



Data Analytics with Tableau

Project Development report

- Project Title:

ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data

- Team Members:

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2. Koppula Lavanya	Team Member
3. Pasupuleti Rohit Kumar	Team Member
4. Katireddy Sridhar Reddy	Team Member

1. INTRODUCTION

1.1 Project Overview :

- This project explores the US toy manufacturing industry using Tableau. It focuses on analyzing patterns, trends, and state-wise performance from the years 2005 to 2016.
- The dashboard and storyboards help stakeholders derive insights for strategic decisions.

1.2 Purpose:

1. Visualize Market Trends

Gain insights into historical toy manufacturing data by analyzing patterns across time and geography. This helps identify growth areas, declines, and key shifts in production trends.

2. Support Strategic Decision-Making

Use data to inform decisions about where and when to produce. Identify

top-performing states, high-index manufacturers, and seasonal demand to optimize operations and investments.

3. Understand Consumer Behavior

Explore toy category popularity, purchasing patterns, and demographic influences. This enables manufacturers to align products with customer preferences and improve market fit.

4. Enable Interactive Exploration

Develop dynamic Tableau dashboards that allow users to filter, compare, and interact with the data. This makes analysis more user-friendly and decision-focused.

2. IDEATION PHASE

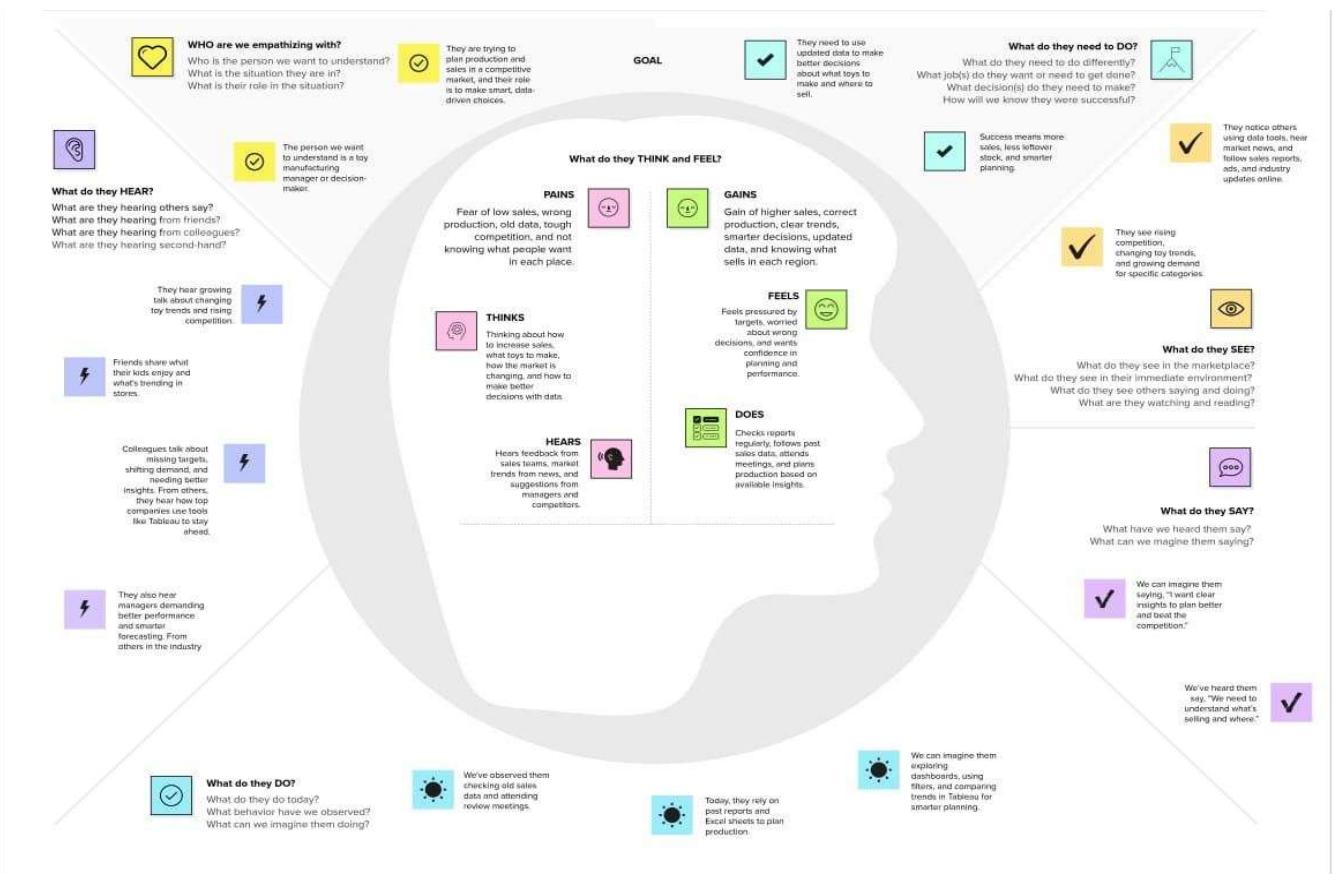
2.1 Problem Statement :

The toy manufacturing industry faces challenges in adapting to dynamic market trends, evolving consumer preferences, and regional demand variations. Despite having access to extensive data, many manufacturers lack actionable insights to make informed strategic decisions. There is a pressing need for a data-driven approach that can reveal production patterns, seasonal sales fluctuations, and demographic-based consumer behavior.

Customer Problem Statement					
I am	I'm trying to	But	Because	Which makes me feel	
 Toy manufacturing manager	 Analyze past sales and predict which toys will be in demand during different seasons.	 The data is scattered, hard to visualize, and doesn't reveal clear trends.	 It lacks visualization and trend clarity.	 Uncertain and frustrated about production planning.	
 Product designer	 Understand toy preferences across demographics like age and location.	 I don't have easy access to consumer preference data in a clear format.	 I don't have structured consumer preference data.	 Disconnected from customer needs.	
 Business analyst	 Create dashboards that show toy sales trends over time.	 The data is buried in spreadsheets and not visually accessible.	 It's not in a digestible or visual format.	 I feel delayed in making decisions and reporting to leadership.	

