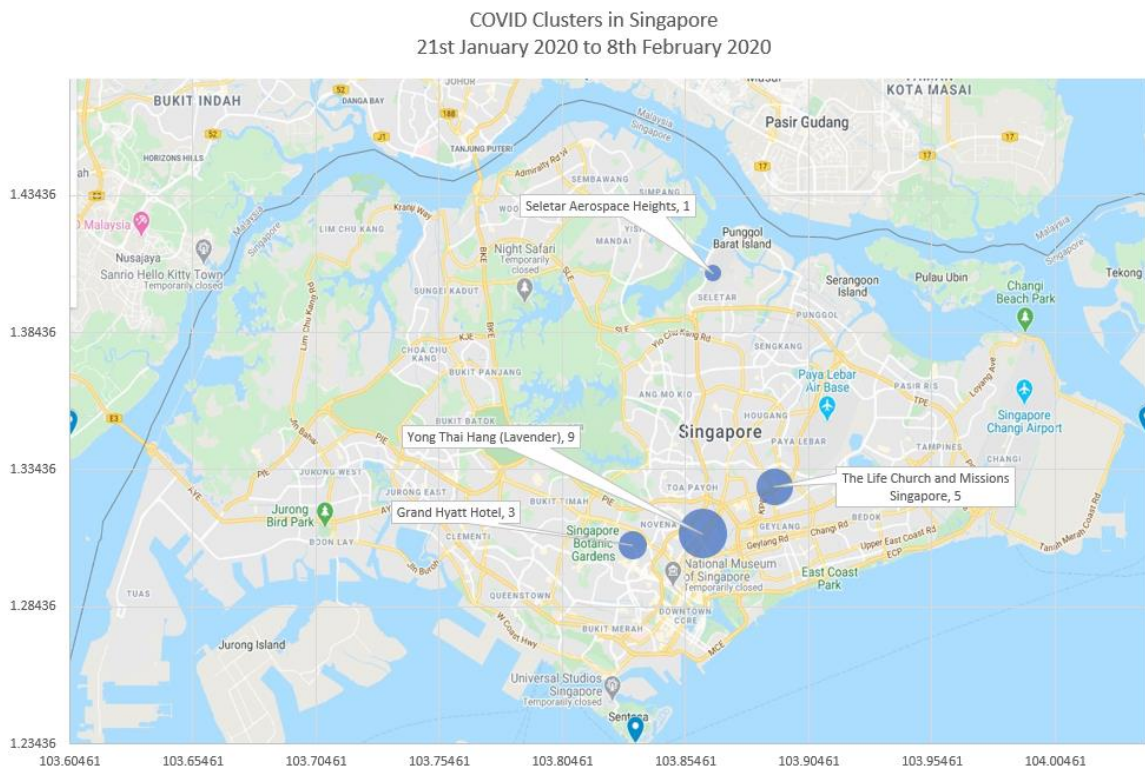


HOW TO DRAW A SIMPLE GEOGRAPHICAL HEATMAP IN EXCEL

DR. ALVIN ANG



CONTENTS

Step 1: Obtain Data.....	3
Source of our Data	3
Obtaining the Latitude and Longitude of Each Location	3
Step 2: Cropping the Singapore Map for Background.....	6
Obtaining the Left Boundary (left Marker)	6
Obtaining the Top Boundary (Top Marker)	7
Saving the 4 Boundary Points as JPG	9
Step 3: Creating a Bubble Chart.....	10
Formatting the Y Axis (Latitude).....	10
Formatting the X Axis (Longitude).....	11
Inserting the “Map of Singapore” into the Chart.....	12
Rename the Chart Title.....	13
Step 4: Inserting the Bubbles in the Heat Map	14
Putting in the Data	14
Labelling the Bubbles	16
Adjust Bubble Size.....	18
Step 5: Saving it as JPG.....	19
Conclusion	20
About the Author	21

STEP 1: OBTAIN DATA

SOURCE OF OUR DATA

- This article will draw a Geographic Heatmap based on the number of COVID cases in Singapore.
- The source of our data¹ will be from 21st January 2020 to 8th February 2020.

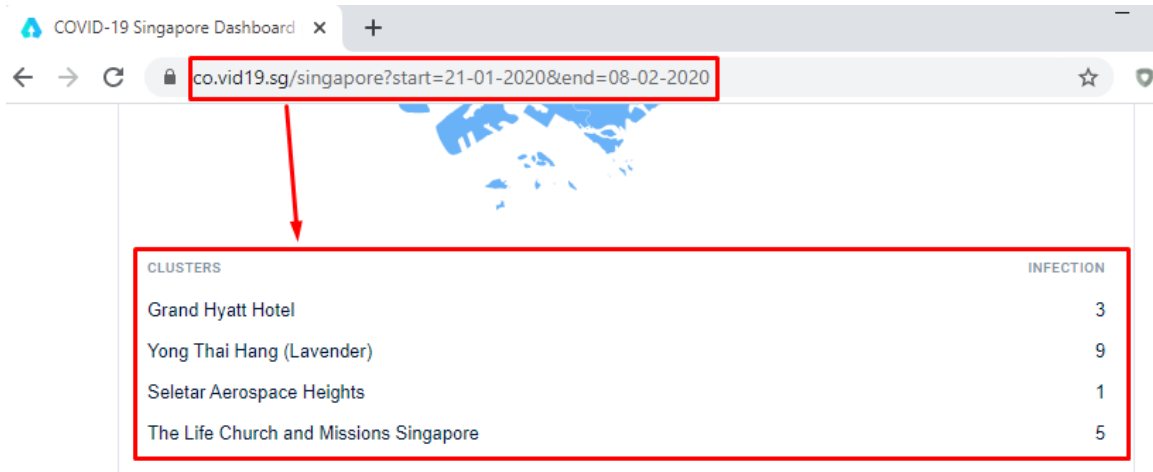


Figure 1: Number of COVID Cases in Singapore from 21/1/2020 to 8/2/2020

OBTAINING THE LATITUDE AND LONGITUDE OF EACH LOCATION

- Copy paste the “Clusters” and “Infection” table into Excel (Figure 1).
- Go to Google Maps²
- Type in “Grand Hyatt Hotel”
- Right click the exact location of Grand Hyatt Hotel → Select “What’s Here?”
- The Latitude and Longitude will appear below (Figure 2).
- Click on it → Copy it (Figure 3)

¹ <https://co.vid19.sg/singapore?start=21-01-2020&end=08-02-2020>

² <https://maps.google.com/>

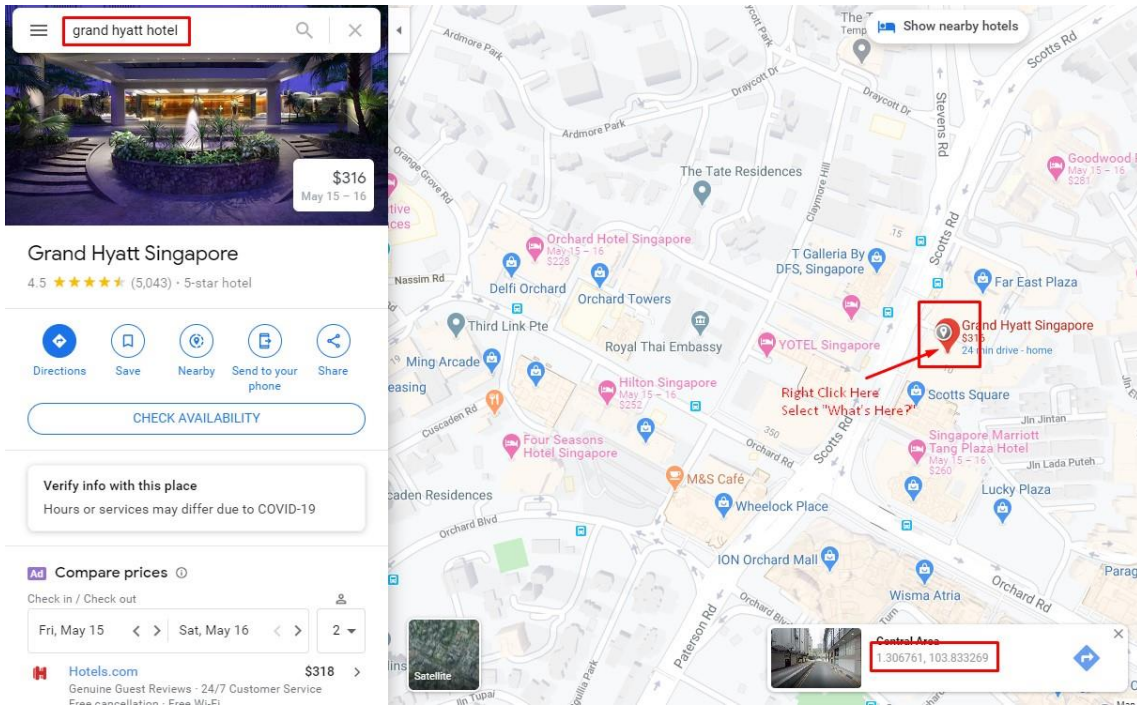


Figure 2: Right Click the Exact Location of Grand Hyatt Hotel to get the Lat and Long

