

Data Visualization of the Number of Foreign And Domestic Tourist Visits to East Nusa Tenggara Using Google Data Studio

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Abstract

Article Info	Abstract
Received, 01/09/22 Revised, 24/09/22 Accepted, 25/09/22	Data presentation techniques are critical in the development of information technology for processing data and producing information. One of the factors to consider while making judgments is the process of converting data into information. Google Data Studio can be used to turn data into information about changes in a data variable over a specific time period. This visual data can be examined and shown in the form of visual graphs and diagrams, for example, data on tourist and foreign visits to an area. This study includes data on local and foreign tourist visits to East Nusa Tenggara in terms of the number of tourists staying at Bintang Hotels from 2019 to 2022. According to the study's findings, the number of tourists visiting star hotels increased and decreased dramatically between 2019 and 2022. In 2019, for example, the largest number of domestic guests was 375,506 people, while the highest number of overseas guests was 43,094 people. Domestic visitors visited 221,884 persons in 2020, while overseas visitors visited 8,420 people. Domestic visitors will increase slightly to 322,024 in 2021, while overseas visitors will fall to 6,095 in 2021. There were 115,839 local guests and 3,201 overseas guests from 2022 to April.

Keywords: Data Visualization, Tourist Domestic and Foreign Visit, Google Data Studio, Visitor Number

1. Introduction

The function of information technology has grown highly essential in a variety of industries as we go into the era of industrialization 4.0. Beginning with areas such as the economy, education, health, governance, and others[1]. The evolution of information technology has made it much simpler to produce and transform data into information[2]. When turning raw data into useful knowledge, one of the factors that should be considered is how that will affect future decisions. In many cases, the information that is created in a variety of formats calls for a comprehensive comprehension of the data that was utilized, the origin of the data, and the format of the information that was produced.

Information is also generated via data presentation. Data is usually presented in tabular form, but now it may be visualized[3]. Visualization converts data into a visual representation so it may be studied. Visualized data makes it easier to understand patterns and trends over a specific period[4]. Google Data Studio is an online, easy-to-use data visualization software. Google Data Studio is a popular data visualization software since it can handle a variety of file extensions[5]. Time series data contain accurate time sequence frequencies within a given duration, such as yearly, monthly, daily, or milliseconds[6]. Time series data can be processed to illustrate variations in a data variable over time for analysis[7]. This study uses sample time series data for domestic tourist trips to East Nusa Tenggara each year. From 2019 through 2022, the following data are based on the number of domestic and international tourists that stayed in five-star hotels throughout each month of each year.

Google Data Studio is used for data analytics[8] because visualization methods help individuals grasp data faster.

East Nusa Tenggara was chosen as a sample data for foreign and domestic tourist visits because it is known for its tourism objects and natural panoramas that can attract tourists to visit, and the government strongly encourages the development of East Nusa Tenggara tourism to become high-quality tourism and is equipped with the tourism sector's digitization. The source of visit data has been made available on the Central Statistics Agency's website, with time series data in a spreadsheet file containing numbers or the number of visits in a table. The information in the table frequently necessitates careful examination of every aspect of the data row in each table field; if the tourist visit data can be processed in the form of visualization, it will undoubtedly be easier to understand and digest by those who access the information. [9] have researched visual forms that are easier to grasp; the use of data visualization with beautiful graphics and an attractive look is not only a demand, integration with data sources, and faster sharing of information is now also an option for data visualization[10][11]. This study aims to visualize data to determine changes in the status of data on the number of foreign and domestic tourists visiting East Nusa Tenggara who stay at star hotels by month, so that they can more easily understand information in visual form[12] and can become a consideration for hotel entrepreneurs and stakeholders in determining decisions on the development of tourist visits to East Nusa Tenggara.

