CS416 – Data Visualization – Summer 2021

Narrative Visualization

MESSAGING:

The narrative visualization is about the most discussed topic since last year - COVID-19. Since its inception, COVID-19 has devastated countries from all around the globe. Many lives lost; economies crippled. This narrative visualization is designed to take the user through the series of events as they unfolded and to give a picture as to what has become of the world since then. The visualization ends with a message/ request to the user to do his bit to help keep the community safe from the ongoing pandemic.

NARRATIVE STRUCTURE:

The narrative visualization follows interactive slideshow structure. The webpage consists of 5 slide each consisting of 2 or more scenes highlighting different details of the COVID-19 data. User can navigate through slides and interact with each slide with a mouse over, or change the details being displayed by clicking the button visible on the scene or dive deeper by clicking on the sections of the map. Additional details are provided on 2 columns surrounding the scenes. User can read through the details, interact with the map, dig deeper to get some additional details if they are interested or they can just move to the next slide.

VISUAL STRUCTURE:

The interactive slide show can of 5 slides contains, 4 choropleth maps and a final slide with a message. The goal of the visualization is to create an awareness of the ongoing pandemic and it overall effect felt in the world. Keeping this in mind, the scenes are designed to be choropleth maps. When the intent is to illustrate data/ details about countries in the world, choropleth map seems suitable is some situations. And the details that is present on this narrative visualization falls into the category.

The webpage has a title displayed right in the top and middle section of the page. Down below that, there is a navbar with 5 buttons depicting each slide present on the webpage. Below that, the whole screen has been divided into 3 sections. The middle section is dedicated for the charts and the 2 columns surrounding the charts are for providing detailed information to the user. The information the left column provides a brief detail of the pandemic related to the specific scene. The sections of the details are highlighted to draw user's attention to read the details. The right column is dedicated to make the use understand how he/ she can interact with each slide and the details present on each slide. The same approach of highlighting the texts has been used here to highlight the important details of the scene.

The middle section is dedicated for the chart. Each slide contains more than one scene which reflects different dimensions of the data. The choropleth map on each scene has been color coded to draw the attention of the user. Each map is also equipped with color coded legends to let the user relate with the data being displayed.

On 3 of the slides, the 1st scene has a button them to let the user interact to see a different angle of the data they are currently viewing. Additionally, user can interact with the chart by mouseover to see details on map about each country. The mouse of brings over a tooltip which transitions with duration, delays ease function to ease in out on the scene. When user clicks on any of the countries on the choropleth map, another scene is drawn which is a bar chart. The bar charts provide details about another dimension in the dataset. To keep the viewer oriented, the contents on each scene follow a color scheme. If the user navigates from the top map to the detailed chart, the color from the parent scene is carried forward to the child scene. The bar chart is also not drawn suddenly once the user clicks on the map. Rather the transition duration, delay and ease functions are used to make the transition as smooth as possible. Similarly, the slides with 2 choropleth scenes, the same color has been used on the 2 maps to provide a context on the change on countries when a different dimension of the data is drawn. e.g., when user is visualizing the cases, the picture they get is which country has most cases. However, when the visualize the same scene from per millions of people, the same scene transitions into another scene with same color coding so that the user can feel subtle difference in the same data when viewed from a different angle and that may change their perspective.

Most of the scenes are annotated providing some interesting insight to the data. The annotations themselves draw the attention of the user because of their placement on the charts and above all they show up immediately instead of waiting from user interaction so that the user knows it is their and they can go through the details on them.

When user navigates from scene to scene, the details on the left and right columns change the data being displayed on them. Some of the data on the columns have been deliberately left the same because the same data may be relevant to each scene.

Each scene on the slide may lead to another scene and they are connected contextually. E.g., the cases and cases per millions on slide 1 provide a connection between the data as to draw 2 different conclusions. They are connected as they provide the details about the cases but from 2 different perspectives. Similarly, clicking on each country takes the user into more detailed view, e.g., from number of cases from a scene to another scene with bar charts with dates and cases to let the user know how they came to the current number and the ups and downs they had during that.

SCENES:

Slide 1 – Scene 1 → The first scene of the slide is obviously a view of the current situation of number of cases in the world. The scene is choropleth map and with a button to switch to another scene (Scene 2) with a choropleth map. This scene draws a picture which tell the user about the number cases based on millions of people. Each scene allow user to click on the countries which draws bar charts (scene 3 or scene 4 depending upon where user decides to dive into the charts).

Slide 2 – Scene 1 → The first scene of the slide is a view of number of deaths in the world. The scene is choropleth map and with a button to switch to another scene (Scene 2) with a choropleth map. This scene draws a picture which tell the user about the number deaths per millions of people. Each scene allow user to click on the countries which draws bar charts (scene 3 or scene 4 depending upon where user decides to dive into the charts).

Slide 3 – Scene 1 → The first scene of the slide is a view of number of people fully vaccinated in the world. The scene is choropleth map and with a button to switch to another scene (Scene 2) with a

choropleth map. This scene draws a picture which tell the user about share of the population that has been vaccinated. Each scene allow user to click on the countries which draws bar charts (scene 3 or scene 4 depending upon where user decides to dive into the charts).

Slide 4 – Scene 1 → The only scene of the slide is a view of what has been happening since last few weeks. This is a choropleth map with details about % of growth in cases since last 2 weeks.

Slide 5 – Scene 1 → The only scene on this slide is a tip/ message to the user. The slide provides few tips to be safe and help curb the cases and a clear message to the user to urge them to get vaccinated.

Scene Orders → The scenes are ordered in the way the pandemic took different turns. COVID came, cases started to rise. Lot of people were infected and there was death. People died across world. And then when there was no hope, then came the vaccine, a life saver. World started vaccinating. But vaccinations dropped. So, the next slide provides a context that cases are again starting to rise because of the vaccination hesitancy. Finally, the last slide. The slide comes last in the deck to let the user leave with a message and the message is to get vaccinated or help follow the guidelines to stop the spread to help each other and protect each other.

