

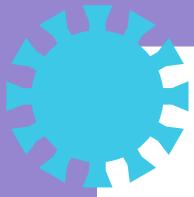
# Malaysia Vaccination Tracker

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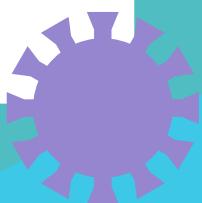
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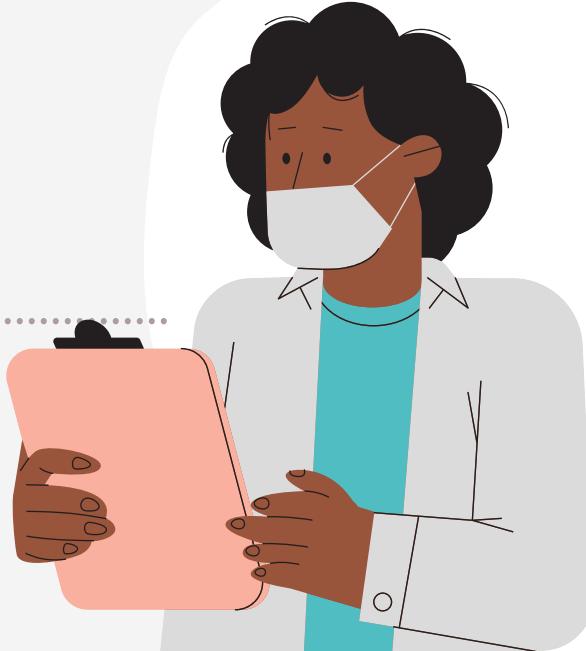


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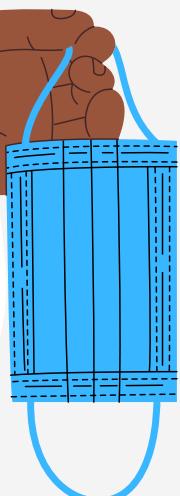
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# COVID-19 VACCINATION

Today, people all around the world have one common enemy which is the COVID-19 outbreak. Many countries have been affected badly by COVID-19 as it robbed lives and changed the way we live now. All countries put their effort on finding the cure of COVID-19 through vaccination. Many countries are focusing on building herd immunity for the population and it has proven to reduce the mortality rate in many countries.

Malaysia is not left behind as they started their very own national immunisation program through “Program Imunisasi COVID-19 Kebangsaan” (PICK). PICK launched on 24th February as the Prime Minister became the first person to be vaccinated in the country followed by a few frontliners.



## WHAT IS THE MAIN FOCUS

With how limited the stock of vaccines for Malaysia right now, the vaccination has to be implemented with the most efficient strategy because every dose counts. Immunisation program involves everyone in the country. Therefore, data must be made available to the public and readable for all. Without proper information about the current situation of the program, it will bring anger into the public. The public need transparency from the one in charge as this involves their lives against the COVID-19. Vaccines are also recently introduced and many still doubt the effectiveness. The government needs to convince the people to take the vaccines.

This is where the analysis of the Malaysia vaccination program comes in handy. A good data reporting using visualizations will deliver the information to the public about the current situation of the program. It is also for transparency so that the people can check and balance the work. This will also convince the people that vaccines are safe when the daily number of doses administered are displayed clearly.

# AIM & OBJECTIVES

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The aim of this project is to visualize the data of the vaccination program by “Program Imunisasi COVID-19 Kebangsaan” (PICK) in Malaysia. All the information extracted will be put to good use to make sure Malaysia is on the right track to reach herd immunity by 2022

## Objectives

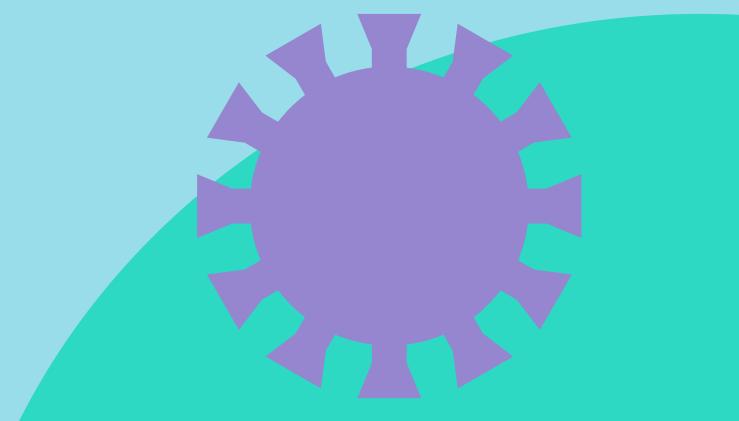
- To observe whether vaccine stocks are distributed at the right places.
- To visualize the vaccination rate of Malaysia and the states.
- To investigate the acceptance of the public towards vaccines.



## SCOPE

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The dataset used is obtainable from the github repository of the official PICK account from the start of the program which is on 24th of February 2021 till 21st of July 2021. There are three main highlights of the data, which is the population, vaccination and registration. Population revolves around the total of Malaysia residents, vaccination is about the cumulative and daily vaccination and lastly registration is about the number of Malaysia residents registered for vaccination. The dataset is limited to Malaysia and all of its states.