2. Method

2.1 Data Visualization

The techniques of data visualization transform the data into a visual format, which enables the properties of the data as well as the relationships between the data to be studied and reported. It is possible to describe visualization as a function that serves as the foundation of the data point domain for a variety of visuals. The term "visualization" can be defined in a number of different ways, ranging from the point domain of data to many forms of graphic and visual examples [12]. The basic objective of data visualization is to enable viewers to see and get a sense of the scale of the underlying data. Data, information, and knowledge are three concepts that are used extensively and frequently connected in the context of visualization. Data visualization is used in numerous situations to display different levels of abstraction, levels of knowledge, or levels of truth regarding a piece of information[13].

2.2 Google Data Studio

Google Data Studio is a free collaborative data visualization application that is strongly connected with other components of the Google portfolio, such as the Google Analytics 360 Suite, DoubleClick Campaign Manager, Google AdWords, Google BigQuery, YouTube, and Google Sheets, among other things[14]. This product takes advantage of the authentication and functionality offered by Google Cloud Storage (GCS), a Google account, or Google Docs in order to provide superior security, authentication, and sharing features. Users are able to connect to many data sources using Google Data Studio, as well as construct calculations, dashboards, and individualized reports, as well as share and interact with other users[5].

2.1 Research Stages

The research's stages are depicted in Figure 1 below:

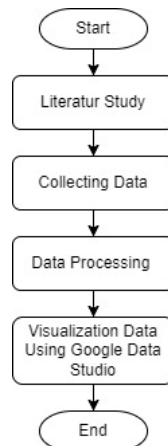


Figure 1. Research Stages

Figure 1 it can be explained Literature study employing time series data visualization can explain it. Problem identification followed by tourist visits from the BPS website[15]. The following technique classifies tourist domestic visit data by month of the number of tourists staying at Bintang Hotels from 2019 to 2022 from the Microsoft Excel spreadsheet extension. The final step is to visualize tourist visit data using Google Data Studio graphs.

3. Results and Discussion

3.2. Data Preparation and Processing Analysis

The article's analysis of the data makes use of information on the number of local and international guests at star hotels by month. The data is from the years 2019 to 2022. This information was acquired from the BPS website[15].

Jumlah Tamu Asing dan Domestik Hotel Bintang menurut Bulan (Jiwa)													
2019													
	Januari	Februari	Maret	April	Mei	Juni	Juli	Agustus	September	Oktober	November	Desember	Tahunan
Mancanegara	1733	2100	2342	3762	3407	2961	4363	6545	4397	4730	3323	3431	43094
Domestik	23388	24191	27776	28949	29730	29840	32259	35629	34372	35938	35309	38125	375506
Jumlah	25121	26291	30118	32711	33137	32801	36622	42174	38769	40668	38632	41556	418600
2020													
	Januari	Februari	Maret	April	Mei	Juni	Juli	Agustus	September	Oktober	November	Desember	Tahunan
Mancanegara	4417	2484	606	8	6	85	20	28	61	160	293	252	8420
Domestik	25166	28209	17750	4126	2815	6067	13229	17242	18220	26785	31012	31263	221884
Jumlah	29583	30693	18356	4134	2821	6152	13249	17270	18281	26945	31305	31515	230304
2021													
	Januari	Februari	Maret	April	Mei	Juni	Juli	Agustus	September	Oktober	November	Desember	Tahunan
Mancanegara	282	132	597	541	681	900	272	161	271	637	806	815	6095
Domestik	16388	7232	21040	26586	20739	33757	15481	17335	30410	42636	46833	43587	322024
Jumlah	16670	7364	21637	27127	21420	34657	15753	17496	30681	43273	47639	44402	328119
2022													
	Januari	Februari	Maret	April	Mei	Juni	Juli	Agustus	September	Oktober	November	Desember	Tahunan
Mancanegara	389	467	950	1395	2106	1945	3707	-	-	-	-	-	-
Domestik	28858	26707	33481	26793	40877	43281	42673	-	-	-	-	-	-
Jumlah	29247	27174	34431	28188	42983	45226	46380	-	-	-	-	-	-

Figure 2. Number Of Foreign And Domestic Guests

Figure 1 shows that the number of visitors to East Nusa Tenggara, as measured by the number of overnight stays at Bintang Hotels, has fluctuated over time. Naturally, if this data can be displayed into infographics, we'd get a monthly trend analysis of domestic and international tourist arrivals from 2017 through 2022.