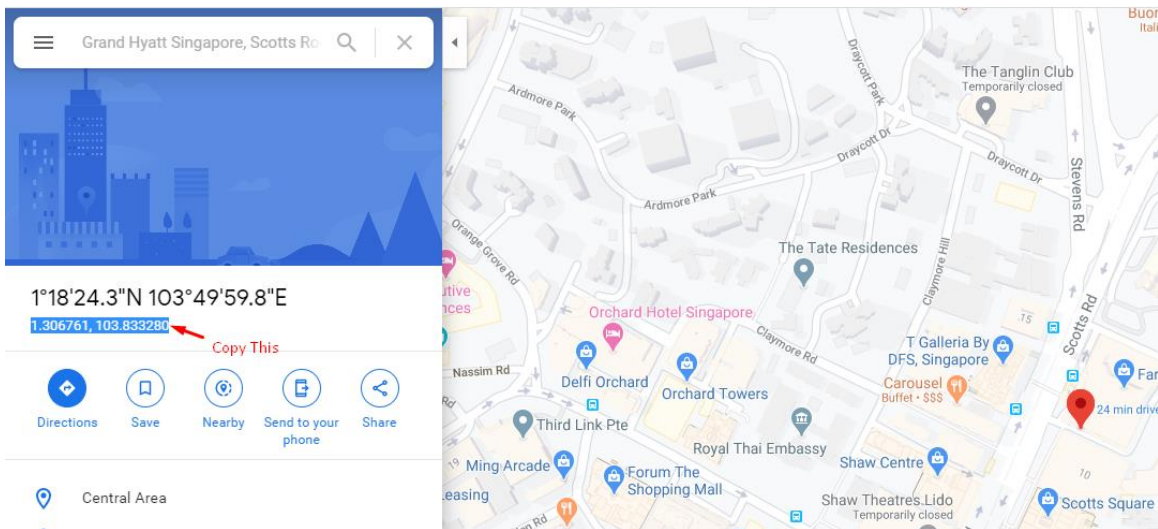


Figure 3: Copy the Lat and Long

- Paste the Lat and Long into Excel

CLUSTERS	INFECTION	Latitude (North to South)	Longitude (East to West)
Grand Hyatt Hotel	3	1.306761	103.83328
Yong Thai Hang (Lavender)	9	1.311162	103.861678
Seletar Aerospace Heights	1	1.406135	103.865732
The Life Church and Missions Singapore	5	1.328203	103.890733

Figure 4: Excel Lat Long of Each Location

- You should end up with Figure 4.

STEP 2: CROPPING THE SINGAPORE MAP FOR BACKGROUND

- We need the 4 EXACT sides (boundaries); else later the heatmap will not be overlaid correctly.

OBTAINING THE LEFT BOUNDARY (LEFT MARKER)

- We need to use our Personal Google Maps³ to do Marking
 - (which is NOT the normal public google map!)

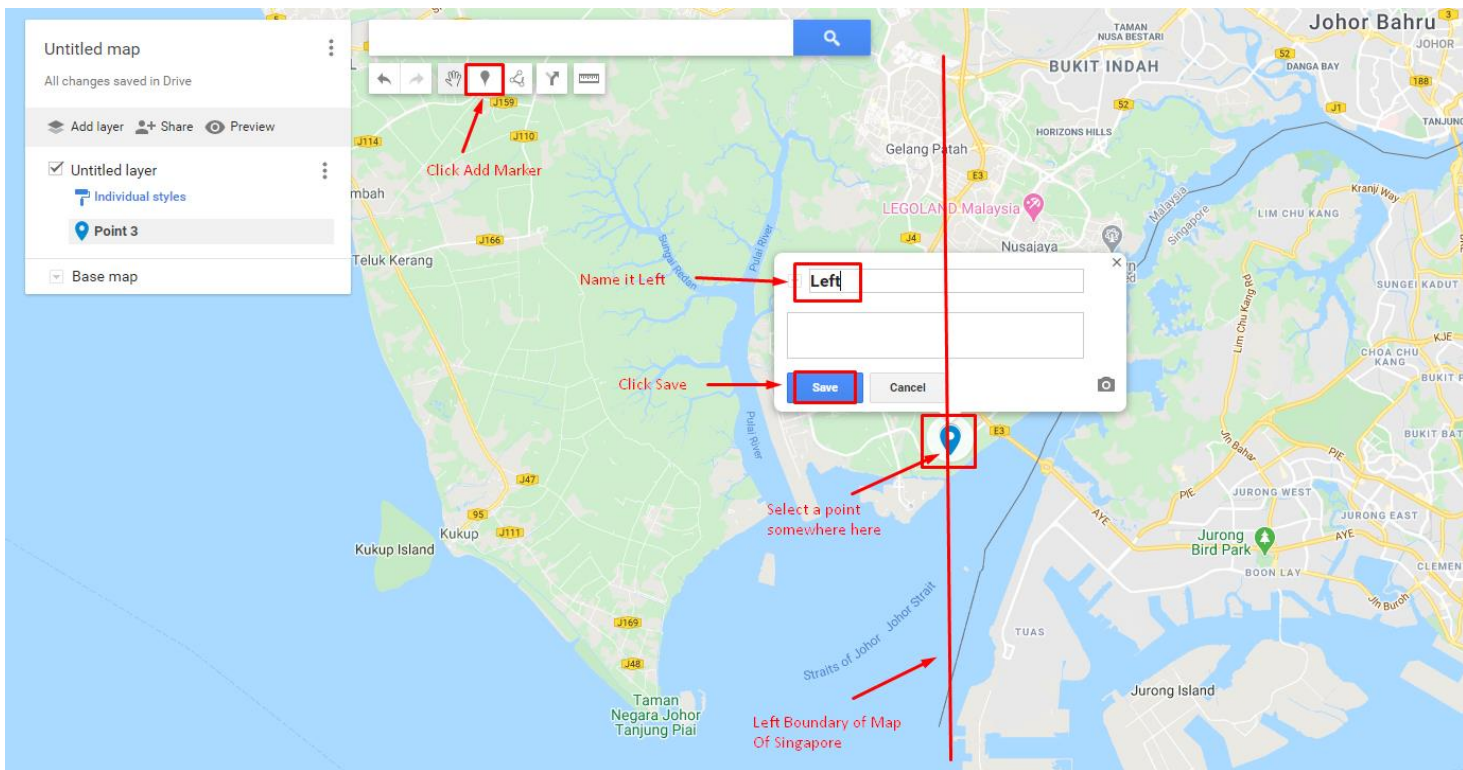


Figure 5: Adding a Marker

- Figure 5 shows how you can add a marker.
- Purpose of the Marker is to show the Left Most Boundary of the map we will be using later.

³ <https://www.google.com/maps/d/u/0/>

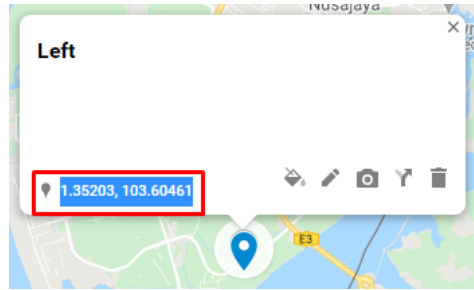


Figure 6: Obtaining the Lat and Long of the Left Boundary

- After you have clicked on “Save” in Figure 5, copy the Lat and Long (Figure 6).
- **LEFT → LAT and LONG: 1.35203, 103.60461**

OBTAINING THE TOP BOUNDARY (TOP MARKER)

