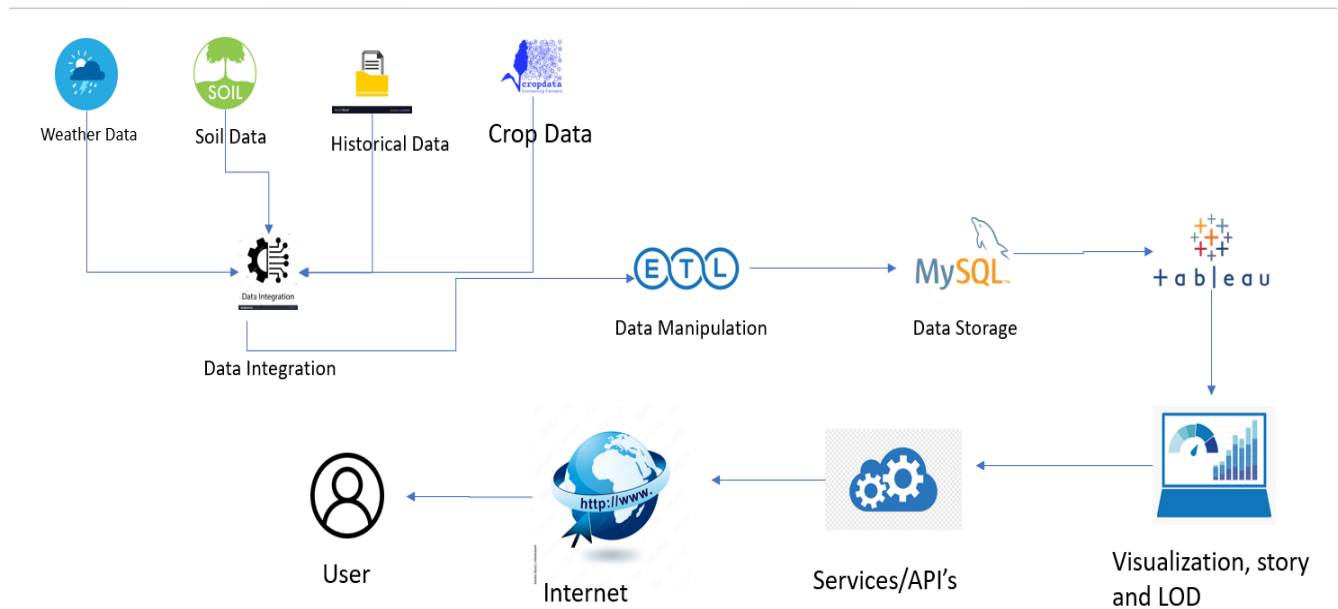# Sugarcane Production Analysis

Introduction: -

Sugarcane, often referred to as the "green gold" of India, stands as the cornerstone of the nation's agriculture and economic landscape. Cultivated over 2.57% of the gross cropped area, sugarcane holds unparalleled significance, making India the second-largest producer globally, following Brazil, contributing to approximately 25% of the world's production. This robust presence establishes sugarcane as a pivotal commercial crop, influencing various industries and aspects of daily life.

The journey of sugarcane from fields to factories is marked by its transformation into sucrose, commonly known as table sugar. Specialized mill factories across the nation play a vital role in extracting this sweet essence, which finds its way into confectionery, beverages, jams, patisserie, and serves as a fundamental raw material in the food industry. The versatility of sucrose mirrors the diverse applications of sugarcane, from sweetening our favorite treats to preserving the flavors in our jams.

Against this backdrop, our project embarks on a comprehensive analysis of sugarcane production data from different countries, with a keen focus on extracting valuable insights using cutting-edge Business Intelligence tools, particularly Tableau. By delving into the intricate details of sugarcane production on a global scale, we aim to unravel patterns, trends, and correlations that can inform and guide decision-making processes across the agricultural and industrial sectors.

The choice of Tableau as our tool is strategic, given its prowess in translating raw data into visually compelling narratives. As we delve into the realms of data visualization, dashboards, and a cohesive story, our project seeks to offer stakeholders, policymakers, and enthusiasts a nuanced perspective on the dynamics of sugarcane production.

Technical Architecture: -

Weather Data

Soil Data

Historical Data

Crop Data

Data Integration

Data Integration

Data Manipulation

Data Storage

tableau

User

Internet

Services/API's

Visualization, story and LOD

Project Flow

To accomplish this, we have to complete all the activities listed below,

● Define Problem / Problem Understanding

      o Specify the business problem

      o Business requirements

      o Literature Survey

      o Social or Business Impact.

● Data Collection & Extraction from Database

      o Collect the dataset,

      o Storing Data in DB

      o Perform SQL Operations

      o Connect DB with Tableau

● Data Preparation

      o Prepare the Data for Visualization

● Data Visualizations

      o No of Unique Visualizations

● Dashboard

      o Responsive and Design of Dashboard

● Story

      o No of Scenes of Story

● Performance Testing

      o Amount of Data Rendered to DB '

      o No of Calculation Fields

      o No of Visualizations/ Graphs

● Web Integration

      o Dashboard and Story embed with UI With Flask

Milestone 1: Define Problem / Problem Understanding

Activity 1: Specify the business problem.

The business problem in this context is the inefficiency and potential health hazards associated with the current manual method of analyzing sugarcane production data. The time-consuming nature of manual analysis may result in delayed decision-making for farmers and agricultural stakeholders. Timely insights are crucial in optimizing sugarcane production and responding to dynamic environmental conditions.

Activity 2: Business requirements

This project holds immense relevance for countries blessed with highly fertile soils, particularly in South America and Asia, where sugarcane production thrives. By leveraging data visualization techniques, this initiative becomes a valuable resource for these nations. The insights derived from the analysis are poised to guide agricultural practices, optimize production, and serve as a strategic tool for decision-making.

For entrepreneurs venturing into sugar production, this project is a goldmine of strategic insights. The focus on data visualization techniques, particularly through Tableau, ensures that business owners can glean actionable intelligence. By understanding the nuances of sugarcane production, from regional trends to environmental factors, stakeholders can make informed decisions, enhance operational efficiency, and ultimately contribute to the growth of the sugar industry.

Activity 3: Literature Survey

Agricultural Practices and Techniques: -

 Explore literature on diverse agricultural practices and techniques employed globally for sugarcane cultivation. This includes studies on irrigation methods, fertilization techniques, and pest management strategies. Understanding the nuances of these practices contributes to optimizing sugarcane production.

Climate and Environmental Factors: -

Investigate research on the impact of climate and environmental conditions on sugarcane production. This involves examining studies that analyze the influence of temperature, rainfall, soil quality, and other ecological factors on crop yield. Insights from these studies can aid in adapting agricultural practices to varying environmental conditions.

Economic Implications of Sugarcane Production: -

 Explore research on the economic aspects of sugarcane production, including studies on market trends, pricing mechanisms, and the economic impact on local and global scales. This information is crucial for business owners, policymakers, and stakeholders in the sugarcane industry.

Soil Health and Fertility Management: -

 Examine literature focusing on soil health and fertility management in sugarcane cultivation. This involves studies on sustainable agricultural practices, cover cropping, and soil conservation methods. Healthy soil is fundamental to sustained and robust sugarcane production.

Sustainable Agriculture in Sugarcane Production: -

 Delve into literature on sustainable agriculture practices specifically related to sugarcane cultivation. This involves studies on water conservation, organic farming, and environmentally friendly approaches

to sugarcane production. Sustainable practices ensure the long-term viability of the industry.

Activity 4: Social or Business Impact.

Social Impact: -

This project holds substantial social significance by shedding light on regions with high sugarcane production. By identifying the factors influencing production and yield, it contributes to the agricultural landscape and the livelihoods of those dependent on sugarcane farming. Understanding these factors enables farmers to make informed decisions, adapt practices, and potentially increase their yield. Moreover, insights derived from the project can facilitate the development of sustainable agricultural practices, leading to improved environmental stewardship. Overall, the social impact extends to the communities involved in sugarcane cultivation, fostering resilience and adaptability in the face of changing agricultural dynamics.

Business Impact: -

From a business perspective, the impact of this project is particularly pronounced for countries engaged in large-scale sugarcane cultivation. The detailed analysis of sugarcane production provides these countries with a strategic advantage. By showcasing regions with high yield potential, the project serves as a valuable tool for attracting investors and fostering economic growth. The information derived from the analysis can be leveraged to develop targeted business models, optimize supply chains, and enhance overall efficiency in the sugarcane industry. As a result, countries with high sugarcane yield not only strengthen their agricultural sector but also position themselves as attractive investment destinations, stimulating economic development and prosperity.

Milestone 2: Data Collection & Extraction from Database

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, evaluate outcomes and generate insights from the data.

Activity 1: Downloading the dataset.

We have successfully downloaded the data from the given link.

Activity 1.1: Understand the data.

Data contains all the meta information regarding the columns described in the CSV files.

Column Description of the Dataset:

1. Continent: Name of the Continent

2. Country: Country Name

3. Production: Production of sugarcane in tons.

4. Production per person: Production per person in tons

5. Acreage: Area for sugarcane cultivation in hectares

6. Yield: The production per area f land (kg / hectare)

Activity 2: Storing Data in DB & Perform SQL Operations

Activity 3: Connect DB with Tableau

Milestone 3: Data Preparation

Activity 1: Prepare the Data for Visualization

Preparing the data for visualization involves cleaning the data to remove irrelevant or missing data, transforming the data into a format that can be easily visualized, exploring the data to identify patterns and trends, filtering the data to focus on specific subsets of data, preparing the data for visualization software, and ensuring the data is accurate and complete. This process helps to make the data easily understandable and ready for creating visualizations to gain insights into the performance and efficiency.