This project addresses the problem by leveraging Tableau to analyze and visualize multi-dimensional toy industry data. It aims to uncover hidden trends, highlight regional and seasonal sales performance, and provide manufacturers with interactive tools to explore consumer preferences. Through insightful visual storytelling, the project empowers stakeholders to optimize production planning, tailor marketing strategies, and enhance competitiveness in a highly seasonal and consumer-driven market.

2.2 Empathy Map Canvas:

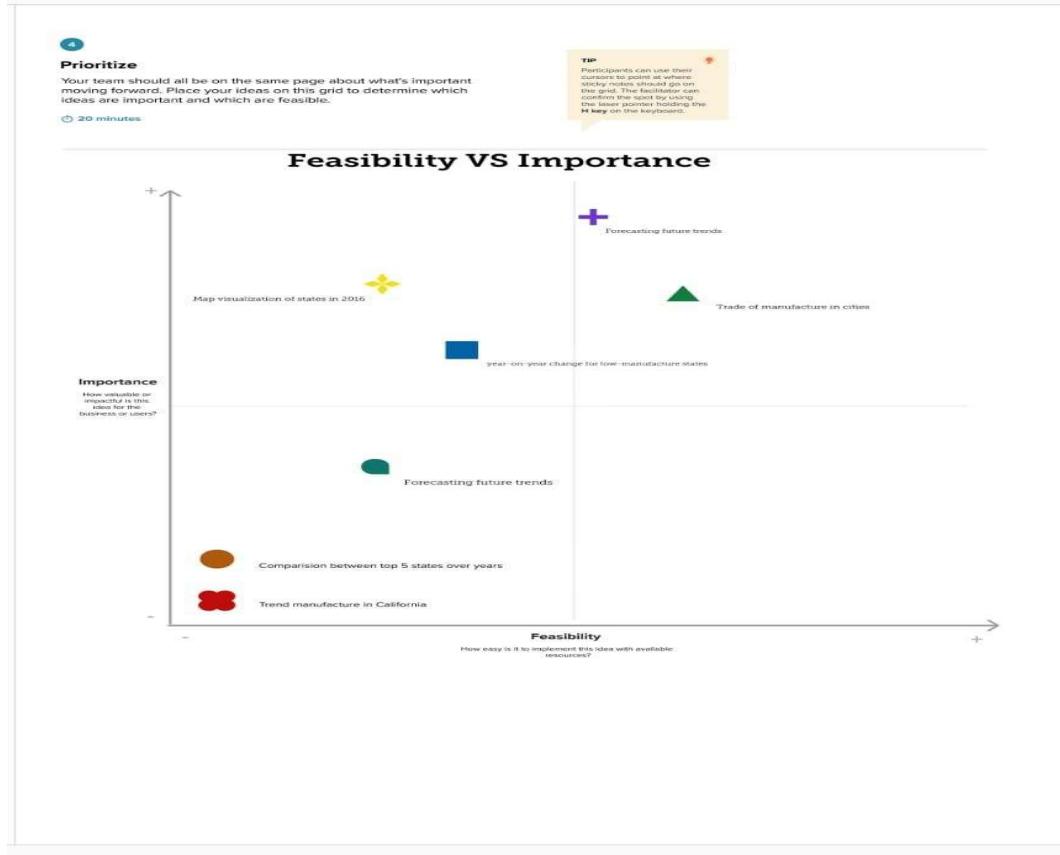


2.3 Brainstorming:

This template provides a structured approach to brainstorming:

- Before you collaborate:** A list of 10 items to prepare for a successful session, including "Define your problem statement" and "Get the right people involved".
- Define your problem statement:** A template to frame the problem as a How Might We statement, such as "How might we solve ToyCraft Tales' Vision into Toy Manufacturer Data?"
- Brainstorm:** A section for generating ideas, with a note that ideas can be refined later. It includes a "PROBLEM" section with "Key rules of brainstorming" and a "SOLUTION" section with "Key ideas from ToyCraft Tales' Vision into Toy Manufacturer Data".
- Group Ideas:** A section for clustering ideas into categories like "How to Make Smarter Decisions", "Sales & Market Insights", and "Customer Feedback & Analytics".

Throughout the template, there are various tips, icons, and examples to guide the process, such as "For effective team collaboration:" and "How to Make Smarter Decisions".



3. REQUIREMENT ANALYSIS

The primary objective of this project is to help a toy manufacturing company gain valuable insights into its sales, product performance, and regional distribution through data visualization using Tableau. The stakeholders include business analysts, sales and marketing teams, manufacturing managers, and decision-makers who require clear, interactive, and insightful dashboards to support strategic decisions. The project must handle clean and structured sales data, provide filtering options (e.g., by product, region, or time), and present key metrics in a visually compelling format. Tableau dashboards and stories should load quickly, be responsive, and ensure data security. Data sources include Excel or CSV files containing detailed records of transactions, products, and customer segments. The solution aims to simplify complex data into actionable insights, making data exploration intuitive for all user levels.

3.1 Customer Journey map:

1. **Entice** – People discover the dashboard through social media, websites, or word of mouth.
2. **Enter** – They visit the link and check out the visuals for the first time.
3. **Engage** – Users explore filters, charts, and stories to understand toy sales.
4. **Exit** – After finding insights, they leave or save/download what they need.
5. **Extend** – They return later, share it with others, or use it in team decisions.