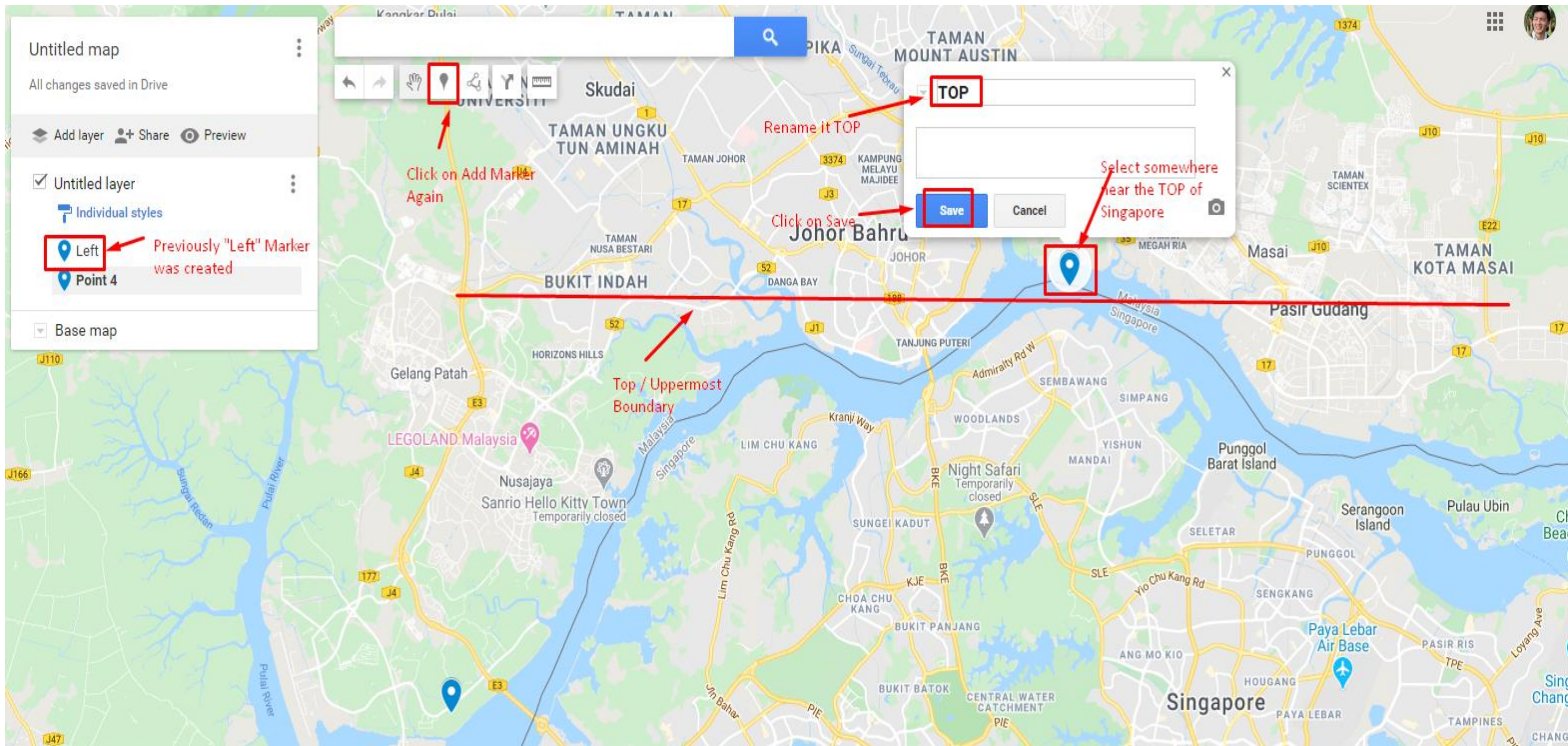


Figure 7: Repeat Similar Steps to Obtaining the Top Boundary

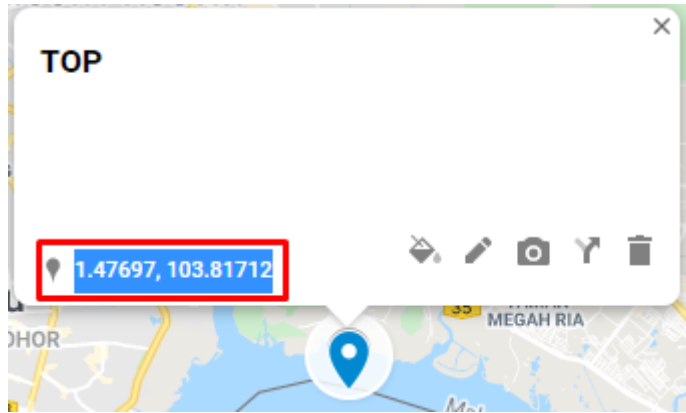


Figure 8: Top Boundary Lat and Long

- Following the above steps, we will obtain the 4 Boundary Lat and Long:
 - LEFT → LAT and LONG: 1.35203, 103.60461
 - TOP → LAT and LONG: 1.47697, 103.81712
 - RIGHT → LAT and LONG: 1.35409, 104.042
 - BOTTOM → LAT and LONG: 1.23436, 103.83285

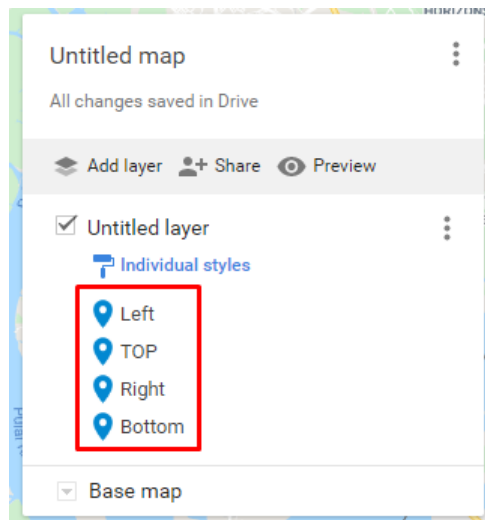


Figure 9: 4 Boundary Points Obtained

SAVING THE 4 BOUNDARY POINTS AS JPG

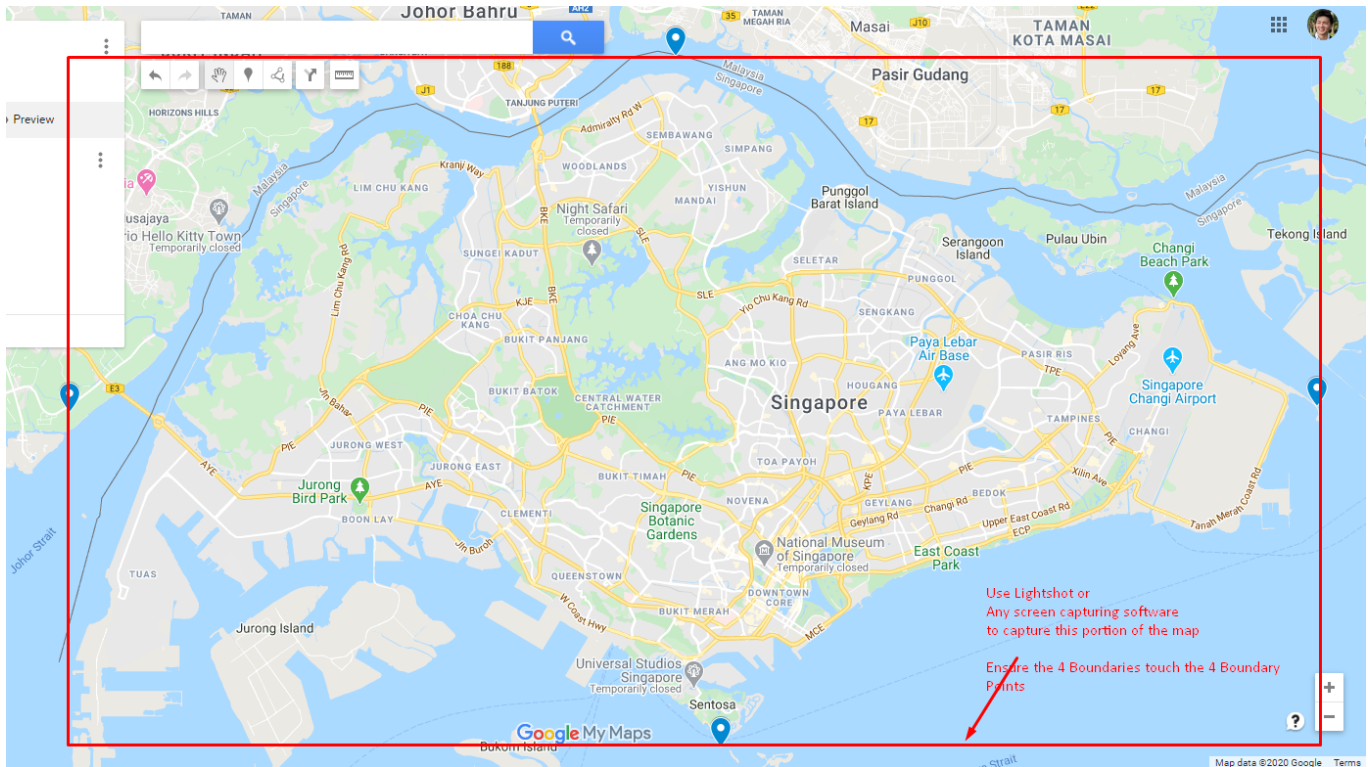


Figure 10: Use Light shot⁴ or any screen capturing software to Capture the 4 Boundaries (demarked by Red Zone). Make sure the Screen Capture touches the 4 Boundary Points

- Save the screen capture above in the Red Zone (perhaps call it “Map of Singapore”).

