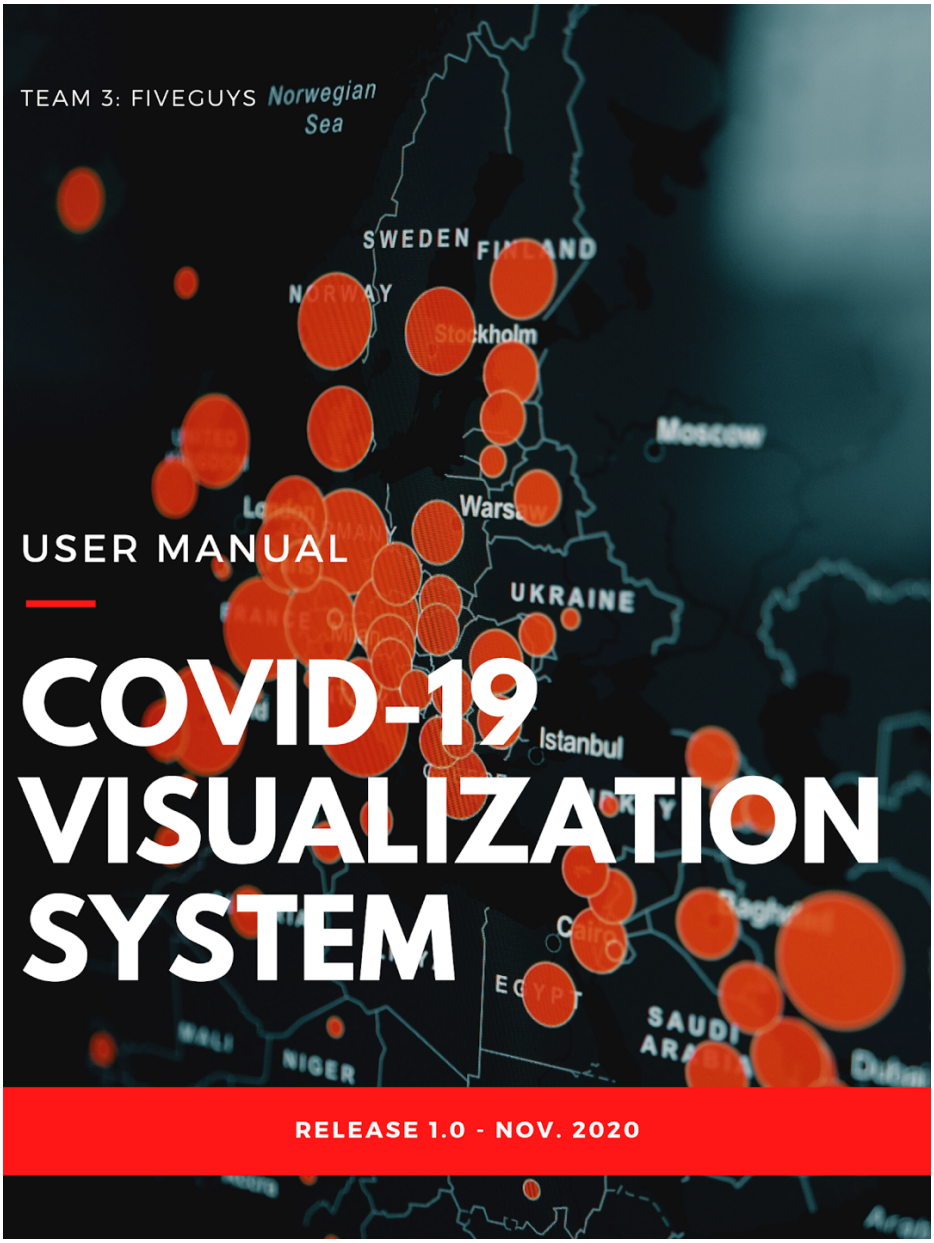
# COVID-19 VISUALIZATION SYSTEM

11/23/2020

## USER MANUAL 1.0



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# Foreword

Thank you for choosing our COVID-19 Visualization System! This project was contributed by Jack Krase, Alek Seibel, Richard Phan, Jason Wu and Sena Yevenyo. A huge appreciation to our instructor, Professor Joann J. Ordille Ph.D., for the limitless supports and help, and a special thanks to Lafayette College for the opportunity to create this project.