Scenario: A toy company uses Tableau to understand and improve its sales.	Entice	Enter	Engage	Exit	Extend
Experience steps	How does someone become aware of this service?	What do people experience as they begin the process?	What do people experience as they engage with the Tableau for understanding sales data? (e.g. range from not interested to highly interested)	What do people typically experience after the process finishes?	What happens after the experience is over?
Interactions	What interactions do they have at each step along the way? • Places: Who do they see or talk to? • Places: Where are they?	Discover a smarter way to explore toy sales with data-driven visuals See how data-driven stories can guide business decisions	They become curious about how Tableau can improve decision-making They chose to learn more about Tableau for understanding sales trends	They often filter by drilling down into specific products, time periods. Charts, maps, and tables provide an overall view of key sales data. Users begin by browsing Tableau dashboards and then gain clarity on performance metrics.	They feel confident making data-driven decisions using Tableau. Feedback helps refine dashboards.
Goals & motivations	At each step, what is a person's primary goal or motivation? ("Help me..." or "Help me avoid...")	Help me discover visualized toy sales data that's more clearly organized for me. Help me avoid using generic reporting methods. ("Help me avoid...")	Help me quickly understand what works for my toy sales. ("Help me quickly...")	Help me compare different products and categories which perform best. ("Help me quickly...")	They return regularly to update data and review performance over time. They apply the insights gained from the Tableau dashboard to their product line.
Positive moments	What steps does a typical person find enjoyable, productive, fun, motivating, delightful, or exciting?	Getting a quick demo of Tableau. ("Help me quickly...") Matching how easily data is presented to the user's familiarity with the tool. ("Help me quickly...")	Curating stories to help users discover interesting trends and patterns. ("Help me quickly...")	Sharing deep into key sales trends using visualizations and analyzing them effectively. ("Help me quickly...")	Sharing stories and parameters to personalize the dashboard. ("Help me quickly...")
Negative moments	What steps does a typical person find frustrating, confusing, angry, costly, or time-consuming?	Difficulty finding relevant information. ("Help me quickly...") People don't immediately understand how Tableau works.	Overwhelmed by the complexity of the interface. ("Help me quickly...")	Difficulty understanding storyboards. ("Help me quickly...")	Sharing insights with team or family members. ("Help me quickly...")
Areas of opportunity	How might we make each step better? What does do have? What have users suggested?	Promote dashboard sharing, portfolios, or LinkedIn. Add a short preview video that gets them excited.	Add a leading screen with a brief introduction.	Interact with others to learn more about specific products or areas.	Take easy insights and share them for future decisions. Share success stories of others who used the new insights.

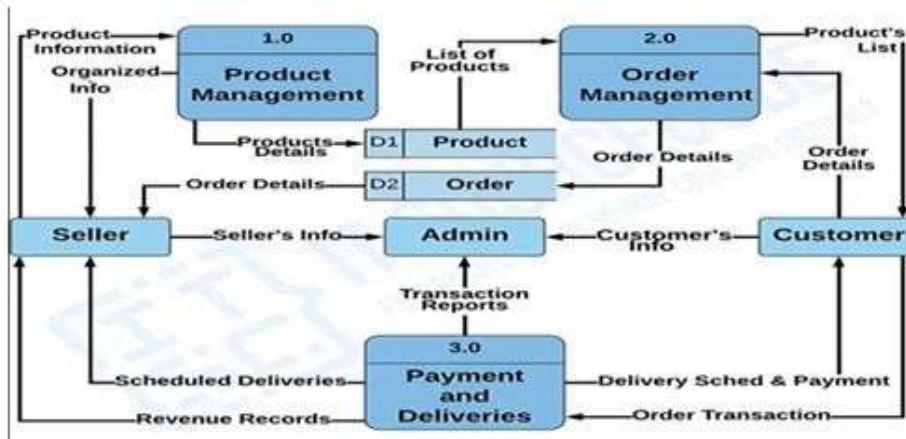
3.2 Solution Requirement:

1. User-Friendly Dashboard
 - Clear visuals and filters to analyze toy sales data.
2. Interactive Storytelling
 - Story feature to guide users through key insights.
3. Responsive Design

- Accessible on desktops, tablets, and mobile devices.
1. Live Data Connectivity (Optional)
 - Option to link real-time or regularly updated datasets.
 2. Data Security & Privacy
 - Ensure shared dashboards protect sensitive info.
 3. Performance & Speed
 - Fast loading and smooth filtering experience.

3.3 Data Flow Diagram:

- Users interact with the ToyCraft Dashboard through a web browser.
- The Dashboard pulls data from a Sales Database that includes product, region, and time-based sales.
- Admin/Analysts upload or update data to the Cloud Data Storage using ETL tools.
- External APIs (e.g., weather or location) may be used to enrich the data before analysis.
- The data flows through Tableau, which processes and presents it visually in dashboards and stories.
- Processed data can also be exported to other tools for reports or shared with management.



3.4 Technology Stack:

1. Frontend

- **HTML/CSS/JavaScript** – For building the interactive landing page and embedding Tableau visualizations.
- **Tableau Public Embed** – To visually present the dashboard and story within the website.

2. Data Visualization

- **Tableau Public** – Main tool used to create dashboards and storyboards for toy sales analysis across products, regions, and time.

3. Backend / Data Handling

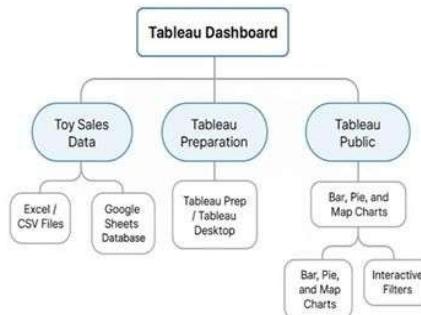
- **CSV/Excel Files** – Used for importing cleaned toy sales data into Tableau.
- **ETL (Extract-Transform-Load)** – Performed manually or through Tableau Prep for preprocessing data.

4. Cloud / Hosting

- **Tableau Public Cloud** – Hosts the dashboard and story online for public access.
- **GitHub or Netlify (optional)** – For hosting the static website where Tableau is embedded.

5. External Tools (Optional)

- **Miro/Mural** – For customer journey mapping and planning architecture.
- **Canva** – For banner or UI design.