⁴ <https://app.pnrtscr.com/en/index.html>

STEP 3: CREATING A BUBBLE CHART

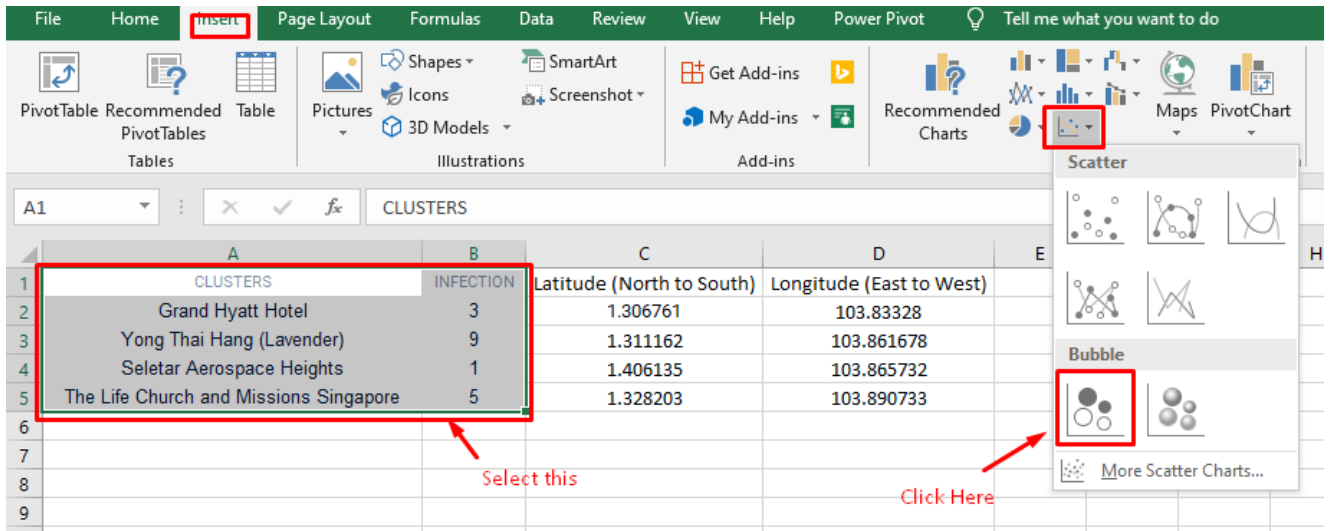


Figure 11: Insert a Bubble Chart

FORMATTING THE Y AXIS (LATITUDE)

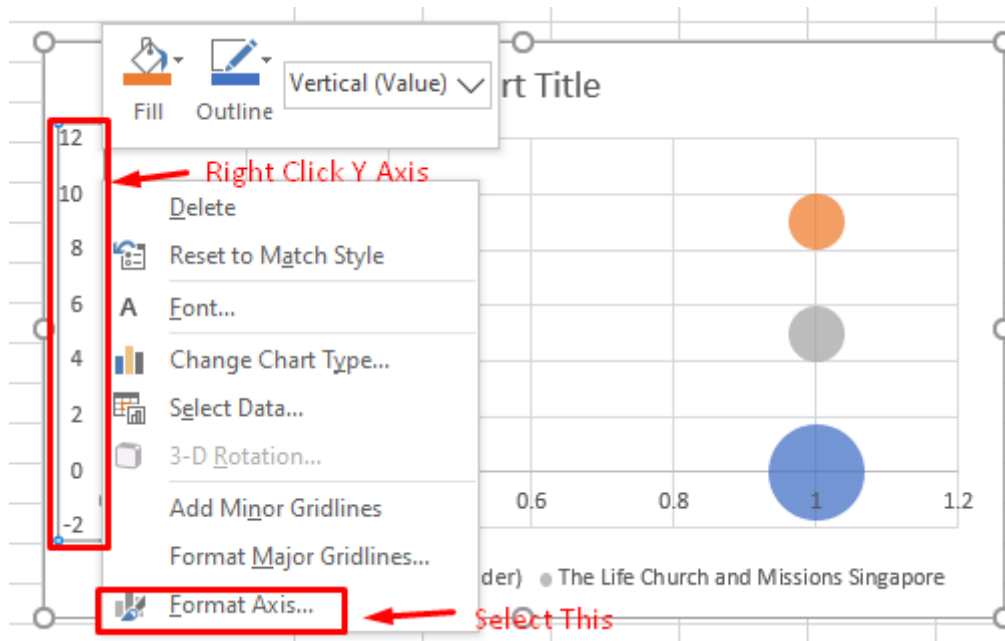


Figure 12: Format the Y Axis

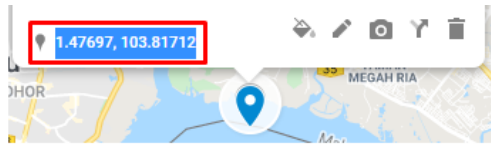


Figure 8: Top Boundary Lat and Long

- Following the above steps, we will obtain the 4 Boundary Lat and Long:
 - LEFT → LAT and LONG: 1.35203, 103.60461
 - TOP → LAT and LONG: 1.47697, 103.81712
 - RIGHT → LAT and LONG: 1.35409, 104.042
 - BOTTOM → LAT and LONG: 1.23436, 103.83285

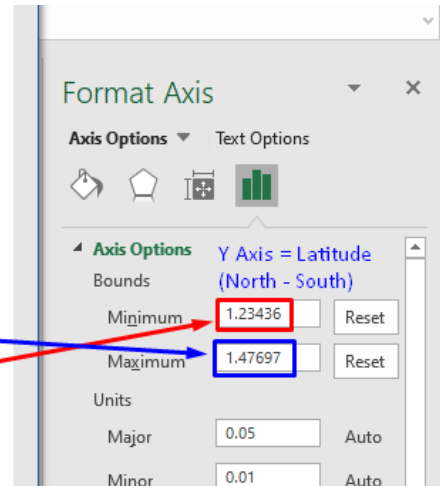


Figure 13: Since we are formatting the Y-Axis (Latitude), we choose the Min and Max of the Lat of the 4 Boundaries

- The purpose of Figure 13 is to make the Chart Axis fit the “Map of Singapore” (the JPG we saved earlier) nicely – later.

FORMATTING THE X AXIS (LONGITUDE)

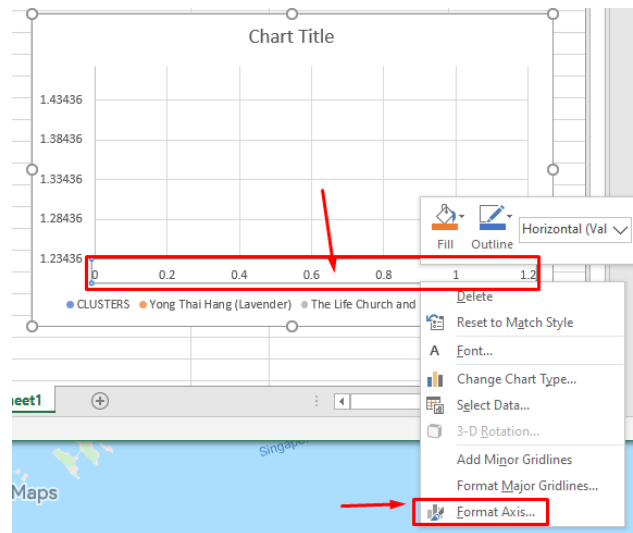


Figure 14: Likewise, we repeat the steps for the X-Axis

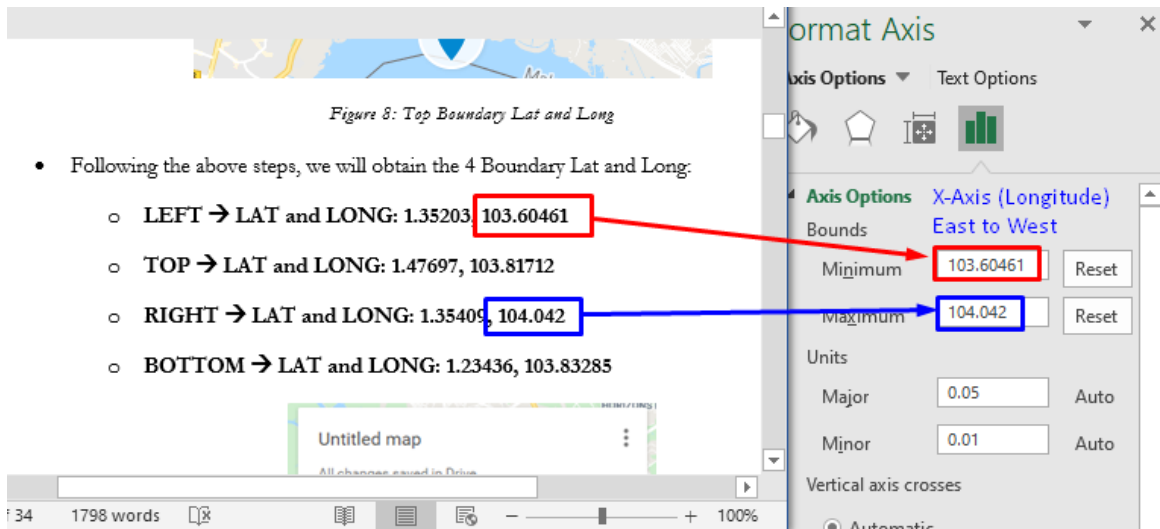


Figure 15: Format the X-Axis (Longitude), choosing the Min and Max of the Long of the 4 Boundaries

