

Data Analytics with Tableau

Project Development report

- Project Title:

ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data

- Team Members:

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1. INTRODUCTION

1.1 Project Overview :

The **Toy Manufacturers' Data Exploration and Visualization Project** is a comprehensive data-driven initiative that leverages the capabilities of **Tableau** to analyze key trends within the **toy manufacturing industry**. The project uses a multi-year dataset to examine critical aspects such as production patterns, market dynamics, and consumer behavior. By transforming raw data into insightful and interactive visualizations, the project aims to help stakeholders understand the evolving landscape of the industry and make informed, strategic decisions.

This project focuses on the visualization of data related to:

- Geographic distribution of toy manufacturers
- Index-based performance analysis
- State-wise and year-wise trends
- Consumer preferences across toy categories.

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.

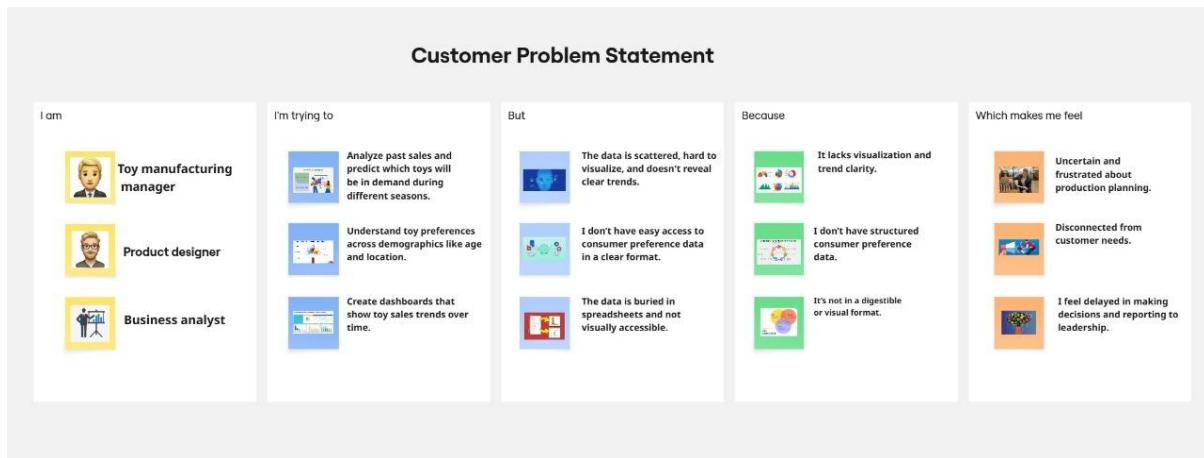
4. Enable Interactive Exploration

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

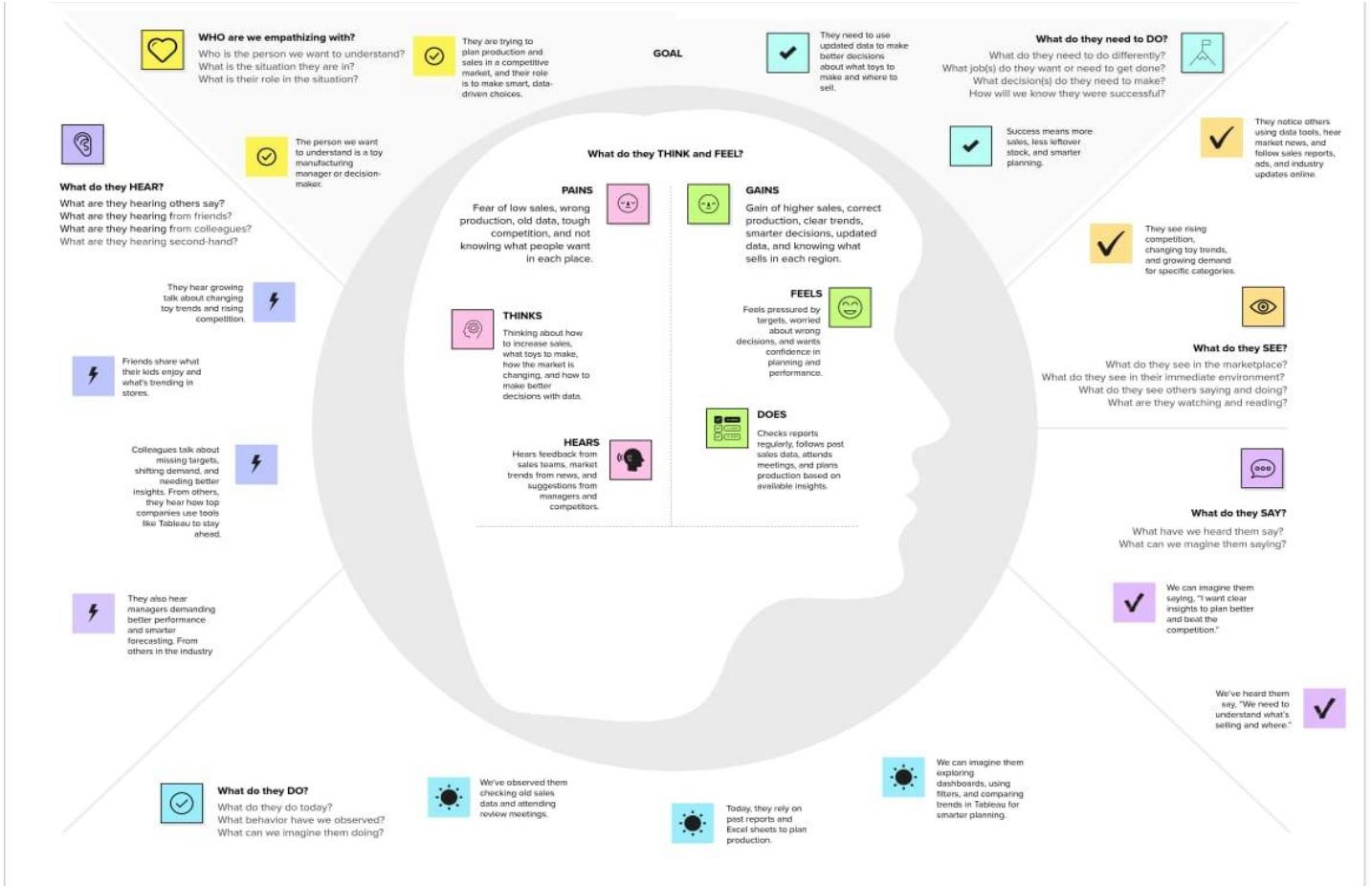
2.1 Problem Statement :

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.



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.

