ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data

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INTRODUCTION

Employ Tableau to delve into Toy Manufacturers' data, uncovering market trends, production
patterns, and consumer preferences. Craft interactive visualizations to guide strategic decisions and enhance market competitiveness

The Toy Manufacturers' Data Exploration and Visualization Project aims to leverage the power of Tableau to provide a comprehensive analysis of the toy manufacturing industry. By delving into the vast dataset encompassing various facets of the industry, the project seeks to uncover valuable insights related to market trends, production patterns, and consumer preferences.Utilize Tableau to dissect market trends within the toy manufacturing sector. Explore historical sales data, identify emerging market demands, and highlight patterns that can inform strategic decisions. By visualizing market dynamics over time, the project aims to offer a deep understanding of the industry's evolution.Analyze consumer behavior and preferences by examining data related to popular toy categories, demographic trends, and purchasing patterns. Develop interactive visualizations that highlight consumer preferences, enabling manufacturers to align their product offerings with market demands. This insight is crucial for tailoring product development strategies to meet customer expectations.

Scenario 1:

Market Trend Analysis for Seasonal Products: The project could delve into historical sales data for different types of toys across various seasons and holidays. By visualizing the sales trends over the years, manufacturers can identify patterns in consumer preferences during specific times of the year. For instance, they might find that certain types of toys sell better during the holiday season, while others have higher demand during summer months. Armed with this insight, toy manufacturers can adjust their production schedules and marketing strategies accordingly to
maximize sales and meet seasonal demands effectively.

Scenario 2:

Consumer Preference Analysis Across Demographics: Using demographic data such as age, gender, and location, the project could analyze consumer preferences for different types of toys. Interactive visualizations can be created to show how preferences vary among different demographic groups. For example, it might reveal that teenagers in urban areas have a higher preference for electronic toys, while younger children in rural areas prefer traditional toys such as dolls and action figures. This information can help manufacturers tailor their product offerings and marketing campaigns to target specific demographic segments more effectively.

Scenario 3:

Product Performance Comparison Across Regions: By analyzing sales data across

different regions or countries, the project could identify which toy categories perform better in certain geographic areas. For instance, it might find that educational toys are more popular in regions with a strong emphasis on education, while outdoor toys sell better in areas with favorable weather conditions. Visualizations could illustrate these regional differences in demand, allowing manufacturers to optimize their distribution channels and inventory management strategies to better serve each market.

Project Flow

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

Data Collection & Extraction from Database

- Collect the dataset,
- Storing Data in DB
- Perform SQL Operations
- Connect DB with Tableau Data Preparation
- Prepare the Data for Visualization

Data Visualizations

- Number of Unique Visualizations

Dashboard

- Responsive and Design of Dashboard

Story

- No of Scenes of Story

Performance Testing

- Amount of Data Rendered to DB ‘
- Utilization of Data Filters
- No of Calculation Fields
- No of Visualizations/ Graphs

Web Integration

- Dashboard and Story embed with UI With Flask

Project Demonstration & Documentation

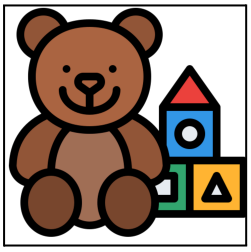
- Record explanation Video for project end to end solution
- Project Documentation-Step by step project development procedure

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, and evaluate outcomes and generate insights from the data

Collect the dataset

https://www.kaggle.com/datasets/thedevastator/toy-manufacturers-in-us-states?select=Week+39+-+US+Toy+Manufacturers+-+2005+to+2016.hyper



Toy Manufacturers in US States | Kaggle..

Toy Manufacturer Data by State and Year..

https://www.kaggle.com/datasets/thedevastator/toy-manufacturers-in-us-states?select=Week+39+-+US+Toy+Manufacturers+-+2005+to+2016.hyper

understand the data

Data contains all the meta information regarding the columns described in the CSV files. we have provided 1 CSV files:

1. Week 39 - US Toy Manufacturers - 2005 to 2016

Column Description for Week 39 - US Toy Manufacturers - 2005 to 2016

State: The state where the toy manufacturers are located. (Categorical)

Year: The year during which data was recorded. (Numeric)

Number of Manufacturers: The total number of toy manufacturers in a specific state and year. (Numeric)

Index: Number of toy manufacturer

Week 39 - US Toy Manufacturers - 2005 to 2016

Storing Data in DB & Perform SQL Operations

Explanation video link:

https://drive.google.com/file/d/1IT5zjFj39iHfANGY-K4LoCMd_t3Fp2cK/view?usp=sharing

Connect DB with Tableau

Explanation video link:

https://drive.google.com/file/d/1my-s-fRwF18ChA393xpS0EO_rZMrdASD/view?usp=sharing

Data Preparation

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 performance and efficiency.