We have identified missing data from the file. For missing data, we have calculated the mean and add it to the missing value.
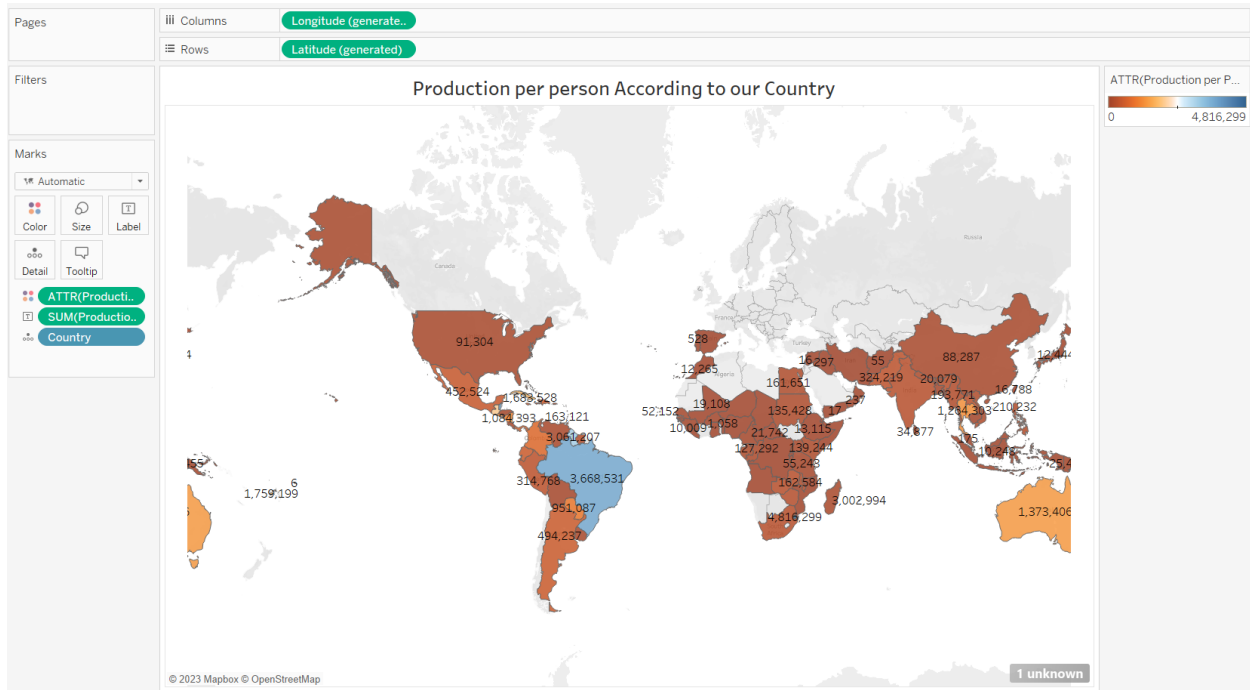

Milestone 4: Data Visualization

Data visualization is the process of creating graphical representations of data to help people understand and explore information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends, and outliers in the data.

Activity 1: No of Unique Visualizations

The number of unique visualizations that can be created with a given dataset. Some common types of visualizations that can be used to analyze the performance and efficiency of banks include bar charts, line charts, heat maps, scatter plots, pie charts, Maps etc. These visualizations can be used to check the complementing disorders and

the lifestyle habits complementing depression among countries. It also shows the depression among countries.

Activity 1.1: Production per Person according to Country

Columns: Longitude (generate..
Rows: Latitude (generated)

Production per person According to our Country

ATTR(Production per P..
0 — 4,816,299

Marks: Automatic — Color, Size, Label, Detail, Tooltip
ATTR(Producti..
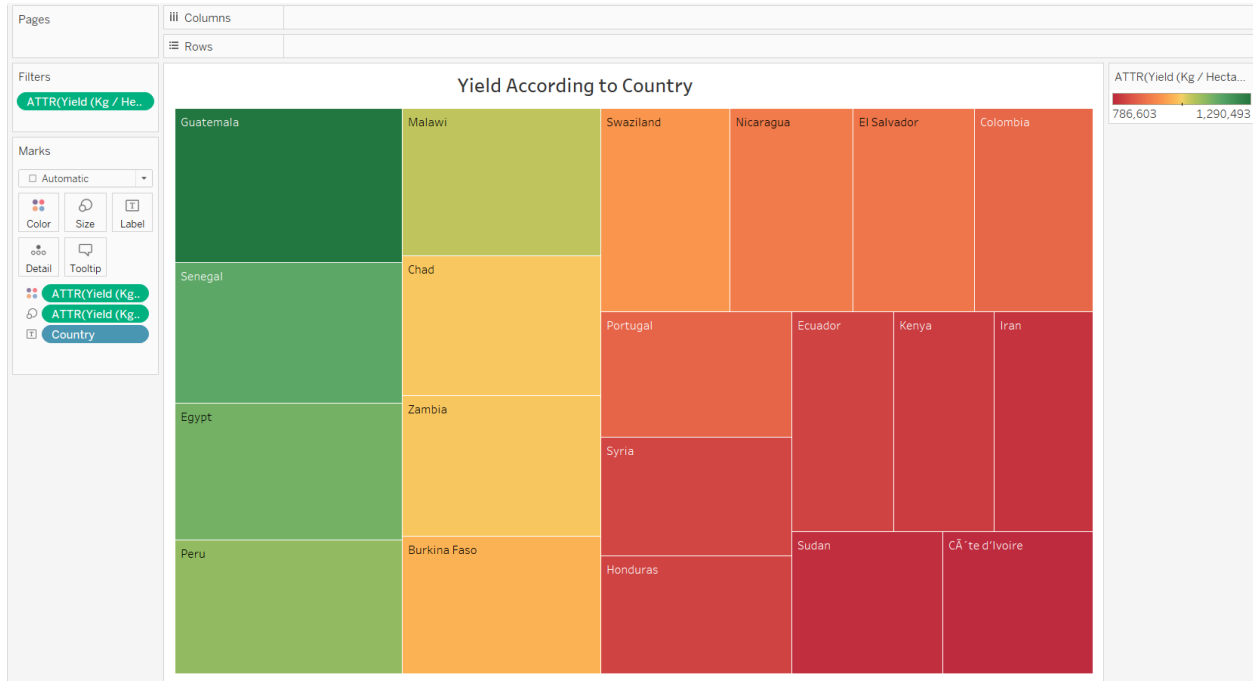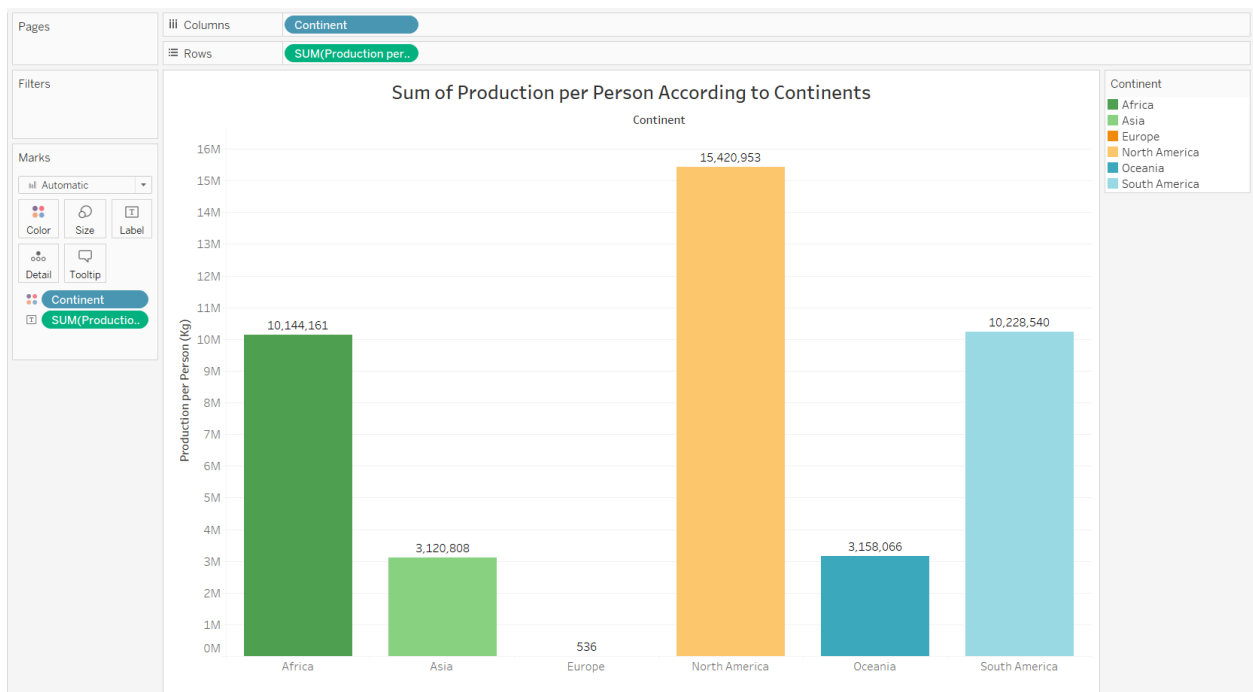SUM(Productio..
Country

Map values: 91,304 · 528 · 16,297 · 55 · 88,287 · 12,44 · 12,265 · 324,219 · 20,079 · 16,788 · 161,651 · 193,771 · 1,264,163 · 210,232 · 452,524 · 1,689,528 · 19,108 · 135,426 · 1,084,393 · 163,121 · 10,099,058 · 34,877 · 52,152 · 3,061,407 · 21,743 · 13,115 · 127,292 · 139,244 · 55,243 · 314,768 · 3,668,531 · 162,584 · 3,002,994 · 951,087 · 4,816,299 · 494,237 · 1,759,199 · 6 · 1,373,406

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1 unknown

Activity 1.2: Comparison of Acreage and Production According to Country

Columns: ATTR(Acreage (Hec.. | SUM(Zero line) | ATTR(Production (T..
Rows: Country

Filters: SUM(Production (To..