3.3. Metric Data Setting

This technique can explain a spreadsheet of foreign and domestic tourist visits that has been uploaded to Google Data Studio and then configured based on the year of visit of domestic visitors. In the menu settings, 2019, 2020, 2021, and 2022 are selected. Figure 3 shows the metric data settings.

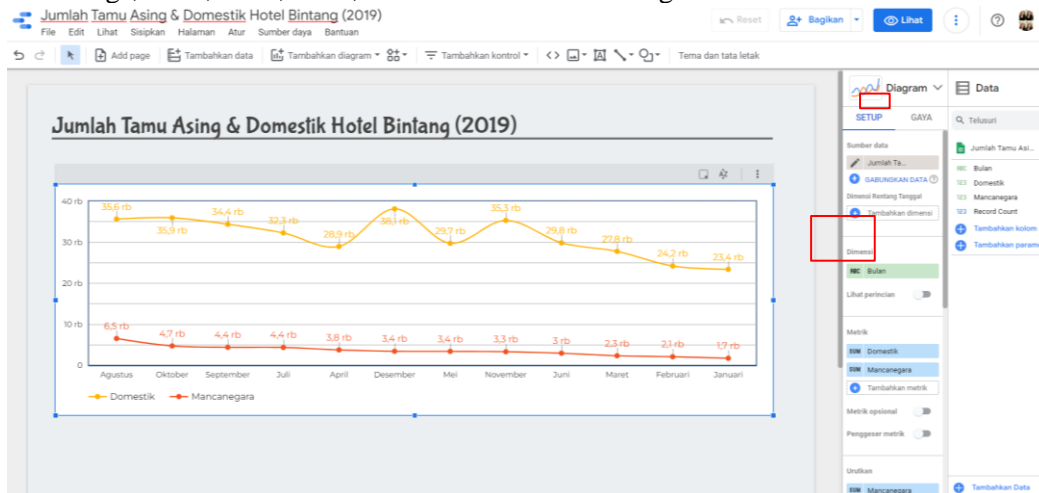


Figure 3. Metric Data Setting

Constructing a scorecard to find out the number of domestic and international guests, total number of guests each year, and average number of guests by clicking "Add Diagram" and selecting a scorecard.