ANNOTATIONS:

The annotation template used is a box with a line poiting to a coutry/ continent. This template was used to provide a brief fact about the pandemic relating to a specfic country/continent. The annotaions change between the scenes but maintain the consistency. The same annotation template is being used in different scenes the annotations change from scene to scene (not on the same scene) to highlight different a fact from the data from the specific scene.

PARAMETERS :

Slide number are the parameters and bases on these parameters, different JavaScript functions are invoked, and scenes are generated accordingly. When the slide number parameters changes, the scene changes. The slide number parameter changes the parameters of each scene in the slides. Each slide in the visualization represent a state and they are controlled by the slide number parameters. When user navigates to different scenes using the slide number, different JavaScript functions are invoked with different set of parameters which changes the map, color of the map, legends, annotations, details on the sidebars.

Similarly, on each scene, the button on the map is also a parameter. This change is parameters cause another JavaScript function to be invoked with different set of parameters.

Each country on the map is a parameter as well. Clicking on the country on each map, changes the state to another chart which basically invokes another JavaScript function with different set of arguments.

Annotations are parameters. Annotations have been placed on some slides and intentionally removed from the slides.

Transitions used in the slides are also parameter. Transitions are used for smooth tooltip pop-up and disappearance and also in constructing bar charts.

The details shown on the sidebars are parameters as well. When scene changes, the parameters change to display different details on sidebars. These details have kept intact on some scene changes.

Mouseover and mouse out changes the parameters of the tooltip to change the opacity and changes in color of the buttons.

TRIGGERS

Buttons – The slide button clicks listens to click events. Based on the click events, the button color is changed to stress the slide is active and all other buttons are marked inactive. The click event triggers different JavaScript functions connected to the buttons.

Button click event triggers JavaScript function with a set of parameters. This helps construct the scene 1 in each slide. The button on the map of scene 1 listens to a click event and changes the parameters and invokes another callback function.

Hovering over the button changes its color which is triggered by mouseover and mouse out functions.

Hovering over the map, pops up tooltip. The maps listen to mouseover and mouse out events and they trigger the tooltip function when the events are registered. These mouse events are used to capture the mouse position and a mouse move from one country to another or one bar to another triggers tooltip function to be invoked and the tooltip to be displayed at the desired location.

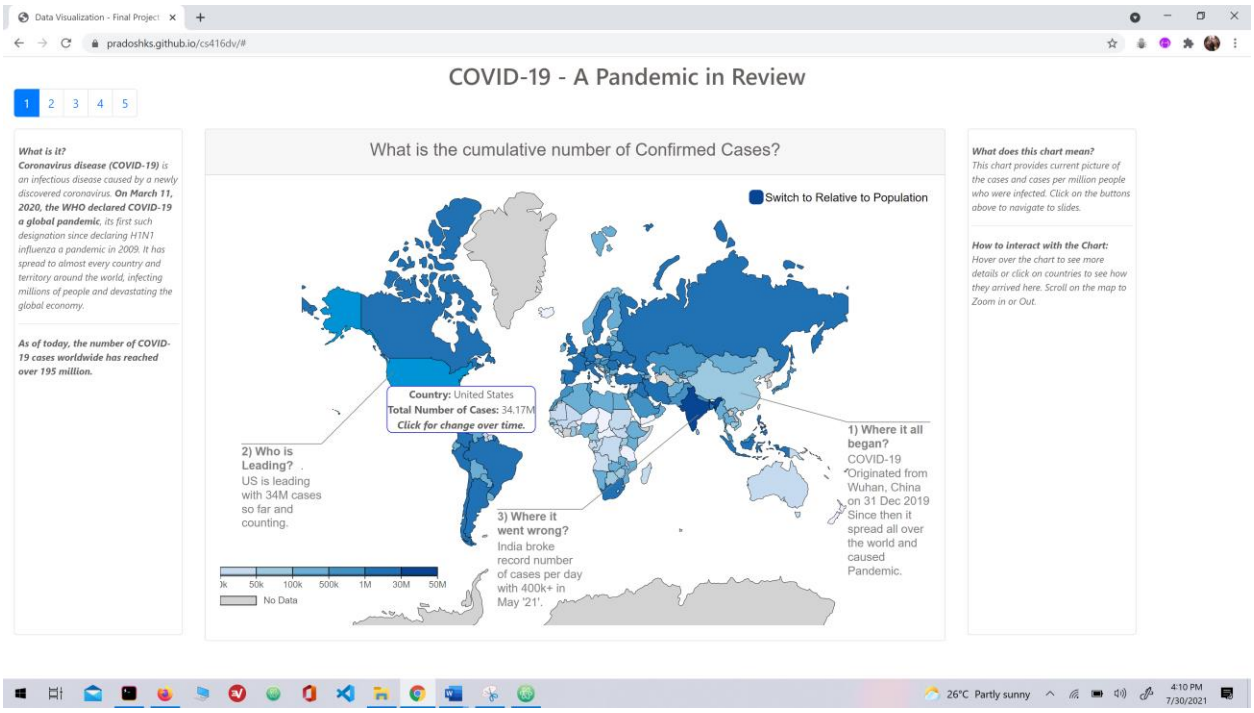
Hovering over the map changes the color of the country. Similarly hovering over the bars changes the color and move out changes the color back to normal. These are triggered by mouse events.

Clicking on the map triggers functions to generate bar charts. This changes the scene and sidebars.