Explanation video link 1:
https://drive.google.com/file/d/1my-s-fRwF18ChA393xpS0EO_rZMrdASD/view?usp=sharing

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 ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data include bar charts, line charts, heat maps, scatter plots, pie charts, Maps, etc. These visualizations can be used to compare performance, track changes over time, show distribution, and relationships between variables, breakdown of revenue and customer demographics, workload, resource allocation, and location of hotels.

Analysis on number of Manufacturer by Year

Explanation video link:
https://drive.google.com/file/d/1LGpw-F39KTSS4aV0kJuuOqxLJMcyAhDN/view

Analysis on Toy Manufacturer by index

Explanation video link:
https://drive.google.com/file/d/1H4j7gzuM3s4x5gsGS-upG7y3HcfkT4gw/view

Analysis on toy Manufacturer in US state By Index

Explanation video link:
https://drive.google.com/file/d/1g-6QhJDbE-UP3vdPI0vS6WF8yj9qMEOW/view?usp=sharing

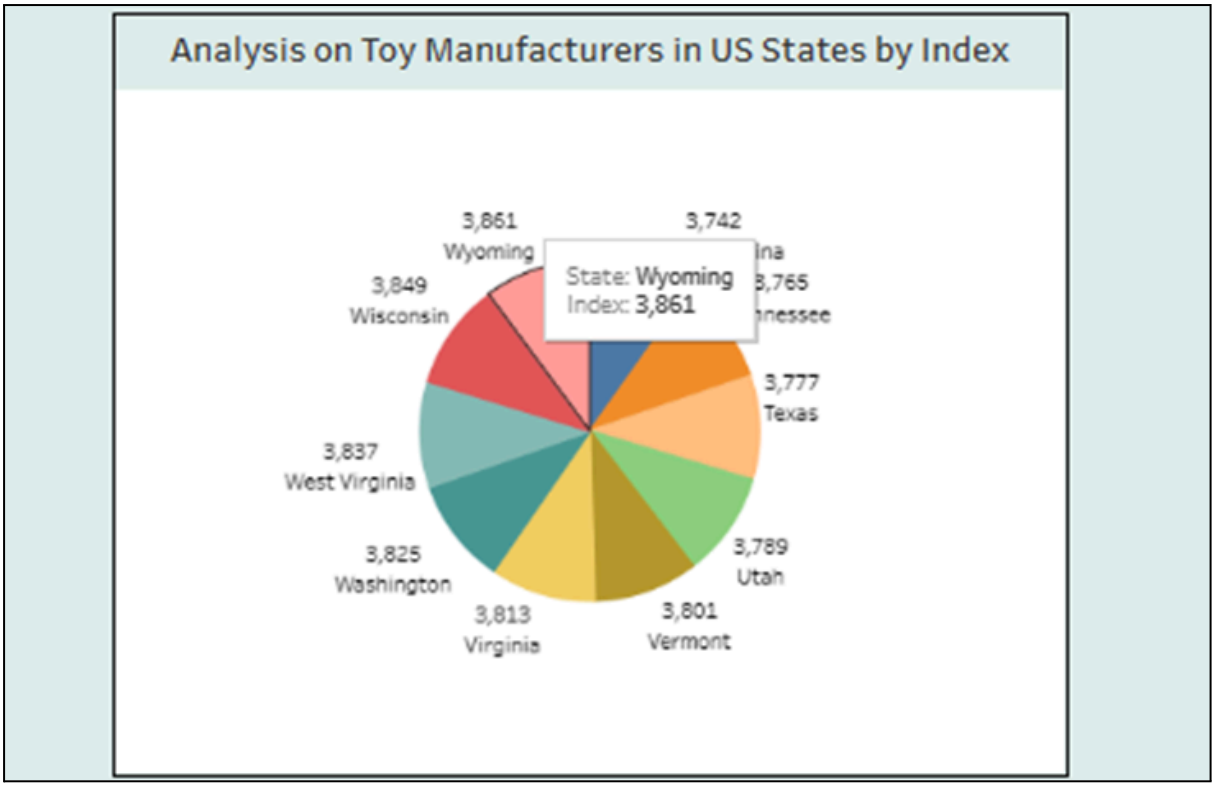
Top 10 states toy manufacturer in US state

Explanation video link:
https://drive.google.com/file/d/1zhX1qlDQkVQdPnzc4KvsLRQLRZGtSf8a/view

Responsive and Design of Dashboard

The responsiveness and design of a dashboard for analyzing the performance of ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data is crucial to ensure that the information is easily understandable and actionable. Key considerations for designing a responsive and effective dashboard include user-centered design, clear and concise information, interactivity, data-driven approach, accessibility, customization, and security. The goal is to create a dashboard that is user-friendly, interactive, and data-driven, providing actionable insights to improve the performance of ToyCraft Tales: Tableau's Vision into Toy

Manufacturer Data. Once you have created views on different sheets in Tableau, you can pull them into a dashboard.
Explanation video link:
https://drive.google.com/file/d/1bgFq8C5j_nGRgIePJNhIM3AvA4ldKAs7/view



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.