Marks: All — Multiple — Color, Size, Label, Detail, Tooltip
Multiple fields
Multiple fields
ATTR(Acreage (..
SUM(Zero line)
ATTR(Producti..

Comparison of Acreage and Production According to Country

SUM(Production (Tons))
15,074,610 — 768,678,382

SUM(Acreage (Hectare))
25,985 — 10,226,205

Acreage (Hectare)	Country	Production (Tons)
10,226,205	Brazil	768,678,382
4,950,000	India	348,448,000
1,675,215	China	123,059,739
1,336,575	Thailand	87,468,496
1,130,820	Pakistan	65,450,704
781,054	Mexico	56,446,821
416,626	Colombia	36,951,213
447,204	Australia	34,403,004
25,985	Guatemala	33,533,403
37,053	United States of America	29,926,210
472,693	Indonesia	27,158,830
410,104	Philippines	22,370,546
331,699	Argentina	21,990,823
442,307	Cuba	18,890,972
256,322	Vietnam	16,313,145
137,011	Egypt	15,760,418
246,937	South Africa	15,074,610

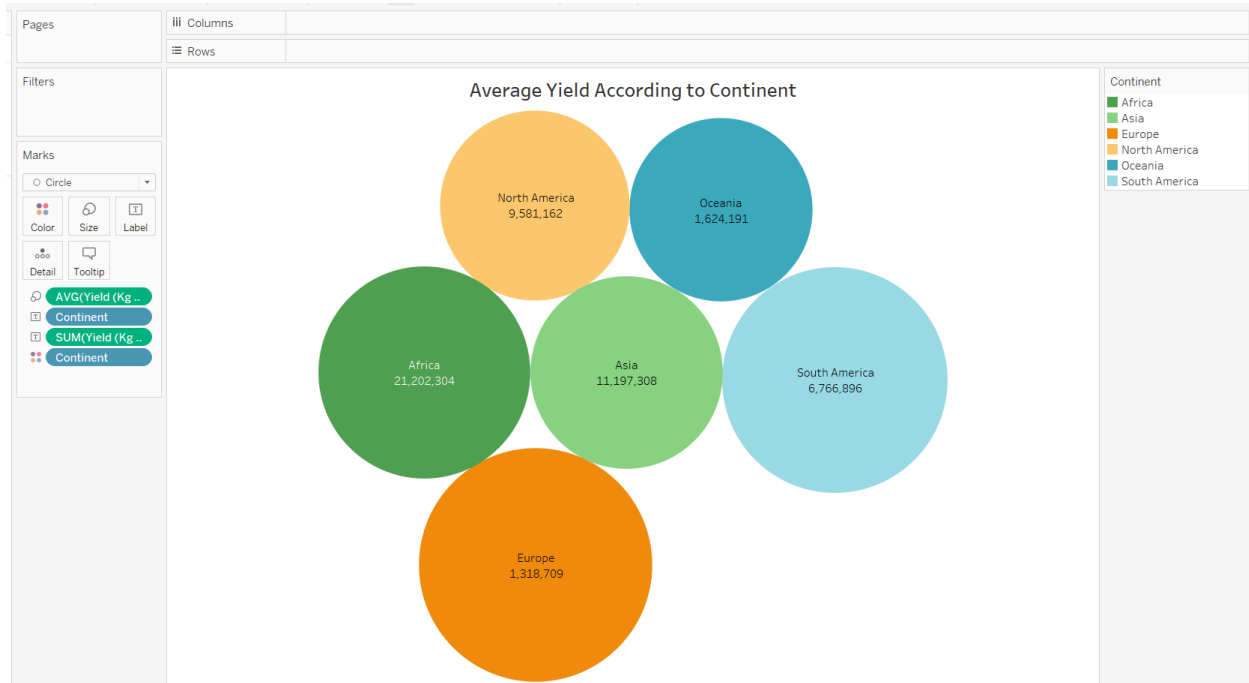Acreage (Hectare) — Zero line (0) — Production (Tons)

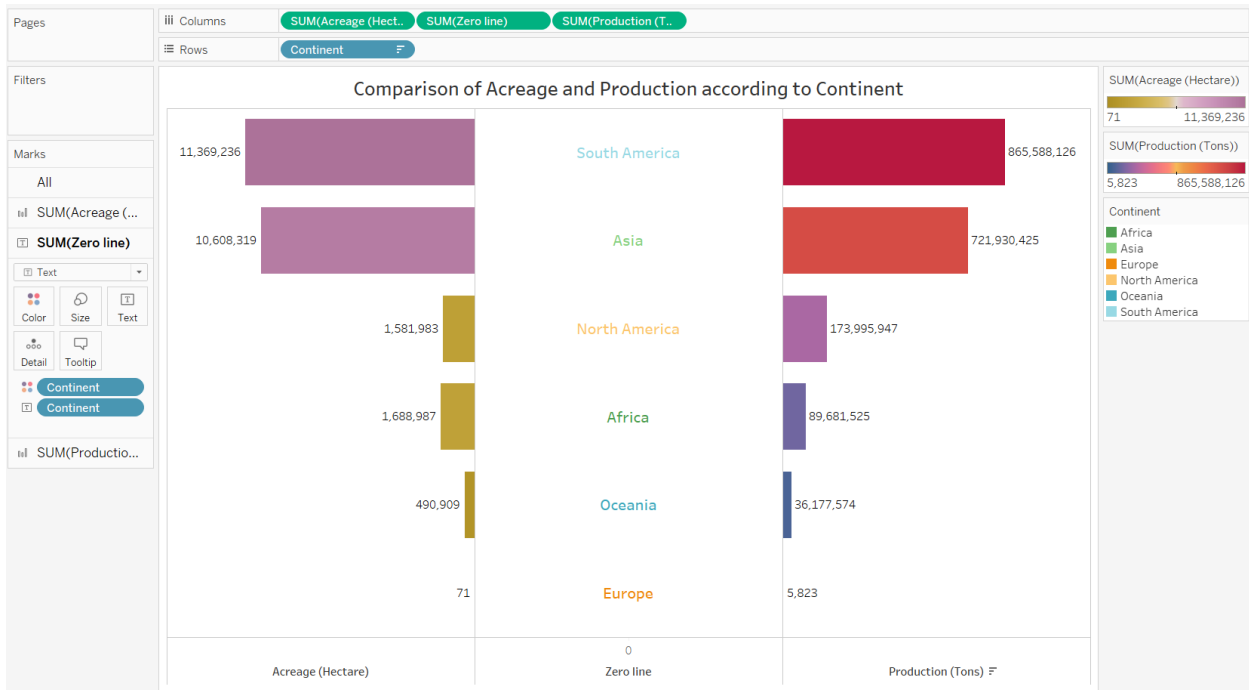# Activity 1.3: Yield According to Country

