DIGITAL TALENT SCHOLARSHIP

Thematic Academy

Big Data for Social Science

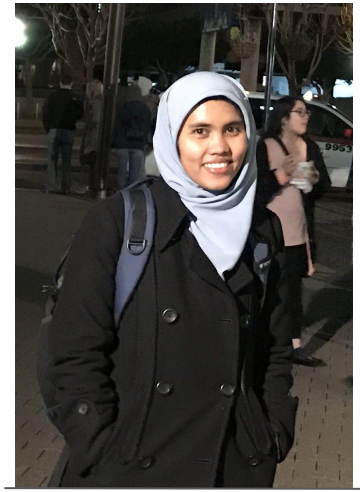
Pertemuan #6 : Building Powerful Data Visualization & Graphic with R

KOMINFO

#JADIJAGOANDIGITAL

Badan Penelitian dan Pengembangan Sumber Daya Manusia

Hello, my name is Erika



Erika Siregar

Education

- **Master in Computer Science from Old Dominion University, US**
- **Bachelor of Applied Science from STIS**

What I am doing now:

- **BPS**
- **R-Ladies Jakarta : Cofounder (IG: @rladiesjkt, youtube: R-Ladies Jakarta, GitHub, Whatsapp Group)**
- **Jakarta Machine Learning: Head of Program**

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Self Check

1. Ever created a visualization before?
2. What visualization?
3. Ever used ggplot before?

Rundown

1. Part 1: intro to visualization in R (ggplot)
   a. basic concept of ggplot (grammar of graphic)
   b. component of ggplot: geom, facet, etc.

2. Part 2: learning simple visualization with ggplot (Practice)

3. Part 3: Case Visualization: Covid 19

Part I:
ggplot 101

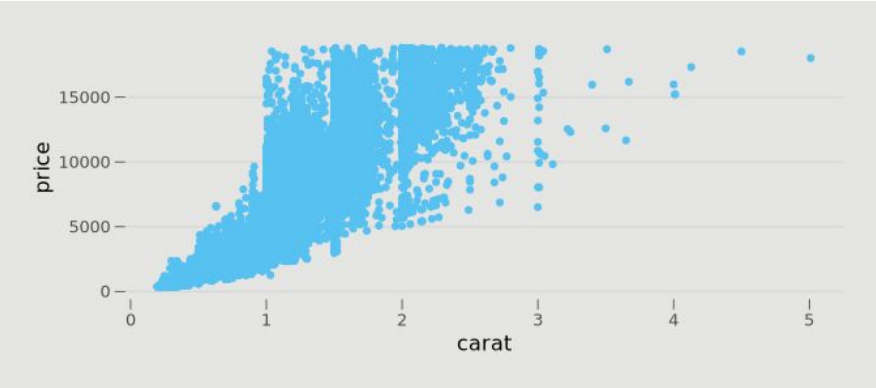
Intro to ggplot

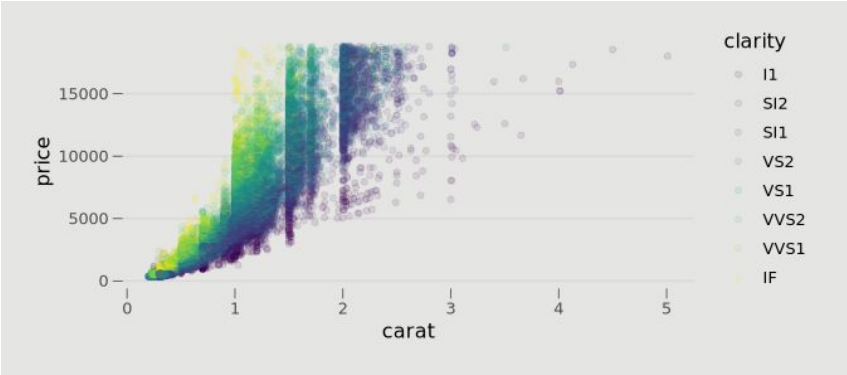
- R-Library: part of tidyverse family
- ggplot2 is a library for declaratively creating graphics
- it is based on The Grammar of Graphics.
  - Grammar of Graphics is a concept that defines a plot as a set of component layers: **aesthetic** and **geometry**.
  - You provide the data, tell ggplot2 how to map variables to aesthetics, what graphical geometries to use, and it takes care of the details.