4. PROJECT DESIGN

4.1 Problem Solution Fit:

Problem:

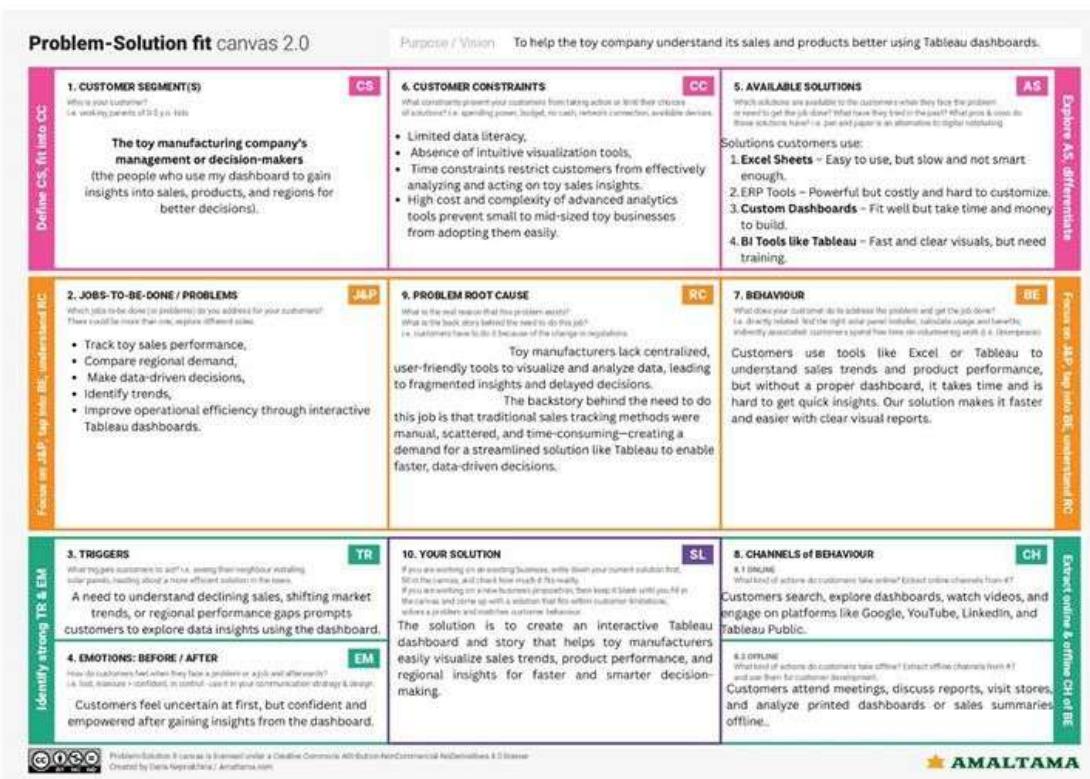
Toy manufacturing companies often struggle to understand complex sales patterns, regional demand, and product performance due to scattered or unvisualized data.

Solution:

The Tableau dashboard and story provide a centralized, interactive, and visual way to explore toy sales data—helping decision-makers quickly identify trends, compare regions, and make informed business decisions.

Fit:

The solution directly addresses the need for clarity, speed, and accuracy in analyzing sales data. It transforms raw numbers into meaningful insights, enabling better planning and strategy.



4.2 Proposed Solution:

We propose implementing an interactive **Tableau Dashboard and Story** that visually represents toy sales data across various regions and products. This solution enables:

- **Real-time insights** into sales performance, top-selling products, and low-performing regions.
- **User-friendly visualizations** for stakeholders to explore trends without deep technical knowledge.
- **Data-driven decisions** through filters, graphs, and KPIs that highlight key metrics.
- **Scalability** to add more data like customer demographics or seasonal trends in future updates.

By using Tableau, the company can convert raw sales data into actionable insights for better planning, marketing, and product decisions.

4.3 Solution Architecture:

The solution architecture for *ToyCraft Tales* integrates data processing, visualization, and user interaction in a streamlined flow:

1. Data Source Layer

- Sales data is collected from spreadsheets, databases, or ERP systems used by the toy manufacturer.

2. Data Preparation Layer

- Data is cleaned, transformed, and formatted using tools like Microsoft Excel or Tableau Prep.

3. Visualization Layer

- Tableau Public is used to build interactive dashboards and stories that visualize sales trends, product performance, and regional analysis.

4. User Interface Layer

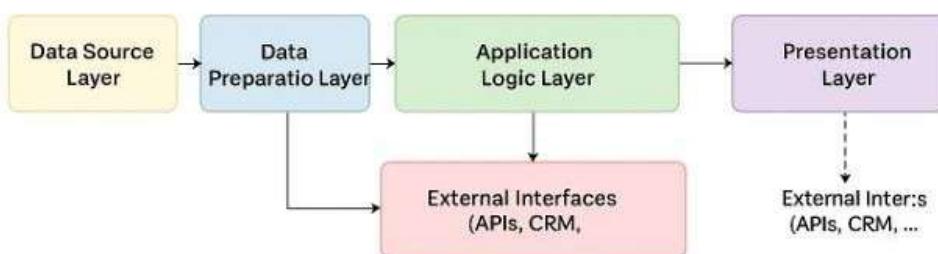
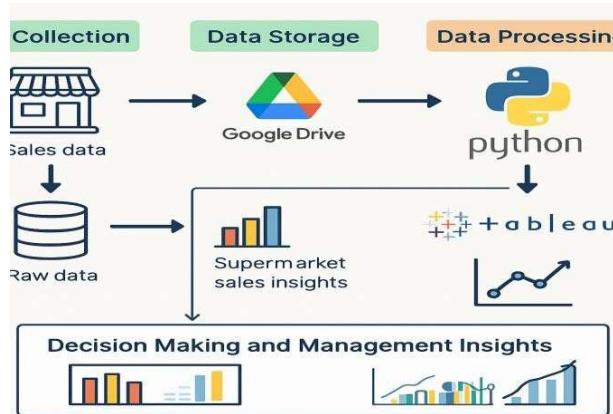
- Users access the visualizations via embedded Tableau dashboards in a responsive web page (HTML/CSS/JS).

5. Hosting Layer

- The solution is hosted on the cloud using Tableau Public, accessible across devices.