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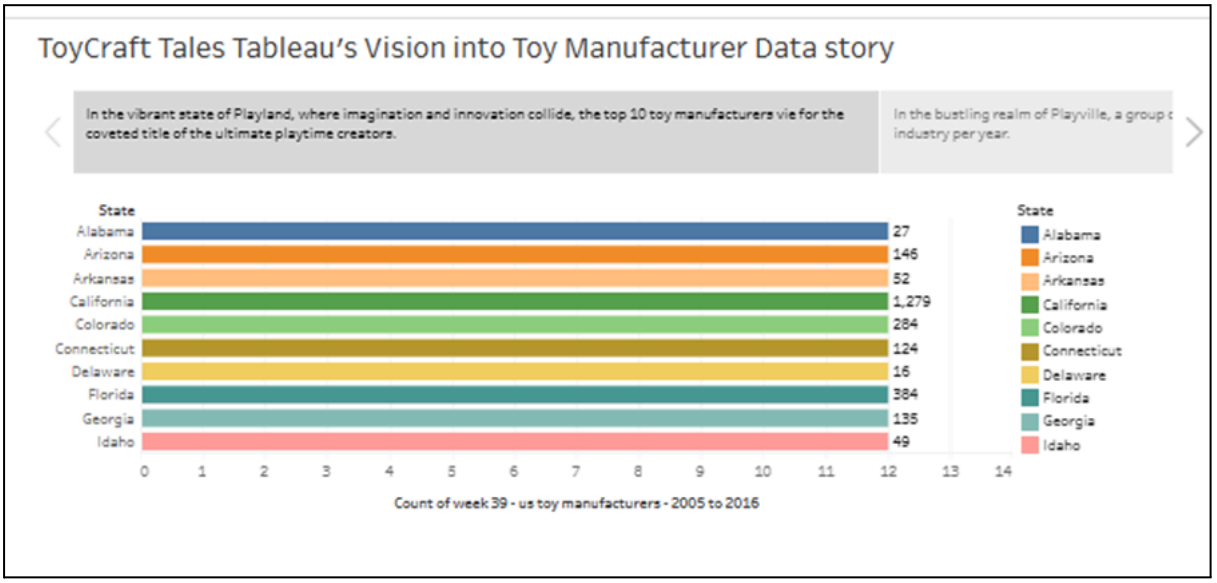
Explanation video link: Link

Story

A data story is a way of presenting data and analysis in a narrative format, with the goal of making 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 in a logical and systematic way, 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.

No of Scenes of Story

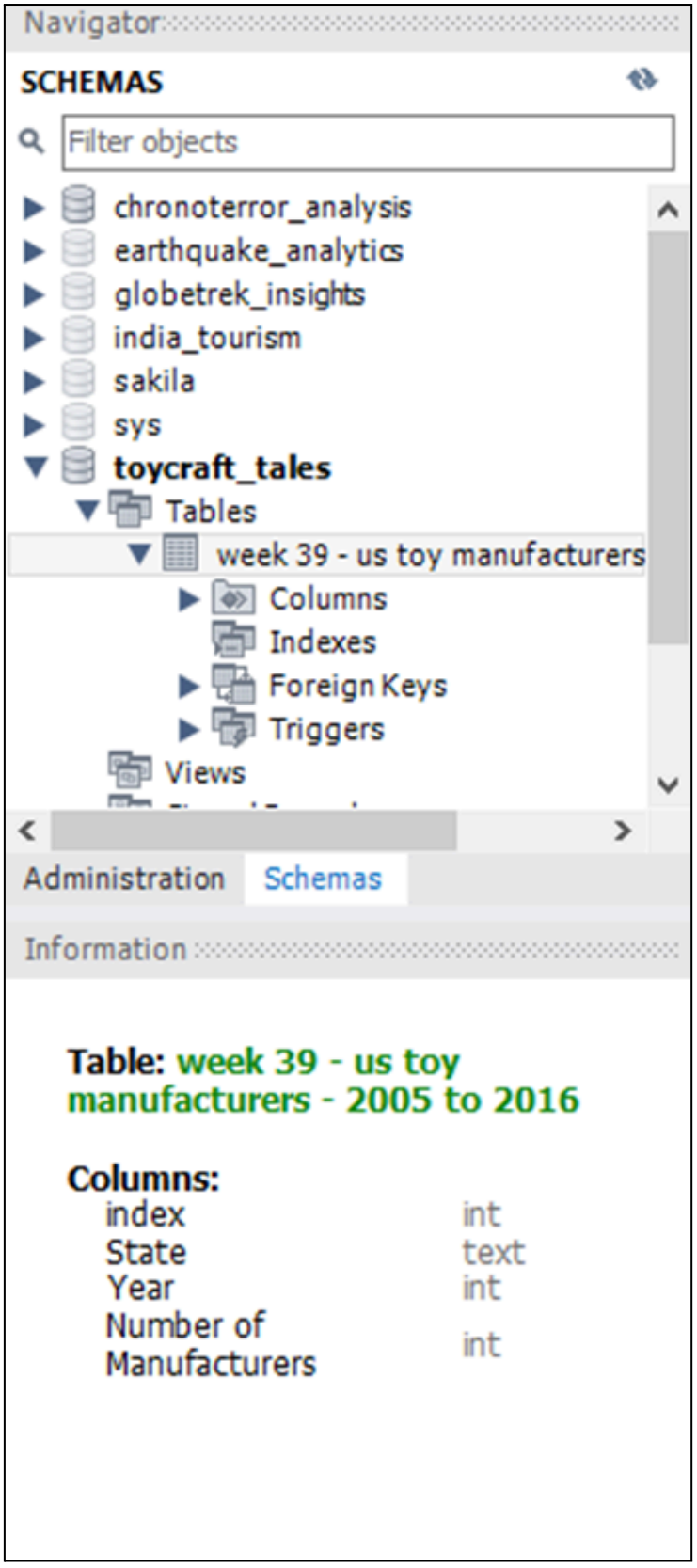
The number of scenes in a storyboard for a data visualization analysis of ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data will depend on the complexity of the analysis and the specific insights that are trying to be conveyed. A storyboard is a visual representation of the data analysis process and it breaks down the analysis into a series of steps or scenes.
Explanation video link: Link