## FUNCTIONAL REQUIREMENT

# USER REQUIREMENT

To visualize the raw data from excel into interactive graphs and charts.

To display the vaccination rate for Malaysia and the states.

To visualize the registered vaccinated percentage and percentage.

To visualize the percentage of vaccinated, registered and infected for each state.

## NON-FUNCTIONAL REQUIREMENT

- AVAILABILITY

- PERFORMANCE

- USABILITY

# SYSTEM REQUIREMENT

Display the amount of residents in each country of Malaysia that have taken the vaccination.

Display the progress of National COVID-19 Immunisation Programme to the residents in Malaysia to give an insight of the current progress.

Ability to track the number of people that have registered to get the vaccine.

Present the amount of people that were infected by Covid-19.

# 6 RESEARCH QUESTION

Which state has the highest percentage of vaccinated population?

Which state has the highest percentage of registered to take the vaccines?

Are the current vaccines distributed correctly to the states that are heavily affected?

Is the slow vaccination rate due to people rejecting vaccines or not enough vaccines?

Which state was affected the most by COVID-19?

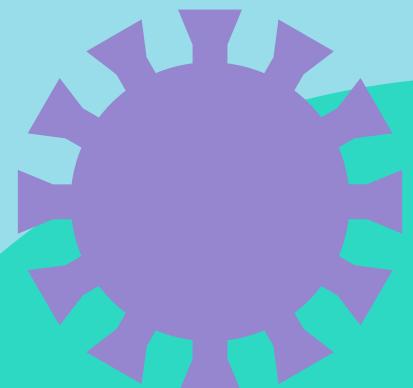
Will Malaysia be able to achieve herd immunity by February of 2022 as planned?



# DATA COLLECTION



The dataset that we used was published by PICK for public use. The data is available at GitHub ([GitHub - CITF-Malaysia/citf-public: Official data on Malaysia's National Covid-19 Immunisation Programme \(PICK\). Powered by MySejahtera.](https://github.com/CITF-Malaysia/citf-public)). The dataset has 5 major tables which are vax\_malaysia, vax\_state, vaxreg\_malaysia, vaxreg\_state, and population



# Data Description

Attributes	Description
Date	Date of the record
State	Name of state
Dose 1 Daily	Number of dose 1 administered on the day
Dose 2 Daily	Number of dose 2 administered on the day
Total Daily	Total number of dose 1 and dose 2
Dose 1 Cumulative	Total number of dose 1 cumulatively from day 1
Dose 2 Cumulative	Total number of dose 2 cumulatively from day 1
Total Dose Administered	Total number of dose 1 and 2 administered
Total	Total number of registration for the day
phase2	Number of resident in phase 2 (above 60)
mysj	Number of registration through MySejahtera
call	Number of registration through call hotline
web	Number of registration through website
children	Number of children in Malaysia
elderly	Number of elderlies in Malaysia
comorb	Patients currently having two or more diseases which not eligible for vaccine
oku	Number of handicapped registered for vaccines
idx	Index number for the record
pop	Total number of population
pop_18	Total number of adult population (above 18)
pop_60	Total number of population elderly (above 60)

# Data Dictionary

Attributes	Data Format	Type
Date	Day, Month, Year	Date
State	-	Text
Dose 1 Daily	-	Integer
Dose 2 Daily	-	Integer
Total Daily	-	Integer
Dose 1 Cumulative	-	Integer
Dose 2 Cumulative	-	Integer
Total Dose Administered	-	Integer
Total	-	Integer
phase2	-	Integer
mysj	-	Integer
call	-	Integer
web	-	Integer
children	-	Integer
elderly	-	Integer
comorb	-	Integer
oku	-	Integer
idx	-	Integer
pop	-	Integer
pop_18	-	Integer
pop_60	-	Integer