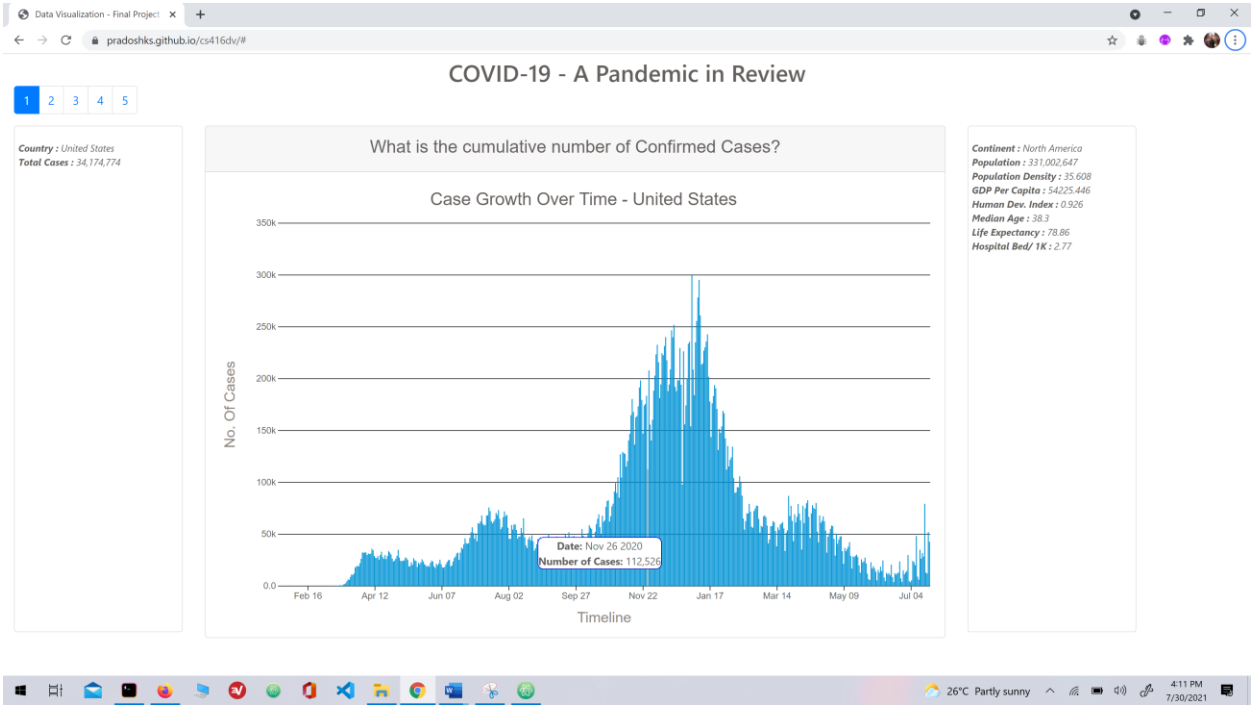
WebPage : *https://pradoshks.github.io/cs416dv/*