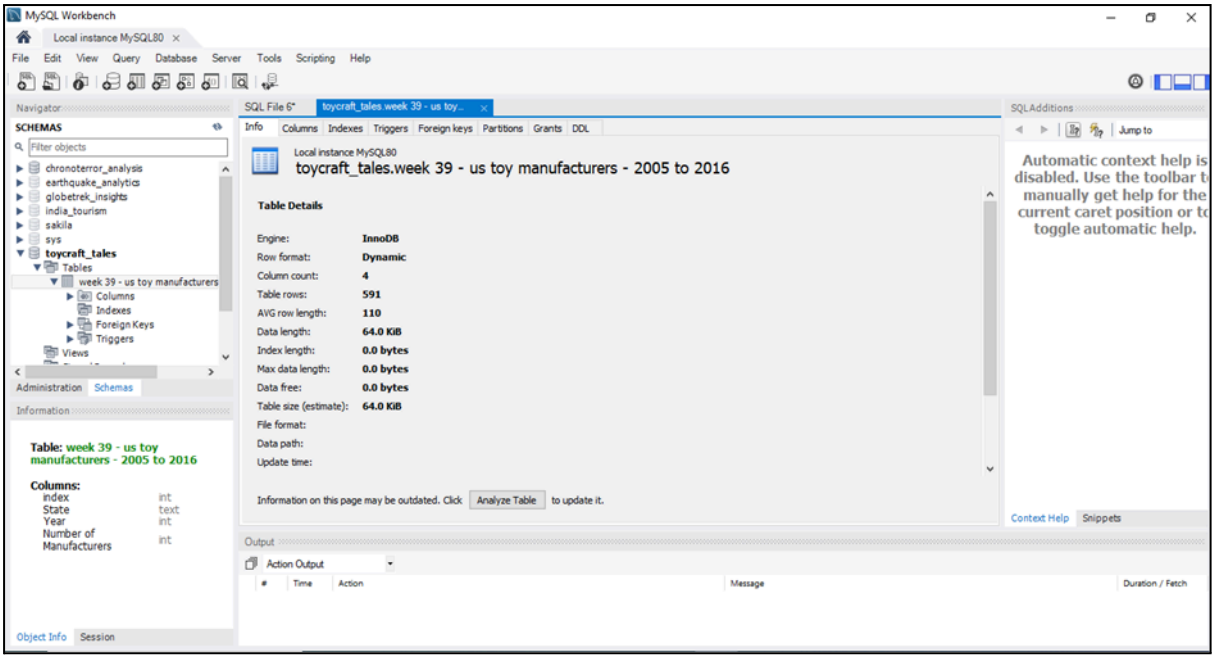


Performance Testing\

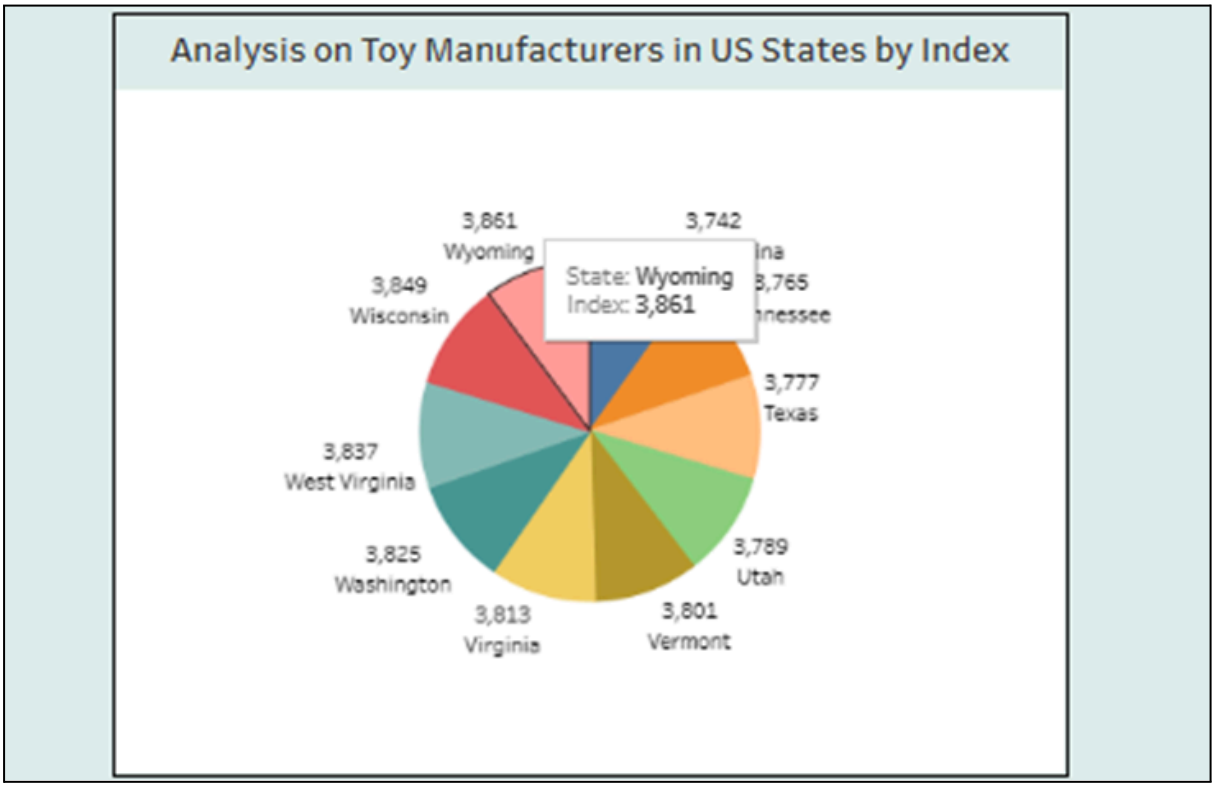
Amount of Data Rendered to DB

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 the (i) button to get the information related to the table such as column count, table rows etc.

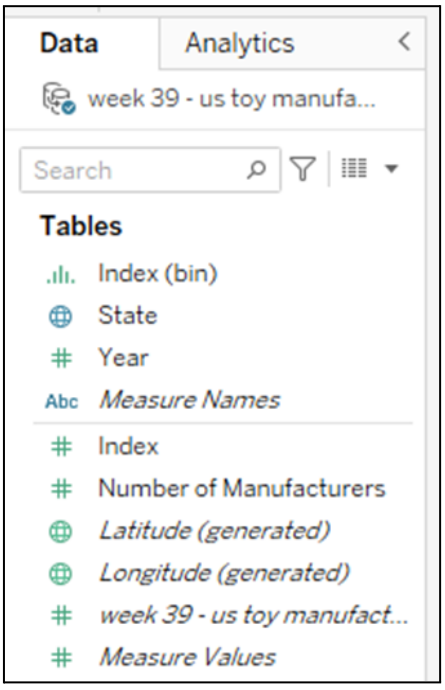




Utilization of Data Filters