Activity 1.4: Production per Person sum for Continents.
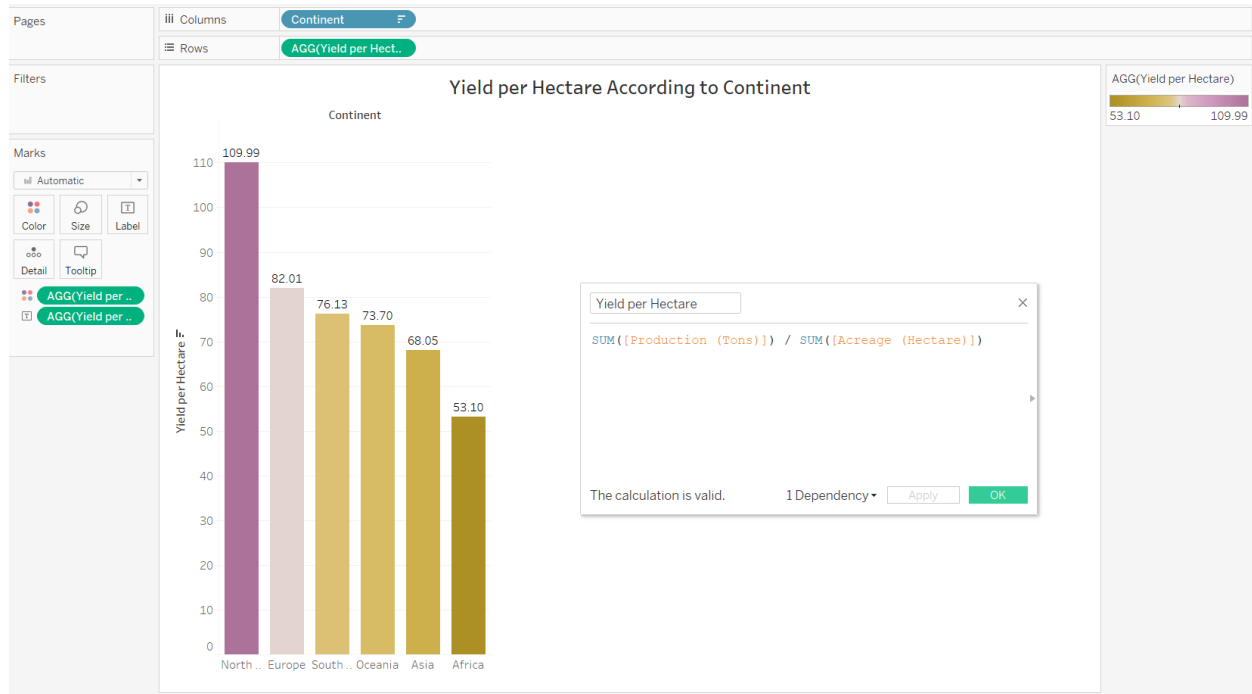
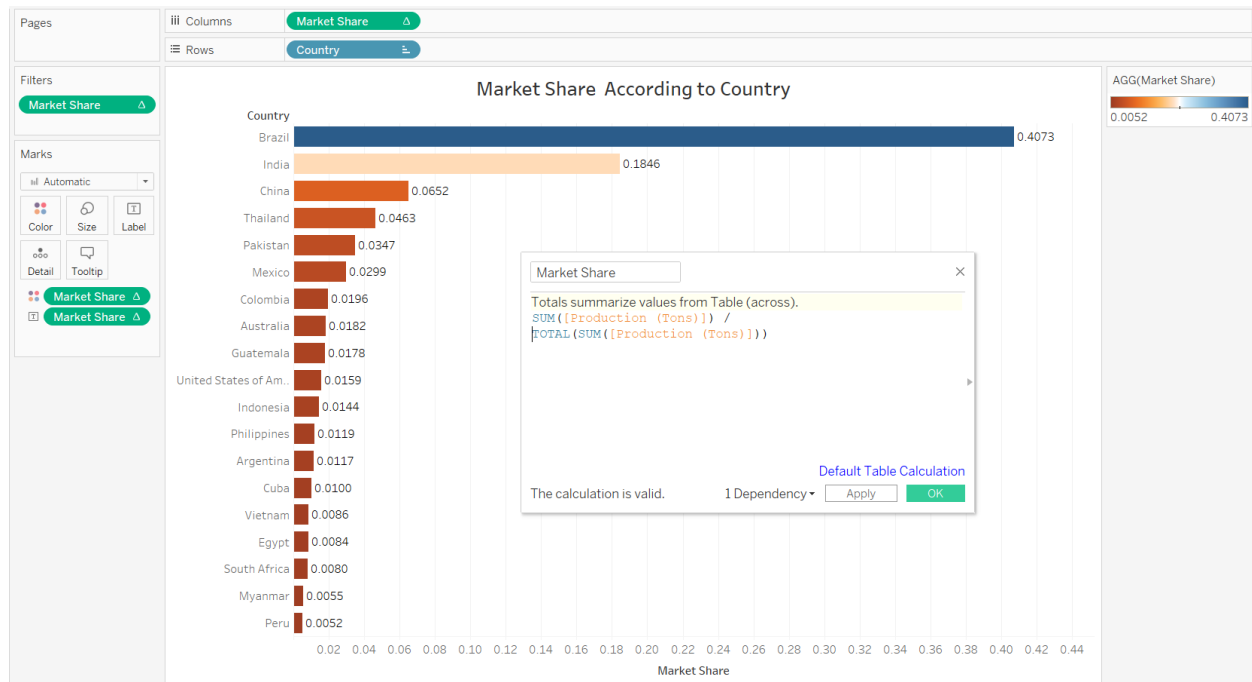# Activity 1.5: Average Yield According to Continent

Activity 1.6: Comparison of Acreage and Production according to Continent
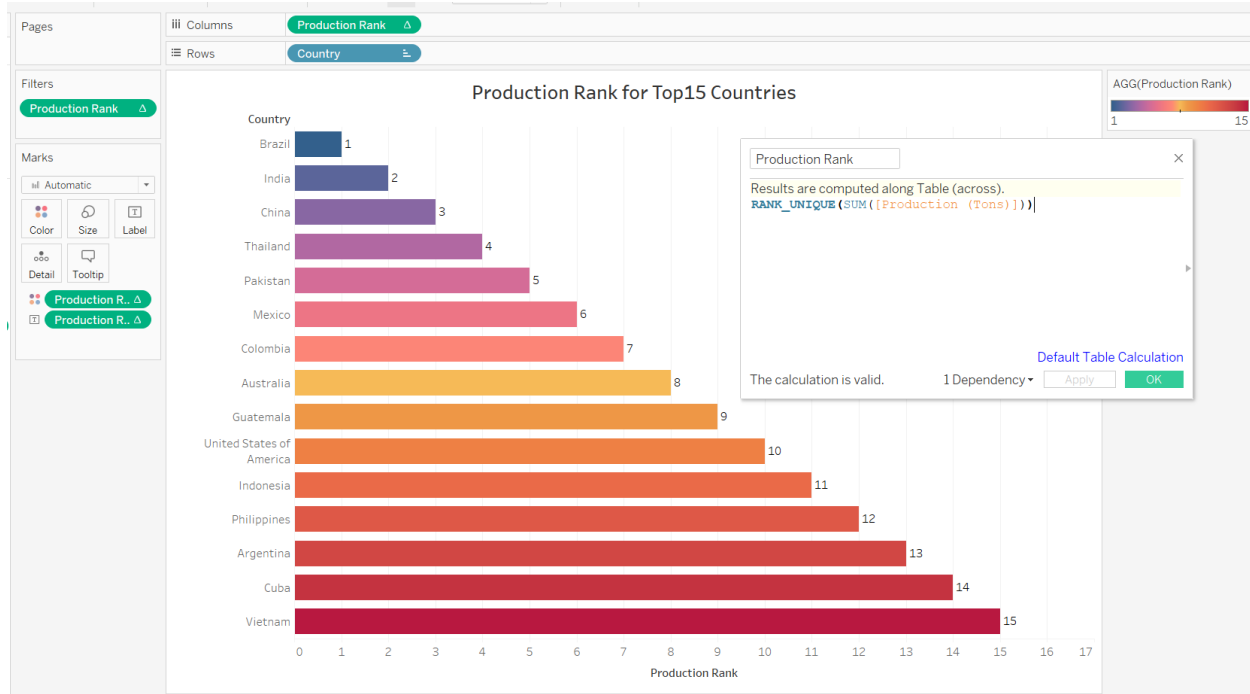
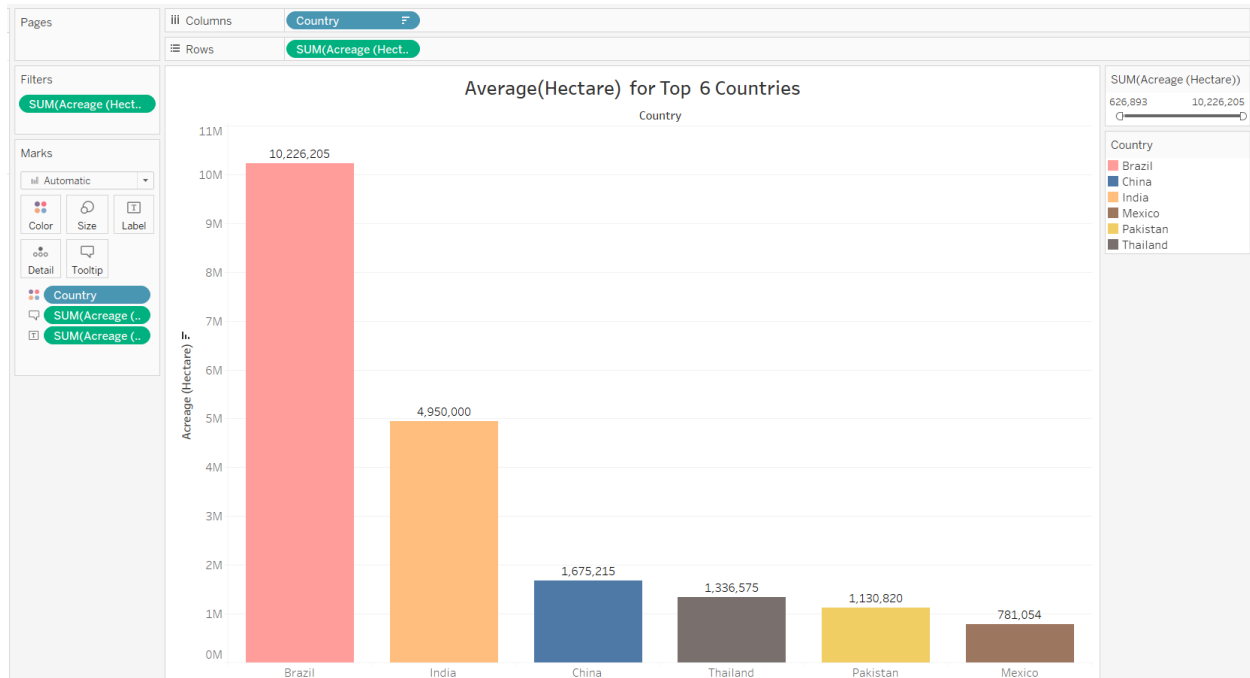# Activity 1.7: Yield per Hectare According to Continent