INSERTING THE "MAP OF SINGAPORE" INTO THE CHART

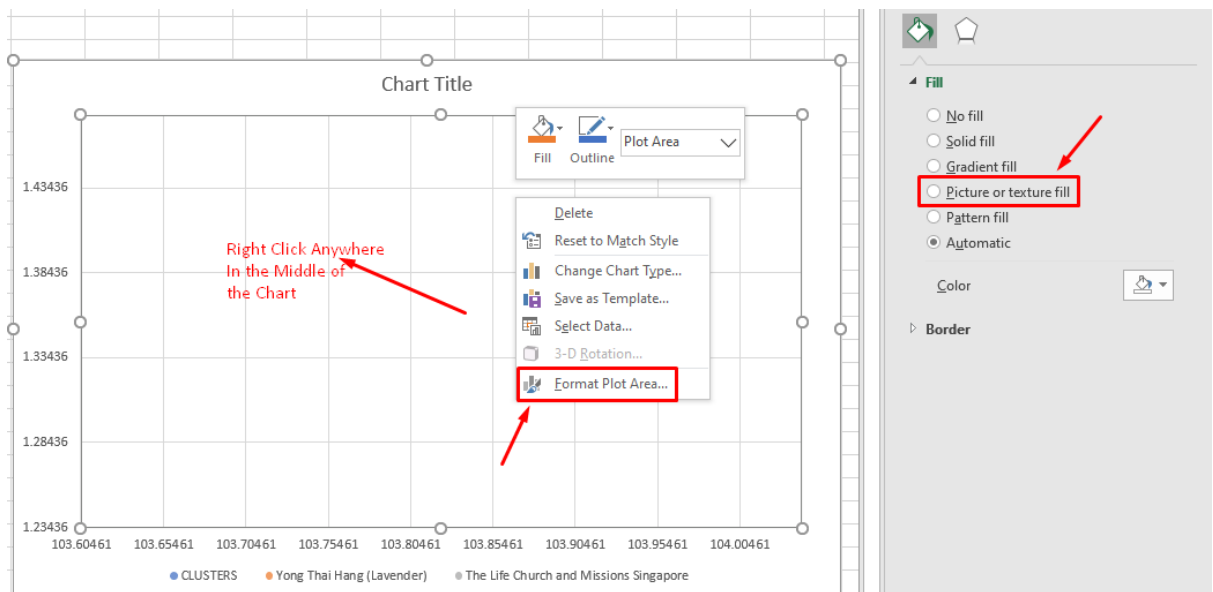


Figure 16: Right click anywhere in the middle of the chart and select "Format Plot Area"