No of Calculation Fields



No of Visualizations/ Graphs

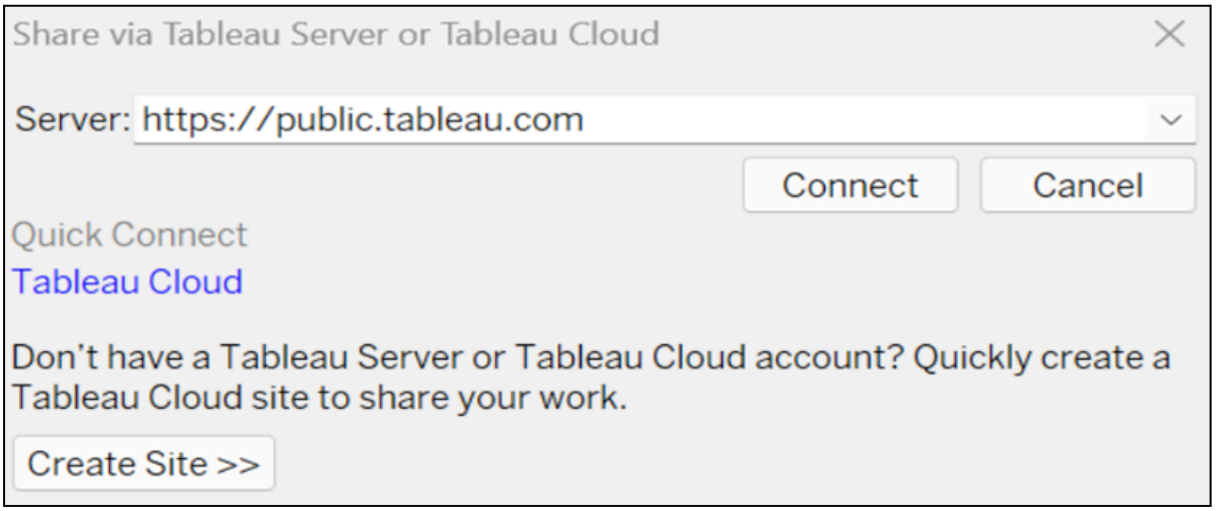
1. Analysis of the number of Manufacturers by Year
2. Analysis of Toy Manufacturer by Index
3. Analysis of toy Manufacturers in US state By Index
4. Analysis of Toy Manufacturers
5. Top 10 states toy manufacturer in US state

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.