6. External Interface (Optional)

- APIs or CSV uploads can be used in the future to bring in real-time or external sales data for analysis.



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

1. Objective:

To build an interactive Tableau dashboard and story that helps toy manufacturers analyze sales data across products, regions, and time.

2. Phases & Timeline:

Phase	Description	Duration
1. Requirement Analysis	Understand data needs, audience, and business goals	2 days
2. Data Collection	Gather and clean sales data	2–3 days
3. Data Visualization	Build dashboard and story using Tableau	4–5 days
4. Web Integration	Embed visualizations into a responsive webpage	2 days
5. Testing & Feedback	Test functionality and gather user feedback	1–2 days
6. Final Presentation	Document, present, and deploy final solution	1 day

3. Tools & Technologies:

- Tableau Public
- Excel or CSV data files
- HTML, CSS, JavaScript
- Canva/Miro for diagrams (optional)

6. FUNCTIONAL AND PERFORMANCE TESTING

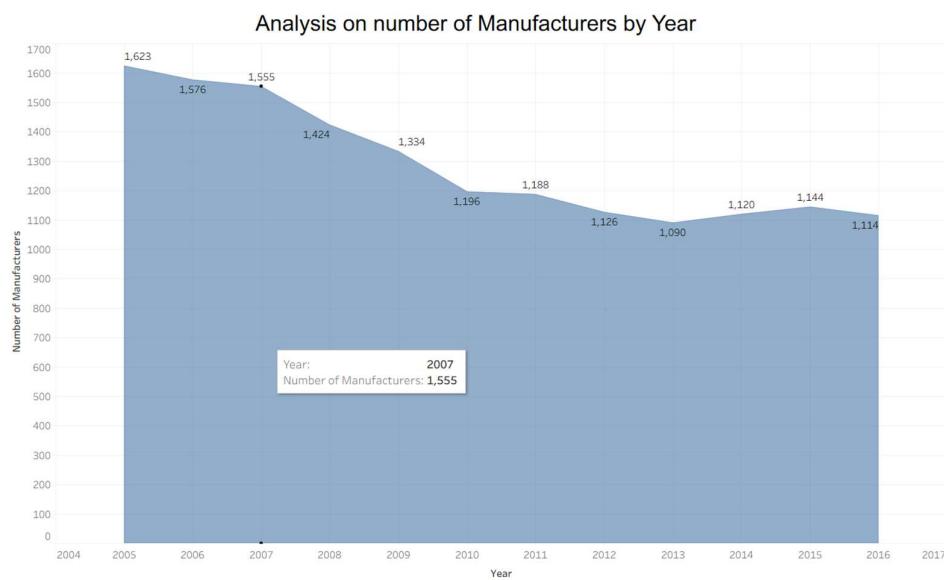
6.1 Performance Testing:

1. Data Rendered Annual number of toy manufacturers from 2005 to 2016, categorized by U.S. states, including a national total for “United States.”
2. Data Preprocessing |Removed “index” column, ensured correct data types (“Year” as “int”, “Number of Manufactures” as “int”), checked for and handled missing values.
3. Utilization of Filters Filters for “State”, “Year” (range: 2005 2016), and “Number of Manufactures”, used for interactive selection in visualizations.
4. Calculation fields Used Year-over-Year change, % contribution of each state to the national total, cumulative state trends, and national aggregates.
5. Dashboard design No of Visualizations / Graphs – 6
- 6 Story Design No of Visualizations / Graphs – 7