Title: *COVID-19 - A Pandemic in Revie*

Page 1 – Scene 1



Page 1 – Scene 2



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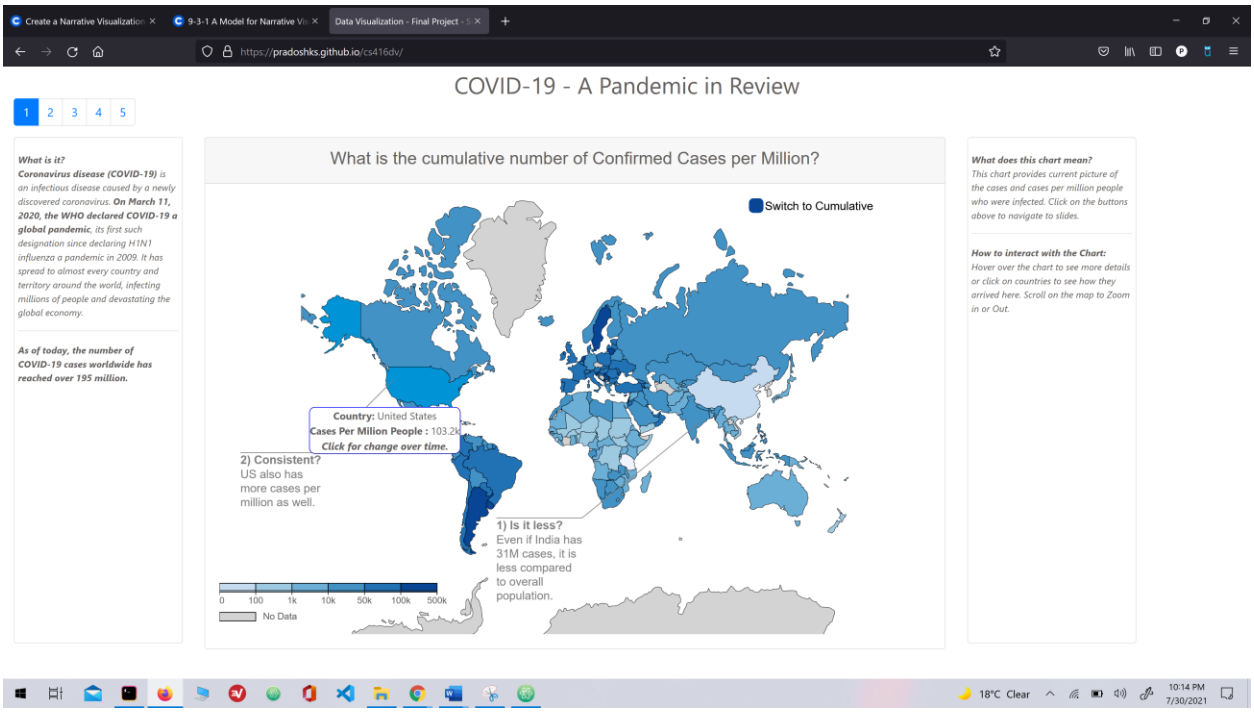
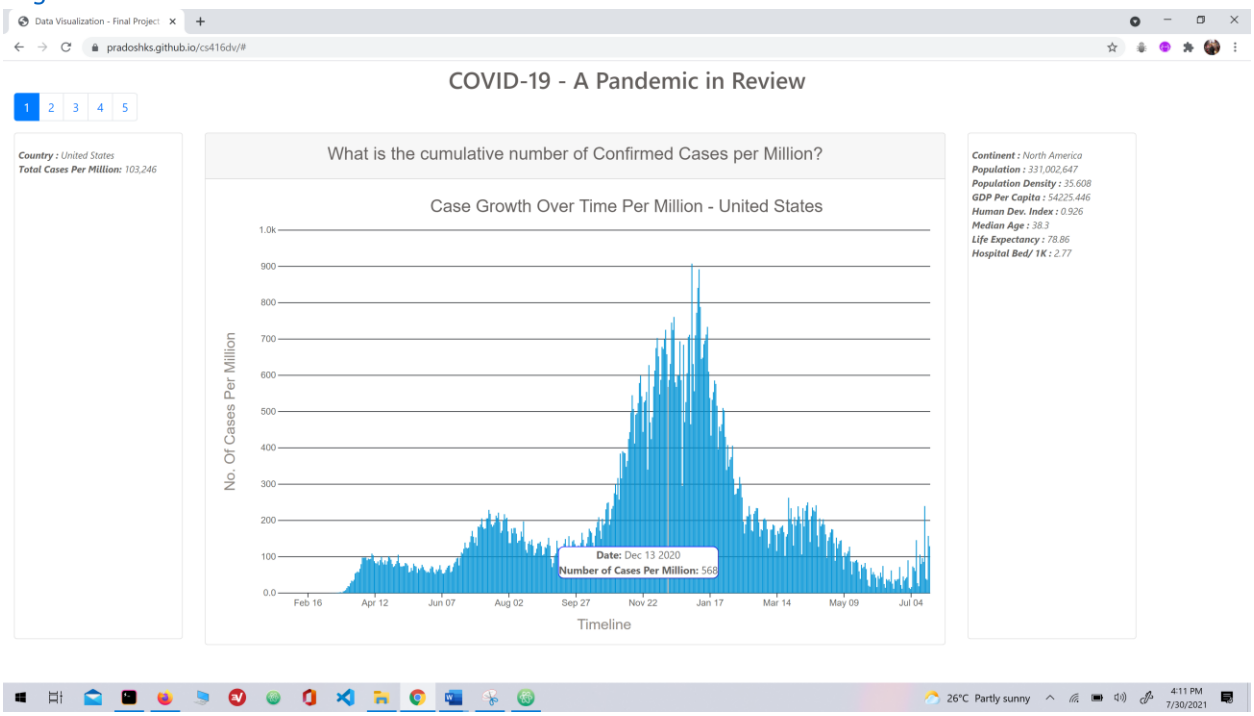
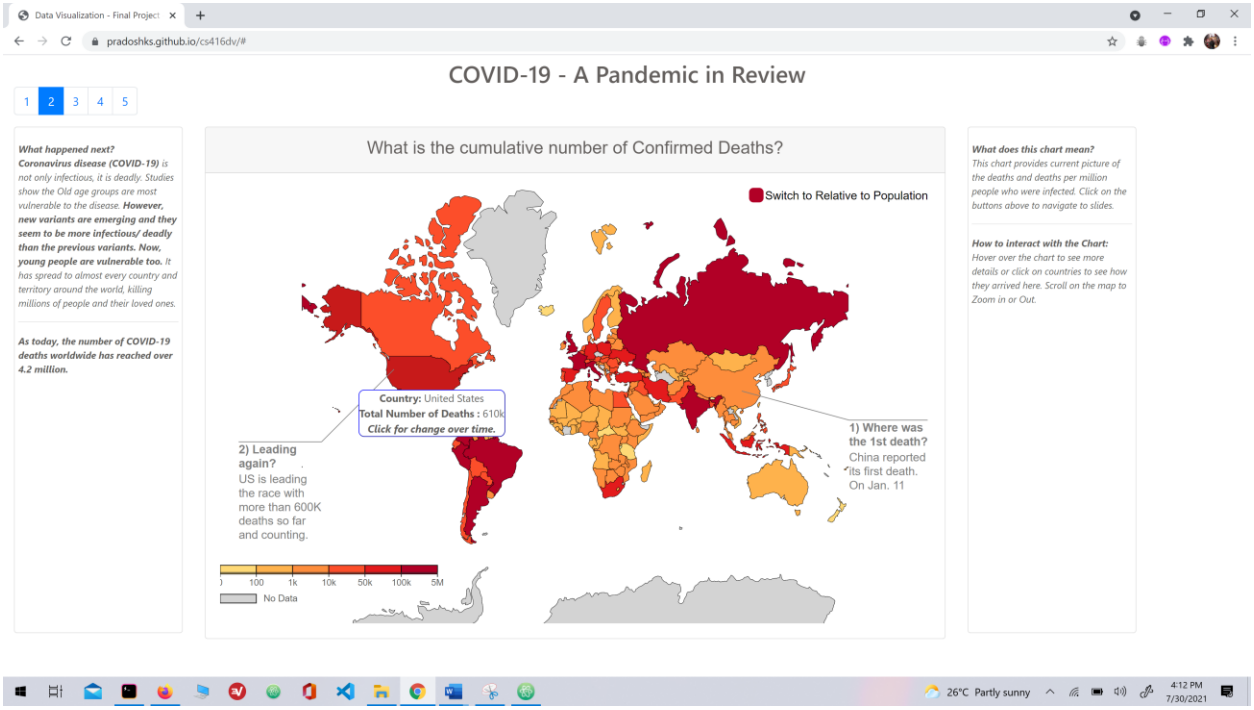