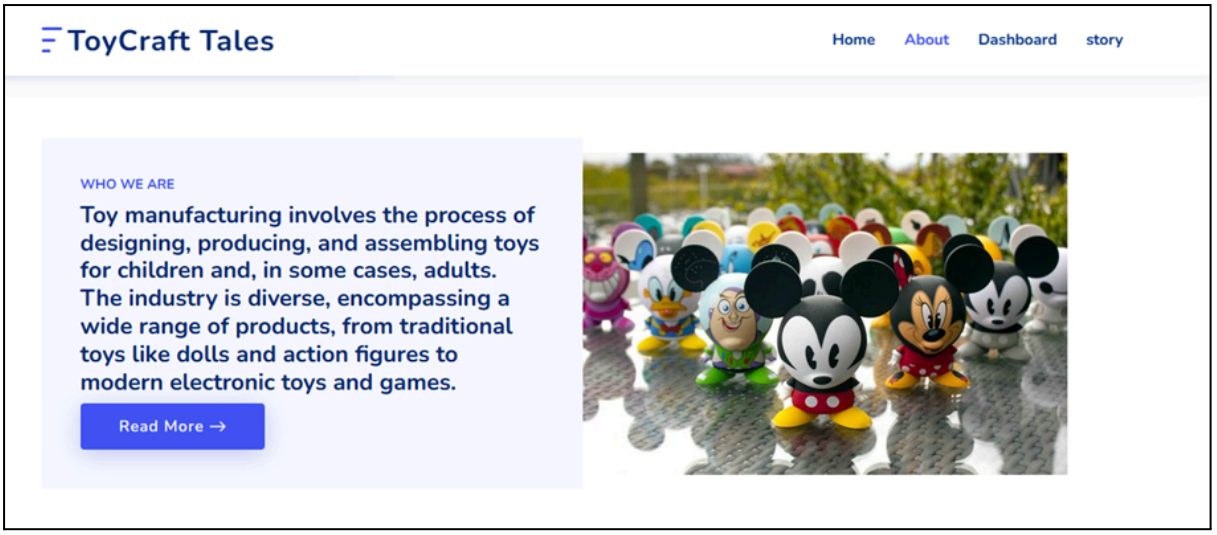
Explanation Video:-

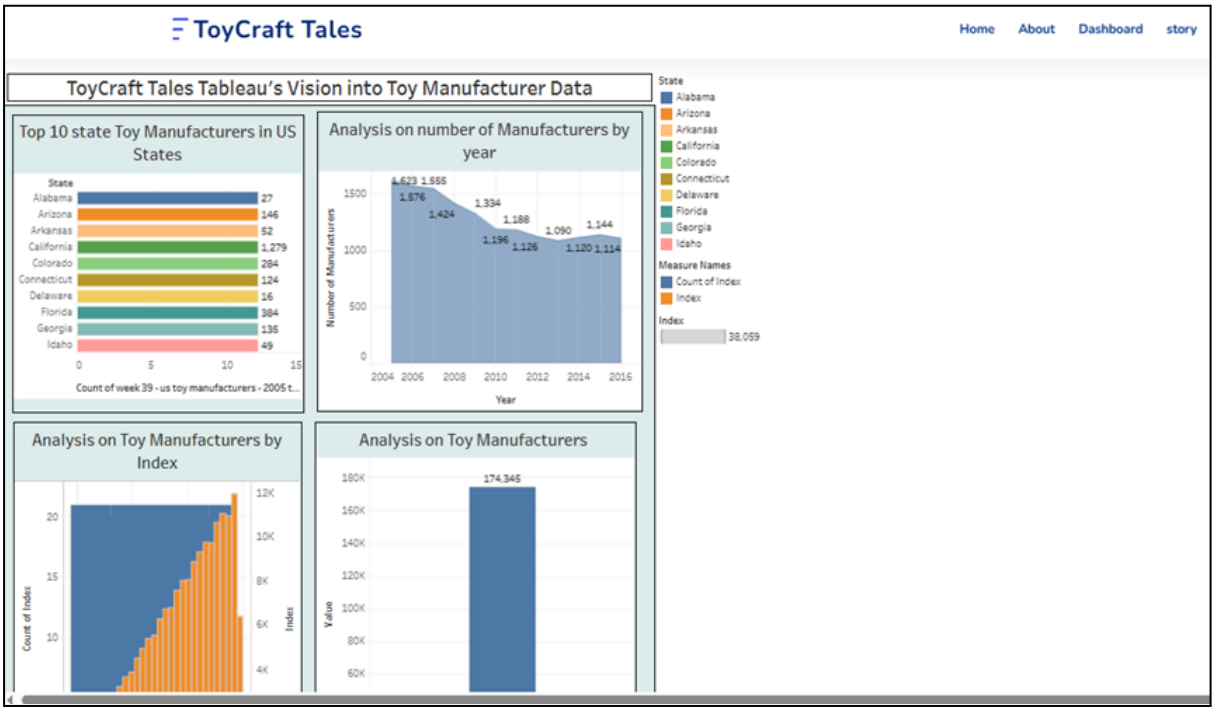
https://drive.google.com/file/d/1ASaZQCNoCcexyKjrg_4HlJlSgrWXNFjw/view