# Disclaimer

This website is designed for visualizing, graphing, analyzing and summarizing the COVID-19 data around Lehigh Valley. By using this website, you will be able to view the COVID-19 cases and deaths with respect to various aspects. The website is not to be used for redistribution.

# Common Issues

Since we did not have much time to review every detail of the website and our website is freshly developed, unexpected bugs might appear without being early addressed. If you encounter an issue that was not notified by us, please contact us by emailing wuyo@lafayette.edu. Please include the steps and perhaps the screenshots if able, and we will resolve problem as soon as possible.

# Running the Website

The fully implemented website can be accessed at the following URL:

http://139.147.9.198

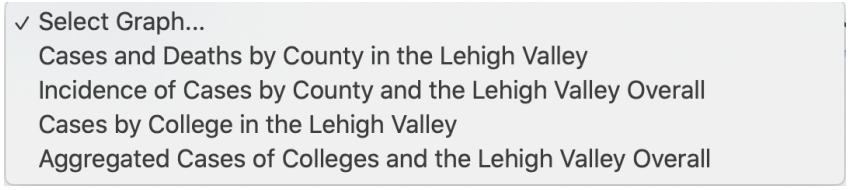
To host the website locally on your computer, follow the steps below:

1. Install Node.js and NPM using commands:
   - `sudo apt-get update`
   - `sudo apt-get install nodejs`
   - `sudo apt-get install npm`
2. Get application from GitHub using command:
   - `git clone https://github.com/rphan038/Lehigh-Valley-COVID19-Database-Project.git`
3. Install all necessary packages in the package.json using command:
   - `npm install express`
   - `npm install pg`
4. Enter command `node dbpg.js` to run the server
5. Navigate to the `public` directory and enter
   `nano index.html`
   Change `<script src="/public/main.js"></script>`
   to `<script src="main.js"></script>`
   Change `<link rel="stylesheet" href="public/style.css">`
   to `<link rel="stylesheet" href="style.css">`
6. Open `index.html` in the web browser

# Selecting and Interacting with Graphs

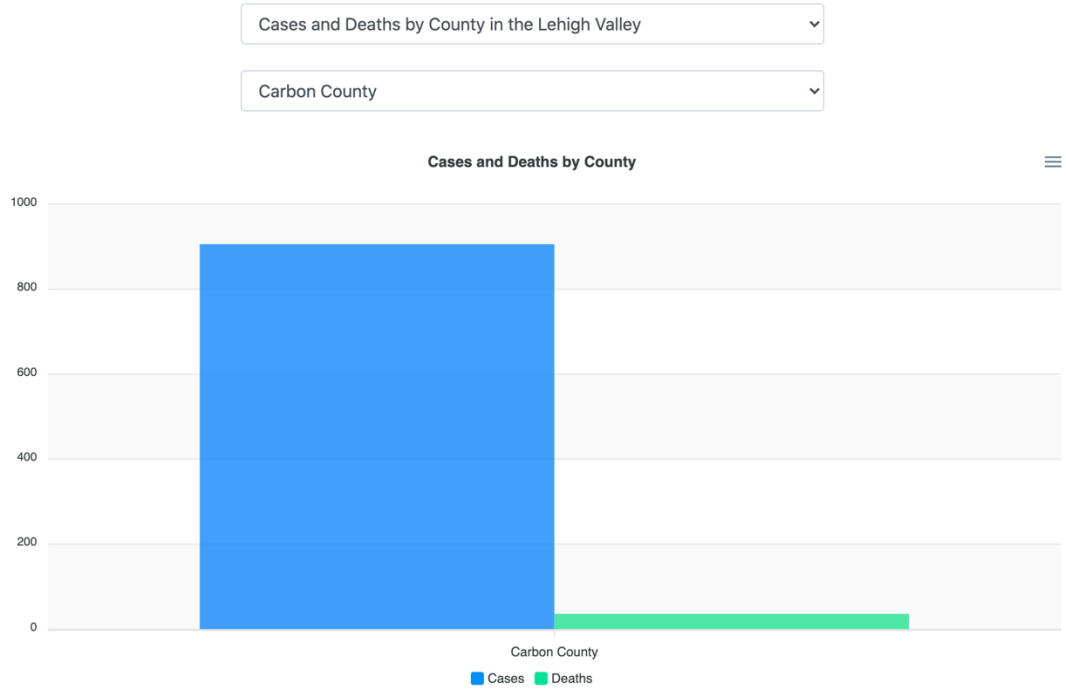
We intend to design a website that do not force the users to switch between different sites. Our data is automatically updated, and the graphs always show the latest version. Once the users enter the website, they will be greeted with a friendly, welcoming title, along with the selection bar. By clicking the selection graph, users should see four different options other than the original “Select Graph…” option.