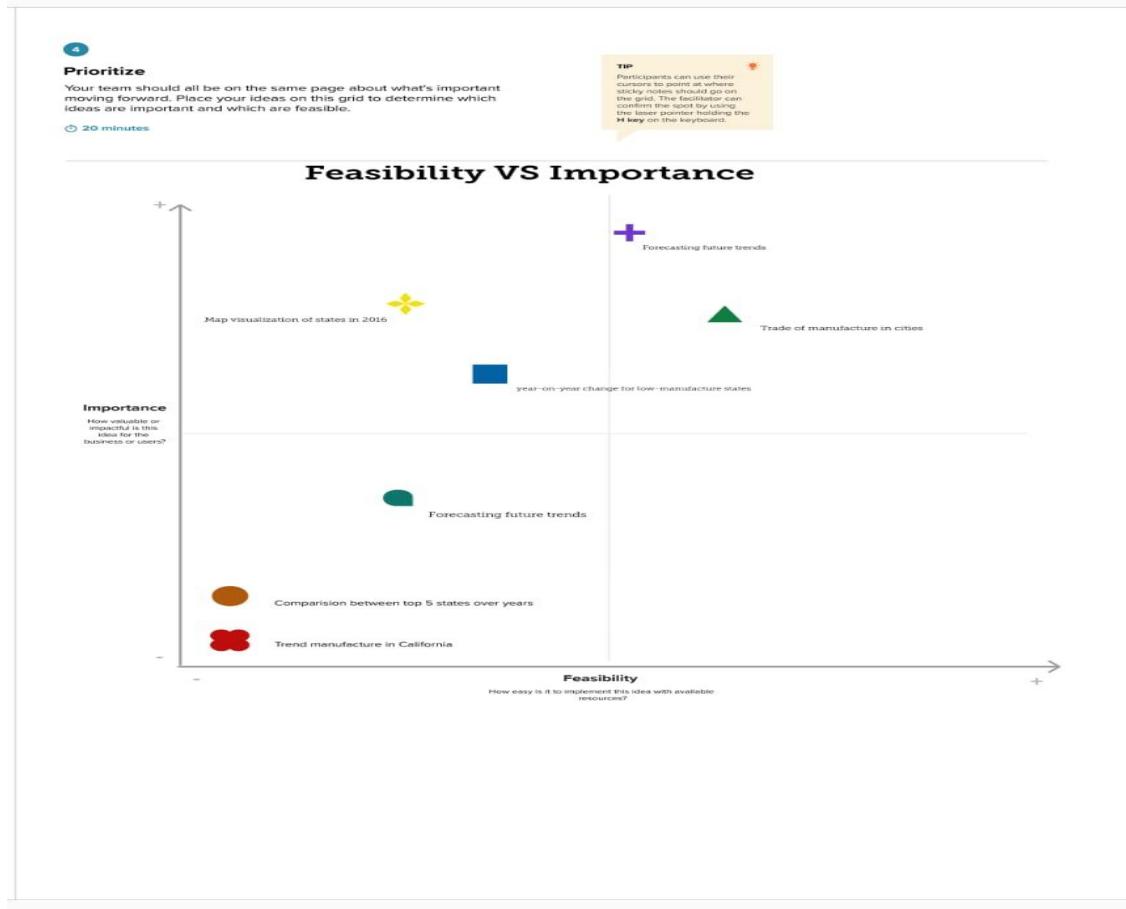
2.2 Empathy Map Canvas:



2.3 Brainstorming:

This template provides a structured approach to brainstorming, divided into several key sections:

- Brainstorm & idea prioritization:** A brief introduction and instructions for use.
- Before you collaborate:** A list of tips for effective collaboration, including active listening, being present, and avoiding distractions.
- How might we solve ToyCraft Tales' Vision into Toy Manufacturer Data?**: A problem statement template.
- Key rules of brainstorming:** Guidelines for running a smooth and productive session, such as staying on topic, deferring judgment, and encouraging wild ideas.
- Brainstorm:** A section for generating ideas, with a timer set for 10 minutes.
- Group Ideas:** A section for clustering key ideas into power smarter decisions, with examples for Sales & Market Insights, Customer Feedback & Quality, Factory & Production, and Supply Chain & Inventory.



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 How does someone become aware of this service?	Enter What do people experience as they begin this process?	Engage How do people interact with Tableau for understanding key sales info in a paperless way? Is it guided or discovery?	Exit What do people typically experience as the process finishes?	Extend What happens after the experience is over?
Experience steps What does the person (or people) at the center of this scenario typically experience in each step?	Discover Want more ways to explore toy sales with stunning visuals.	They become curious about how data can improve decision-making.	Users begin to drill down into specific regions, products, or time periods.	They feel confident making data-driven decisions using Tableau.	Feedback helps refine dashboards.
Interactions What interactions do they have at each step along the way? ▪ People: Who do they see or talk to? ▪ Places: Where are they? ▪ Places: Where are they?	See how data-driven stories can guide better toy buying decisions.	They interact with dashboards, explore sales, trends, and metrics with team members or stakeholders in a meeting.	Users interact with Tableau to get quick insights into top sales data.	They gain clarity on sales, product performance, and customer trends.	Users return to check updated data. Smarter, data-driven choices.
Goals & motivations At each step, what is a person's primary goal or motivation? ("Help me..." or "Help me avoid...")	"Help me discover better tools to understand my sales data." "They want to make better decisions."	"Help me avoid using outdated or manual reporting tools." "They want to be freed from one of their processes."	"Help me explore how this Tableau dashboard can help me analyze sales data." "They want to learn how to better communicate."	"Help me identify opportunities for growth in my business."	"Help me validate my assumptions with real data." "They want to confirm or challenge their gut feelings." "Help me explore deeper insights beyond what I can see."
Positive moments What steps does a typical person find enjoyable, productive, fun, motivating, delightful, or exciting?	Having a quick demo with a friend. – Engaging with friends in interesting ways.	Communicating there is now something new to learn about sales trends, discovering something that interests them in a region.	Drilling deeply into key sales trends using visual storytelling to make analysis easier.	Sharing findings with team members.	Sharing the project with peers, family, and friends. "Help me connect with other users."
Negative moments What moments do a typical person feel frustrating, confusing, annoying, costly, or time-consuming?	Too many similar looking dashboards. Confused about where to start and what to explore first.	Lack of awareness about how Tableau dashboards are valuable. – Users may not understand what they are seeing.	Overwhelmed by dashboards completely different from what they were off.	Difficulty understanding complex visuals. – Visuals are too complex or confusing, graphs may confuse users.	Explaining the time or effort needed to learn how to use Tableau. "Help me validate my assumptions with real data."
Areas of opportunity How might we make each step better? What would you suggest? What have others suggested?	Promote additional stories via social media, forums, or LinkedIn.	Add a learning lesson with a brief intro.	Interact with filters to see how they affect key business insights.	Compare performance across categories using filters.	Take away insights on trends and future decisions.
Product brief	Add a short summary video or GIF that guides them.	Use clear titles for stories for better visual clarity.	Highlight where to click or interact (desktop, smartphone).	Navigate story steps to see how they affect key business insights.	Feel informed and inspired to make data-backed conclusions.