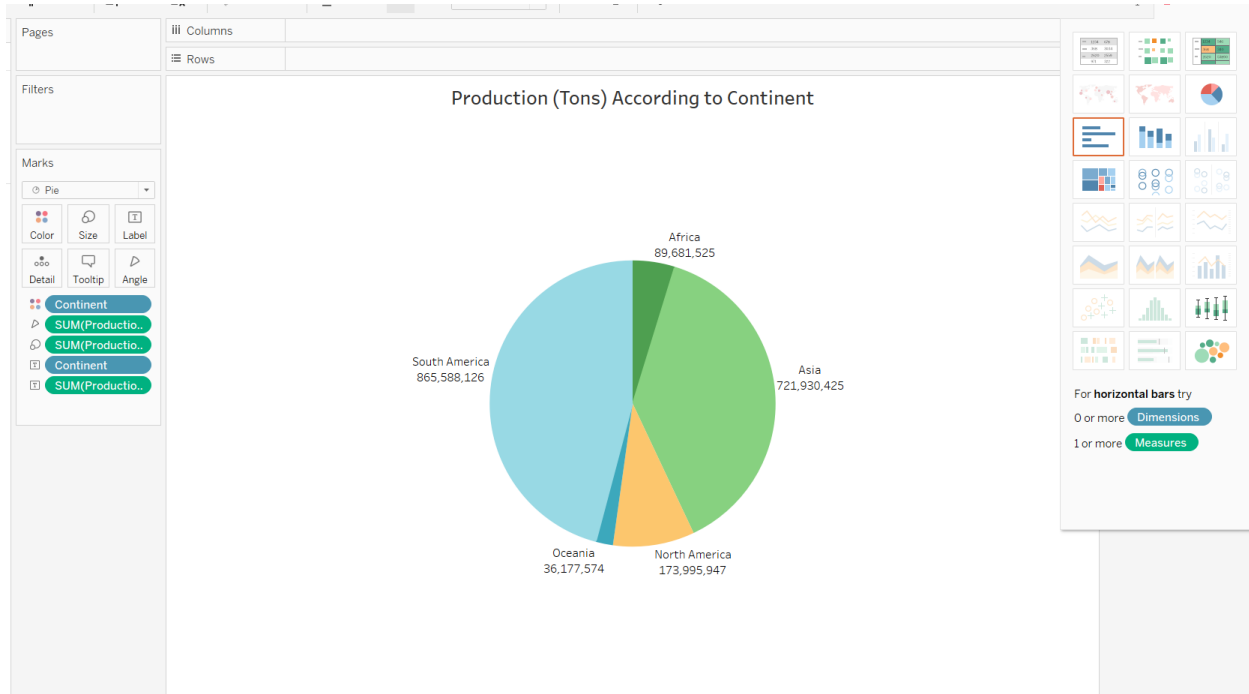# Activity 1.8: Market Share According to Country

Activity 1.9: Production Rank for Top15 Countries

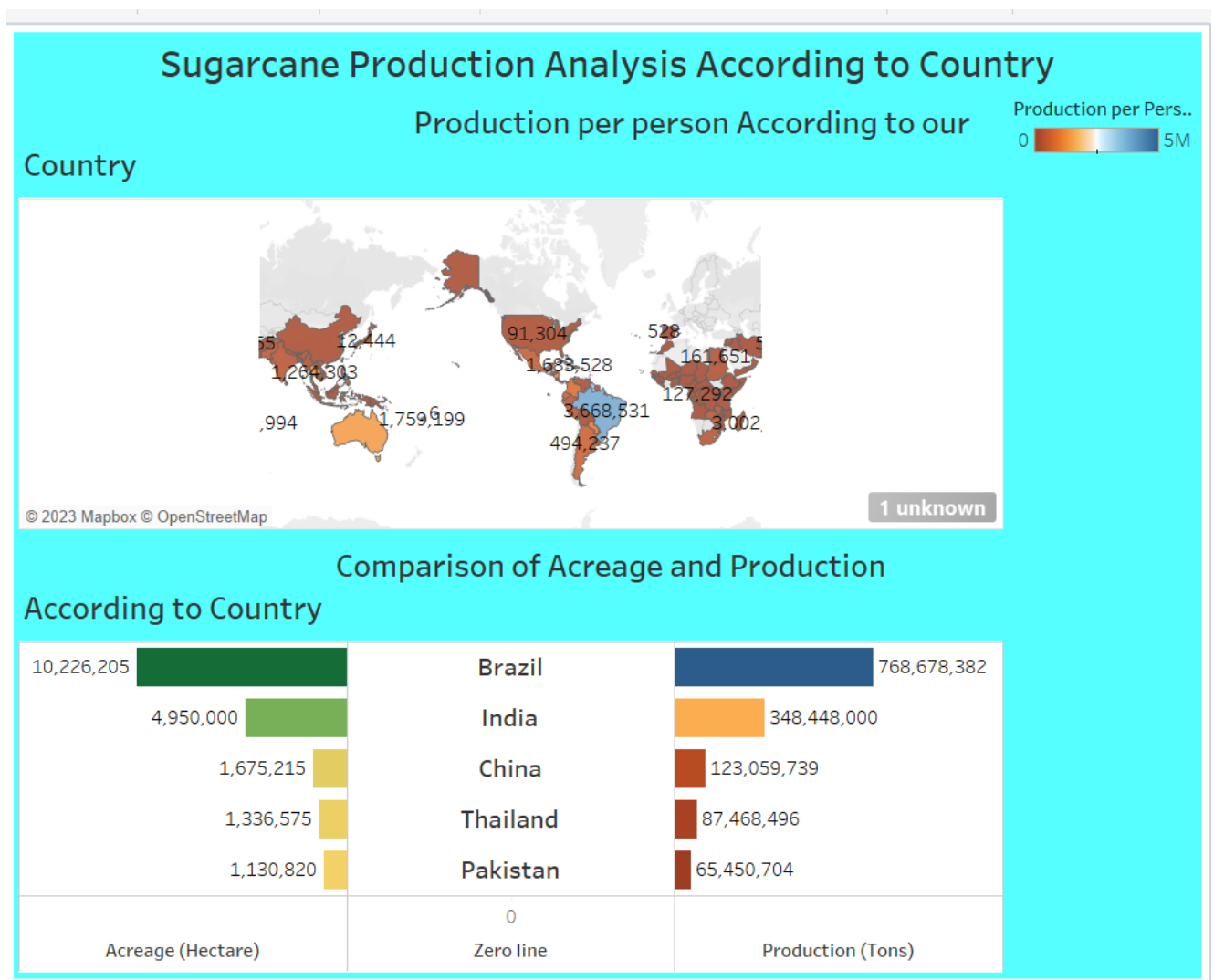# Activity 1.10: Average (Hectare) for Top 6 Countries

Activity 1.11: Production (Tons) According to Continent

Production (Tons) According to Continent

Africa
89,681,525

Asia
721,930,425

North America
173,995,947

Oceania
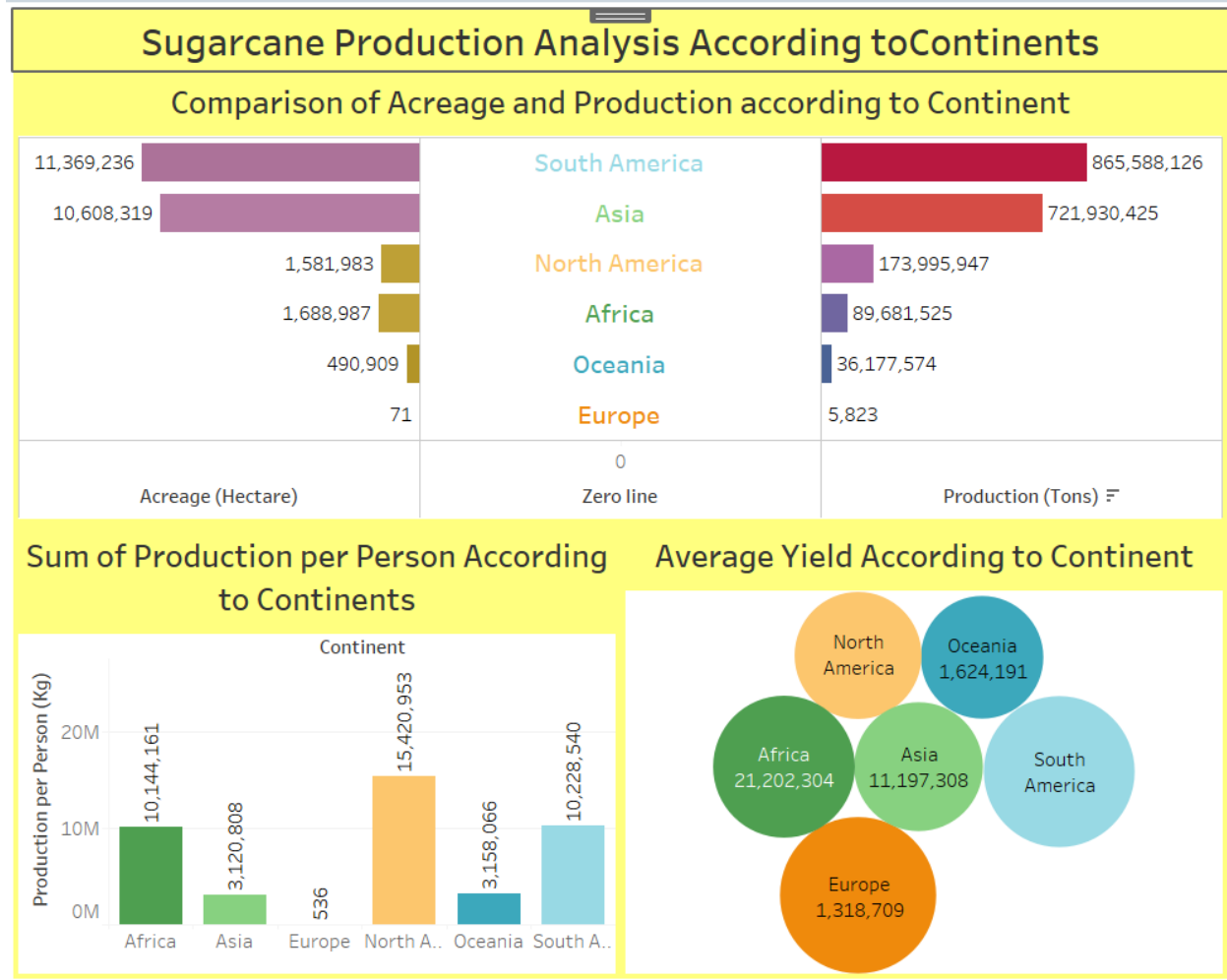36,177,574

South America
865,588,126

Milestone 5: Dashboard

A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data and are typically designed for a specific purpose or use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables.