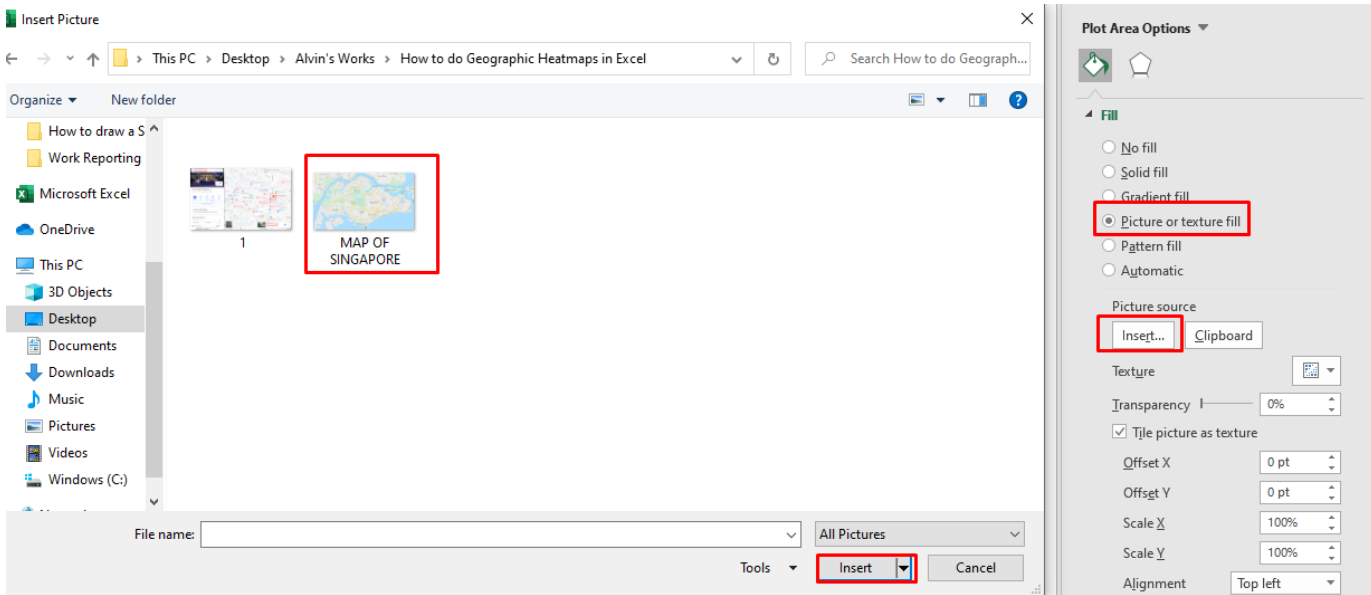


Figure 17: Navigate the "Map of Singapore" and insert the picture

RENAME THE CHART TITLE

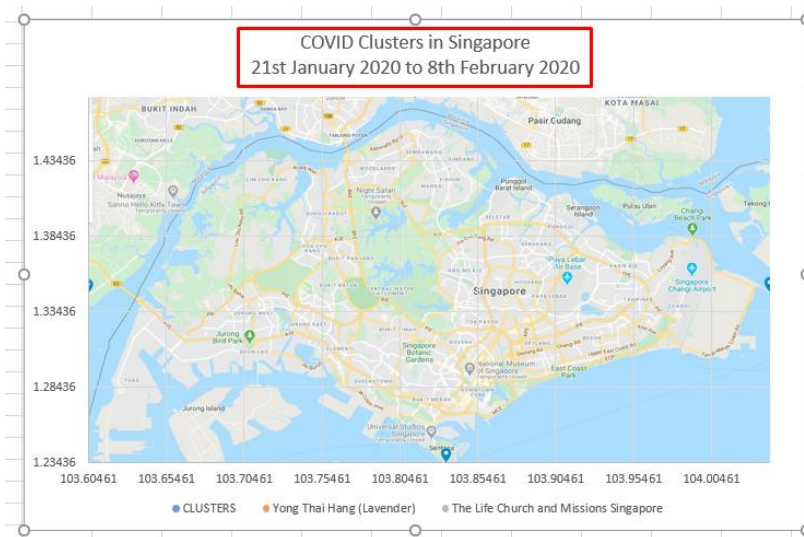


Figure 18: Rename the Chart Title

STEP 4: INSERTING THE BUBBLES IN THE HEAT MAP

PUTTING IN THE DATA

COVID Clusters in Singapore
21st January 2020 to 8th February 2020

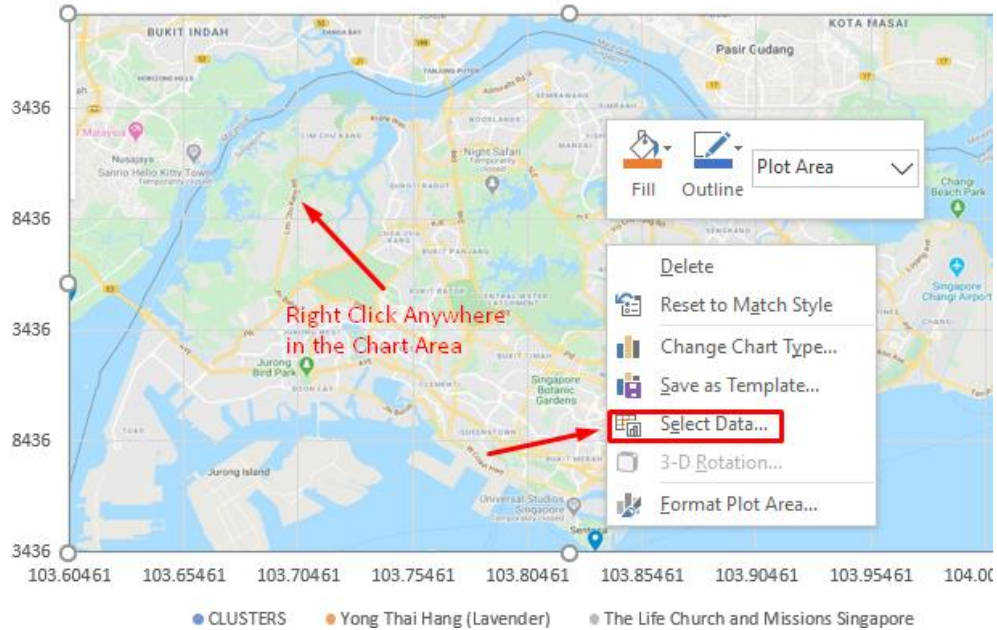


Figure 19: Right Click anywhere in the Chart Area and Click Select Data

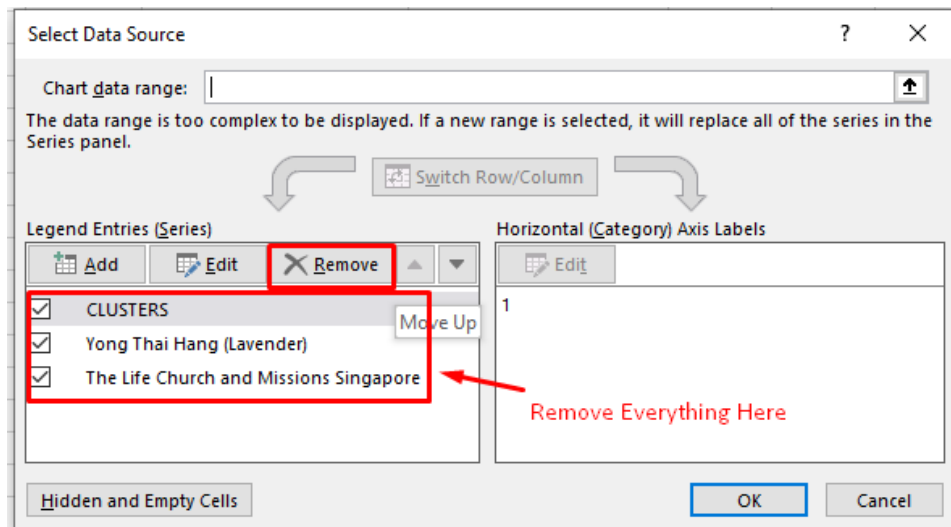


Figure 20: Remove Everything in the Series

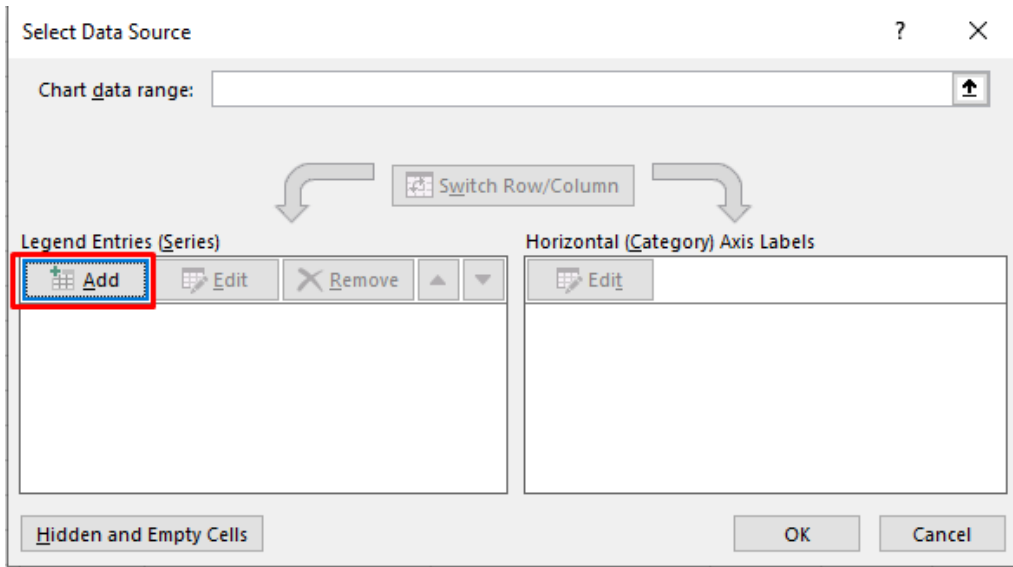


Figure 21: After clearing everything, click on 'Add'