3.2 Solution Requirement:

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

- Accessible on desktops, tablets, and mobile devices.

4. Live Data Connectivity (Optional)

- Option to link real-time or regularly updated datasets.

5. Data Security & Privacy

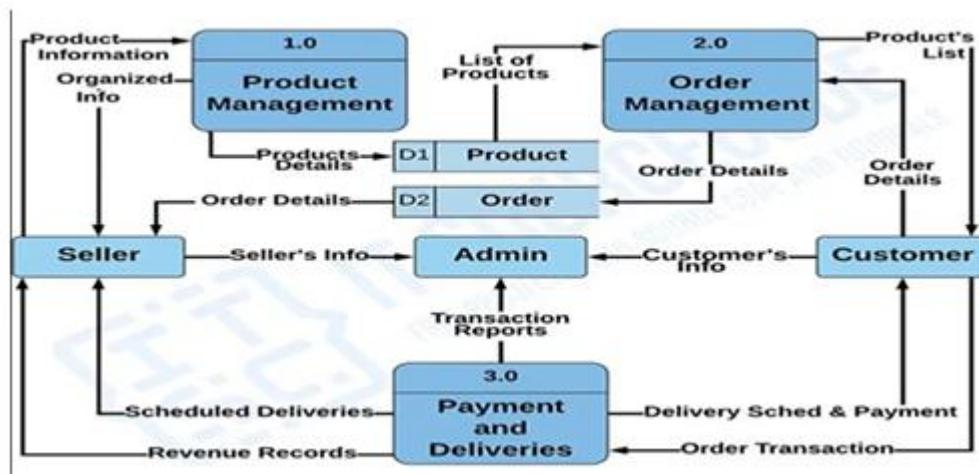
- Ensure shared dashboards protect sensitive info.

6. 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

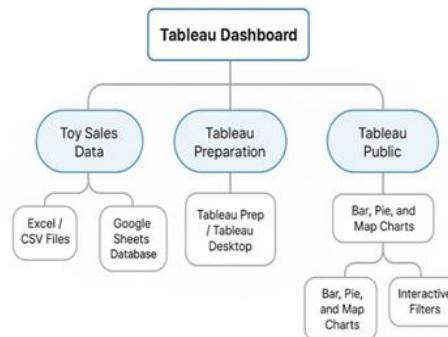
- **CSV/Excel Files** – Used for importing cleaned toy sales data into Tableau.
- **ETL (Extract-Transform-Load)** – Performed manually or through Tableau Prep for preprocessing data.

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.

Problem-Solution fit canvas 2.0							
		Purpose / Vision	To help the toy company understand its sales and products better using Tableau dashboards.				
Define CS, fit into CC	1. CUSTOMER SEGMENT(S) Who is your customer? i.e. working parents of 0-5 yr old kids	CS	6. CUSTOMER CONSTRAINTS What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices				
Focus on JAP, tap into BE, understand RC	The toy manufacturing company's management or decision-makers (the people who use my dashboard to gain insights into sales, products, and regions for better decisions).	CC	• Limited data literacy, • Absence of intuitive visualization tools, • Time constraints restrict customers from effectively analyzing and acting on toy sales insights. • High cost and complexity of advanced analytics tools prevent small to mid-sized toy businesses from adopting them easily.				
Explore AS, differentiate	5. AVAILABLE SOLUTIONS Which solutions are available to the customers when they face the problem? i.e. what can get the customer "there" have they tried in the past? What price & some do these solutions have? i.e. pen and paper is an alternative to digital note-taking Solutions customers use: 1. Excel Sheets – Easy to use, but slow and not smart enough. 2. ERP Tools – Powerful but costly and hard to customize. 3. Custom Dashboards – Fit well but take time and money to build. 4. BI Tools like Tableau – Fast and clear visuals, but need training.	AS					
Focus on JAP, tap into BE, understand RC	2. JOBS-TO-BE-DONE / PROBLEMS What jobs to-be-done (or problems) do you address for your customers? There could be more than one, explore different sides. • Track toy sales performance, • Compare regional demand, • Make data-driven decisions, • Identify trends, • Improve operational efficiency through interactive Tableau dashboards.	JAP	9. PROBLEM ROOT CAUSE What is the real reason that this problem exists? What is the backstory behind the need to do this job? i.e. customers have to do it because of the change in regulations. Toy manufacturers lack centralized, user-friendly tools to visualize and analyze data, leading to fragmented insights and delayed decisions. The backstory behind the need to do this job is that traditional sales tracking methods were manual, scattered, and time-consuming—creating a demand for a streamlined solution like Tableau to enable faster, data-driven decisions.	RC	7. BEHAVIOUR What does your customer do to address the problem and get the job done? i.e. directly related, first the right sales panel installed, valuable usage and benefit, indirectly associated, customers spend free time on visualizing work (e.g. Onepeace). Customers use tools like Excel or Tableau to understand sales trends and product performance, but without a proper dashboard, it takes time and is hard to get quick insights. Our solution makes it faster and easier with clear visual reports.	BE	
Identify strong TR & EM	3. TRIGGERS What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news. A need to understand declining sales, shifting market trends, or regional performance gaps prompts customers to explore data insights using the dashboard.	TR	10. YOUR SOLUTION If you are working on an existing business, write down your current solution first, fit in the canvas, and check how much it fits visually. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour. The solution is to create an interactive Tableau dashboard and story that helps toy manufacturers easily visualize sales trends, product performance, and regional insights for faster and smarter decision-making.	SL	8. CHANNELS OF BEHAVIOUR 8.1 ONLINE What kind of actions do customers take online? Extract online channels from #?	CH	
	4. EMOTIONS: BEFORE / AFTER How do customers feel when they face a problem or a job and afterwards? i.e. lost, measure > confident, in control—use it in your communication strategy & design. Customers feel uncertain at first, but confident and empowered after gaining insights from the dashboard.	EM			8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #? and use them for customer development. Customers attend meetings, discuss reports, visit stores, and analyze printed dashboards or sales summaries offline..	CH	Extract online & offline CH of BE



Problem-Solution fit canvas is licensed under a Creative Commons Attribution-NonCommercial-NoDerivs 4.0 license.