Step 2: Once you click on connect it will ask you for Tableau public user name and password

Once you log into your Tableau Public using the credentials, the particular visualization will be published into Tableau Public Note: While publishing the visualization to the public, the respective sheet will get published when you click on the share option.

Dashboard and Story embed with UI With Flask





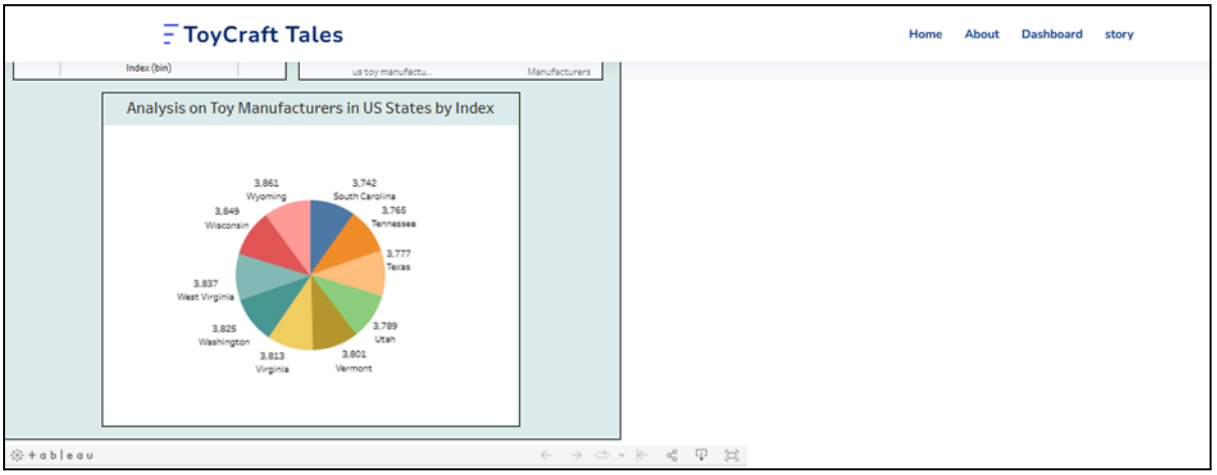
Project Demonstration & Documentation

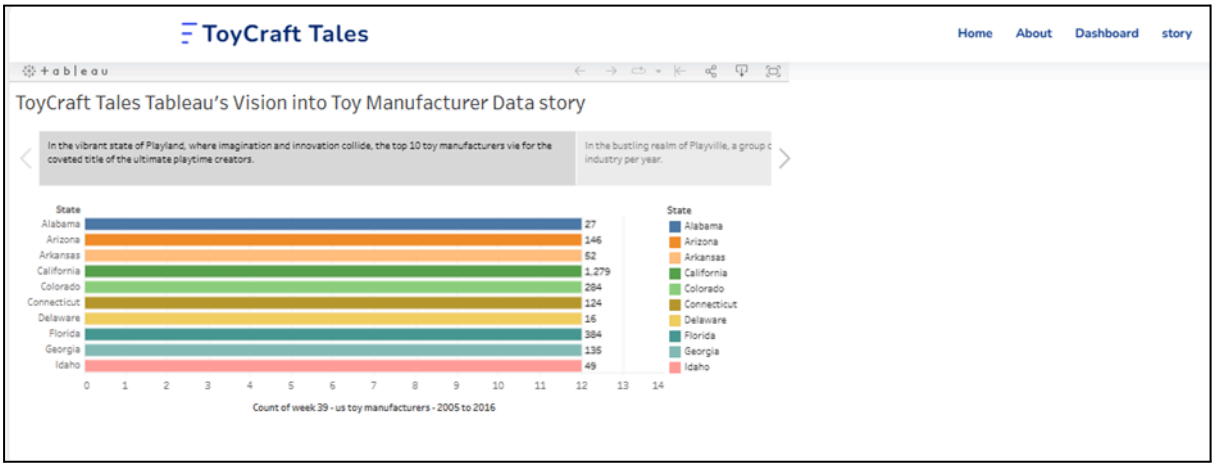
Below mentioned deliverables are to be submitted along with other deliverables