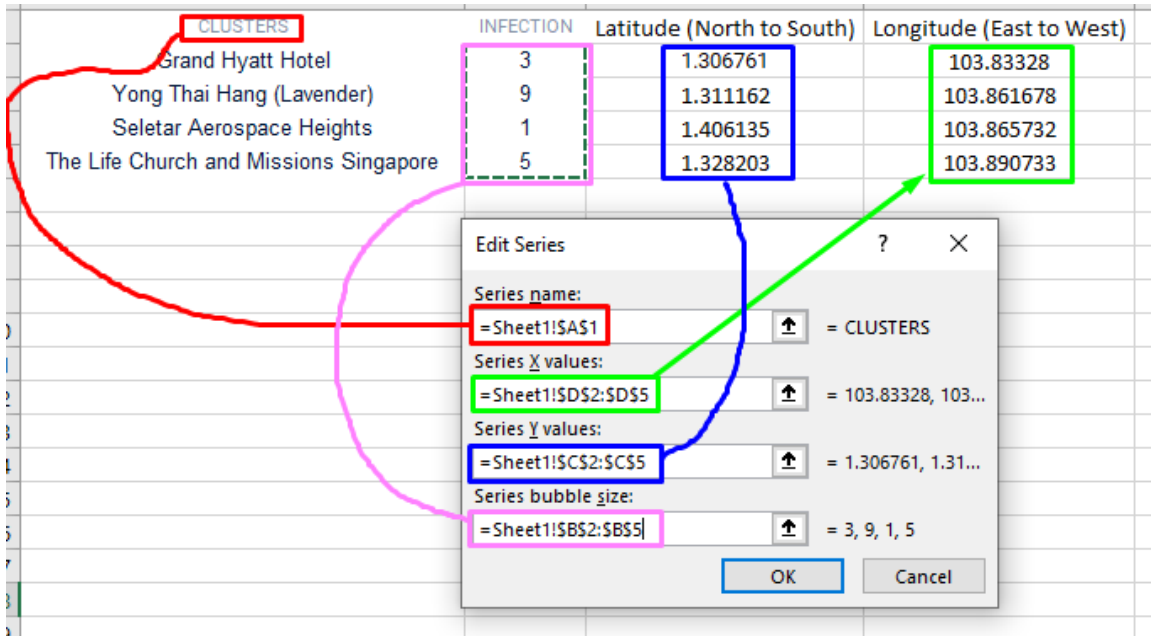


Figure 22: Select the Edit Series as shown

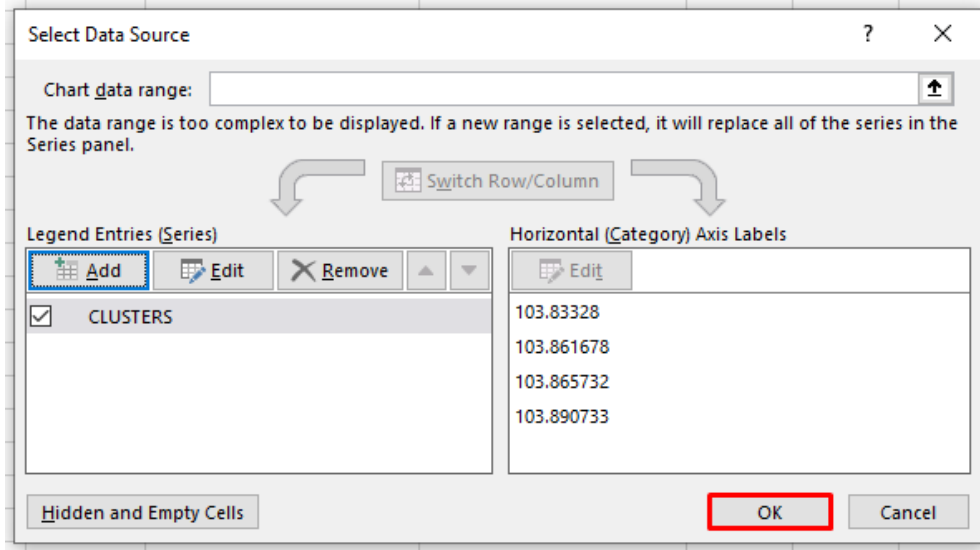


Figure 23: Click OK

LABELLING THE BUBBLES

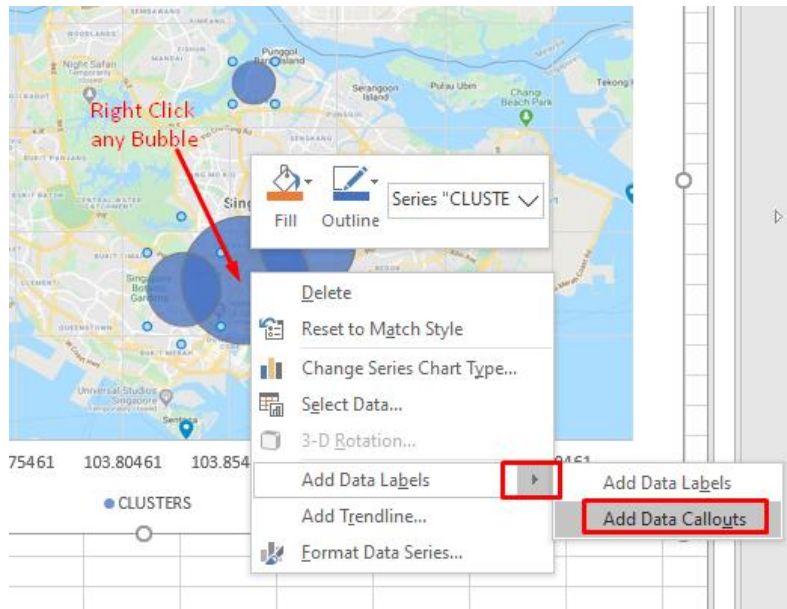


Figure 24: Right click on any bubble and Select 'Add Data Callouts'

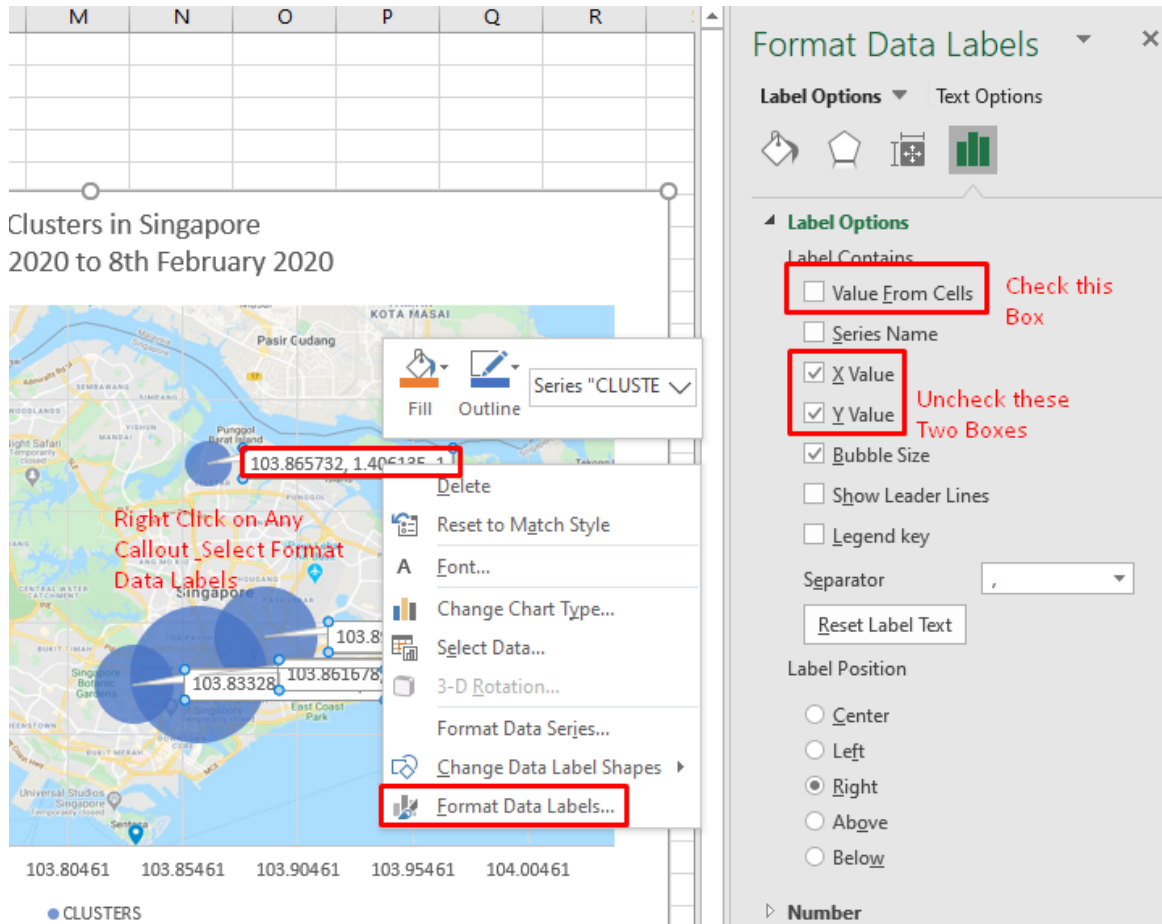


Figure 25: Right click on any callout --> Select Format Data Labels --> uncheck X and Y Value box --> Check the 'Value from Cells' Box