Activity 1- Responsive Design of Dashboard 1

Activity 2- Responsive Design of Dashboard 2

Sugarcane Production Analysis According toContinents

Comparison of Acreage and Production according to Continent

Acreage (Hectare)	Continent	Production (Tons)
11,369,236	South America	865,588,126
10,608,319	Asia	721,930,425
1,581,983	North America	173,995,947
1,688,987	Africa	89,681,525
490,909	Oceania	36,177,574
71	Europe	5,823

Zero line: 0

Sum of Production per Person According to Continents

Continent

Production per Person (Kg)

- Africa: 10,144,161
- Asia: 3,120,808
- Europe: 536
- North A..: 15,420,953
- Oceania: 3,158,066
- South A..: 10,228,540

Average Yield According to Continent

- North America
- Oceania 1,624,191
- Africa 21,202,304
- Asia 11,197,308
- South America
- Europe 1,318,709

Milestone 6: Story

A data story is a way of presenting data and analysis in a narrative format, intending to make the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis logically and systematically, and a conclusion that summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos.

Activity 1- No of Scenes of Story

The number of scenes in a storyboard for a data visualization analysis of the performance of banks will depend on the complexity of the analysis and the specific insights that are trying to be conveyed. A storyboard is a visual representation of the data analysis process, and it breaks down the analysis into a series of steps or scenes.
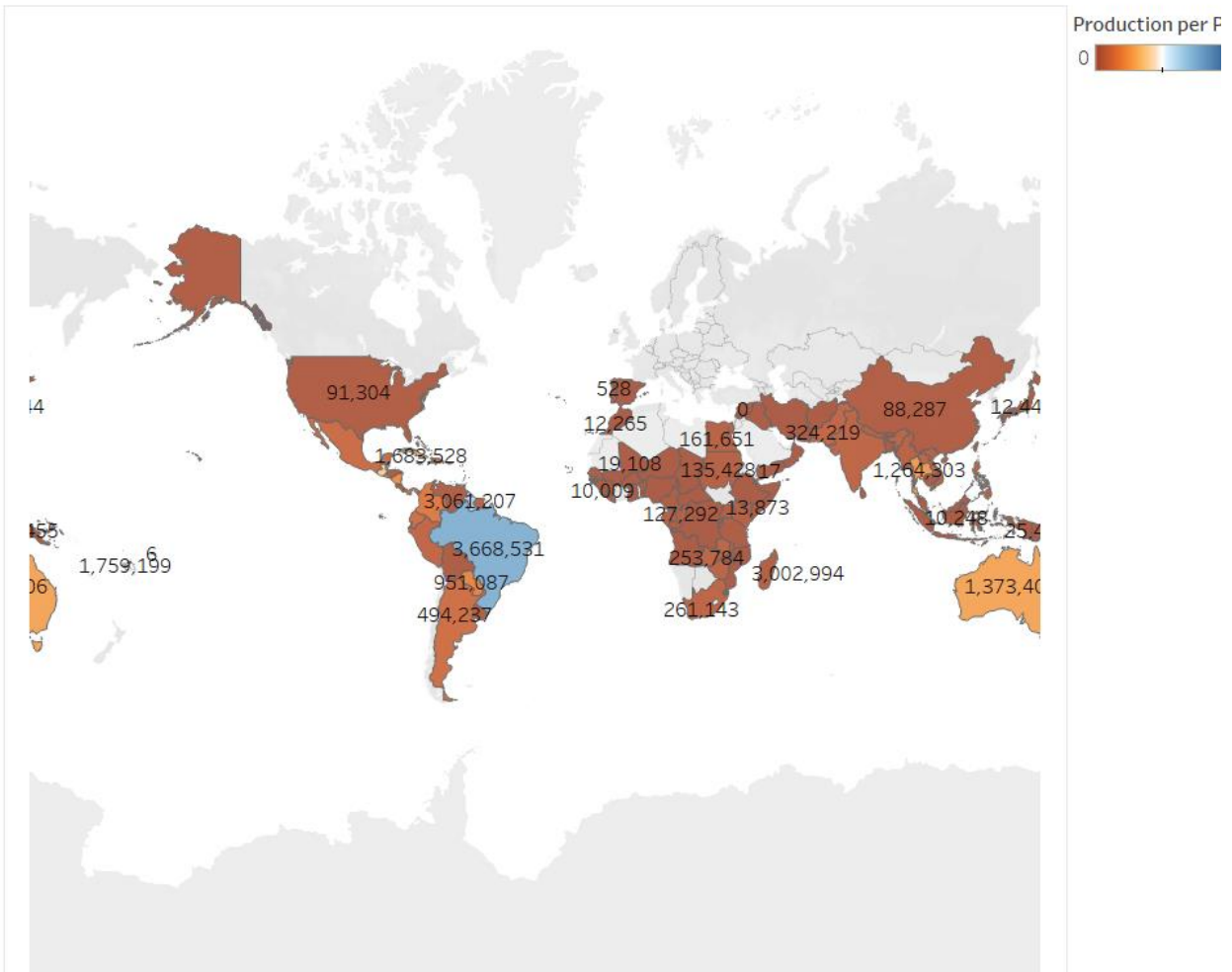
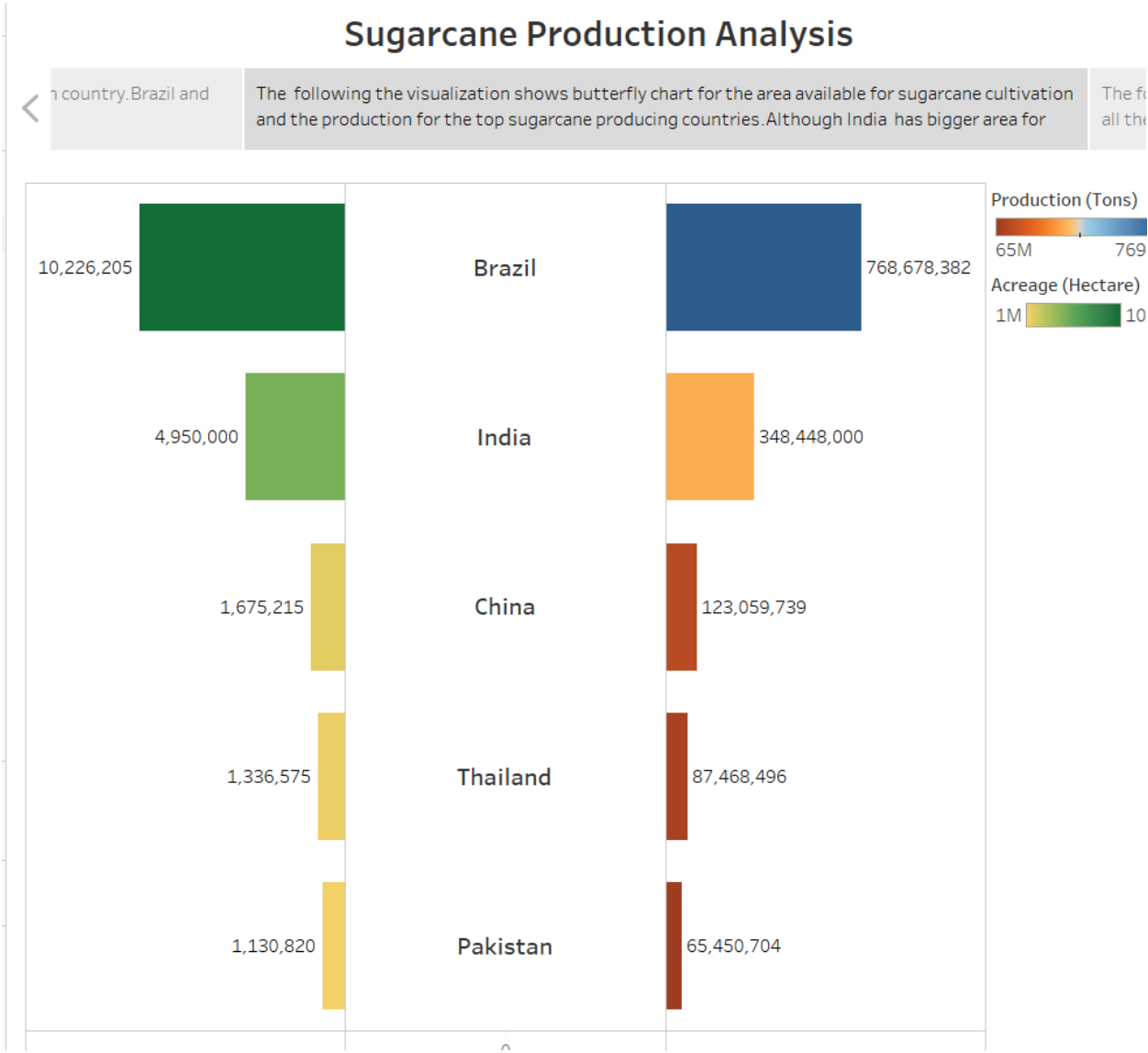# Scene 1:

Sugarcane Production Analysis

The following visualization shows the production per person according to each country. Brazil and India have high Production per person.