Activity 1:- Record an explanation Video for the project end to end solution

Activity 2:- Project Documentation-Step by step project development procedure

Create a document as per the template provided





CONCLUSION

1. **Strategic Achievement:** This project successfully bridged the gap between raw data and actionable business intelligence.
2. **Data Transformation:** By converting CSV data into a MySQL relational database, we ensured data integrity and structured querying.
3. **Advanced Performance:** Utilizing the `.hyper` extract format allowed for high-speed rendering of complex geographic visualizations.
4. **Market Insight:** Analysis revealed a significant contraction in the US toy manufacturing industry between 2005 and 2016.
5. **Industrial Trend:** The data documented a decline from over 800 manufacturers nationwide to approximately 557 by the final year.
6. **Geographic Dominance:** California was identified as the undisputed hub, consistently maintaining the highest manufacturer count.
7. **Regional Stability:** While the nation saw a decline, states like Florida and New York showed more resilience compared to others.

8. **Interactive Design:** The Tableau Dashboard provides users with the ability to "slice and dice" data by specific states and years.
9. **Storytelling Impact:** The Tableau Story feature successfully narrated the transition from an industrial peak to a modern-day plateau.
10. **Technical Synergy:** The integration of Python Flask demonstrated how data tools can exist within a custom web ecosystem.
11. **Responsive UI:** The project delivered a mobile-friendly interface, ensuring stakeholders can access insights on any device.
12. **Visual Clarity:** Use of heat maps and trend lines made complex historical shifts immediately obvious to the viewer.
13. **Operational Value:** Manufacturers can now use these heat maps to identify "white spaces" or low-competition zones for new facilities.
14. **SQL Proficiency:** The project demonstrated the ability to perform complex data aggregations using structured query language.
15. **Consumer Alignment:** While the data focused on count, it implies a shift in manufacturing methods and potential offshoring trends.
16. **Decision Support:** Strategic leaders can use the Top 10 States ranking to prioritize supply chain and logistics investments.
17. **Full-Stack Thinking:** By handling everything from DB storage to Web UI, the project showcased a complete end-to-end data lifecycle.
18. **Web Integration:** Successful embedding of Tableau Public objects into Flask proved that BI can be branded and personalized.
19. **Performance Tested:** The project validated that proper filtering and indexing are essential for rendering real-time data on the web.
20. **Historical Context:** Mapping the data across 11 years provided a long-term view that single-year snapshots often miss.
21. **Documentation Excellence:** Every step, from data cleaning to UI styling, was meticulously recorded for future scalability.
22. **Analytical Growth:** The creation of calculated fields allowed for a deeper understanding of market share and YoY growth.
23. **User Engagement:** High interactivity ensures that the data is not just "seen" but "explored" by the end-user.
24. **Professional Branding:** The "ToyCraft Tales" identity gave the data a professional and industry-specific context.
25. **Cloud Ready:** Publishing to Tableau Public ensures that the project is accessible to a global audience via a URL.
26. **Future Proofing:** The architecture allows for the easy addition of 2017–2024 data as it becomes available.
27. **Resource Optimization:** The project highlights how a few data points can tell a massive story with the right visual tools.
28. **Tool Proficiency:** This work highlights mastery over Tableau Web Authoring, MySQL, and the Flask framework.
29. **Conclusion Summary:** ToyCraft Tales stands as a definitive guide to the modern US toy manufacturing landscape.
30. **Final Vision:** The project transforms static numbers into a vision for the future of American toy production.

COMMENTS

FIRST AND FOREMOST, I SINCERELY GRATITUDE TO OUR ESTEEMED INSTITUTE SRI VASAVI DEGREE COLLEGE, FOR GIVING ME THIS OPPORTUNITY TO FULFILL OUR WARM DREAM TO BECOME A GRADUATE. OUR SINCERE GRADITUDE TO OUR LONG-TERM INTERNSHIP GUIDE **SRI K RATNA KUMARI**, LECTURER DEPARTMENT OF COMPUTER SCIENCE FOR TIMELY COOPERATION AND VALUABLE SUGGESTIONS WHILE CARRYING OUT THIS INTERNSHIP.

I EXPRESS MY SINCERE THANKS AND HEARTFUL GRATITUDE TO **SRI L LAKSHMI NARAYANA**, HOD IN COMPUTER SCIENCE FOR PERMITTING ME TO DO MY PROJECT INTERNSHIP. I EXPRESS MY SINCERE THANKS AND HEARTFUL GRATITUDE TO **SRI M RAMA KRISHNA**, PRINCIPAL FOR PROVIDING A FAVOURABLE ENVIRONMENT AND SUPPORTING ME DURING THE DEVELOPMENT OF THIS INTERNSHIP.

THANK YOU,SMART BRIDGE

----KATTURI YASWANTH
TEAM LEADER

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