# SYSTEM DEVELOPMENT

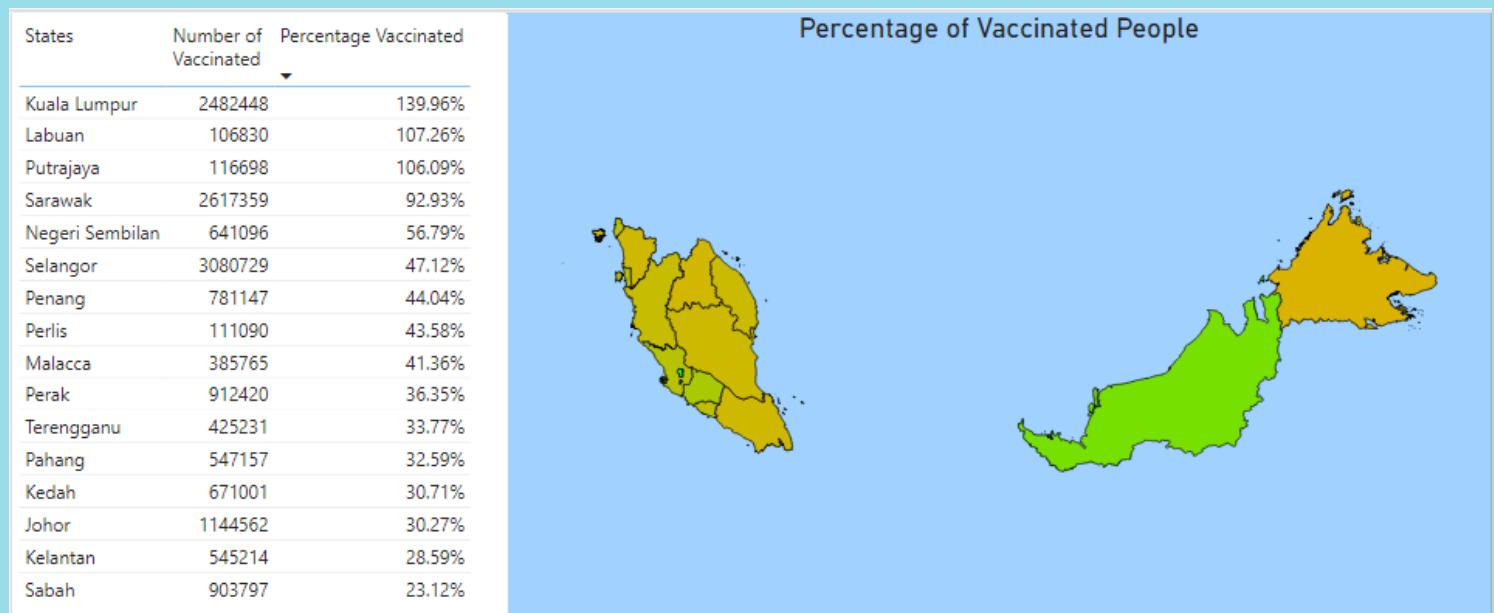
Data visualizations are done by using Power BI. By visualizing the data, there are a lot of finding and conclusions that we can reach. Visualizations of geographical view for vaccines distributions, number of vaccinations daily by state, timeline of vaccinations, and vaccines registration data. From the visualizations, we can analize the effectiveness of vaccination distribution, the rate of vaccination, and the public perception regardings the vaccines.

## Power BI Link:

[https://app.powerbi.com/view?  
r=eyJrljoiMDEyODk5ZDMtMDAz  
OS00MjlyLThhNzgtYmYwZmJjY  
jdkMzY2IiwidCI6ImNkY2JiMGU  
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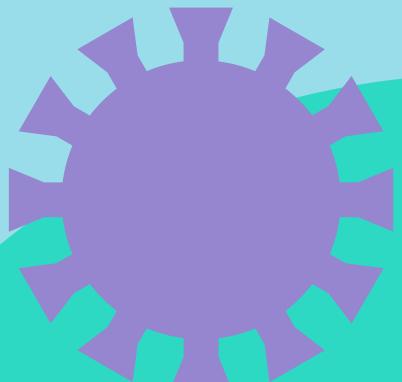
# ANALYSIS & FINDINGS