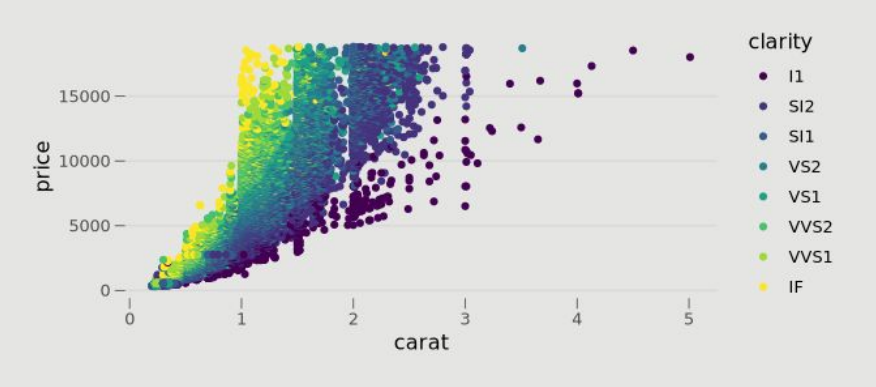
learn more...

Part II:
Practicing with Simple Visualization

exercise 1: scatter plot

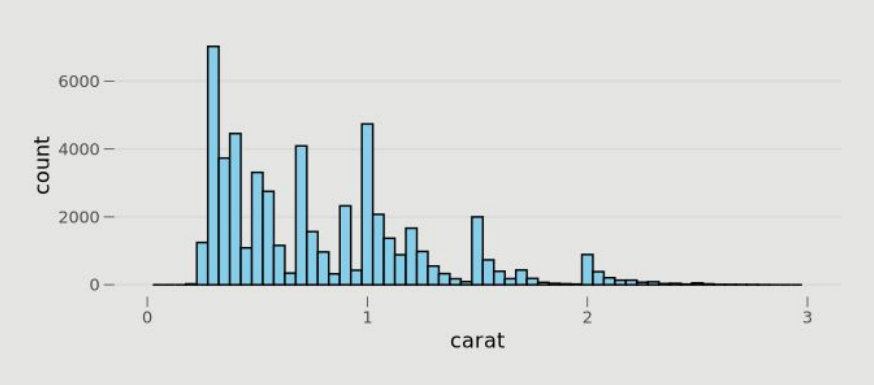






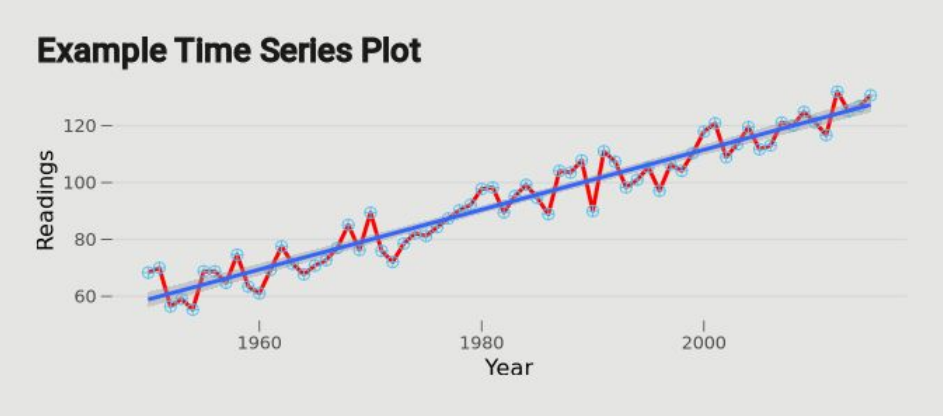

```
ggplot(data=..., aes(x=..., y=...)) +
  geom_...
```