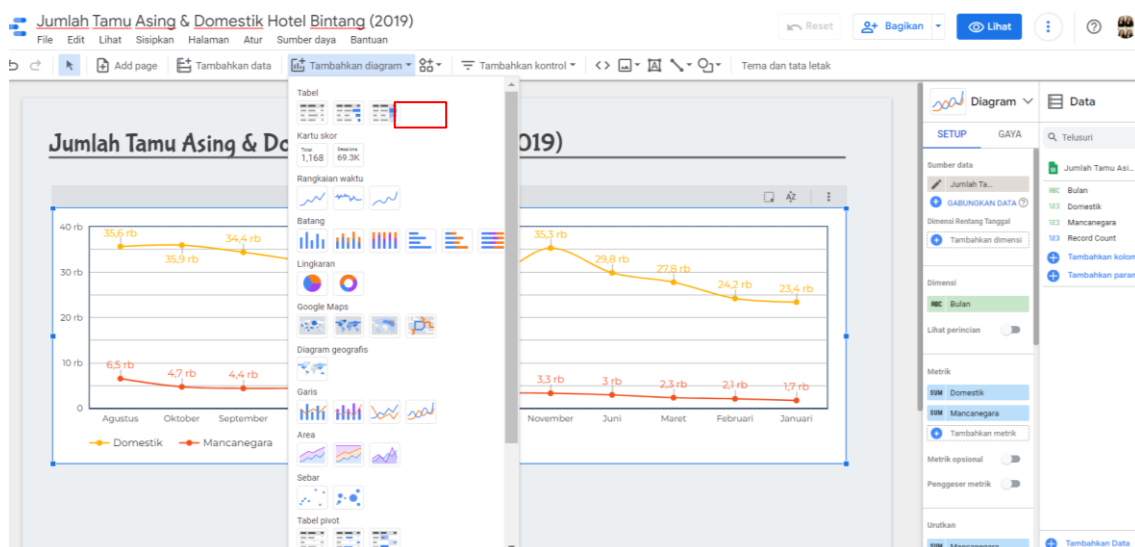


Figure 4. Adding Scorecard

To compute the total number of foreign and domestic tourists, go to the Data menu and select "Add Column," then add the necessary column. After successfully constructing the column, fill in the measure with the newly generated column, namely Domestic Total. The same process can be used to generate a Total Overseas.

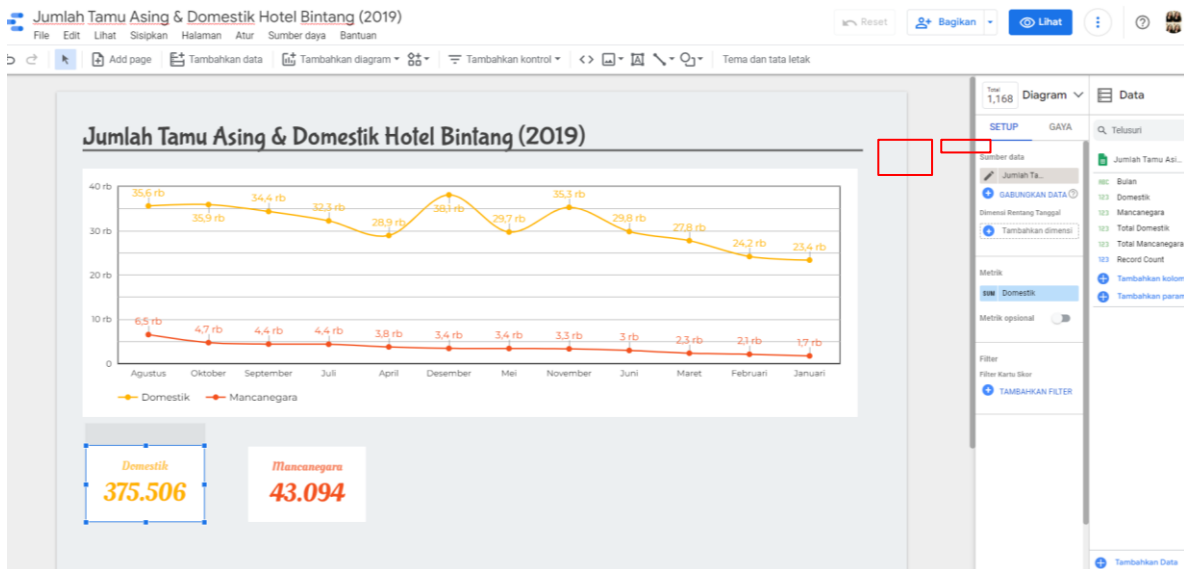


Figure 5. Conting Number of Foreign and Domestic Tourist

Input the average guest measure and modify the data aggregation to average to determine the data metric.