7. RESULTS

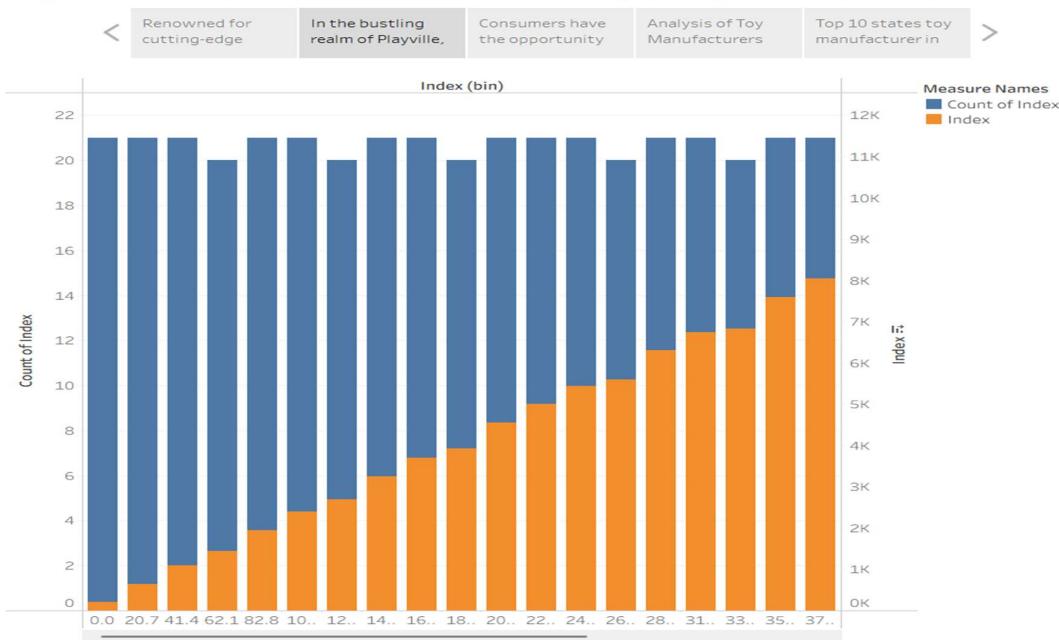
7.1 Output Screenshots

1. AREA CHART showing number of manufacturers by year:

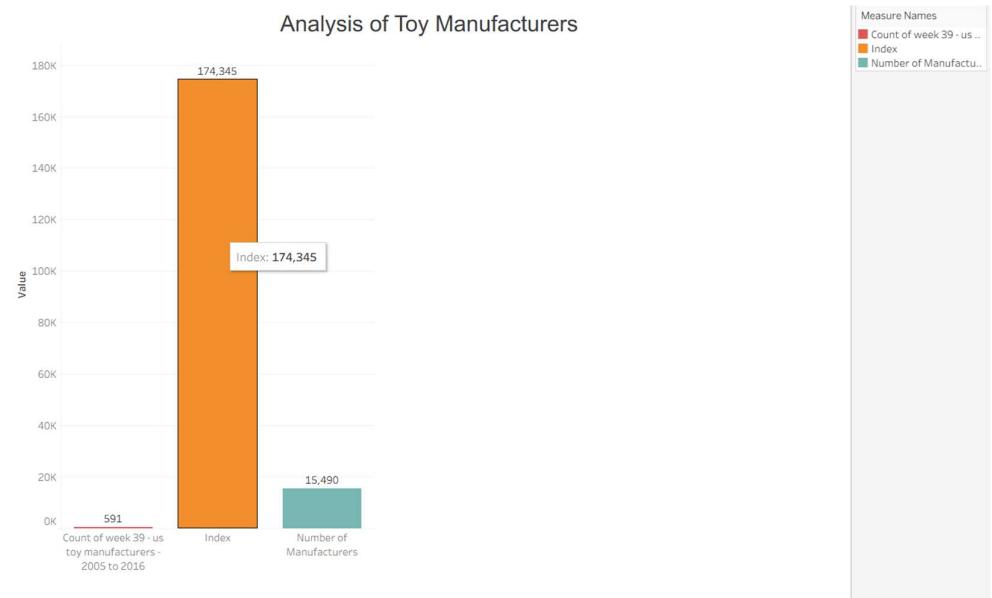


2.BAR CHART showing analysis on Toy manufacturers by

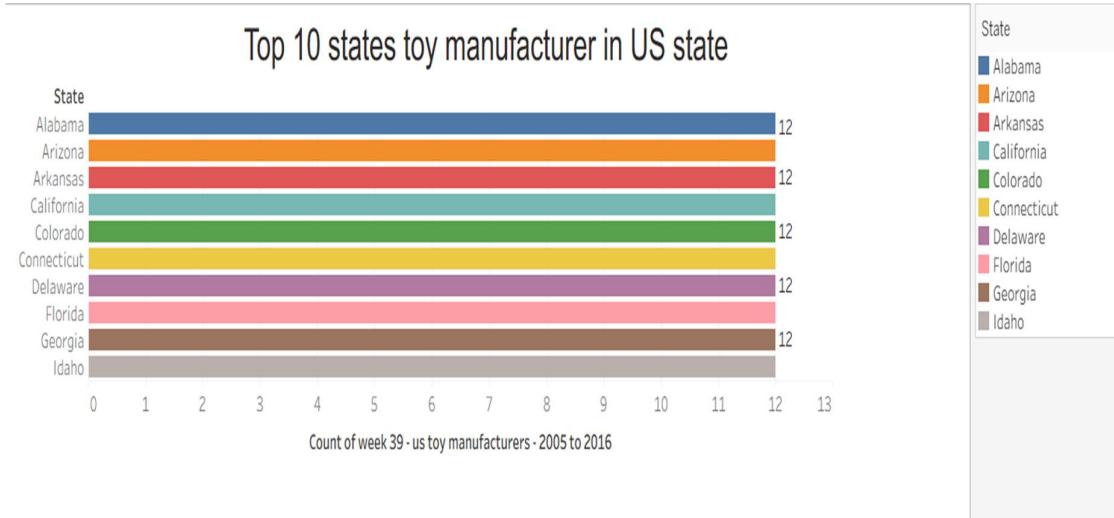
ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data



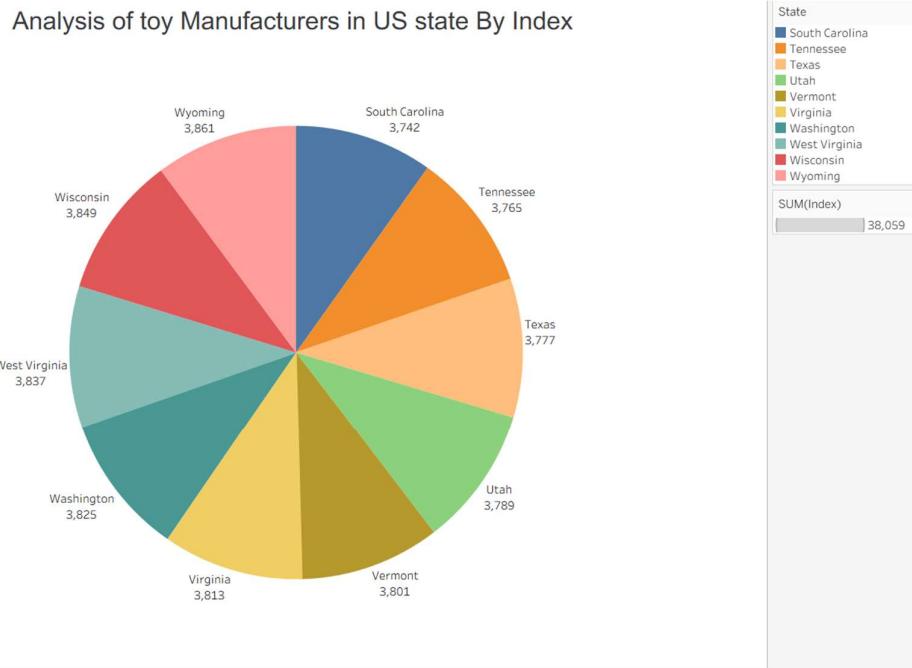
3.BAR CHART showing no.of indexes:



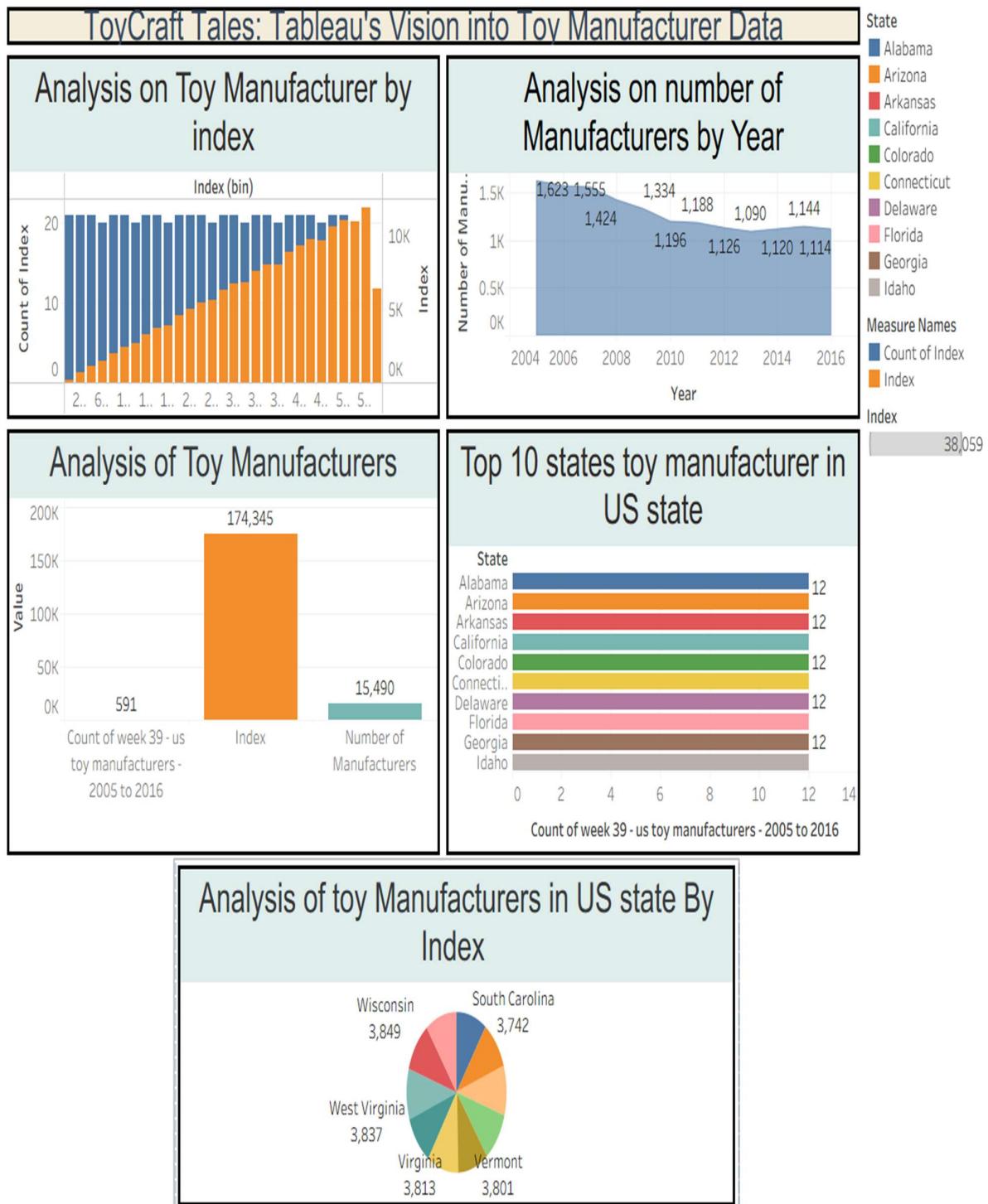
4.Chart showing top 10 toy manufacturers in US



5.PIE CHART showing analysis on toy manufacturers by index:



DASHBOARD

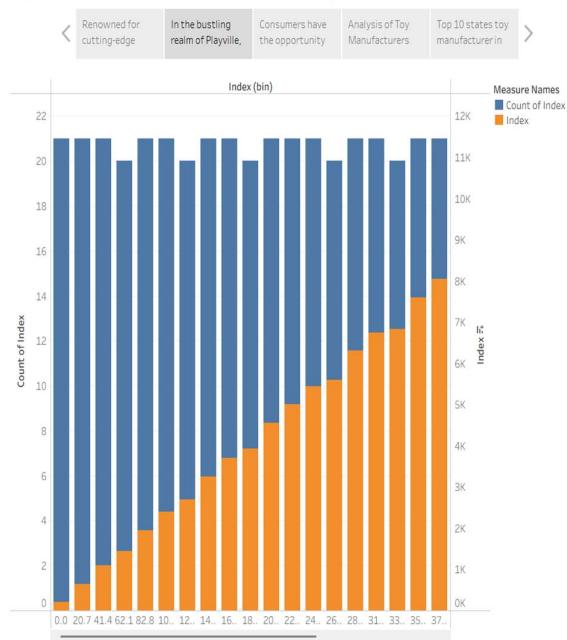


STORY

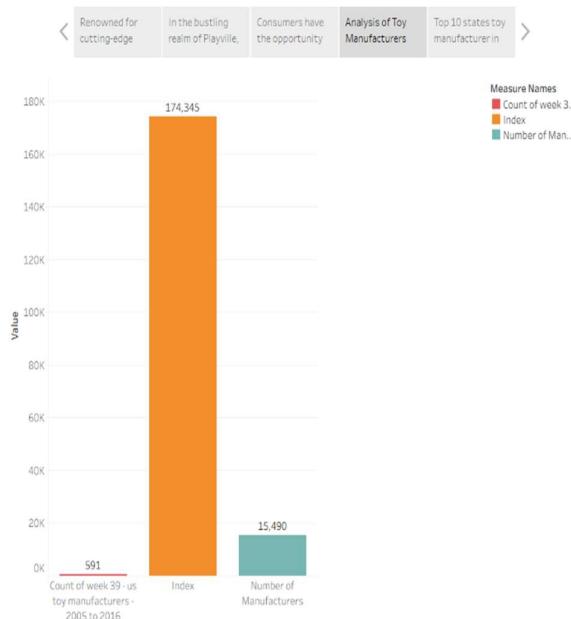
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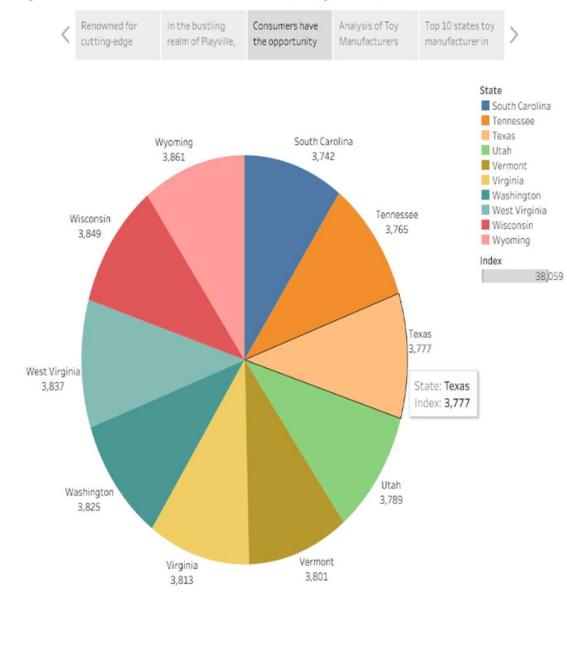
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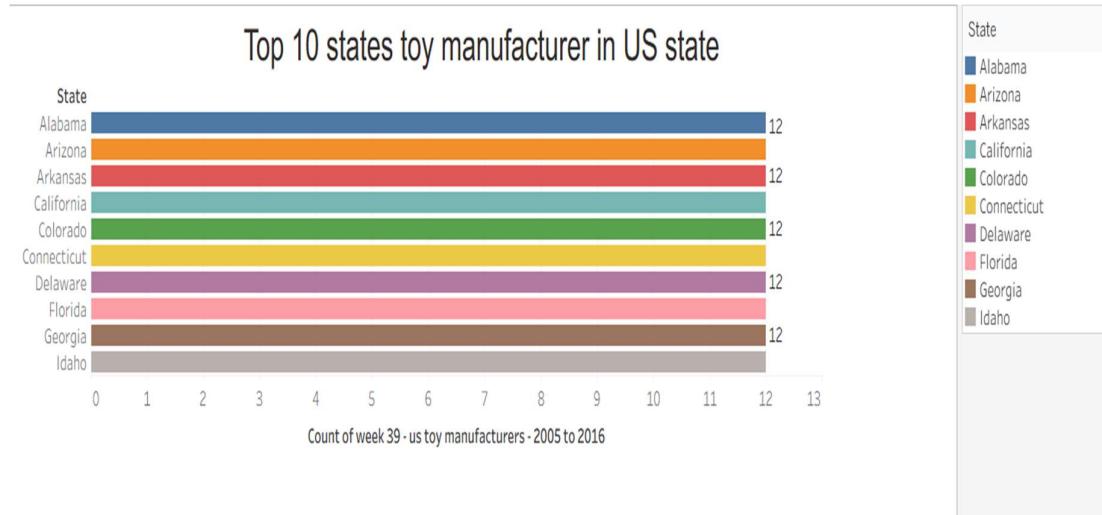


ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data



ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data





8. ADVANTAGES & DISADVANTAGES

Advantages:

1. Improved Decision-Making

Helps toy manufacturers make data-driven decisions using interactive visuals.

2. Visual Insights

Tableau dashboards and stories make complex data easy to understand.

3. User-Friendly Interface

Clean, responsive web integration makes the dashboard accessible on any device.

4. Time-Saving

Reduces manual reporting efforts with real-time visual updates.

5. Scalable Solution

Can be extended with more datasets like inventory, feedback, or seasonal trends.

Disadvantages:

1. Limited to Public Tableau

Free Tableau Public has restrictions (e.g., no data privacy, limited customization).

2. Static Data (if not automated)

If data isn't updated regularly, the dashboard becomes outdated.

3. Internet Dependency

Requires stable internet to view online dashboards.

4. Learning Curve

Some users may need time to understand and interact with Tableau visuals effectively.

5. Not a Full BI Tool

This project provides insights but doesn't support advanced forecasting or real-time alerts without additional tools.

9. CONCLUSION

The ToyCraft Tales project successfully demonstrates how data visualization tools like Tableau can transform raw sales data into meaningful insights for better decision-making in the toy manufacturing industry. By integrating interactive dashboards and stories, this project enhances data accessibility, uncovers key trends across products and regions, and empowers stakeholders with a clear view of performance. It provides a solid foundation for building data-driven strategies and highlights the importance of visual analytics in modern business environments.

10. FUTURE SCOPE:

Future Scope

- 1. Real-time Data Integration:** Incorporate live data feeds for dynamic dashboards and up-to-the-minute insights.
- 2. Advanced Analytics:** Apply predictive analytics and forecasting models using machine learning for demand prediction.
- 3. Mobile Accessibility:** Optimize dashboards for mobile and tablet viewing to enhance usability for on-the-go decision-makers.
- 4. User Customization:** Enable role-based dashboards tailored to departments like sales, marketing, or inventory.

5. **Scalability:** Extend the solution to include more regions, product lines, and multi-source data integration for broader insights.

11. APPENDIX

Source Code(if any):

ToyCraft Tales project is based on **Tableau**, there usually isn't "source code" for this project in the traditional sense (like Python, Java, etc.)

Dataset Link:

ToyCraft _Tales : Tableau's Vision into Toy Manufacturer Data

<https://www.kaggle.com/datasets/thedevastator/toy-manufacturers-in-us-states>

GitHub & Project Demo Link

Github repository:

<https://github.com/Venkatesh9143/ToyCraft-Tales-Tableau-s-Vision-into-Toy-Manufacturer-Data>

project demo link:

<https://drive.google.com/file/d/1epBvtg2rjXZlit-ytVlGNwi5socludF/view?usp=sharing>