(first view)




(options in the selection bar)

We use two types of graphs in majority: the aggregating data and the time series. The aggregating data is very similar with the histograms in statistics. It shows the users about the cases in a certain area and a certain condition. If the users select “Cases and Deaths by County in the Lehigh Valley” or “Cases by College in the Lehigh Valley”, which will return the aggregating data graphs, the second selection bar will show up. By clicking the second selection bar, the users can also select a county from the four we have covered: Carbon County, Lehigh County, Northampton County and Warren County.

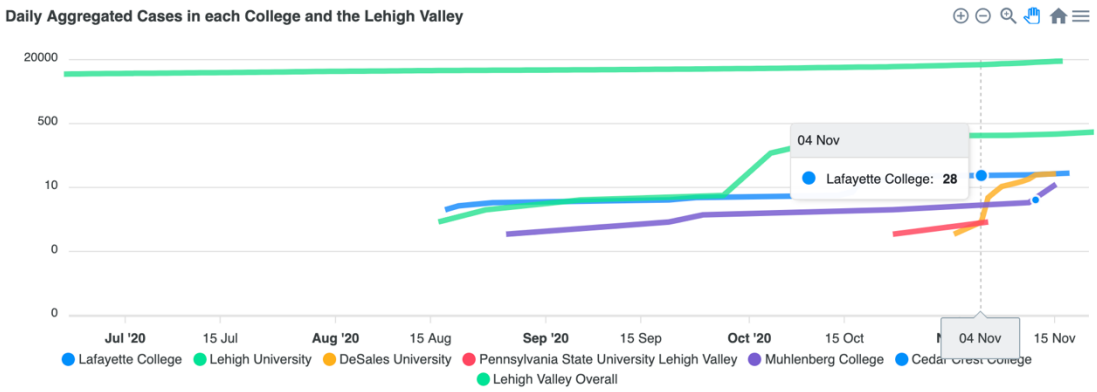



Displays the total recorded COVID-19 cases and deaths in Carbon County

(example of the aggregating data graph)


(options in the second selection bar)

The time series graph is shown when the users select “Incidence of Cases by County and the Lehigh Valley Overall” or “Aggregated Cases of Colleges and the Lehigh Valley Overall” is able to tell the changes over time. Instead of letting the users select the county, the time series graph includes all of the counties automatically. There are a lot of lines because we have included a number of counties, but the users can eliminate any data they are not interested by clicking the name under the x-axis. Even though all of the counties are included in the graph, users can also zoom in and out a certain piece for better view or clicking the add-button or minus-button on the top right corner.




Displays the aggregated COVID-19 cases for colleges in the Lehigh Valley and the Lehigh Valley itself

(example of a time series graph)