exercise 2: histogram




```
ggplot(data=..., aes(x=...)) +
  geom_...(fill="...",
           col="...",
           binwidth = ...) +
           xlim(..., ...)
```

exercise 3: time series chart




```
years <- seq(1950,2015,1)       # Create some dummy data
readings <- (years-1900) + runif(66,0,20)
mydata <- data.frame(years,readings)
ggplot(data=..., aes(x=...,y=...)) +
  geom_...(color="...", size = 1)    + # add line
  geom_...(shape=10, size=2.5)    + # add points
  geom_...(method=lm) +    # Add a linear best fit line
  xlab("...") + ylab("...") +   # Change axis labels
  ggtitle("...") # Add a title
```

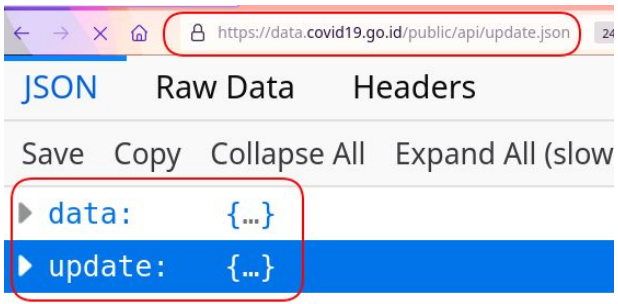
Part III:
Visualizing Covid 19 Data

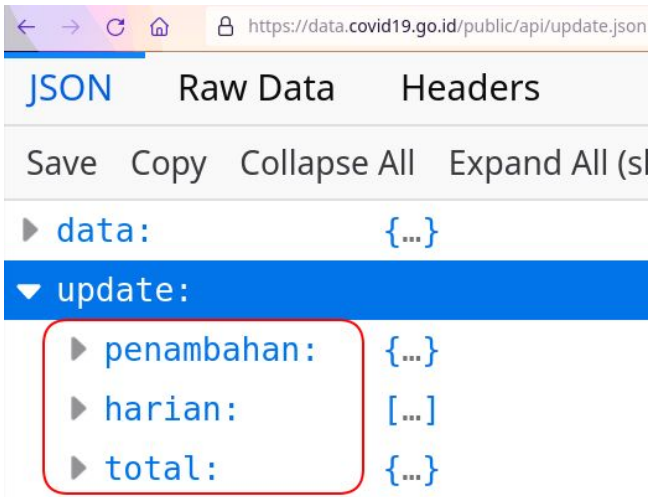
Covid 19 Visualization: Data Source

1. obtain data from https://data.covid19.go.id/public/index.html
   a. https://data.covid19.go.id/public/api/update.json
   b. https://data.covid19.go.id/public/api/prov_detail_ACEH.json
2. preprocessing