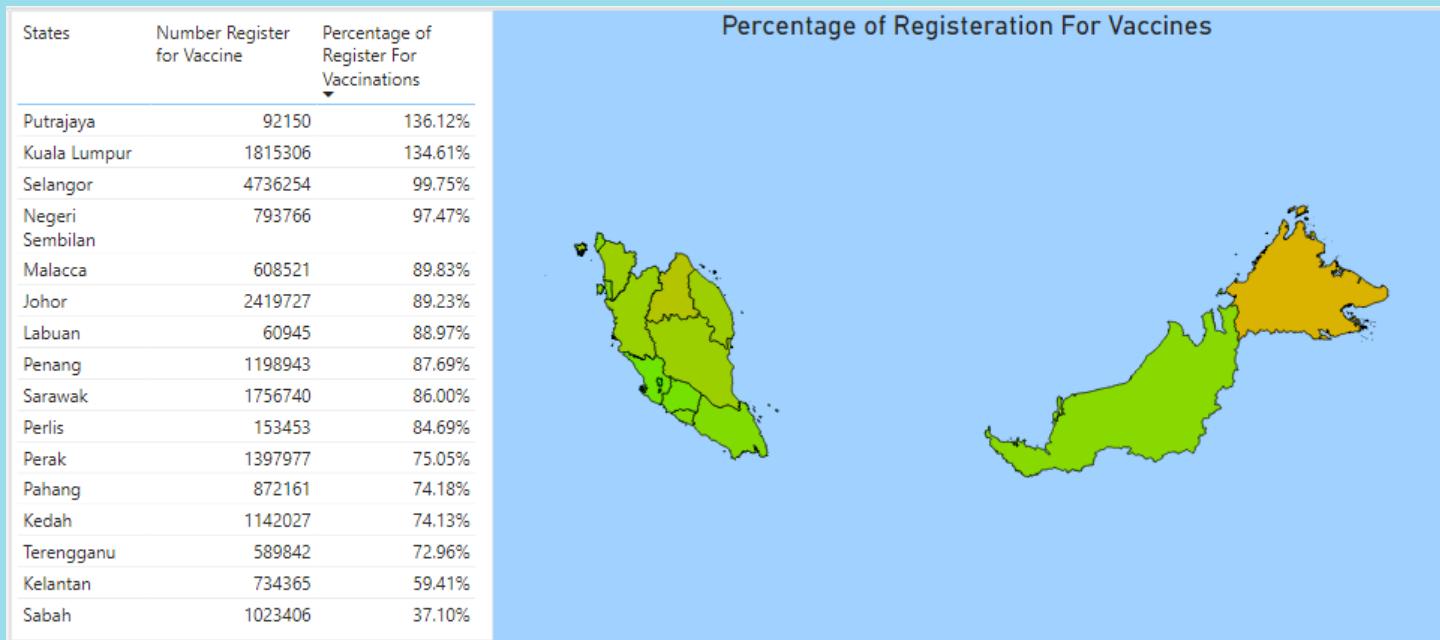
## Figure 1

**Figure 1 shows the geographical view of Malaysia for distribution of percentage of vaccinated people. The states that have achieve their herd immunity will turn into a green state to signal that they are in a safe zone. The highest percentage of vaccinated people is Federal Territories of Kuala Lumpur with 2482448 (139%) people vaccinated. The vaccinated percentage above 100 percent due to the fact that non resident of Kuala Lumpur also can take their shots at Kuala Lumpur. This can also shows that the vaccination system is not at their best if it scheduled the people to vaccination centres that are located at the heart of the city which can be far from their house. The system should give option for people to take their vaccines at the place nearest to their house.**

**Figure 1 also shows the worst state in vaccination progress which is Sabah with only 23.12% of the residents vaccinated. This can be due to the fact that Sabah has a lot of rural ares that are not accessible for medical persons to deliver vaccines. The government should study the ways to speed up Sabah vaccinations process as Sabah has the third highest population in Malaysia. The same thing can be said to Kelantan that has only 28.59% as Kelantan also has a lot of rural areas**