Created by Deniz Nepraklina / Amaltama.com



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

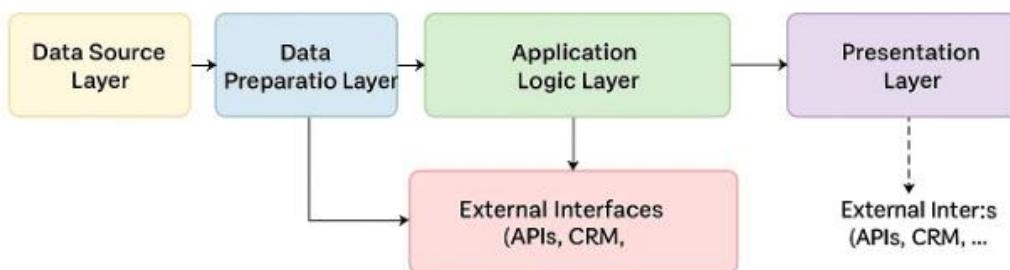
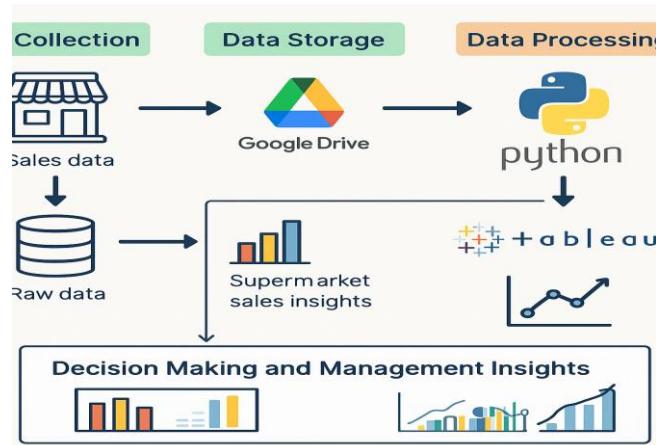
- Users access the visualizations via embedded Tableau dashboards in a responsive web page (HTML/CSS/JS).

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

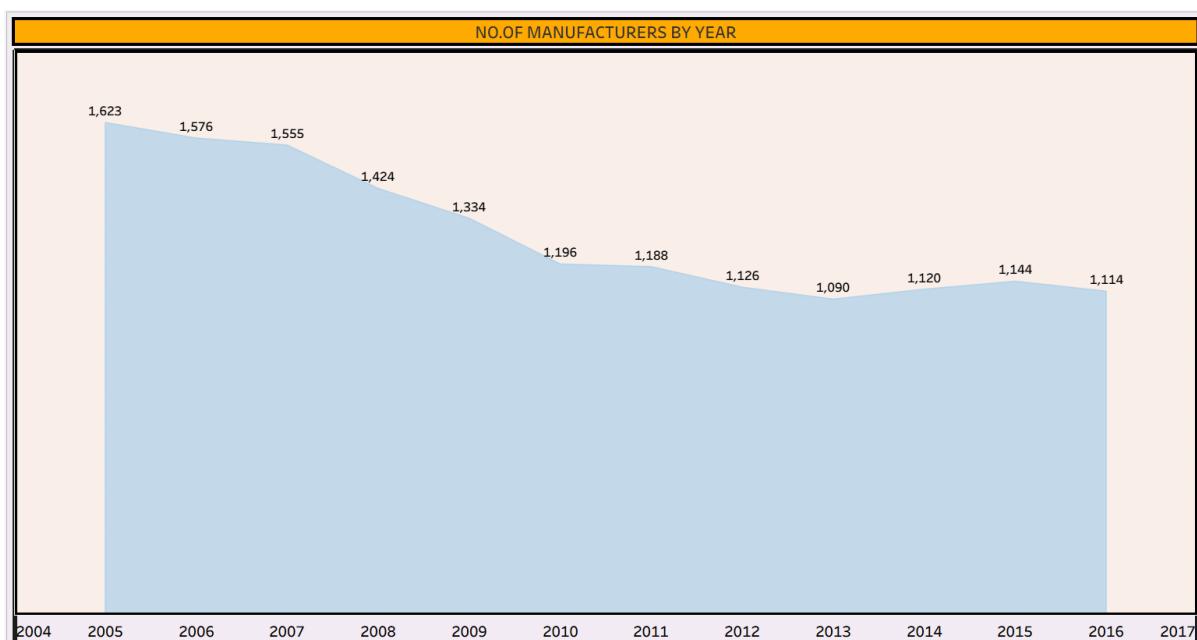
6.1 Performance Testing:

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

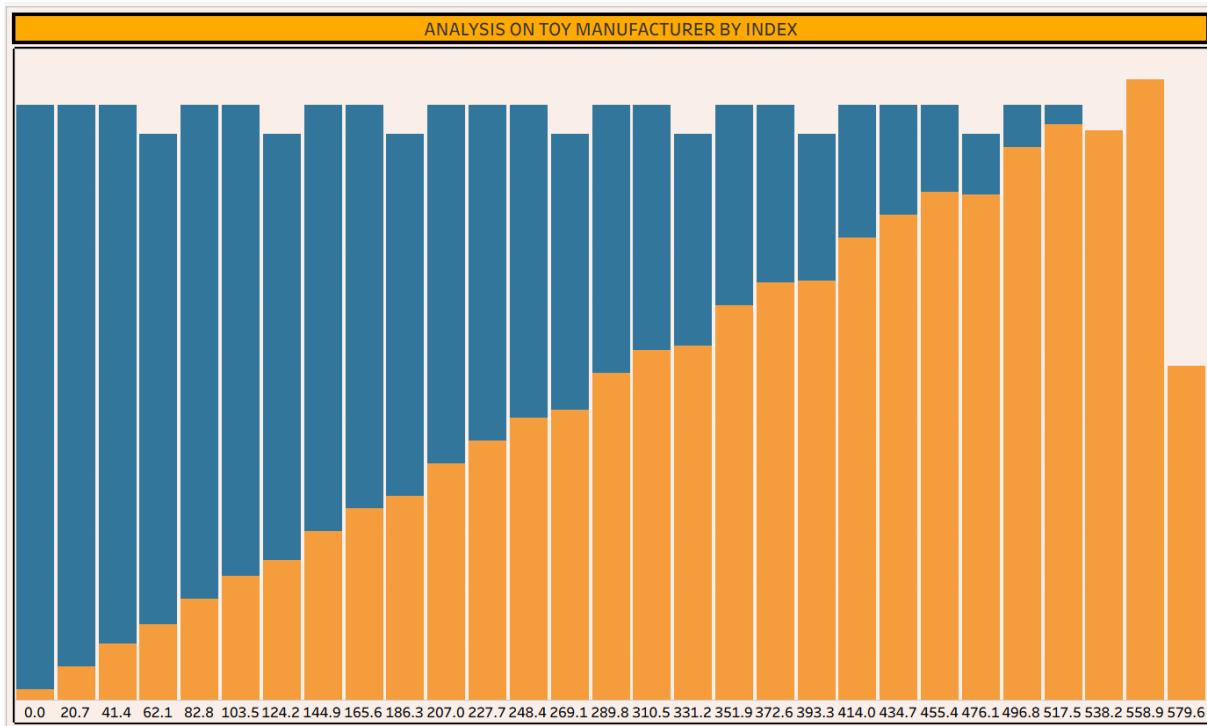
7. RESULTS

7.1 Output Screenshots

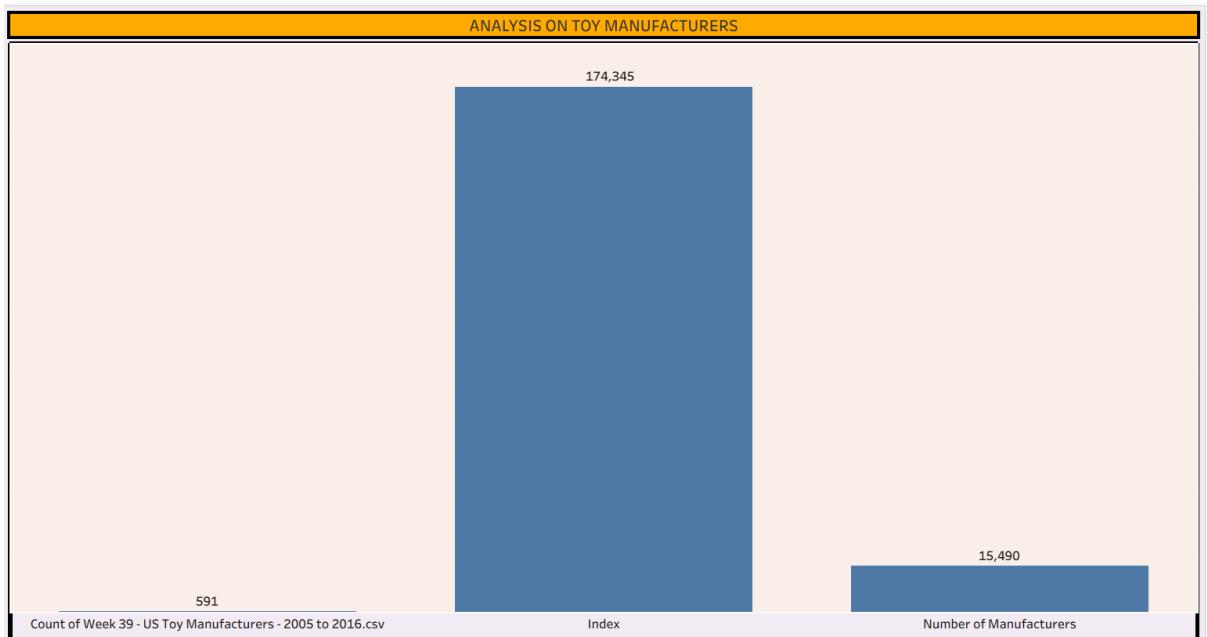
1. AREA CHART showing number of manufacturers by year:



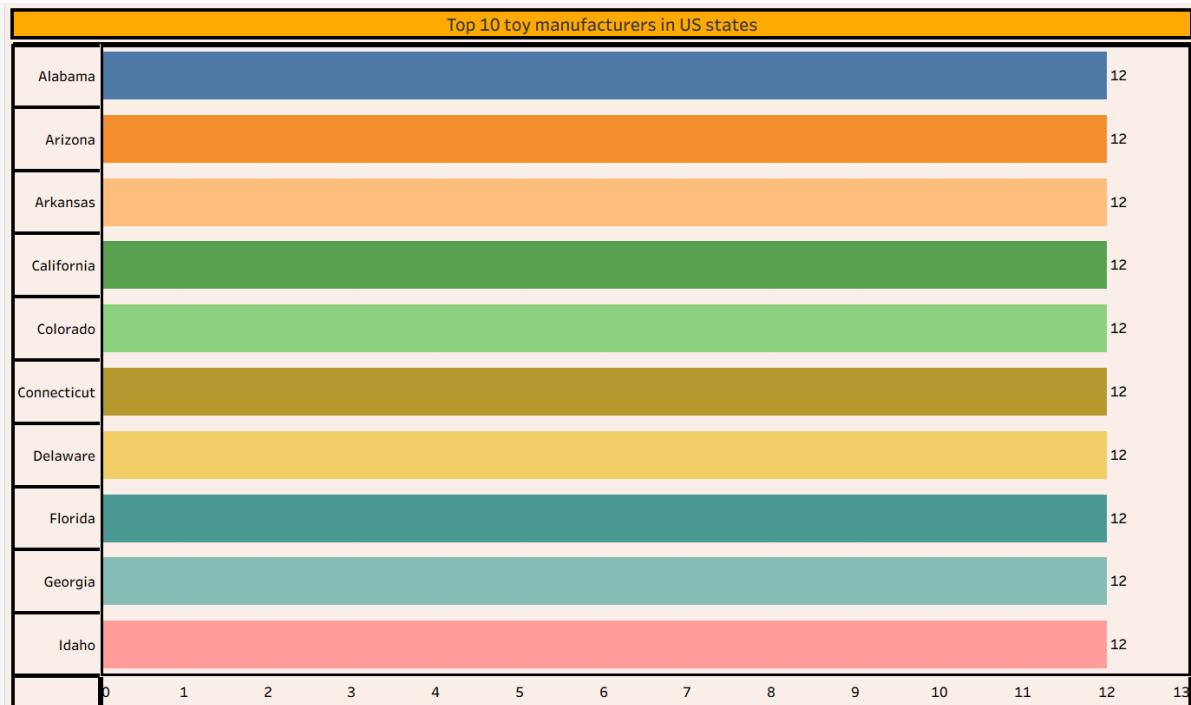
2.BAR CHART showing analysis on Toy manufacturers by index:



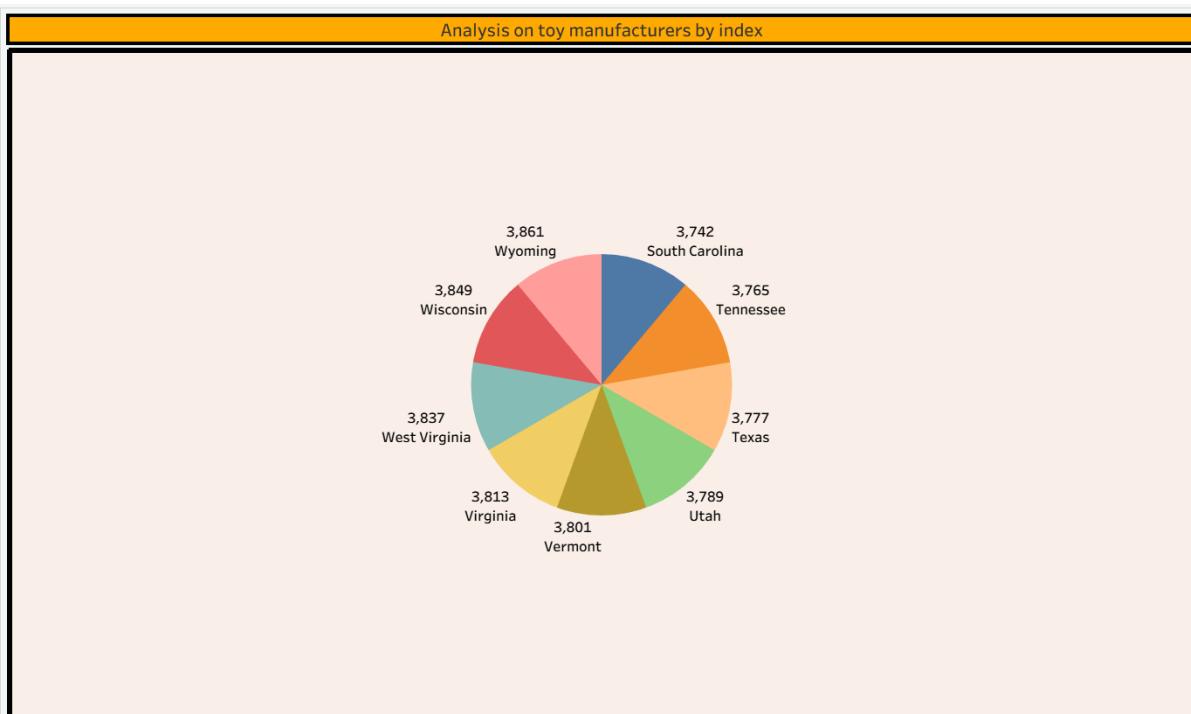
3.BAR CHART showing no.of indexes:



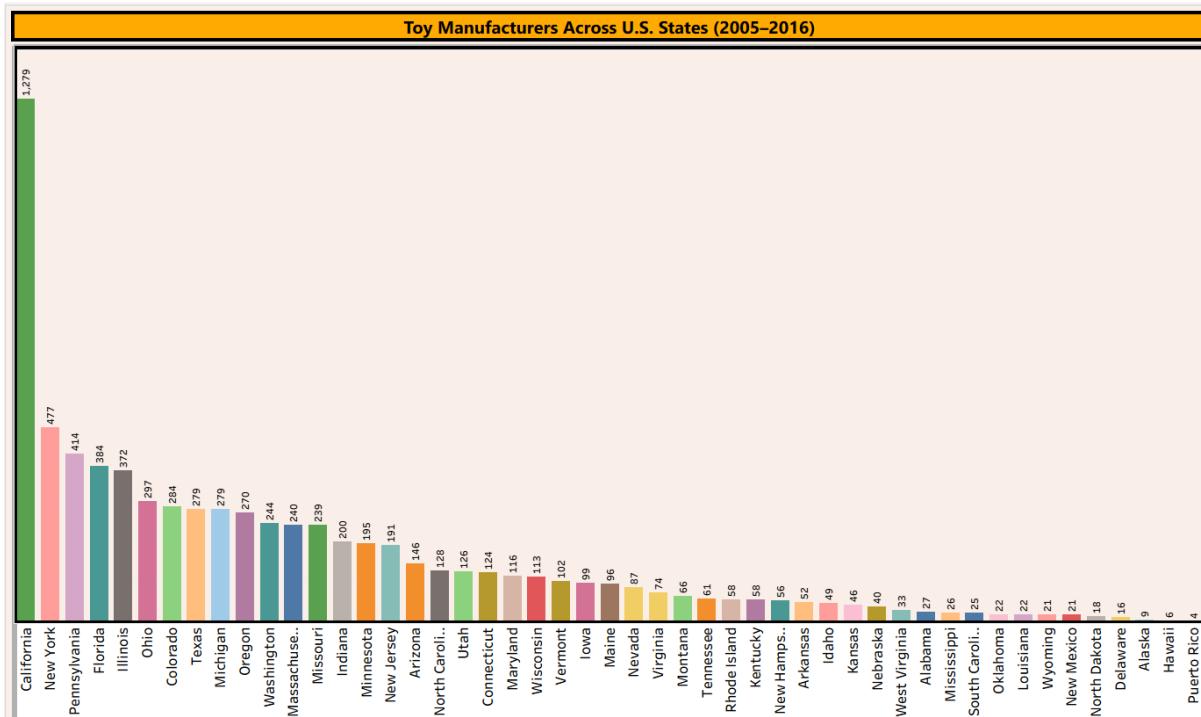
4.Chart showing top 10 toy manufacturers in US



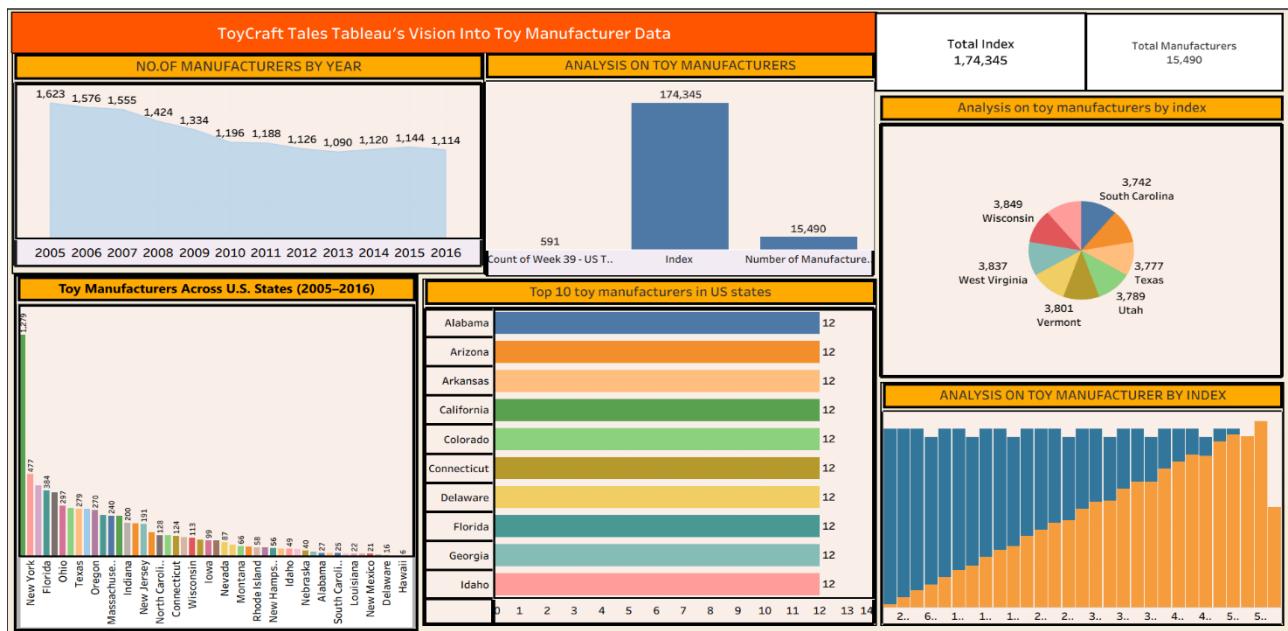
5.PIE CHART showing analysis on toy manufacturers by index:



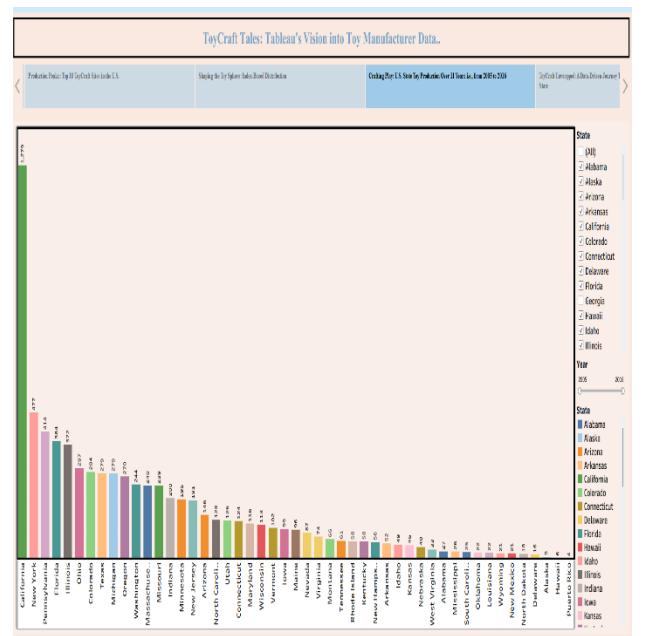
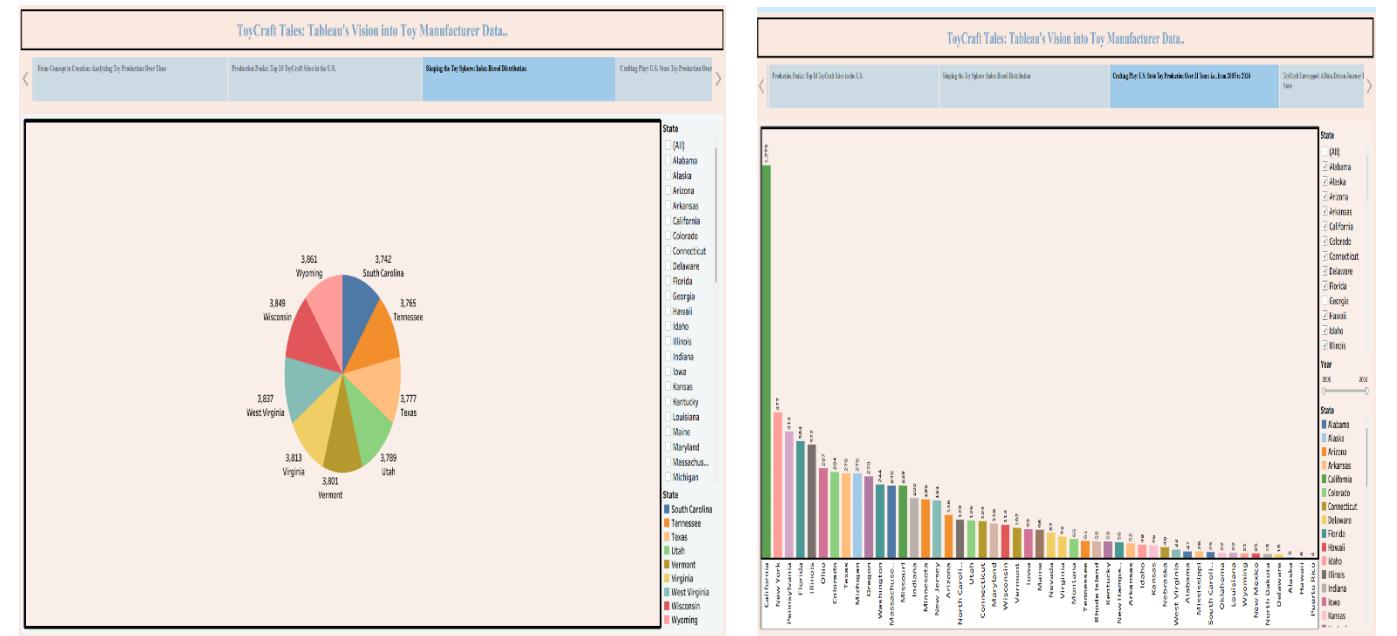
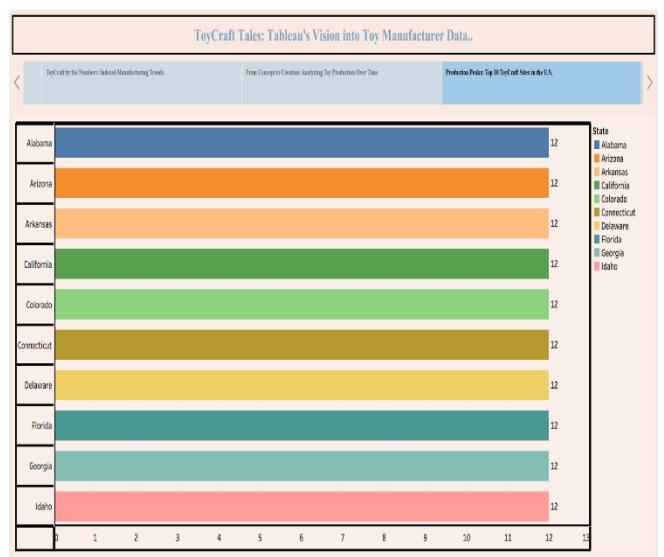
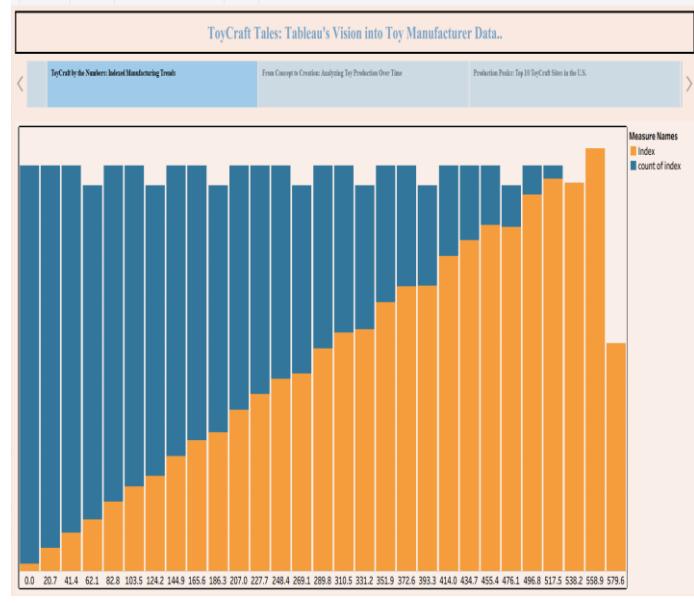
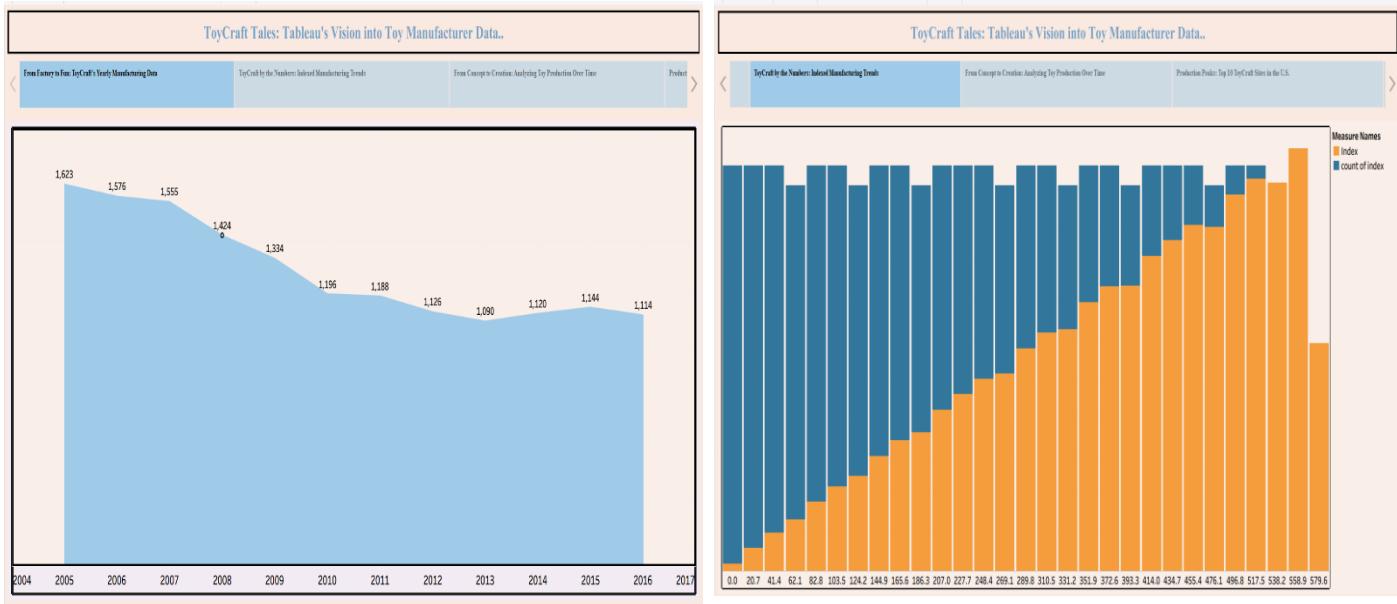
6.Chart showing total toy manufacturers across all states of US:

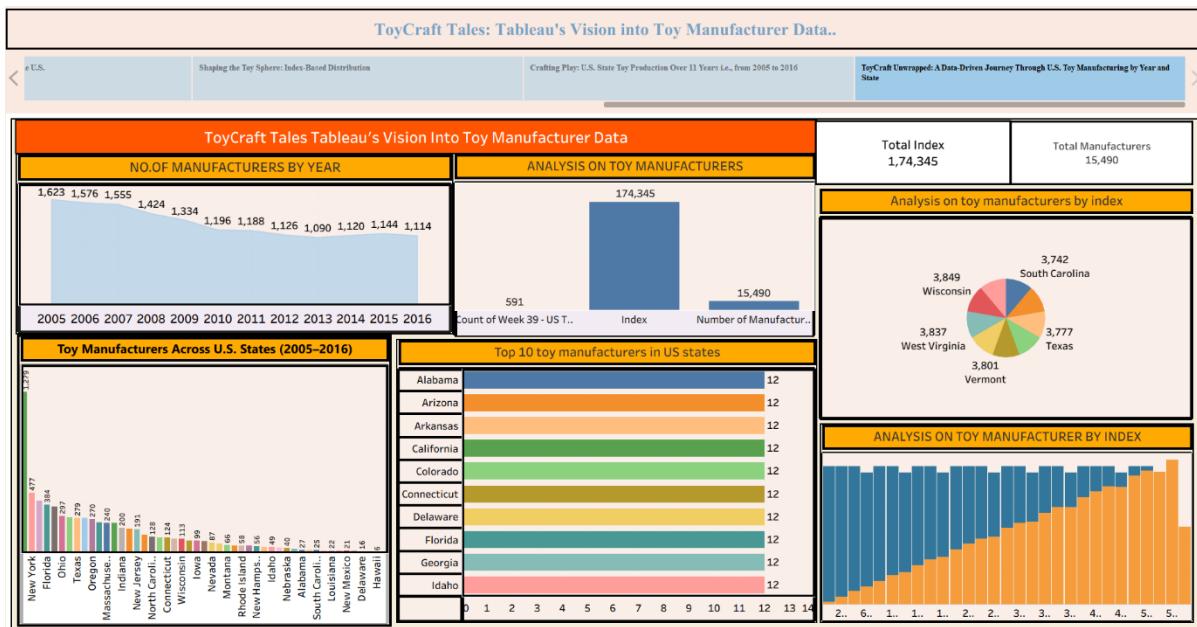


DASHBOARD



STORY





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?select=Week+39+-+US+Toy+Manufacturers+-+2005+to+2016.hyper>

GitHub & Project Demo Link

Github repository:

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

project demo link:

https://drive.google.com/file/d/1_oVgqBoazB3JPxIaLgfD_dEmuLvUTNV_/view?usp=sharing