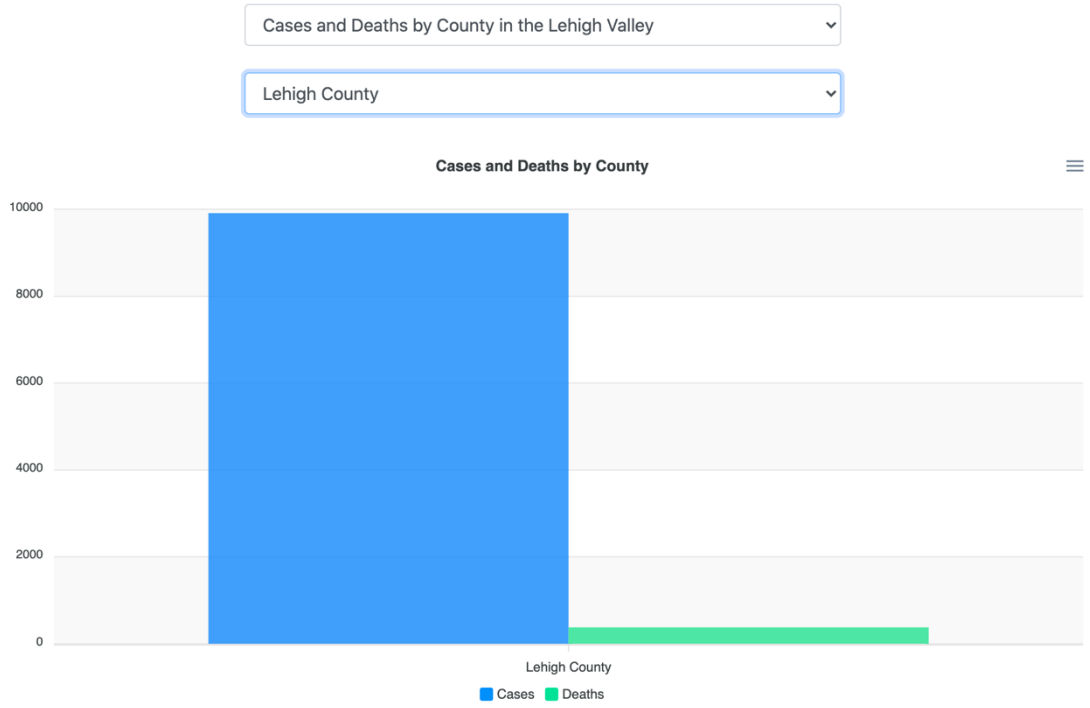
(toolbar)

There will be a brief explanation about each graph below the graph.

# AVAILABLE GRAPHS

1. **Cases and Deaths by County**

   This section returns the aggregating number graphs, so it will have two selection bars with the second one choosing the county. It displays the total recorded COVID-19 cases and deaths in Lehigh Valley. The y-axis is evenly distributed in units of single cases. There will always be two bars on the graph: the left one indicating the number of cases and the right one indicating the number of deaths. The right bar is not supposed to be higher than the left bar.

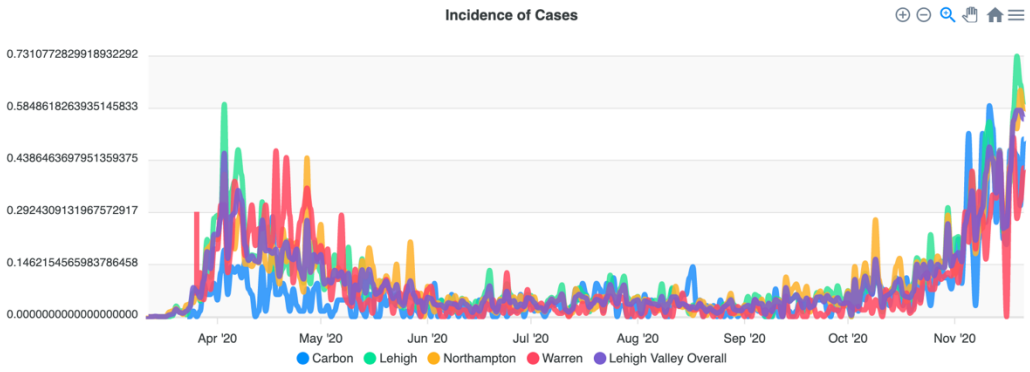



(Cases and Deaths in the Lehigh County)