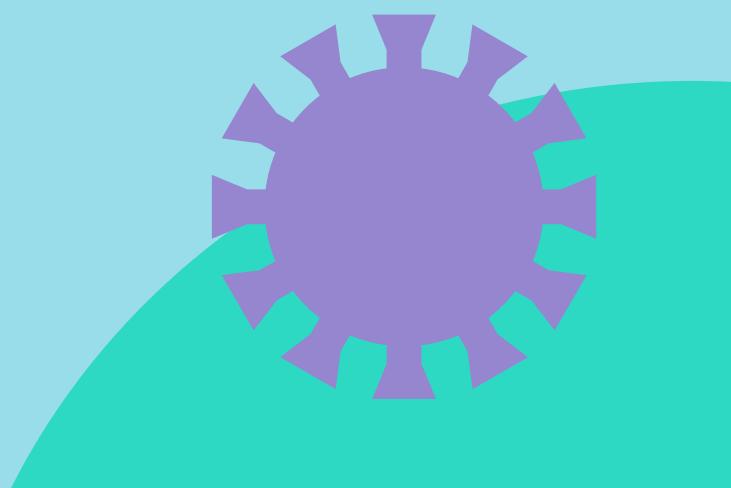


# ANALYSIS & FINDINGS

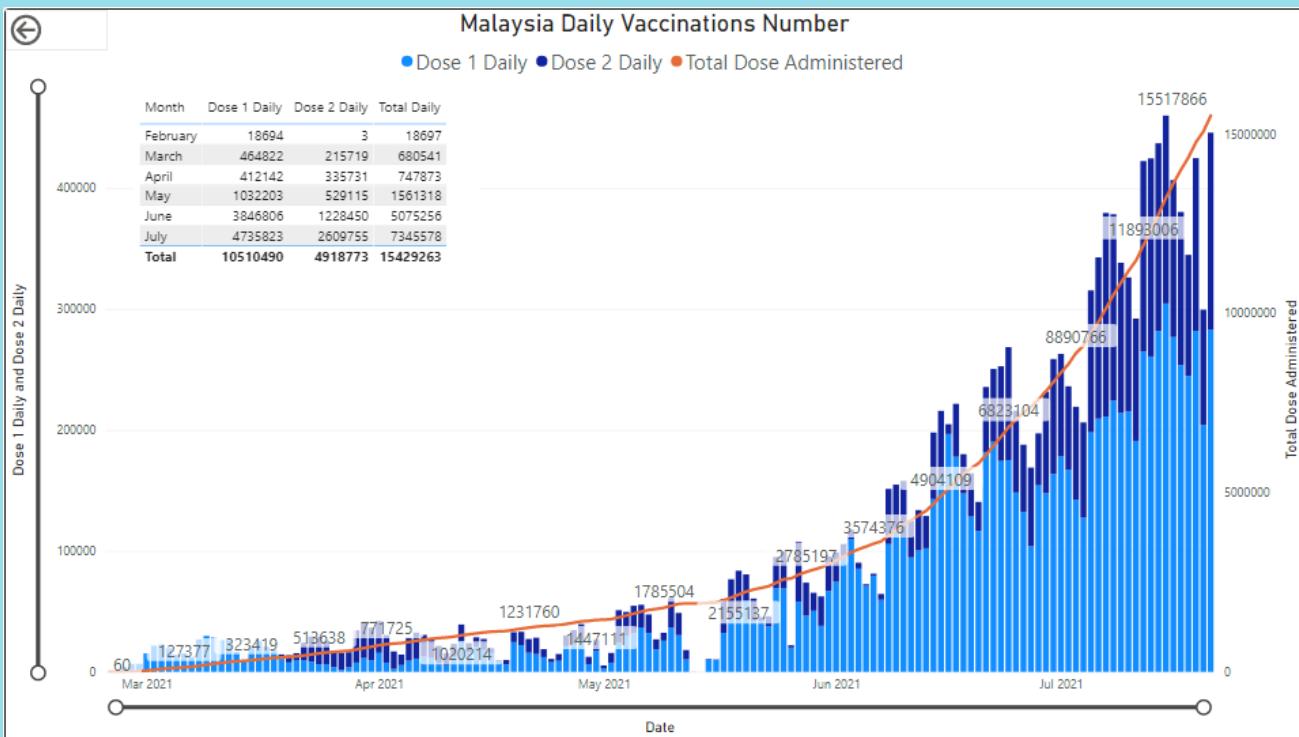


## Figure 2

Figure 2 shows the geographical view for distribution of percentage of registrations for vaccines. The data for percentage of registration only count for the population of above 18 years old residents. Overall view shows that people want to be vaccinated as most states show up as green. The highest state which is Putrajaya has a total of 92150 (136.12%) total of people opt to take the vaccines. The number can exceed above 100% due to the fact that there are a lot of mega vaccination