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Visualization of Covid-19 Data in Indonesia in 2022 through the Google Data Studio Dashboard

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ABSTRACT

The COVID-19 pandemic has presented significant challenges to governments, researchers and the general public in understanding and monitoring the spread of this disease. In an effort to analyze the spread of COVID-19 disease in Indonesia effectively, this study uses Google Data Studio as a tool for data visualization and better understanding. This review is based on collecting data on the spread of COVID-19 disease in Indonesia which has been collected from various reliable sources. , including the World Health Organization (WHO) and national health agencies. This data is then processed and processed using Google Data Studio to produce informative visualizations. The results of the study show that Google Data Studio can be used effectively to analyze the spread of the COVID-19 disease in Indonesia. Through the use of available features, such as interactive graphs, maps, and tables, researchers can easily describe patterns of disease spread, infection rates, and recovery rates from an area or country. The quality of data collected from different sources may vary, and this can affect the accuracy and reliability of the resulting visualizations. Elements of the Scorecard that displays some important information related to the Covid-19 pandemic from 1 January 2019 to 31 January 2022. Information regarding the Covid-19 displayed on the Scorecard is as follows. The total survivors of the Covid-19 disease are 3,234,336,858 people. This indicates the number of people who have successfully recovered and recovered from infection with the Covid-19 virus during the period in question. The total number of deaths due to Covid-19 is 89,398,496 people. This reflects the number of people who died due to complications caused by the Covid-19 virus in that period.

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1. INTRODUCTION

Corona virus has been endemic in Indonesia for more than a year. Indonesia first confirmed a case of Coronavirus Disease of 2019 (COVID-19) on Monday 2 March 2020 [1]. Based on the official website for COVID-19 in Indonesia, it was recorded on November 14 2021, the number of confirmed positives was 4,250,855, the number recovered was 4,098,178 and the number died due to COVID-19 was 143,659 [2]. Corona virus is a large family of viruses that cause disease in animals and humans [3]. COVID-19 is caused by a new strain of the Corona Virus, Novel Coronavirus 2019 (2019-nCoV) officially named as Severe Acute Respiratory Syndrome-Coronavirus 2 (SARS-CoV-2) [4].

From the research conducted, on collecting data on the spread of the COVID-19 disease in Indonesia which has been collected from various reliable sources, including the World Health Organization (WHO) and national health institutions. This data is then processed and processed using Google Data Studio to produce informative visualizations[5].

Every day the number of spread of this virus continues to increase, both those who are newly infected, recovered, in treatment or even those who are declared dead. Because more and more data is added every day, an adequate data warehouse is needed so that data can be processed quickly and precisely[6]. In addition to an adequate data warehouse, data visualization (display) is also very necessary so that the displayed data looks more attractive[7].

Data visualization is an analytical technique of representing data in a visual form. Data visualization is one attempt to help people understand data by placing data in a visual context [8]. Data visualization is built to make it easier for people to understand the information conveyed. The number of cases of the spread of COVID-19 is very large, therefore a tool is needed to visualize this data. One of the most well-known tools for data visualization is Google Data Studio[9].

Google Data Studio is a data visualization application that is easy to use in an attractive and clear way to represent complex data sets[10][11]. Google Data Studio's performance is quite impressive in producing attractive and easy-to-understand data visualizations[12]. Data visualization is one of the techniques used to communicate data and information and then make it into a visual object[13].

This visualization is in the form of a Dashboard in which there are several diagrams. The dashboard itself is a display or visualization that presents important information using graphs, tables, images and others so that it is attractive and easily understood by all parties [14]. Dashboards can also be used to present performance quality information, from a work process in a company or institutional institution[15].

2. METHOD

This research has two objectives, namely general objectives and specific objectives. The general objective of this research is to produce a data visualization dashboard regarding cases of the spread of COVID-19 in 2019 - 2022 in Indonesia. The dashboard is expected to help and facilitate decision making.The stages of this research are described as follows:

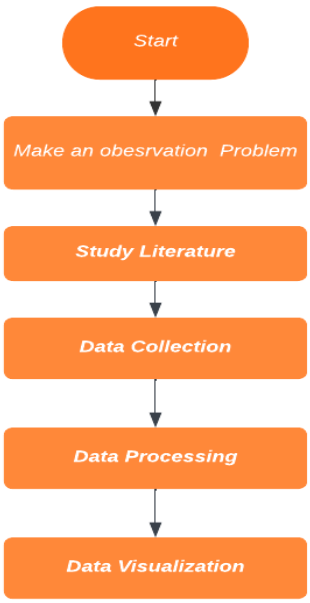

Figure 1. Research Stages

1. Problem Determination
   Based on observations of the Indonesian government's official website monitoring the spread of COVID-19 cases, the available timeframe options are only the last week, last month, last three months, and all times. There is no option to display the time span of the last year. This makes it difficult for the public to see how far the cases of COVID-19 have spread in Indonesia throughout 2019 - 2022.
2. Study Literature
   Literature study means collecting information obtained by reviewing books, the internet, or similar previous observations in the hope of obtaining a conclusion on the problem being discussed.