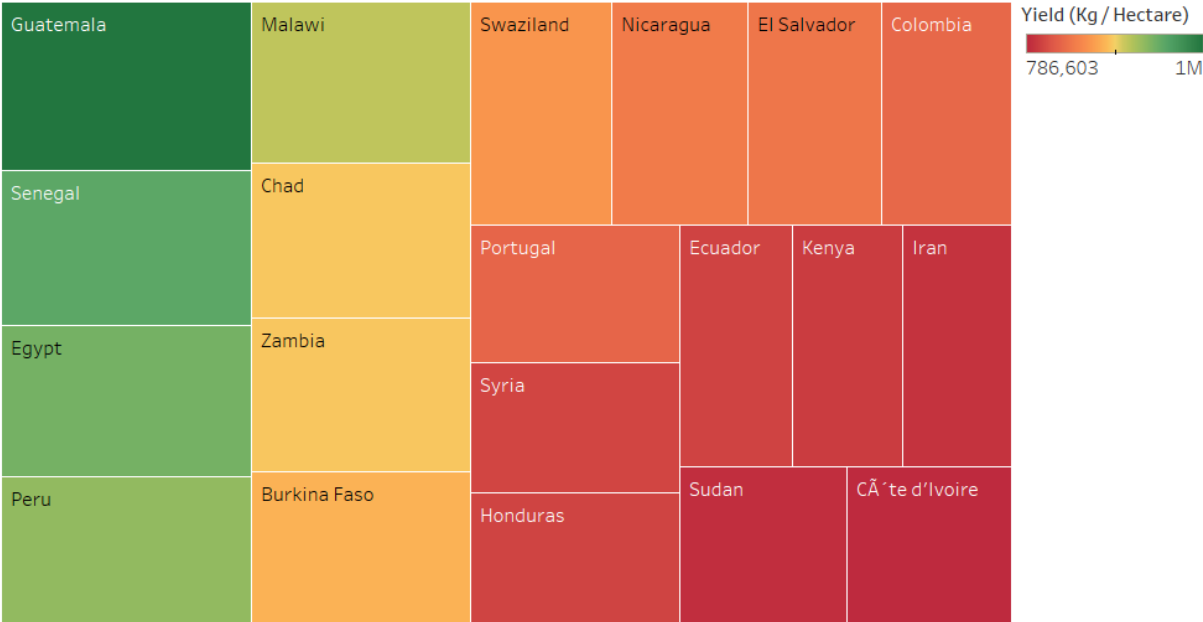The following the visualiza and the production for the

Production per P

0

	528		88,287	12,44
91,304	12,265	324,219		
1,683,528	161,651		1,264,303	
	19,108	135,428 17		
3,061,207	10,009		10,248	25,4
1,759,199	127,292	13,873		
3,668,531	253,784	3,002,994	1,373,40
951,087			
494,237	261,143		

Scene 2:

Sugarcane Production Analysis

The following the visualization shows butterfly chart for the area available for sugarcane cultivation and the production for the top sugarcane producing countries. Although India has bigger area for

The f
all the

Production (Tons)

65M   769

Acreage (Hectare)

1M   10

10,226,205	**Brazil**	768,678,382
4,950,000	**India**	348,448,000
1,675,215	**China**	123,059,739
1,336,575	**Thailand**	87,468,496
1,130,820	**Pakistan**	65,450,704

Scene 3:

Sugarcane Production Analysis

The following visualization shows Tree Map that describes that Guatemala has Highest Yield among all the countries.

Yield (Kg / Hectare)
786,603 — 1M

Tree map countries: Guatemala, Malawi, Swaziland, Nicaragua, El Salvador, Colombia, Senegal, Chad, Portugal, Ecuador, Kenya, Iran, Egypt, Zambia, Syria, Peru, Burkina Faso, Honduras, Sudan, CÃ´te d'Ivoire

Scene 4:

Sugarcane Production Analysis

Highest Yield among | The following visualzation shows Sum of Production per Person According to Continents that describes that North America has highest Production Per Person. | The f... Amer...

Continent

Continent
■ Africa
■ Asia
■ Europe
■ North America
■ Oceania
■ South America

Production per Person (Kg):

- North America: 15,420,953
- South America: 10,228,540
- Africa: 10,144,161
- Oceania: 3,158,066
- Asia: 3,120,808
- Europe: 536

Scene 5:

Sugarcane Production Analysis

The following visualization shows Average Yield According to Continent that describes that North America has highest Yeild among all the continents.

Continent
- Africa
- Asia
- Europe
- North America
- Oceania
- South America

North America
9,581,162

Oceania
1,624,191

Africa
21,202,304

Asia
11,197,308

South America
6,766,896

Europe
1,318,709

Scene 6:

Sugarcane Production Analysis

The following visualization shows Comparison of Acreage and Production according to Continent that describes that South America has Highest Acreage and production(Tons) . ›

11,369,236	South America	865,588,126
10,608,319	Asia	721,930,425
1,581,983	North America	173,995,947
1,688,987	Africa	89,681,525
490,909	Oceania	36,177,574
71	Europe	5,823

0

Acreage (Hectare)
71 — 11M

Production (Tons)
5,823 — 866M

Continent
- Africa
- Asia
- Europe
- North America
- Oceania
- South America

Milestone 7: Performance Testing

Activity 1: Amount of Data Rendered to DB

● The amount of data that is rendered to a database depends on the size of the dataset and the capacity of the database to store and retrieve data.

● Open the MySQL Workbench, go to the database then click to expand the tables, select the table, and click on (i) button to get the information related to table such as column count, table rows etc.
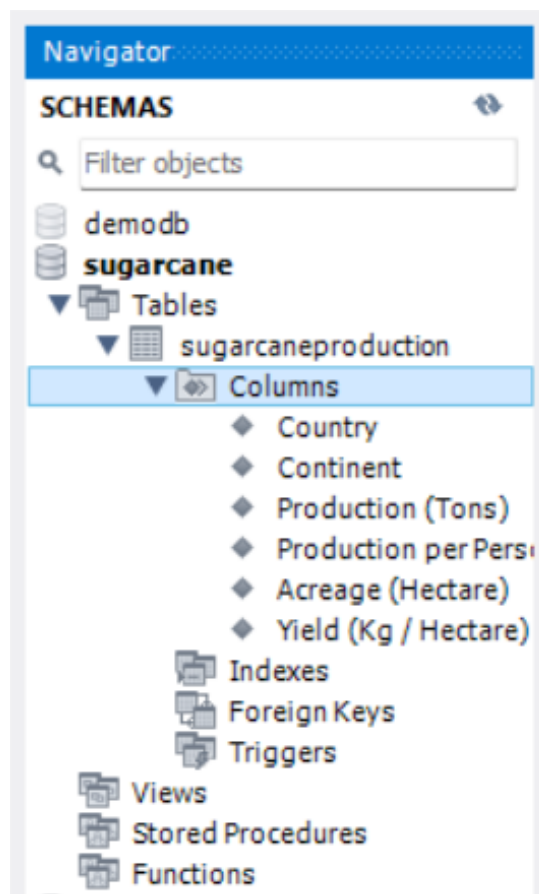
Activity 2: No of Calculation Fields

Activity 3: No of Visualizations/ Graphs

1. Production per Person according to Country

2. Comparison of Production and Acreage according to country

3. Yield according to country

4. Sum of Production per person According to continents

5. Average Yield according to Continent

6. Comparison of Acreage and Production according to Continent

7. Yield per Hectare According to Continent

8. Market Share According to Country

9. Production Rank for Top15 Countries

10. Average (Hectare) for Top 6 Countries

11. Production (Tons) According to Continent

Milestone 8: Web integration

Publishing helps us to track and monitor key performance metrics and to communicate results and progress. help a publisher stay informed, make better decisions, and communicate their performance to others.

Publishing dashboard and reports to tableau public

Step 1: Go to Dashboard/story, click on the share button on the top ribbon.
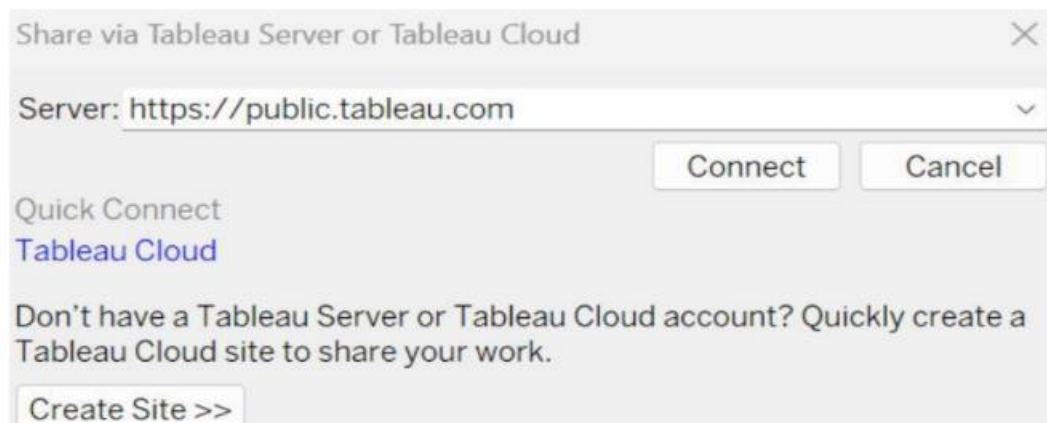
Give the server address of your tableau public account and click on connect.

Step 2: Once you click on connect it will ask you for the tableau public username and password.