centres located in the town. The bottom two states, again, Sabah and Kelantan has a low registration percentage with 37.10% and 59.41% respectively. This is due to fact that there are many rural areas and the registration system is mostly done online which can be difficult for rural areas to get access to stable internet. The government should create a different approach for these two states by doing more outreach program to get more people to register for vaccines.

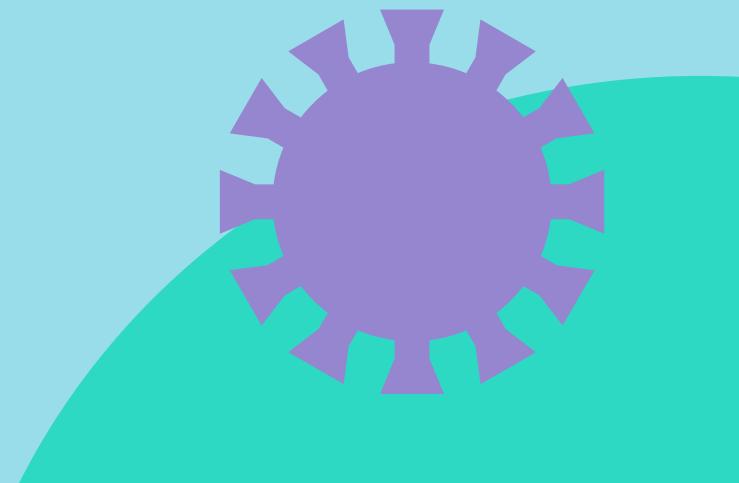


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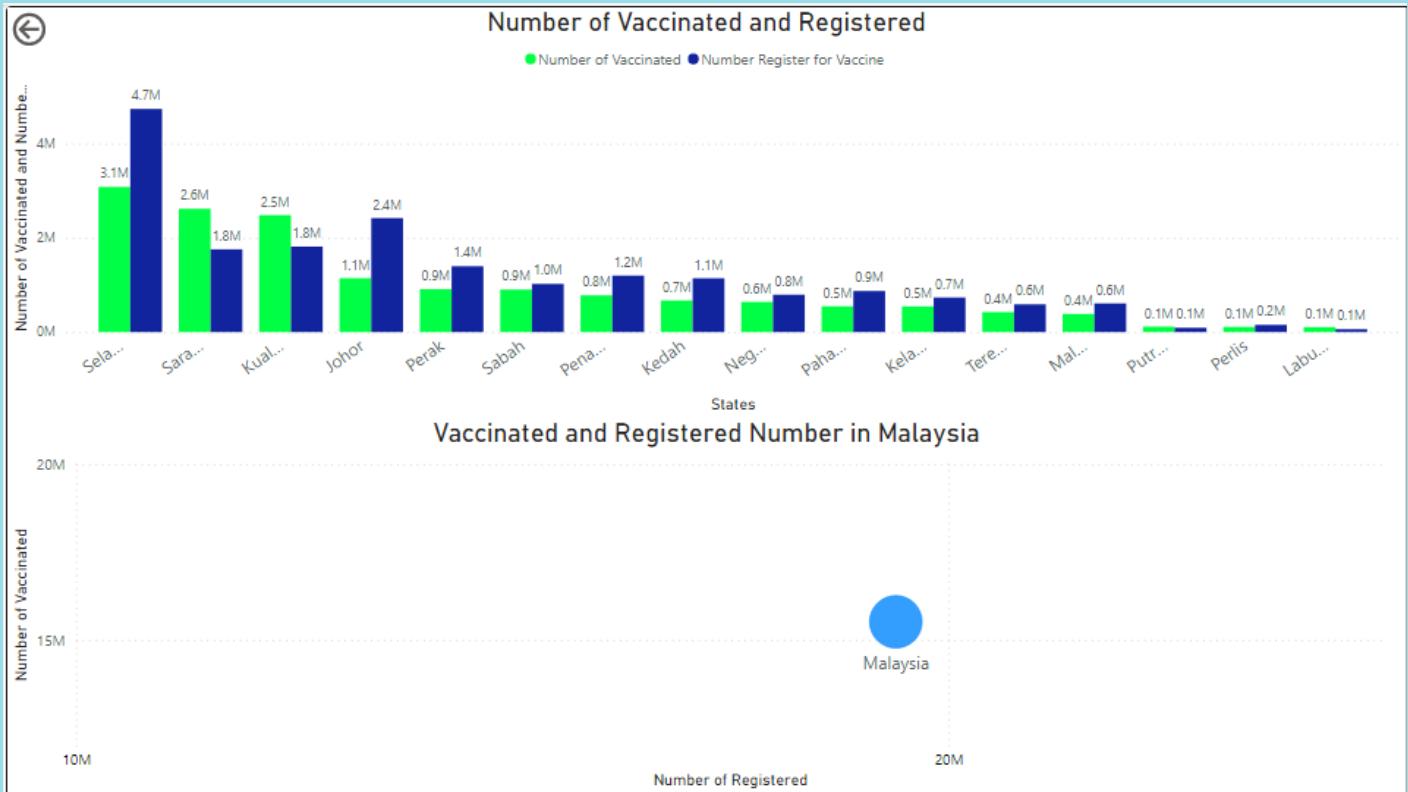