- ever worked with json before?
- check the data using your browser

The Covid Data





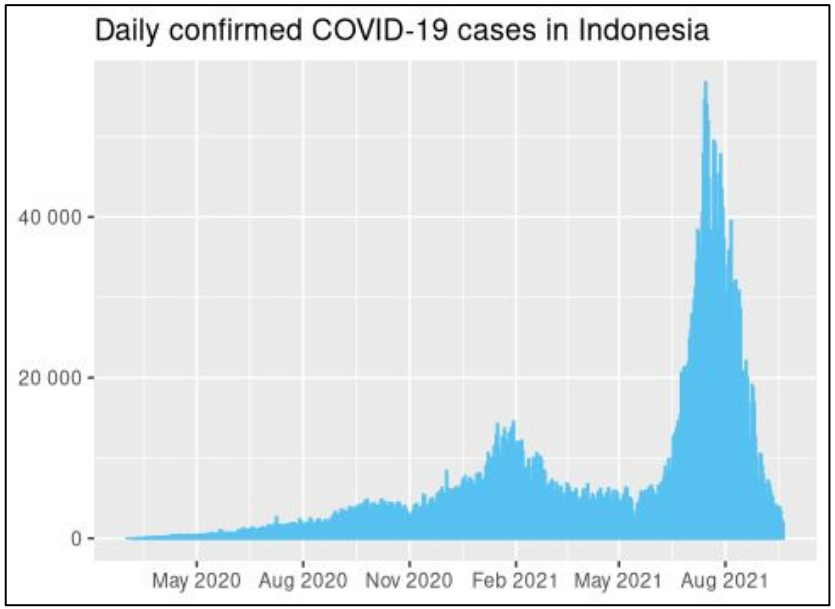
After Preprocessing

	key_as_string	jumlah_positif_value	jumlah_sembuh_value	jumlah_meninggal_value
1	2020-03-02T00:00:00.000Z	2	0	0
2	2020-03-03T00:00:00.000Z	0	0	0
3	2020-03-04T00:00:00.000Z	0	0	0
4	2020-03-05T00:00:00.000Z	0	0	0
5	2020-03-06T00:00:00.000Z	2	0	0
6	2020-03-07T00:00:00.000Z	0	0	0
7	2020-03-08T00:00:00.000Z	2	0	0
8	2020-03-09T00:00:00.000Z	13	0	0
9	2020-03-10T00:00:00.000Z	8	2	0
10	2020-03-11T00:00:00.000Z	7	0	1
11	2020-03-12T00:00:00.000Z	0	0	0
12	2020-03-13T00:00:00.000Z	35	0	3
13	2020-03-14T00:00:00.000Z	27	6	1
14	2020-03-15T00:00:00.000Z	21	0	0
15	2020-03-16T00:00:00.000Z	17	0	0
16	2020-03-17T00:00:00.000Z	38	1	0

Showing 1 to 16 of 568 entries, 4 total columns

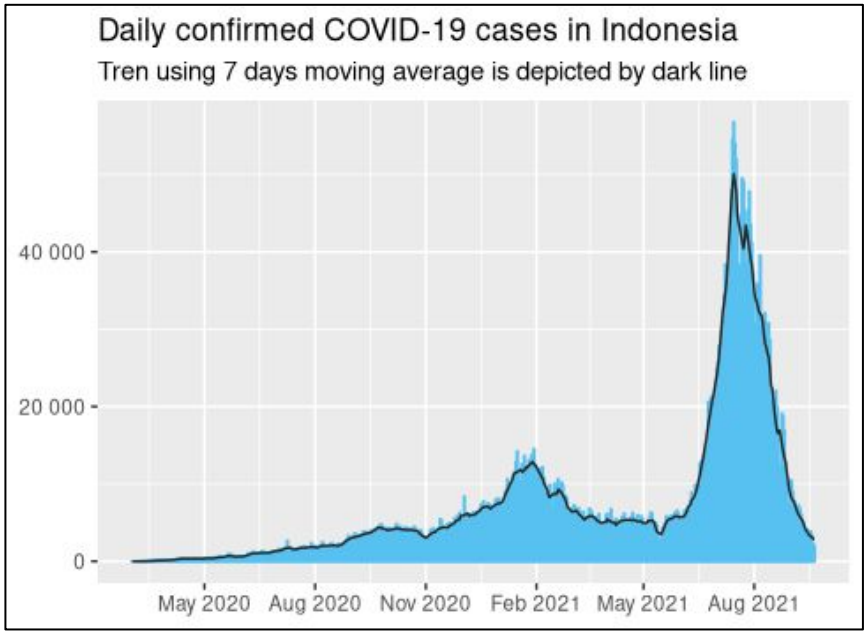
Covid 19 Visualization

VIS 1: How is the daily cases trend?