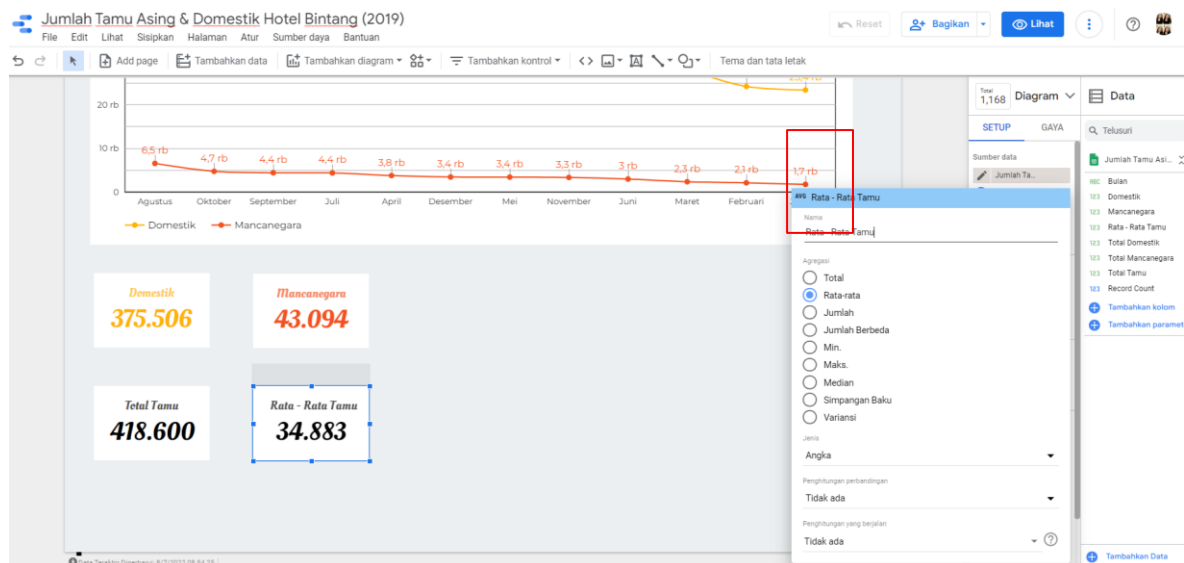


Figure 6. Metric Mean Values

3.4. Data Visualization Result

3.4.1. Visualization of Foreign and Domestic Tourist Data in 2019

The resulting data visualization is shown below and is based on the data collected. Whereas in this data visualization, it is visible that there were 375,506 domestic visitors, with a mean of 31,292. There were 418,600 total guests in 2019, including 43,094 foreign visitors, with an average stay of 3,591. The Figure 7 below shows further information.

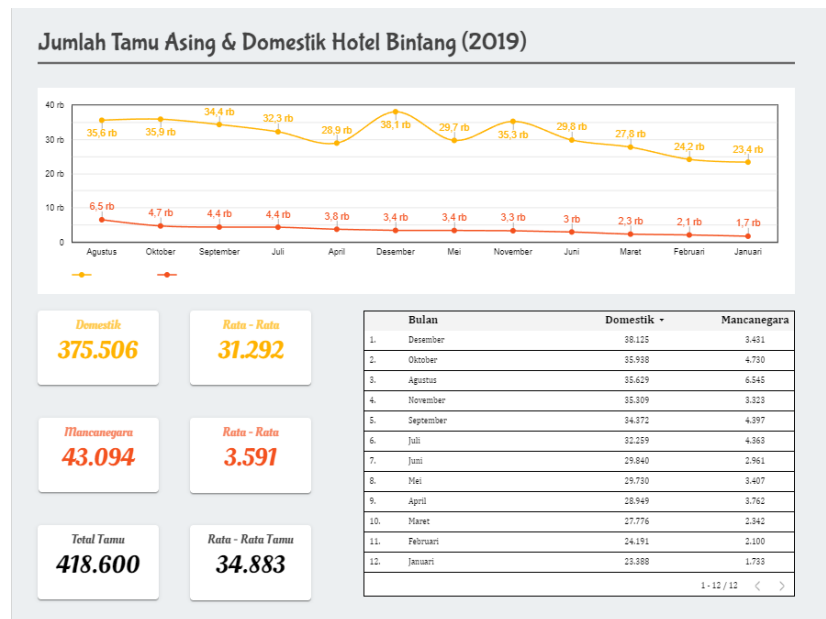


Figure 7. Visualization of Tourist Data in 2020

3.4.2. Visualization of Foreign and Domestic Tourist Data in 2020

The resulting data visualization based on the given information is as follows. This data visualization shows that the total number of domestic visitors is 221,884, with an average of 18,448. Foreign guests 8,420 with an average of 702; total guests 230,304 with an average of 19,192 in 2020. Shown in Figure 8 below:

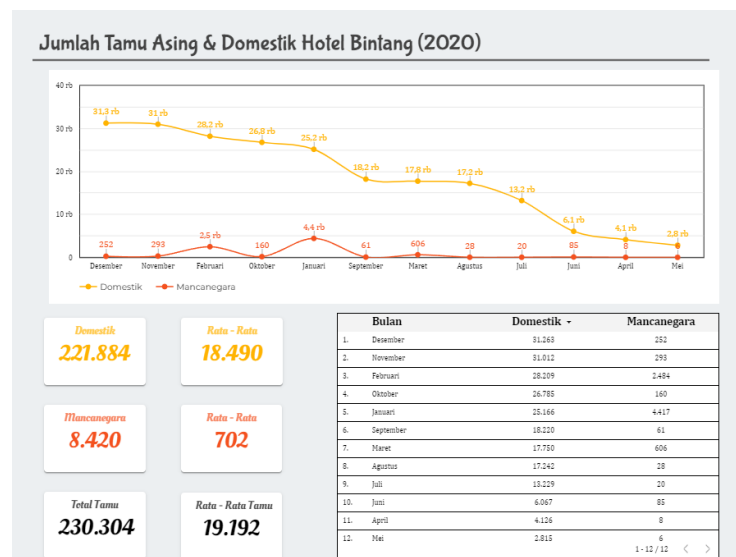


Figure 8. Visualization of Tourist Data in 2020

3.4.3. Visualization of Foreign and Domestic Tourist Data in 2021

From the data that was collected, the following data visualization was made. This data visualization shows that there are 322,024 domestic guests with an average of 26,835, 6,095 foreign guests with an average of 508, and 328,119 total guests in 2021, with an average of 27,343. Figure 9 is shown below.

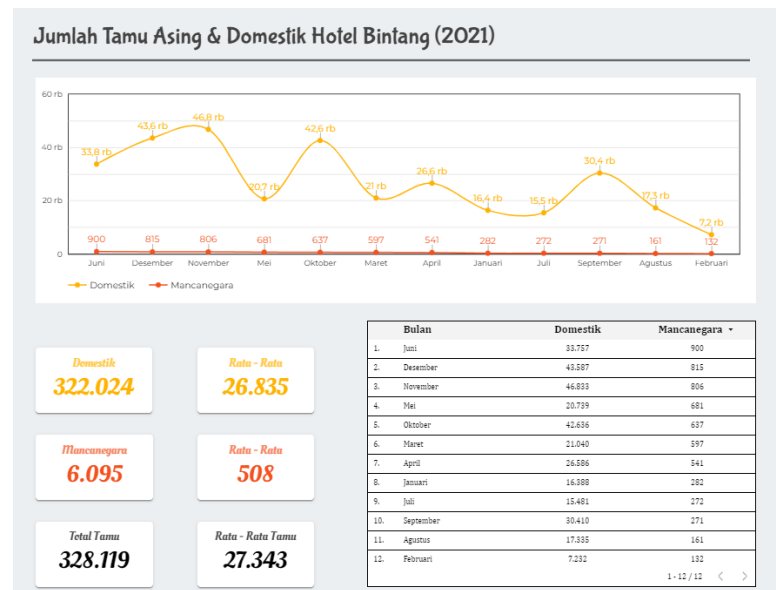


Figure 9. Visualization of Tourist Data in 2020

3.4.4. Visualization of Foreign and Domestic Tourist Data in 2022

From the data that was collected, the following data visualization was made. This data visualization shows that there are 115,839 domestic guests with an average of 9,653, 3,201 foreign guests with an average of 267, and 119,040 total guests in 2022, with an average of 9,920 for each. Figure 10 shows what I mean.