## Figure 3

Figure 3 shows the bar and line graph for daily number of vaccines doses administered in Malaysia for dose 1 and dose 2. Light blue graph represents the number for dose 1 and the dark blue represents the number for dose 2. The line graph represents the total of dose 1 and dose 2 administered. The visualization can show the timeline of the vaccination process daily from 26th of March until 21st of July. The graph shows an increasing rate of daily vaccination as Malaysia secured more vaccine stocks starting from June up until today. Even though Malaysia started slow for the first 3 months, now they are boosting the rate as country aim to reach herd immunity by February 2022. As of 21st July, the country now administered a total of 15.5 millions of combined total of dose 1 and dose 2.

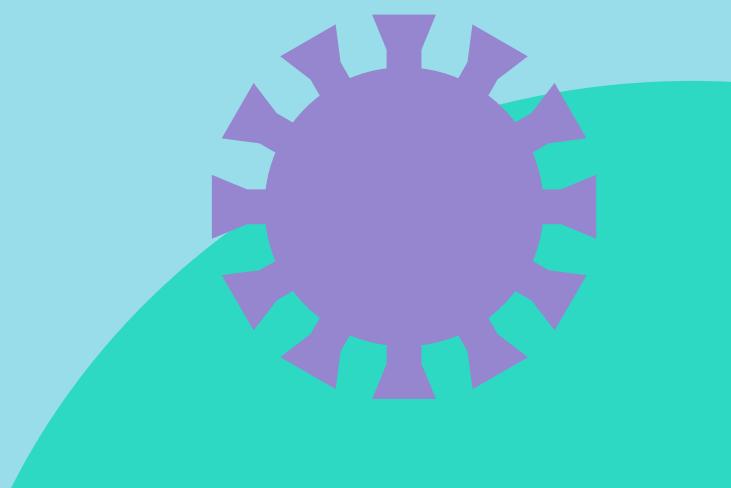


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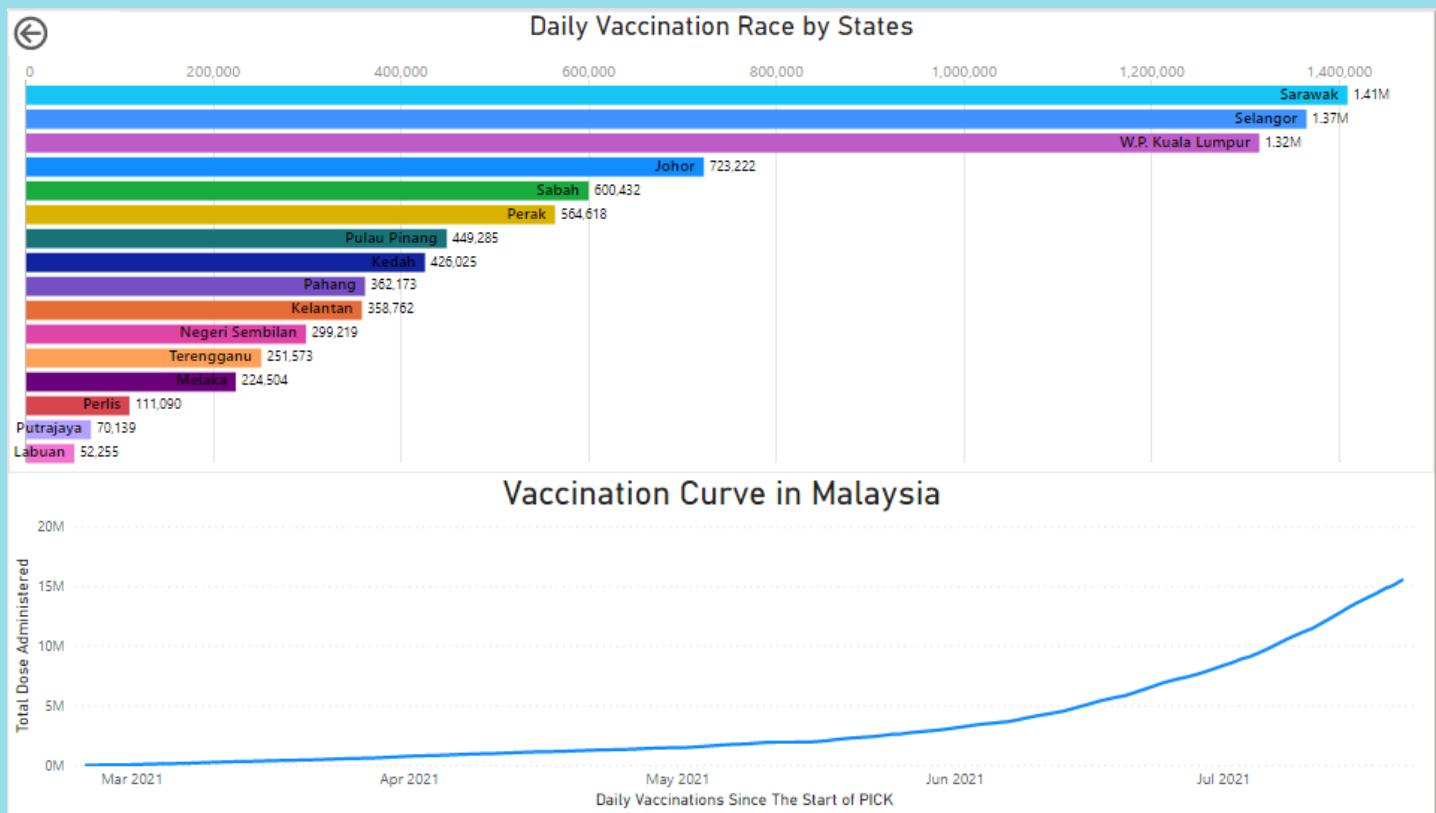