Page 1 – Scene 4



Page 2 – Scene 1



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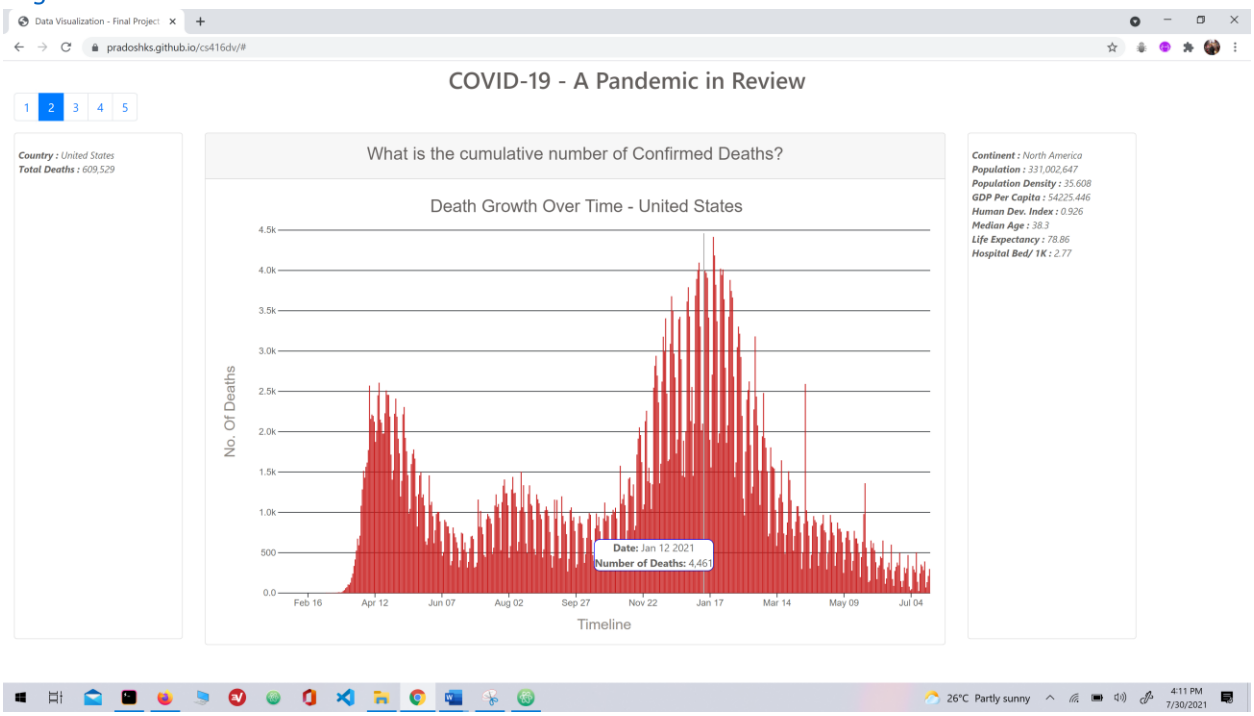