2. **Incidence of Cases by County and the Lehigh Valley Overall**

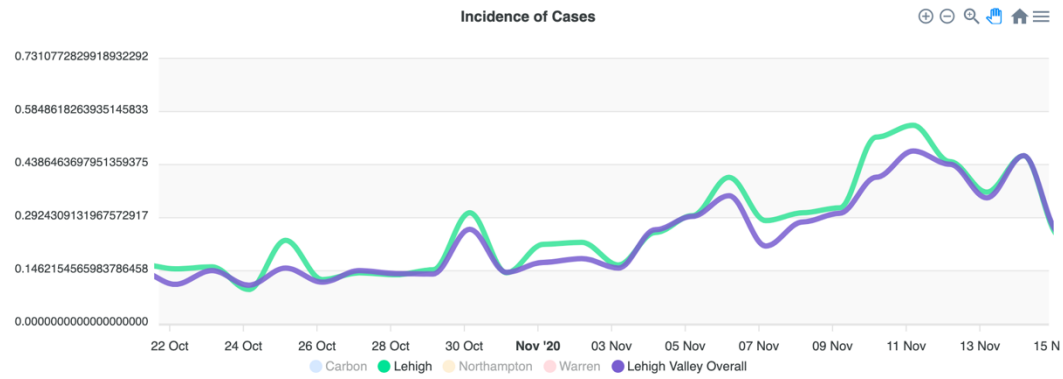
   This section returns a time series graph that includes the information of all counties and the Lehigh Valley overall as well. The y-axis is the incidence in decimals, while the x-axis indicates the time. We design this graph so that the users are able to view the information at any time slot.

As mentioned earlier, the users are able to zoom in a specific piece and eliminate lines.




Displays the incidence of cases (new daily cases per 1000 people in the county) since March

(Incidence of cases of all counties)

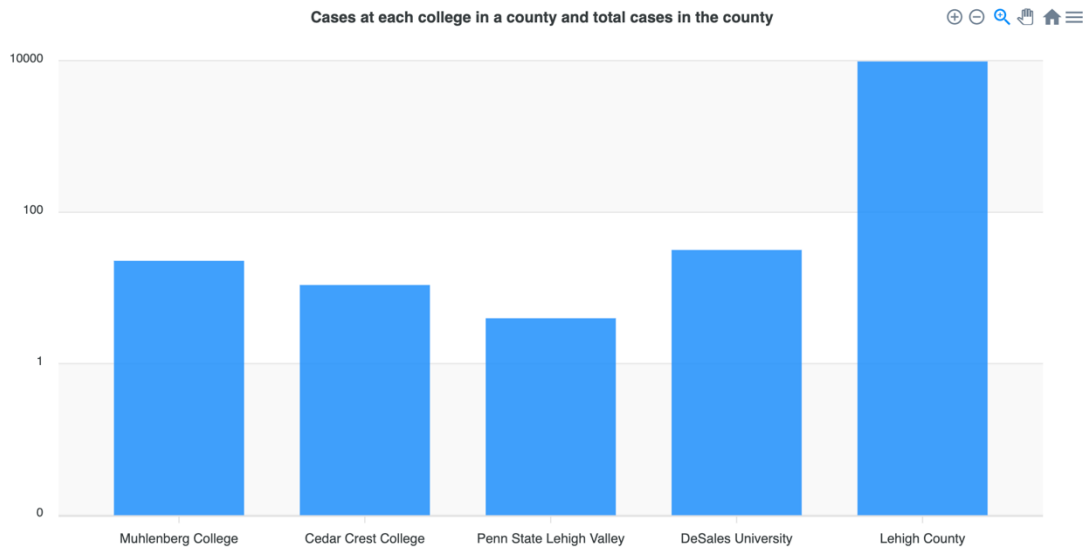



(incidence of cases of the Lehigh County and Lehigh Valley Overall from Oct.22nd to Nov.15th)

### 3. Cases by College in the Lehigh Valley

This section returns aggregate numbers graphs. It displays the total recorded COVID-19 cases for colleges and universities in Lehigh Valley. Note that the y-axis raising from a small number to a large one. We design that in order to include the information of the county as a whole without making that number too dominant in the graph. As the graph below shows, each college in Lehigh County has no more than 100 cases while the county has around 10,000 cases in total. If the scale of y-axis stays even, the visualization of the graph will be very confusing and