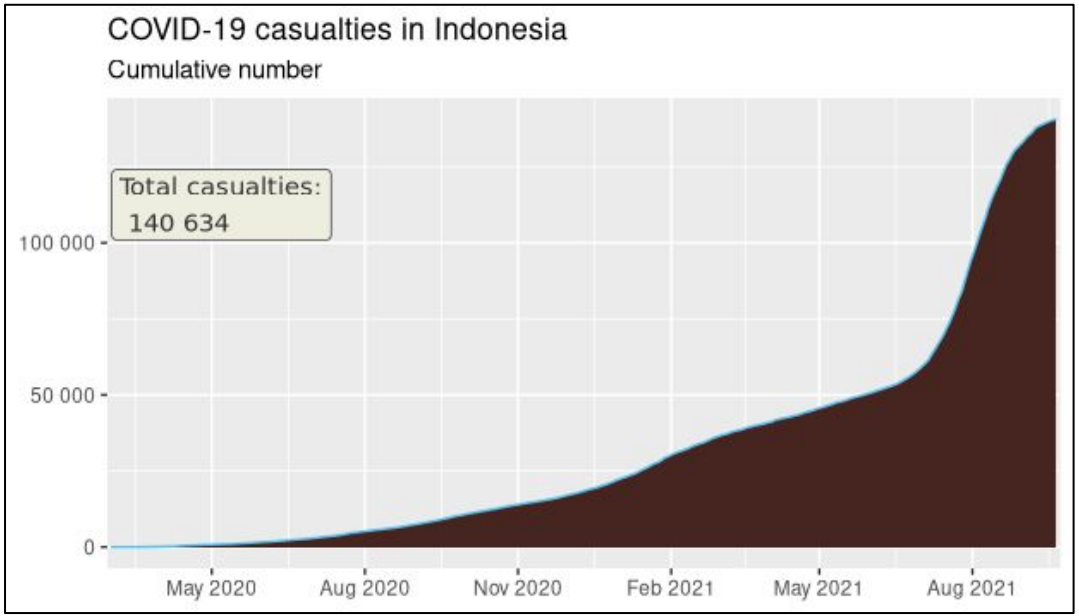
Covid 19 Visualization

VIS 2: The daily cases trend with 7 days moving average



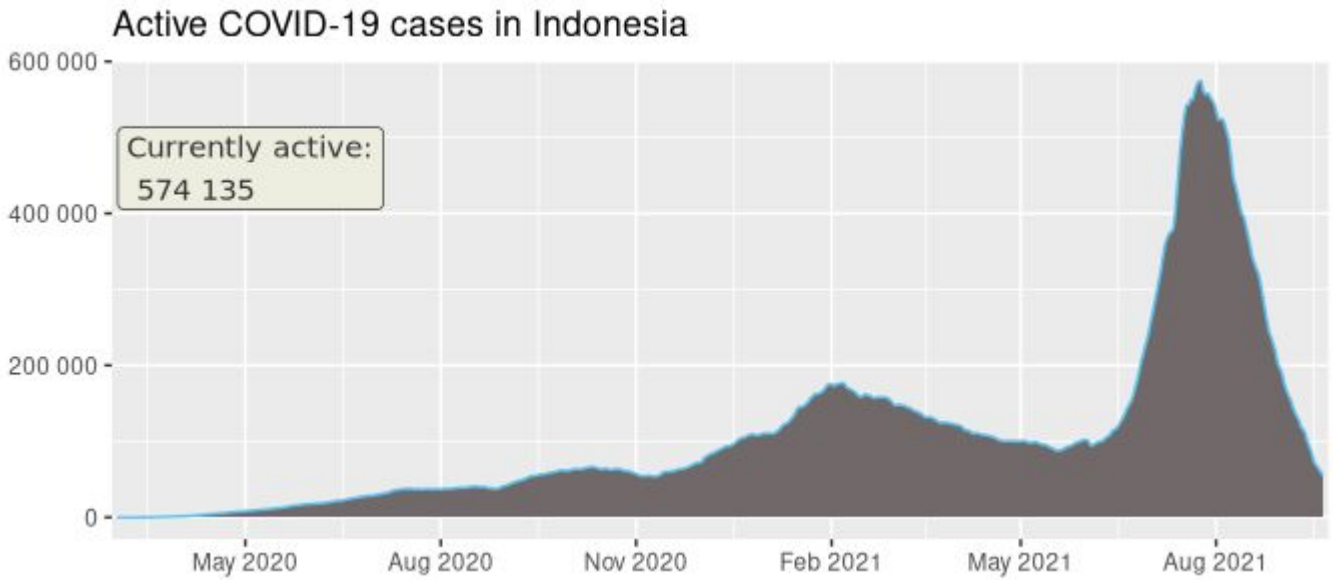
Covid 19 Visualization

VIS 3: Cumulative Casualty Cases