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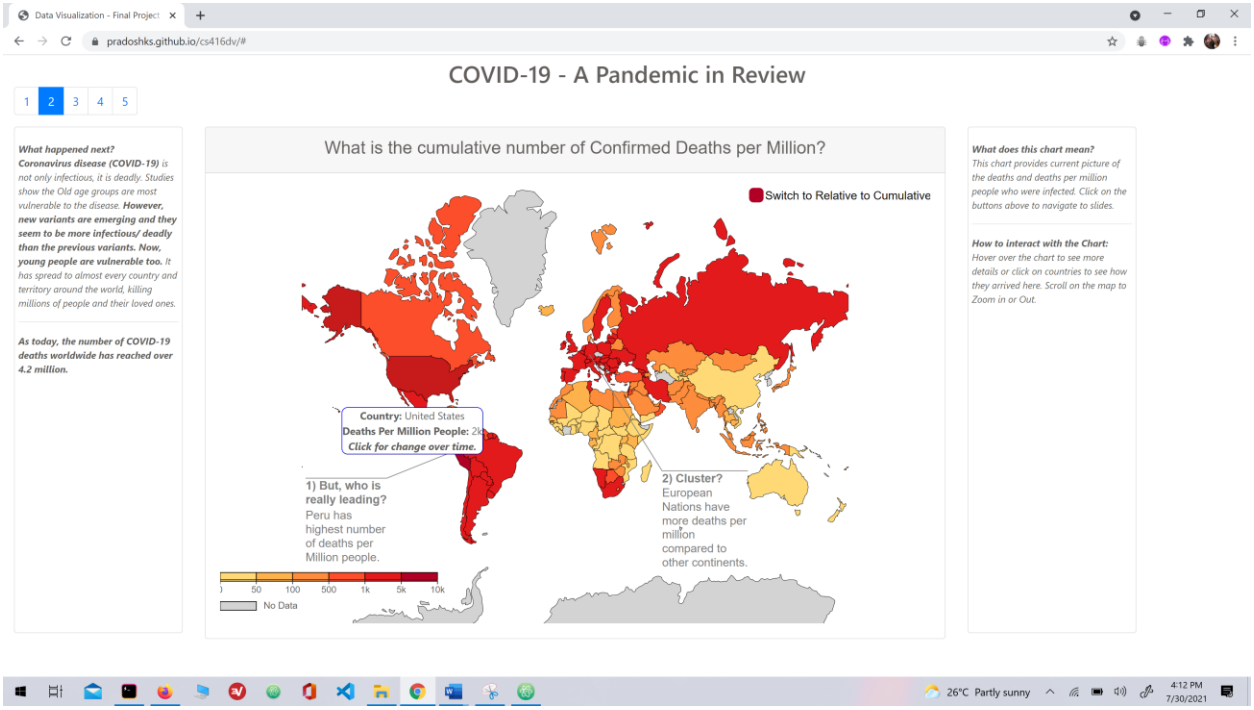
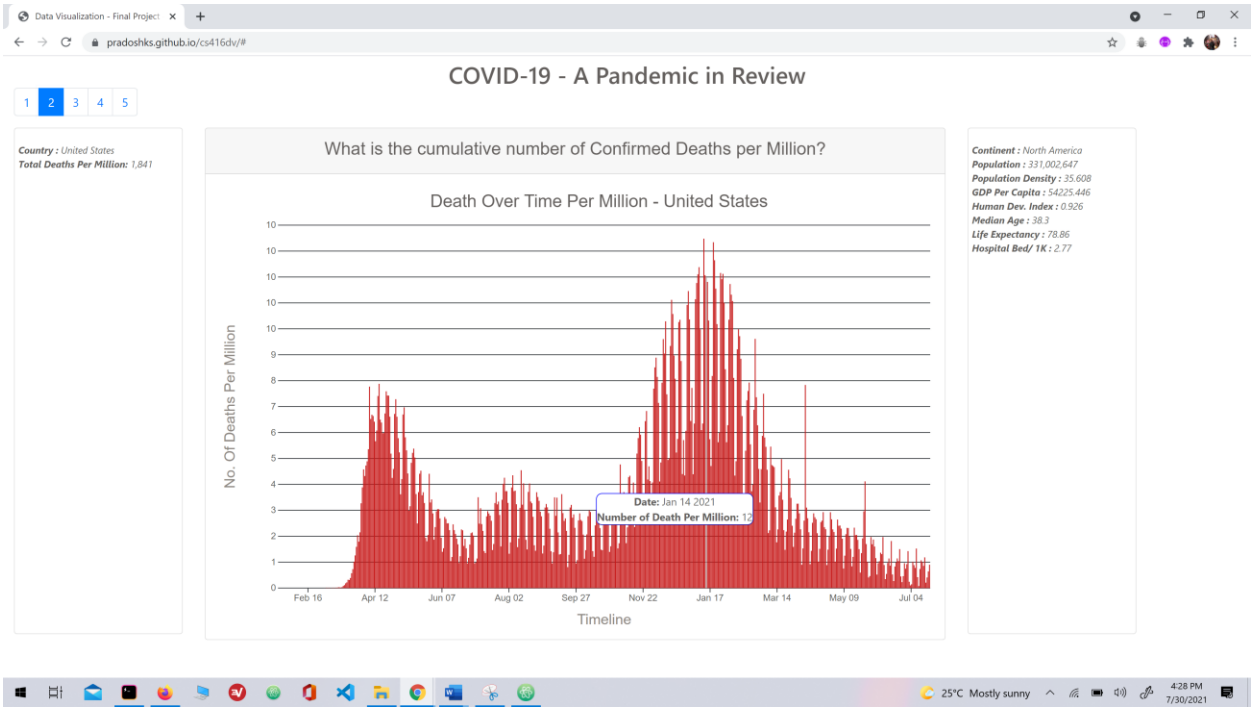
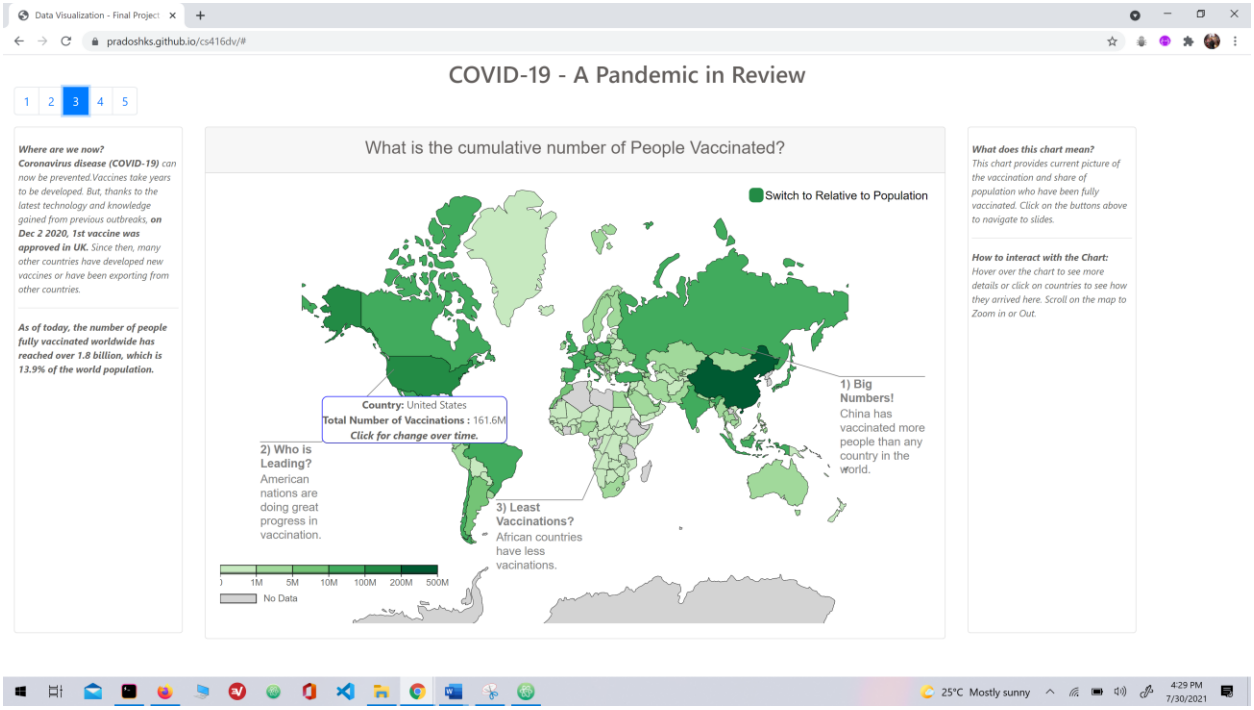