## Figure 4

Figure 4 shows the clustered bar graph and scatter plot graph for vaccinated and registrations number in Malaysia. These 2 graphs can give us information on whether the vaccination program in Malaysia is accepted by the people. These visualizations answer the research question of whether the vaccinations rate being slow is due to the fact that people refusing to take vaccines or due to not enough stock of vaccines. The bar graph shows that there are still people who registered and still not getting their vaccination appointments as the blue bar is higher than the green bar for most of the states. The scatter plot graph also shows that the number of registrations for vaccines is higher than the number of vaccinated people.

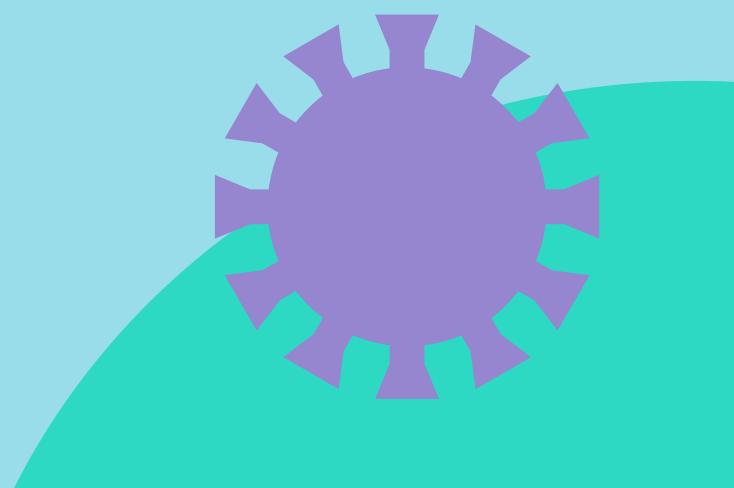


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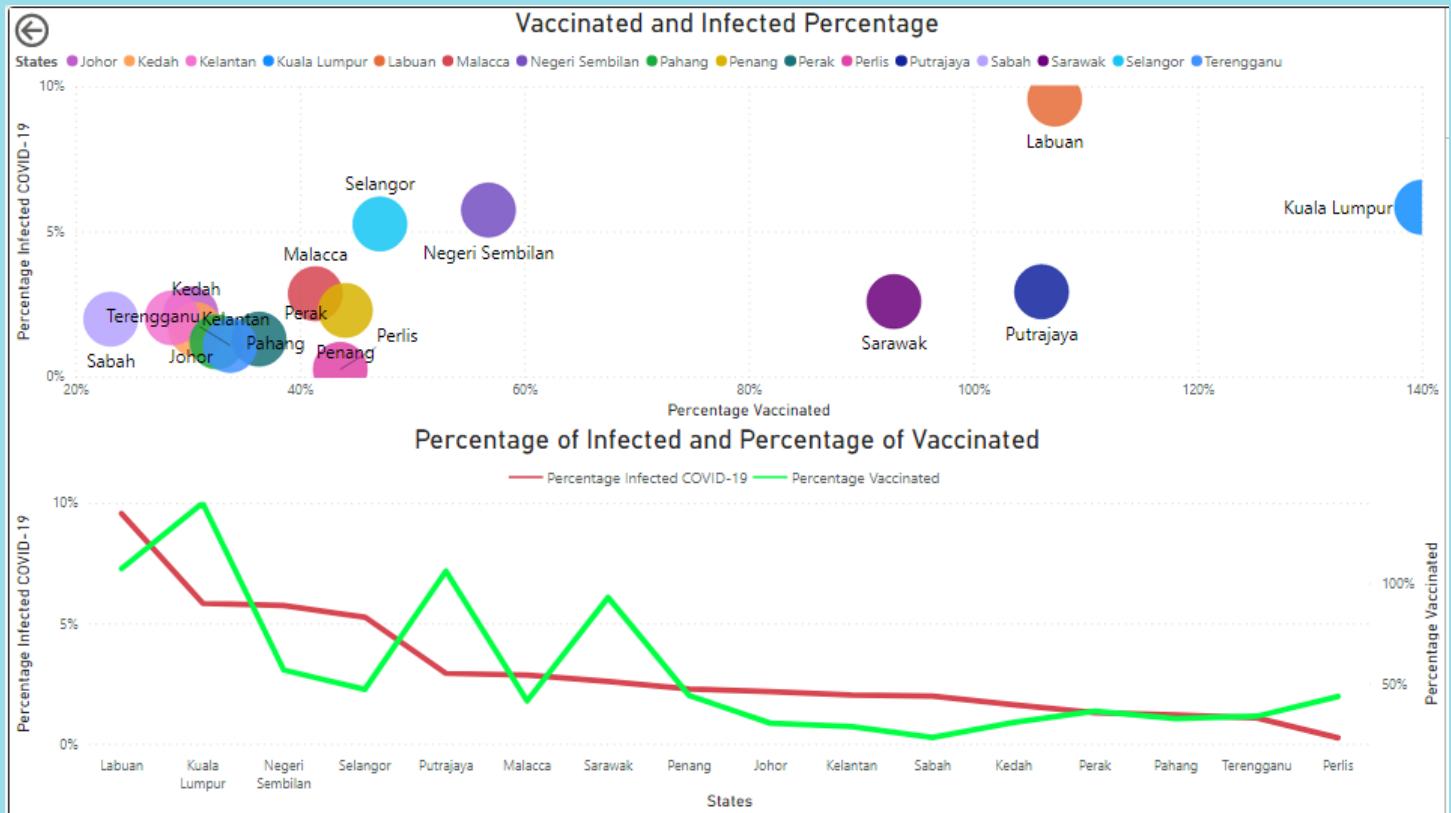


## Figure 5

Figure 5 shows the animated race bar graph and line graph. The animated race bar graph is used to show the timeline of daily vaccination administered for each states from 25th of March until 21st of July 2021. The line graph shows the vaccination curve in Malaysia to show the rate of vaccines give out. The graph shows an increasing rate of vaccination. With current rate of vaccination administered by the frontliners, Malaysia will be able to achieve their target of achieving herd immunity by February 2022.

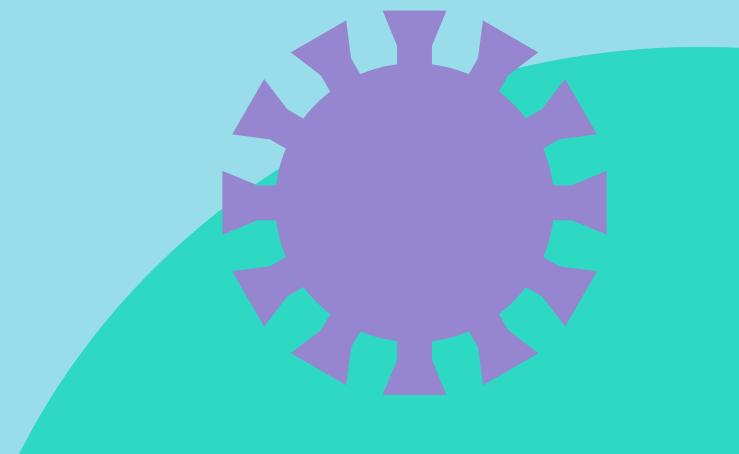


# ANALYSIS & FINDINGS



## Figure 6

Figure 6 shows the scatter plot and the line graph to answer the research question of whether the distribution of limited stock of vaccines in Malaysia is correct. The highly affected states should be allocated more doses as unvaccinated COVID-19 patients have higher chance to get severely ill. Labuan, who has the highest percentage of people infected by COVID-19 also has the 2nd highest percentage for vaccination. The highest vaccination rate is Kuala Lumpur which is the major city in Malaysia that is crucial for economic recoveries post pandemic. It is also one of the crowded state. Selangor, which has the highest number of COVID-19 cases, has a low vaccination rate due to the fact that most of the state's COVID-19 cases contributed by undocumented workers which can be hard to trace for vaccinations. The distributions of vaccines in Malaysia is great but some improvements can be done based on research. The government now focusing to vaccinate people in Selangor through special program of walk-in vaccinations as residents of Kuala Lumpur and Selangor can just walk into the vaccination centres to get their shots without having to wait for appointments. We believe that the vaccination strategy in Malaysia is on the right track.



# CONCLUSIONS

The aim of this study is to visualize the data of Program Imunisasi COVID-19 Kebangsaan (PICK) to give overviews about the on going vaccination program. Through this project, the data of PIICK is able to be understand and a lot of knowledges are extracted from the data. The transparency of government program is also improved by visualization of data as it can be understood by many compared to raw numbers. The objectives of the project are achieved and the research questions are answered through visualizations. In conclusion, Malaysia is doing great and on the right track to achieve the herd immunity by February 2022 as the road map for the program suggested. All Malaysians should go out to get their vaccines and help the country recovers from the pandemic.

**#StaySafe  
#KitaJagaKita**



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