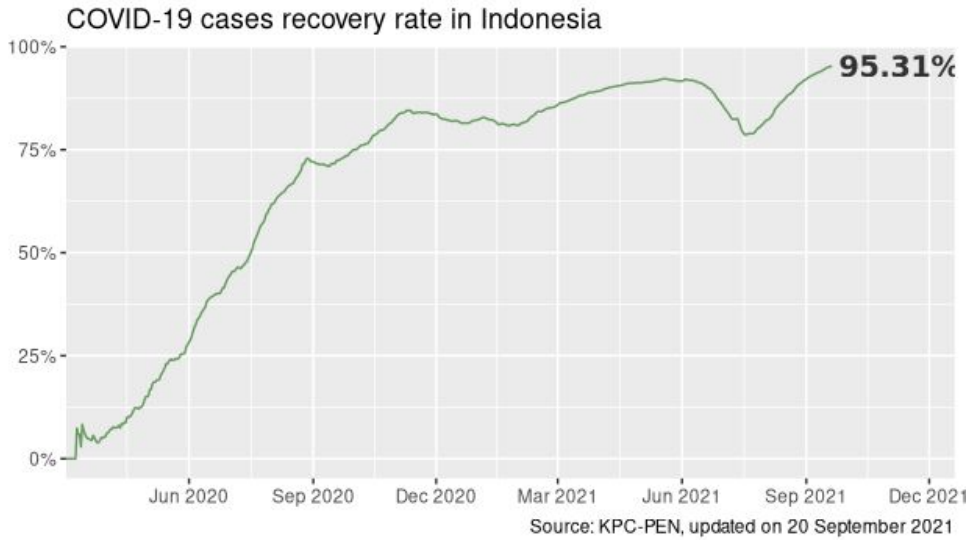
Covid 19 Visualization

VIS 4: The Active Cases



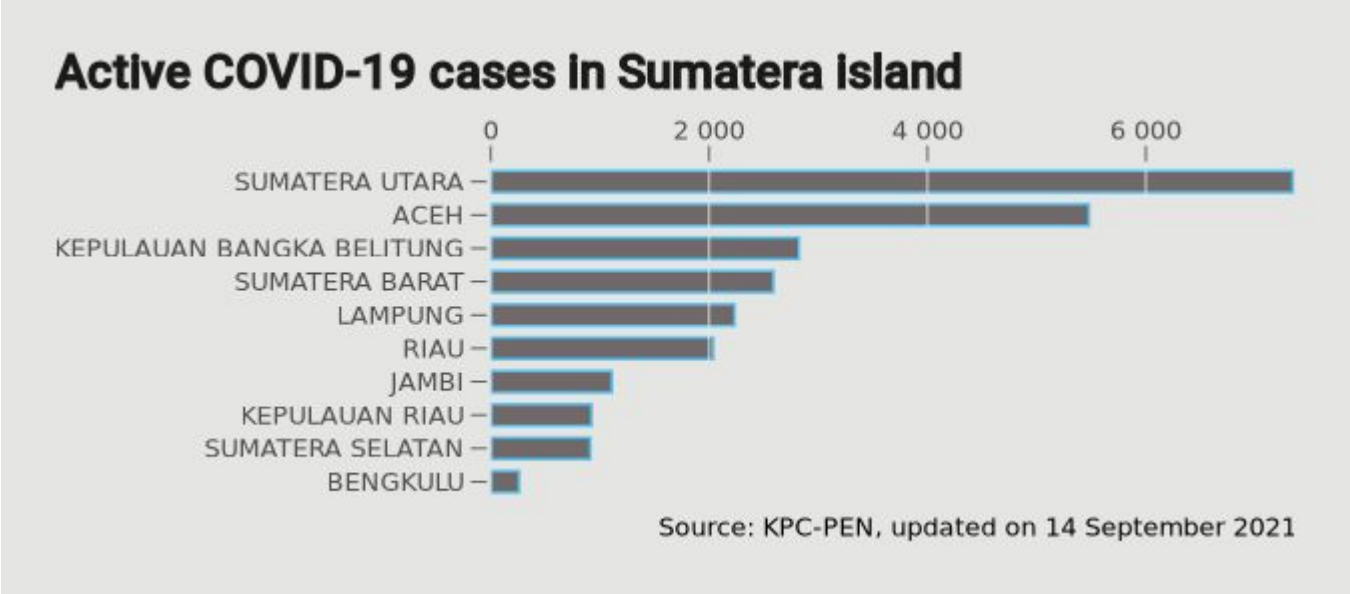
Covid 19 Visualization

VIS 5: The Recovery Rate



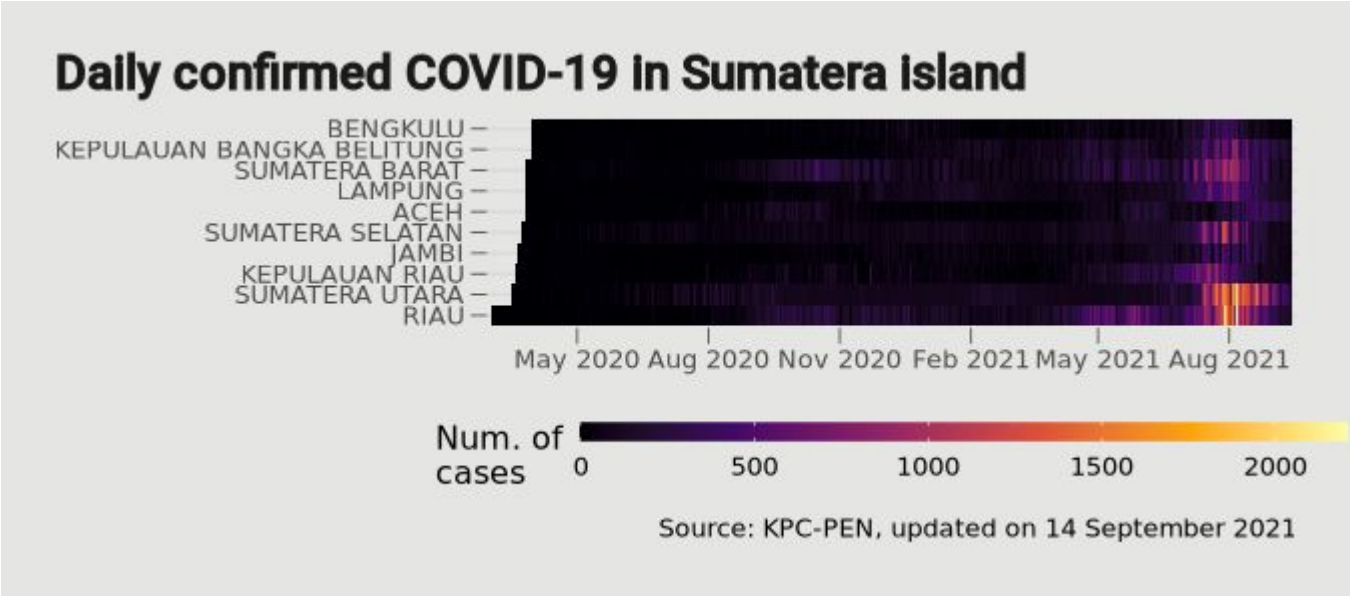
Covid 19 Visualization

VIS 6: Active Covid Cases in Sumatera Island



Covid 19 Visualization

VIS 7: Daily Confirmed Covid-19 in Sumatera Island



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Terima Kasih

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