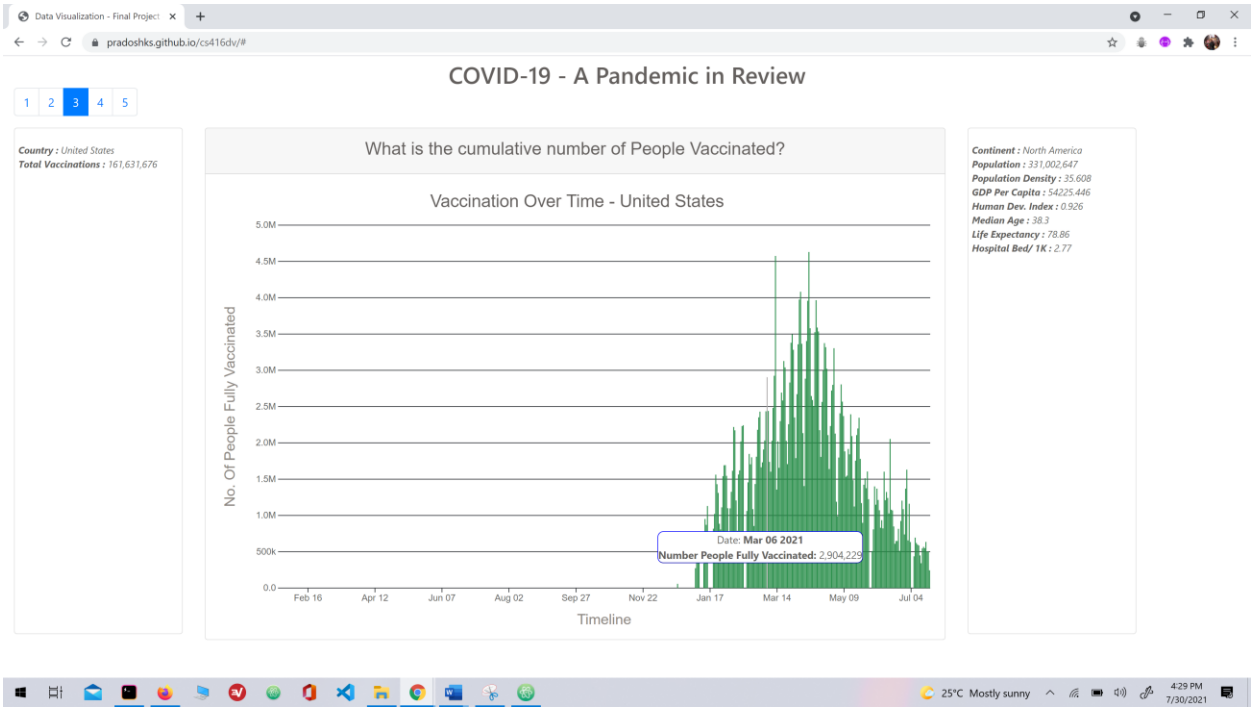
Page 2 – Scene 4



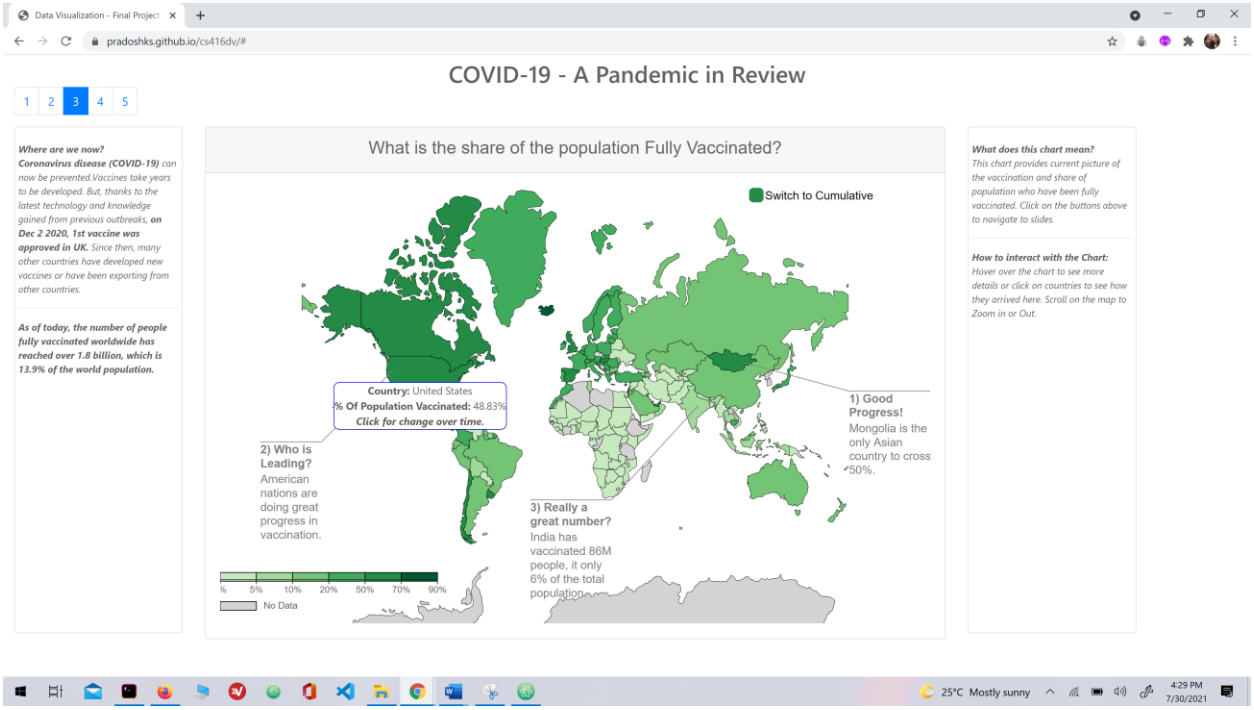
Page 3 – Scene 1



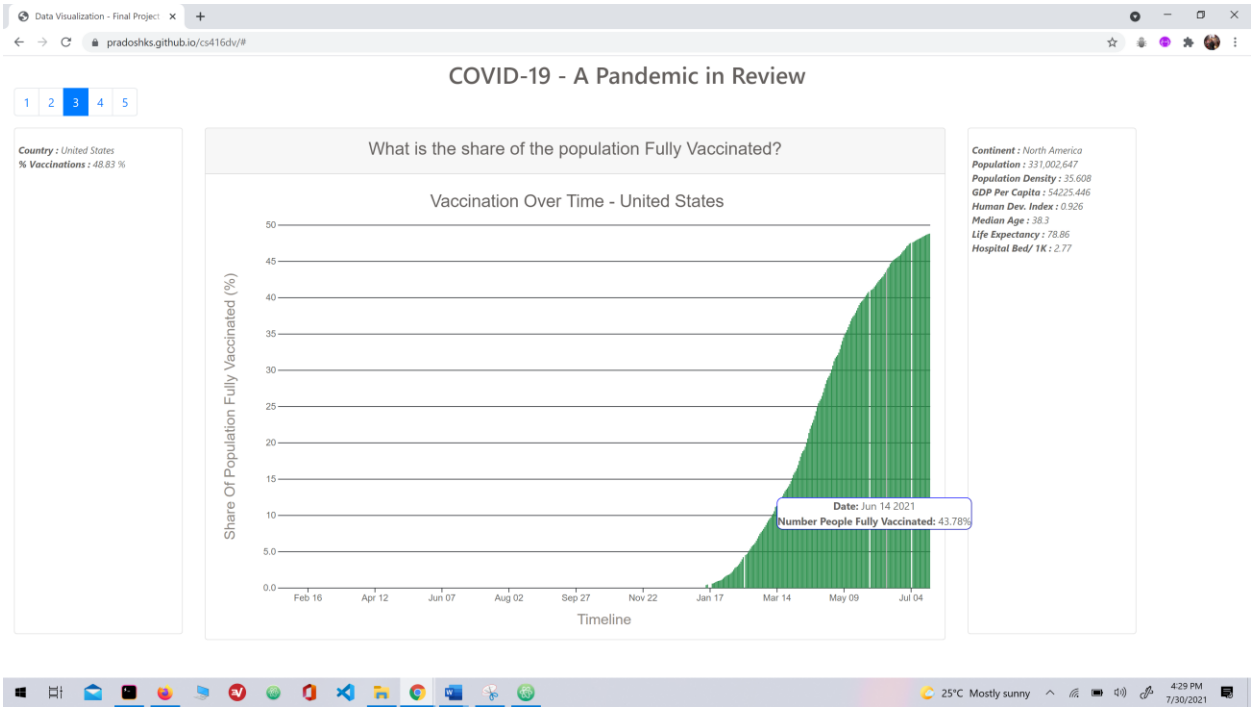