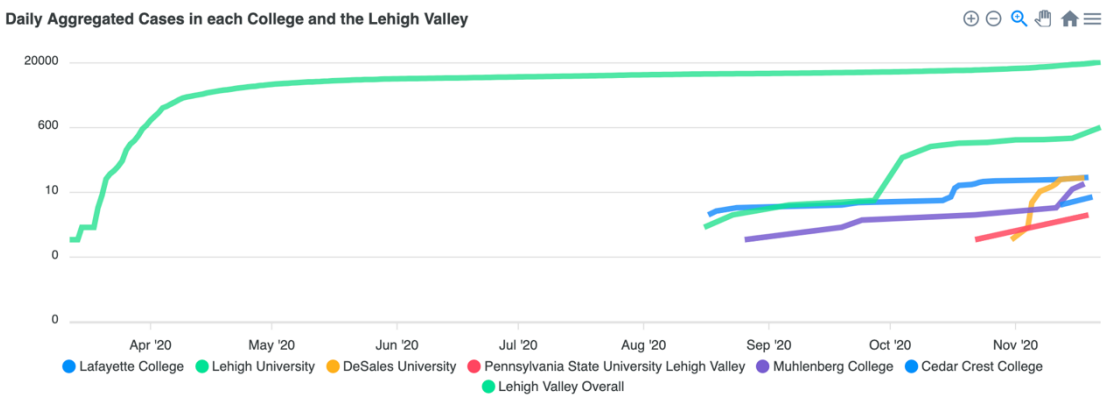
unobservable. Like the “Cases and Deaths by County” section, this section has multiple graphs with respect to different counties. However, there is not a college/university in some of the counties. In that case, there will only be one bar telling the information of the county itself. The others will contain multiple bars, displaying the information of the colleges and the county itself.




Displays the total recorded COVID-19 cases for colleges and universities in Lehigh County

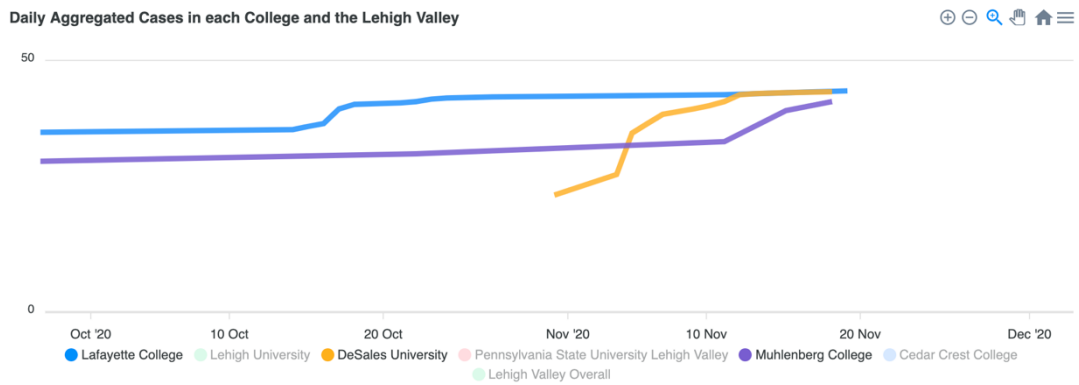
(Cases at each college and total cases in Lehigh County)

4. **Aggregated Cases of Colleges and the Lehigh Valley Overall**
   This section contains a time series graph, it includes the aggregated cases of each college and the Lehigh Valley overall. Like the last section, the scale of y-axis varies to prevent the number of Lehigh Overall being too dominant in the graph and destroying the visualization. The users can zoom in and out and eliminate lines as well in this section.




Displays the aggregated COVID-19 cases for colleges in the Lehigh Valley and the Lehigh Valley itself

(Aggregated cases in each college and the Lehigh Valley)




(Aggregated cases in Lafayette College, DeSales University and Muhlenberg College from Oct.20th to Nov.20th)

# Accessing the Data

Users can access the data we use by adding "/county/" and the county name in order to view the data we use. For example, to view the data in Northampton County, users can type the URL http://139.147.9.198/county/Northampton After entering this site, the users are able to view the details of the data that we use. The data is sorted by date for convenience. All other endpoints are explained in detail in the Developer's Manual.


At last, thank you so much, again, for choosing our website. We sincerely hope you have a great experience with the website we developed!