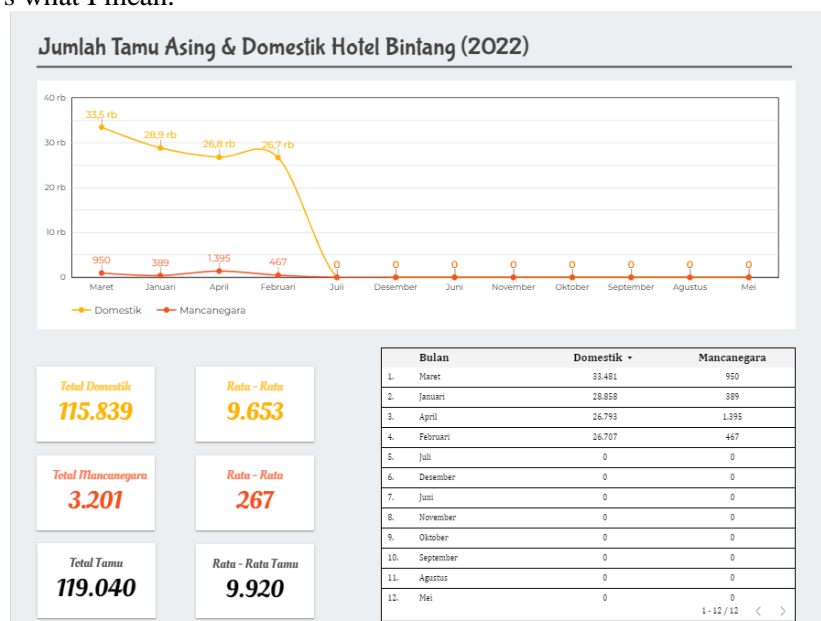


Figure 10. Visualization of Tourist Data in 2022

3.4.5. Visualization of Foreign and Domestic Tourist With Range Data in 2019-2022

Based on the data that was collected, a data visualization of the last 4 years, from 2019 to 2022, is made. Where this data visualization shows that the number of domestic guests in the last four years has been 1,035,253, with an average of 258,813, the number of foreign guests has been 60,810, with an average of 15,203, and the total number of guests in the year was 1,096,063, with an average of 274,016.

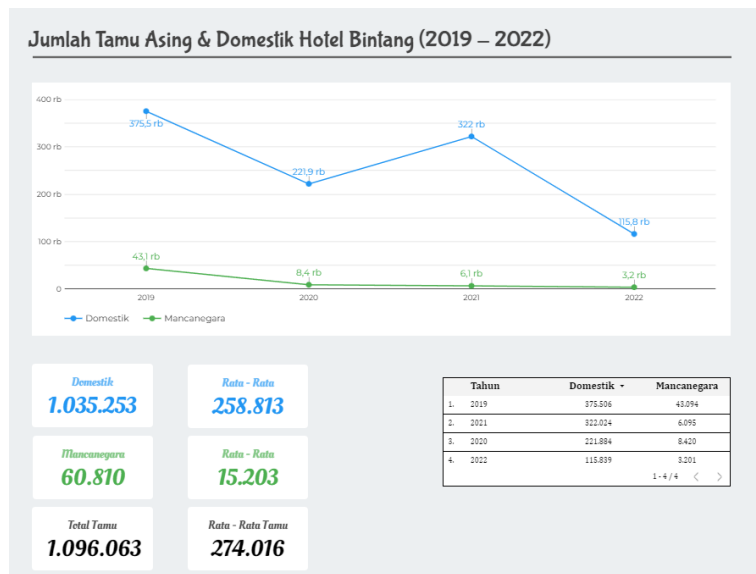


Figure 11. Visualization of Tourist Data in 2019-2022

4. Conclusion

Based on data visualization carried out using Google Data Studio, it can be seen that the number of guests visiting star hotels from 2019 to 2022 has experienced a drastic increase and decrease. For example, in 2019, the highest number of domestic guests was 375,506 people, while foreign guests numbered 43,094 people. In 2020, the number of visitors decreased, with domestic visitors visiting 221,884 people and foreign visitors visiting 8,420 people. In 2021, there will be a slight increase for domestic guests, which is 322,024 people, while foreign guests will decrease to 6,095 people. From 2022 to April, there were 115,839 domestic guests and 3,201 foreign guests. This number in a year alone may have increased or even less than the number of guests in the previous year depending on government regulations regarding travel in an area in Indonesia.

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