Page 3 – Scene 2



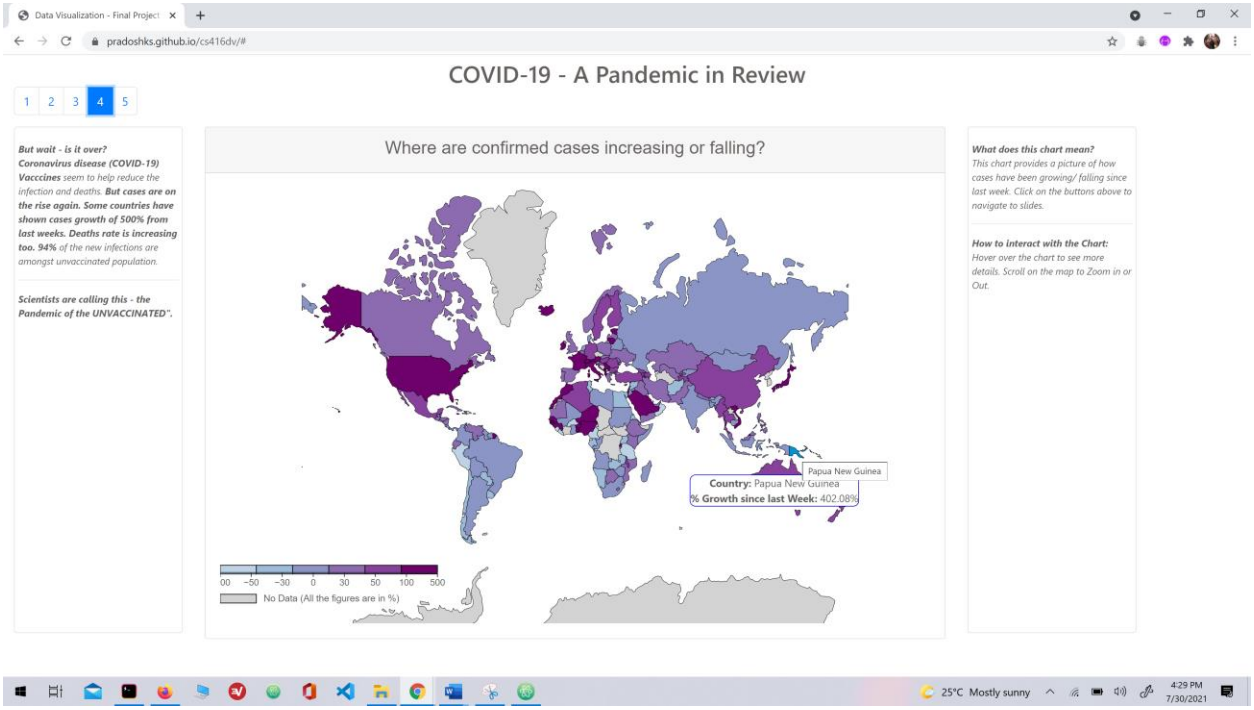
Page 3 – Scene 3



Page 3 – Scene 4



Page 4 – Scene 1



Page 5 – Scene 1