3. Data collection
   Data collection was carried out by downloading data from Covid_19_jhu_csse (Public Dataset Google Bigquery). The data used is case data from January 1 2019 to December 31 2022.
4. Data processing
   At this stage shows the process. The results of filtering the data are stored in .csv format before finally being visualized using Google Data Studio.
5. Data Visualization
   This stage describes the procedures or steps in making a dashboard. Starting from the selection of data sources (datasource), making graphs, to designing these graphs into a dashboard.

3. RESULTS AND DISCUSSION

Data visualization is a way to display data in graphical form to make it easier to understand. An effective data visualization must be able to explain the data presented well and arouse the curiosity of the reader. Chart settings not only explain the underlying data, but also allow the reader to isolate problematic areas (e.g., sub-optimal product sales) for further analysis.

3.1. Data processing

The data that I will use is the Covid_19_jhu_csse dataset (Google Big query Public Dataset), in the dashboard image above for Indonesia on 1 Jan 2019 – 31 Des 2022.

3.2. Visualization

At this stage the data that has been obtained will be converted into graphical form to make it easier to read. If using a data source. The following is the result of visualization using Google Data Studio.

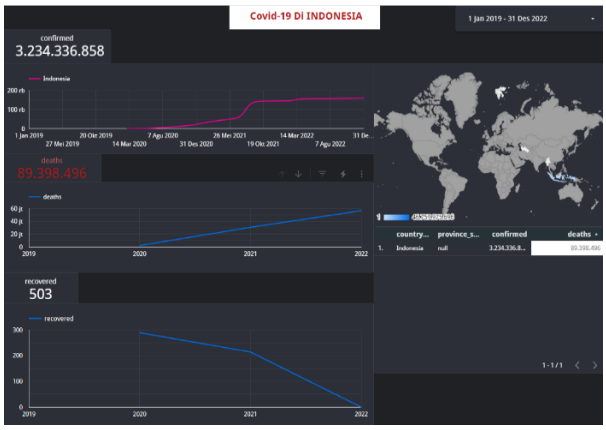

Figure 2. Visualization Results Using Google Data Studio

3.3 Elements Dashboard

Some of the main dashboard elements in Google Data Studio include different types of graphs, such as bar charts, line, pie charts, and more, which allow users to visualize data in easy-to-understand ways. In addition, there are filter and parameter features that allow users to filter data and adjust the visualization appearance according to their needs.

a. Scorecard and Time Series Chart

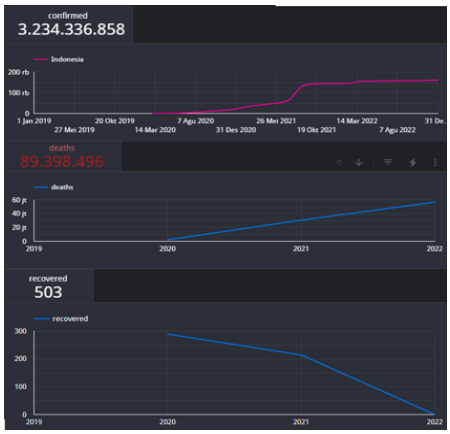

Figure 3. Scorecard Elements

The Scorecard element as shown in the image above displays some information, the first being total revenue during sales from 1 January 2019 to 31 January 2022. The total survivors of the Covid-19 disease were 3,234,336,858 people. Then it displays the total who died from Covid-19, namely 89,398,496 people. In addition, there are also a total of 503 survivors of the Covid-19 disease.

b. Geographic Charts

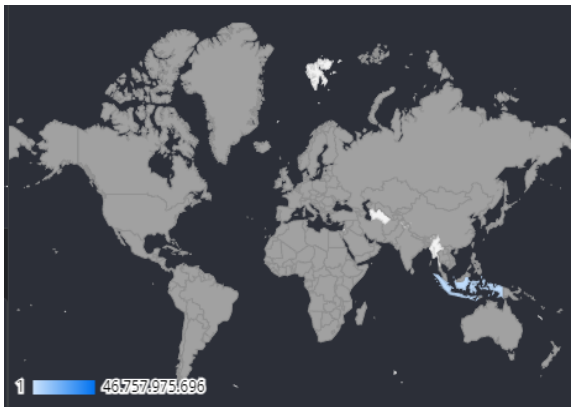

Figure 4. Elements of a Geographic Chart

Geo charts are used to show a map of countries, continents, or regions. The values for each location are displayed in color. The geographic diagram above shows Indonesia's geography.

c. Table

Figure 5. Element Table

The image above displays related information 1. Country_region 2. Province_state 3. Confirmed 4. Deaths.

4. CONCLUSION

Based on the discussion that has been described in the previous chapters, the researcher can draw conclusions from research regarding the 2019 - 2022 COVID-19 Data Visualization in Indonesia as follows:

1. The data source used in this study was taken from Big Query with the dataset name Covid_19_jhu_csse. The data used is case data for 2019 - 2022.
2. The data is visualized using the Google Data Studio platform and produces a dashboard regarding cases of the spread of COVID-19 in Indonesia which consists of graphs of new cases, graphs of total cases, and graphs of distribution maps.
3. The visualization results show, on the graph, new confirmed cases or new cases that have died have decreased by the end of 2022, with the implementation of proportional Large-Scale Social Restrictions (PSBB) in Indonesia which took place from 23 March 2021 to 5 April 2021

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