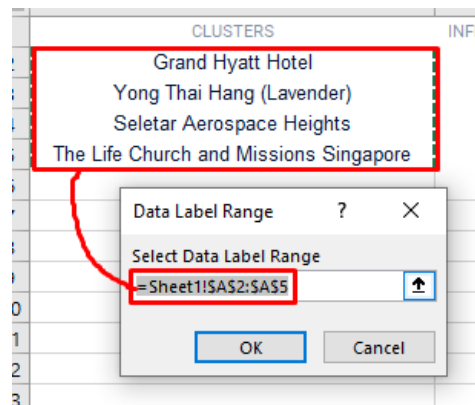


Figure 26: Select the Data Label Range

ADJUST BUBBLE SIZE

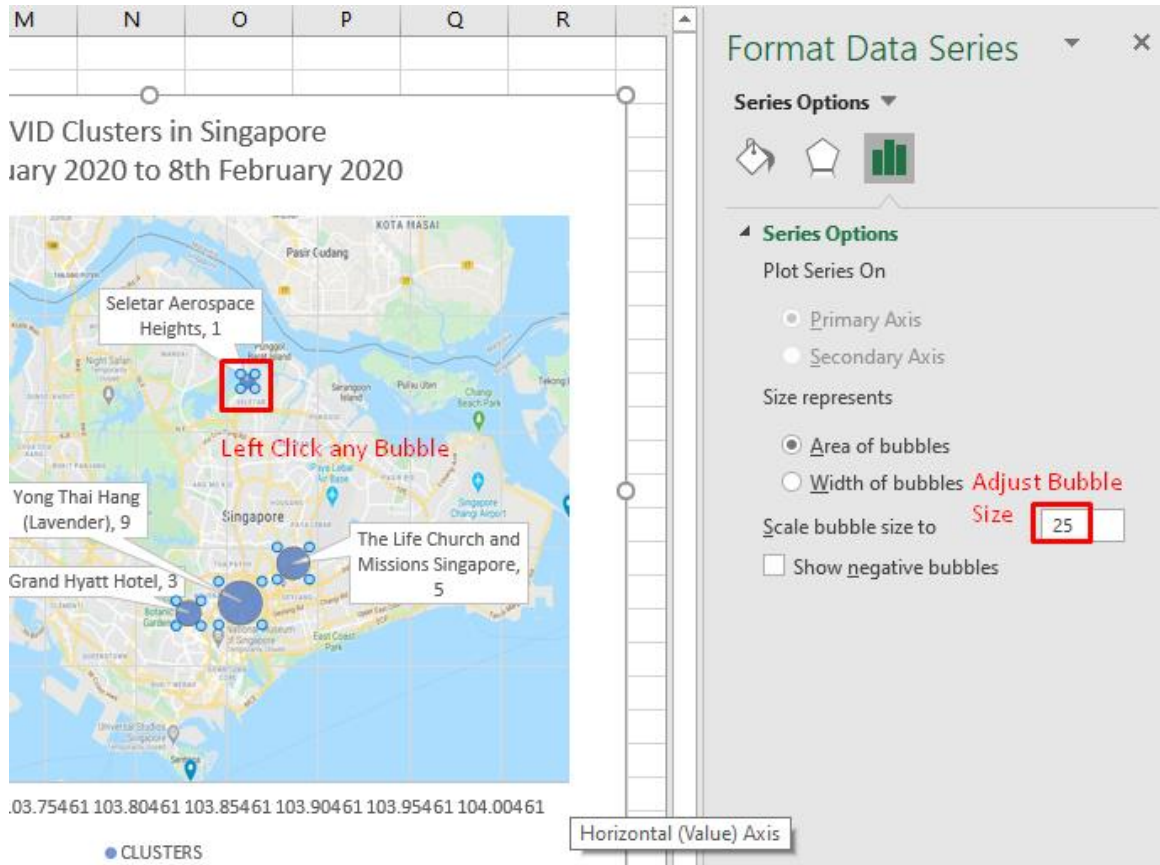


Figure 27: Left click on any bubble and adjust the bubble size to 25%

STEP 5: SAVING IT AS JPG

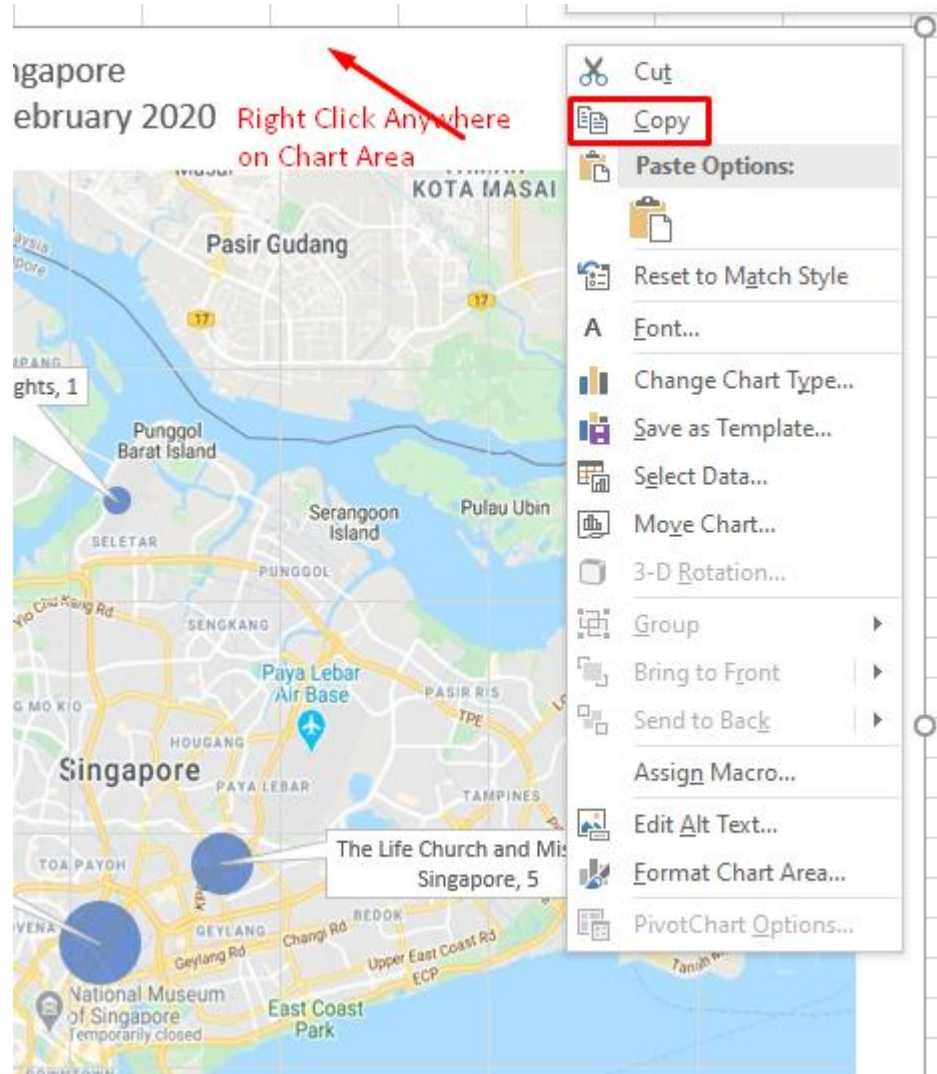
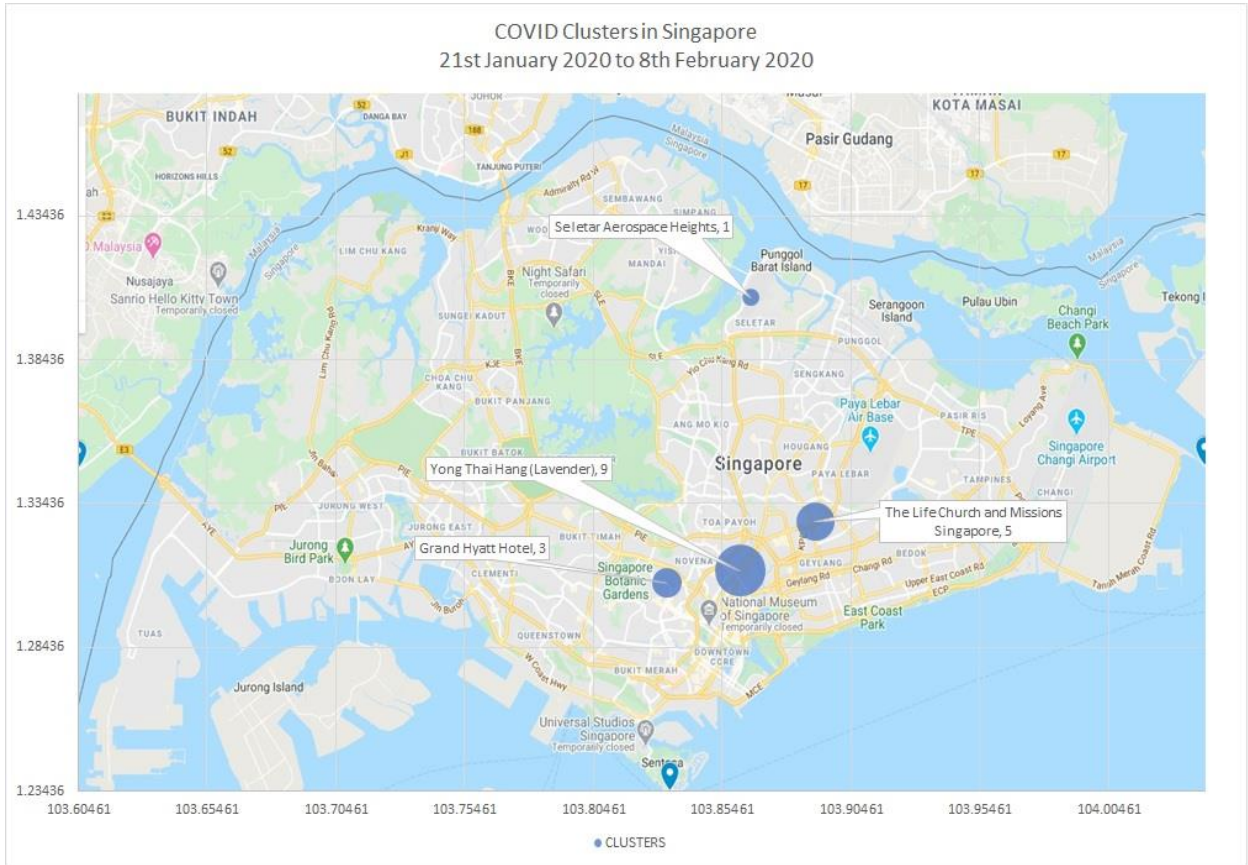


Figure 28: Right Click anywhere on Chart Area and Copy

- After Figure 28, paste the entire chart anywhere inside “Microsoft Paint”.
- Click ‘Save As’ to save in any format you want.

CONCLUSION



ABOUT THE AUTHOR

Dr. Alvin Ang earned his Ph.D., Masters and Bachelor degrees from NTU, Singapore. He is a scientist, entrepreneur, as well as a personal/business advisor. More about him at www.AlvinAng.sg.