Once you login into your tableau public using the credentials, the particular visualization will be published into the tableau public
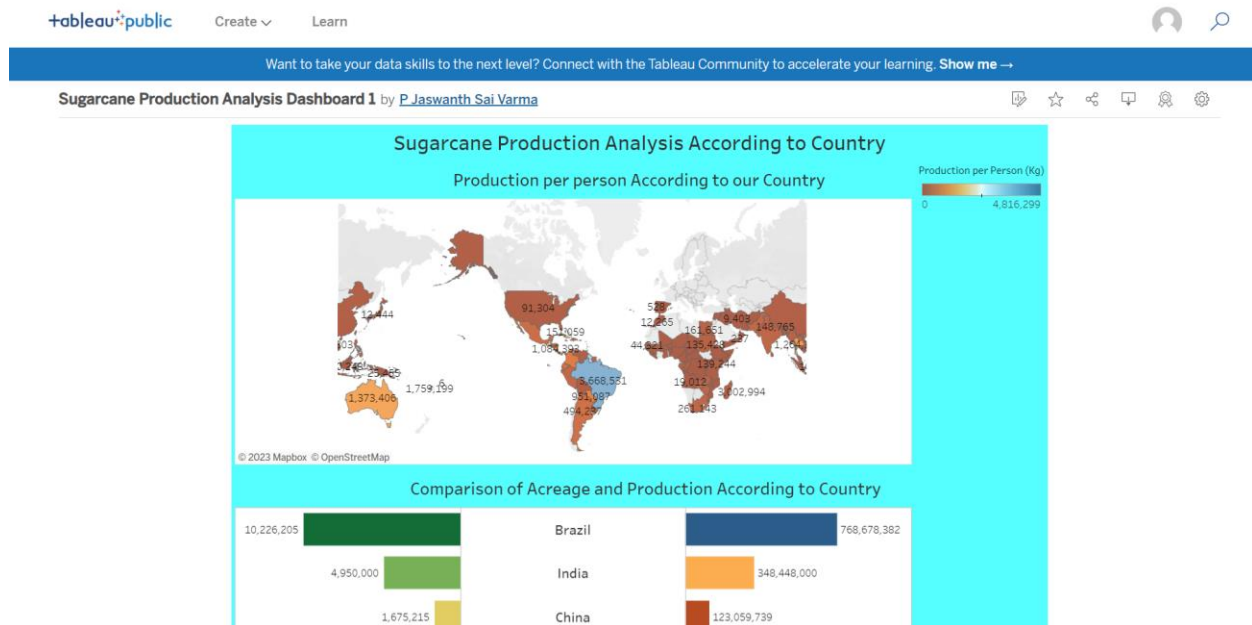
Once you are connected to Tableau public you get the embedded code to paste in the bootstrap template or web application etc.

Note: While publishing the visualization to the public, the respective sheet will get published when you click on the share option.

Activity 1: Embed Dashboard & Story with Web Bootstrap

SUGARCANE PRODUCTION ANALYSIS. Home About Dashboard Story Team Contact [Get Started]

Powerful Insights and Business Decision Making.
We are team of Data Analytics

SUGARCANE PRODUCTION ANALYSIS. Home About Dashboard Story Team Contact [Get Started]

Introduction

In India, sugarcane occupies 2.57% of the gross cropped area and is the second-largest global producer after Brazil, accounting for 25% of the world's production. This project employs Tableau for Business Intelligence analysis of sugarcane production data from different countries. I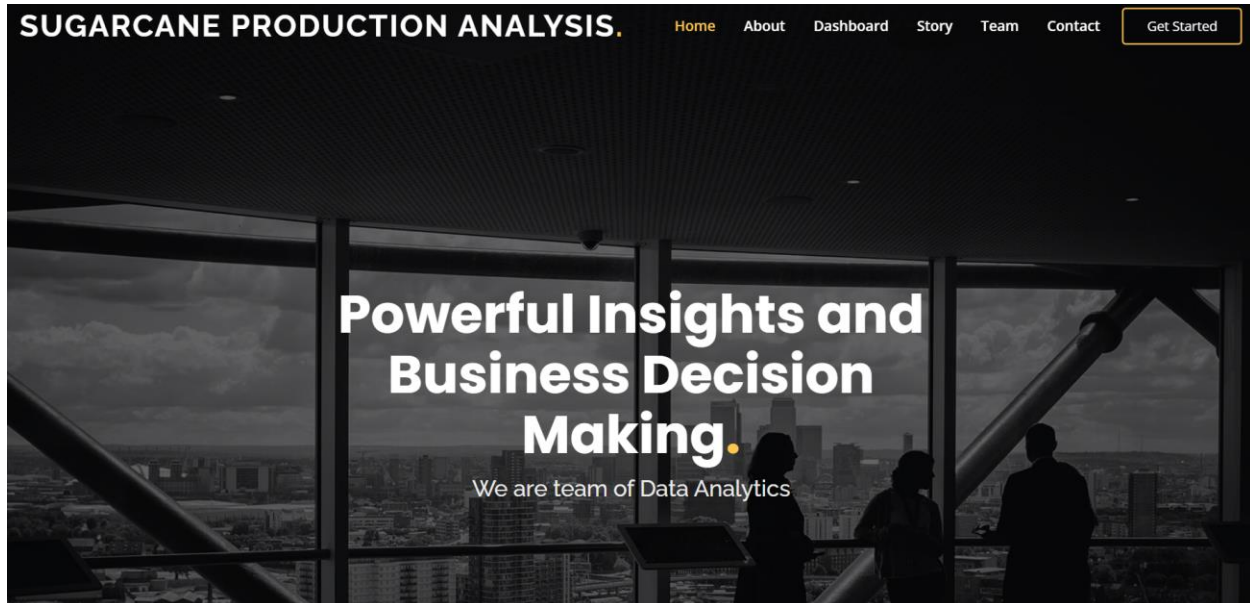nsights derived from the data can inform decisions to optimize production, enhance profitability, and promote sustainable agriculture.

Key areas of focus include production trends, geographical distribution, yield, consumption, economic factors, and environmental impact. Collaboration among stakeholders is crucial for long-term success. The project aims to visualize data through Tableau, enabling effective communication of findings to support the sugarcane industry's development.
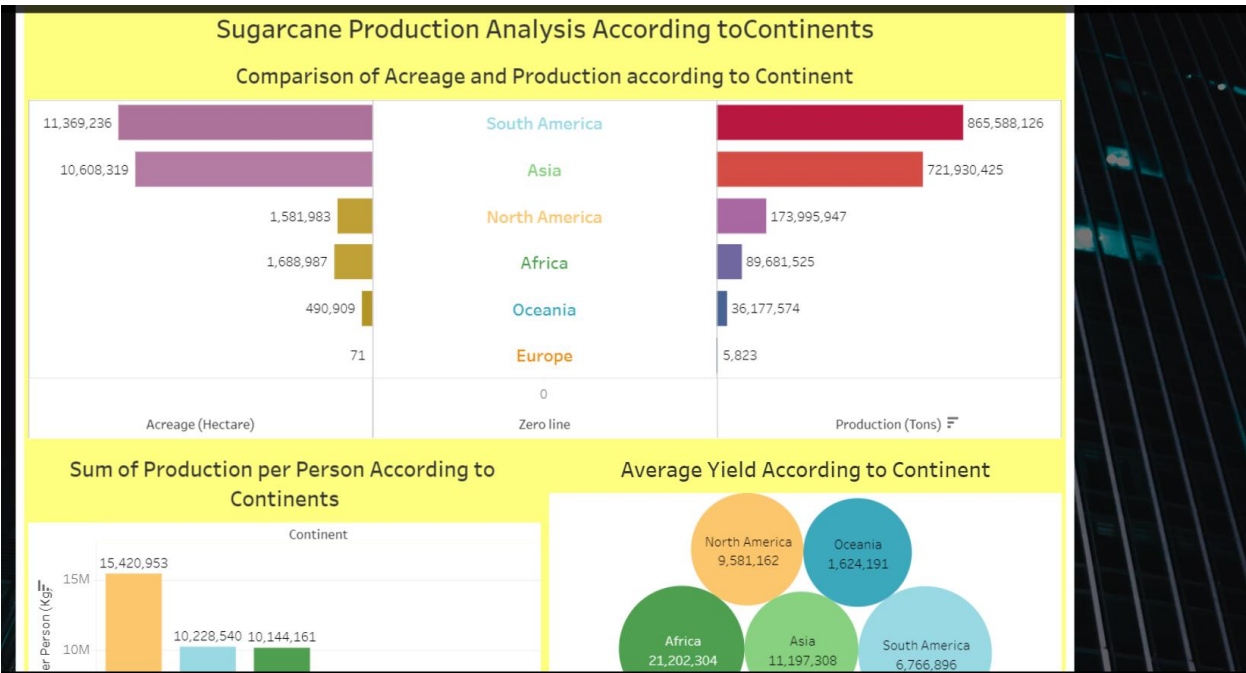
BELIMO   LifeGroups   Lilly   citrus   Trustly   oldendorff

Sugarcane Production Analysis According to Country

Production per person According to our Country

Production per Person (Kg)
0 — 4,816,299

© 2023 Mapbox © OpenStreetMap

169,403   88,287   12,444   91,304   12,265

Comparison of Acreage and Production According to Country

Acreage	Country	Production
10,226,205	Brazil	768,678,382
4,950,000	India	348,448,000
1,675,215	China	123,059,739
1,336,575	Thailand	87,468,496

Sugarcane Production Analysis According toContinents

Comparison of Acreage and Production according to Continent

Acreage (Hectare)	Continent	Production (Tons)
11,369,236	South America	865,588,126
10,608,319	Asia	721,930,425
1,581,983	North America	173,995,947
1,688,987	Africa	89,681,525
490,909	Oceania	36,177,574
71	Europe	5,823
	Zero line 0	

Sum of Production per Person According to Continents

Continent

Per Person (KgF)
15M — 15,420,953
10M — 10,228,540   10,144,161

Average Yield According to Continent

North America 9,581,162
Oceania 1,624,191
Africa 21,202,304
Asia 11,197,308
South America 6,766,896

Sugarcane Production Analysis

The following visualization shows the production per person according to each country. Brazil and India have high Production per person.

The following the visualization s... the top sugarcane producing cou... brazil which has less area as com...

Production per Person (Kg)

0   4,816,299

CHECK OUR TEAM

R Sujith
Team Leader

C Purushotham
Team Member

SUGARCANE PRODUCTION ANALYSIS.

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Call:

Your Name

Your Email

Subject

Message