

ToyCraft Tales - Project Report

1.. INTRODUCTION

1.1 Project Overview

This project analyses the number and distribution of toy manufacturers across US states from 2005 to 2016.

The goal is to provide insights into manufacturing trends using MySQL and Tableau.

1.2 Purpose

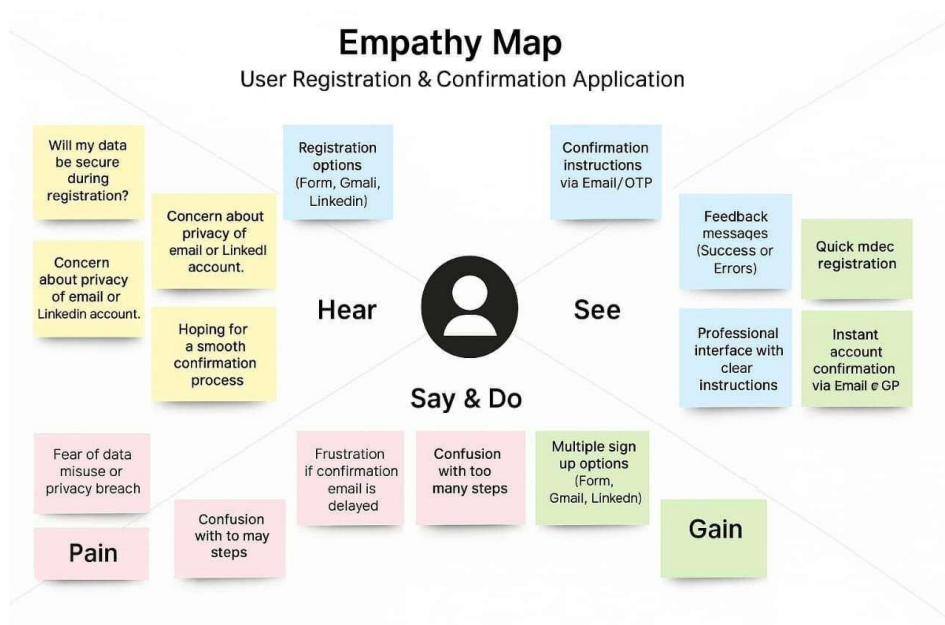
The purpose is to identify state-wise and year-wise manufacturing trends and visualize the insights using interactive dashboards.

2.. IDEATION PHASE

2.1 Problem Statement

Toy manufacturers collect a lot of data, but understanding it can be difficult. This project uses Tableau to turn complex toy data into easy, clear visuals to help improve sales, production, and decision-making.

2.2 Empathy Map Canvas



2.3 Brainstorming

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Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

PROBLEM

Toy manufacturers collect a lot of data, but understanding it can be difficult. This project uses Tableau to turn complex toy data into easy, clear visuals to help improve sales, production, and decision-making.



Key rules of brainstorming

To run an smooth and productive session



Stay in topic.



Encourage wild ideas.



Defer judgment.



Listen to others.



Go for volume.



If possible, be visual.

1. Production Efficiency
Monitoring Analyze production output vs. targets. Detect bottlenecks or delays in the manufacturing process. Optimize resource allocation for different toy lines.

1. Sales Performance
Dashboard Track sales by product category, region, and time period. Identify best-selling and low-performing toys. Spot seasonal trends (e.g., holiday spikes).

2. Customer Demographics
Insights Understand sales patterns by customer age group or region. Discover which products appeal to different customer segments.

2. Inventory Management
Visualize stock levels for each toy model.

Highlight slow-moving or overstocked items.

Forecast demand using historical sales data.

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Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

⌚ 20 minutes

TIP

Add custom labels to sticky notes to make it easier to find, remove, separate, and categorize important ideas on boards within your board.

1 Sales Analysis Group

Goal: Focus on understanding toy sales trends. **Tasks:** Collect and clean sales data (Product, Region, Time). Create Tableau dashboards for: Best-selling toys. Regional sales performance.

2 Inventory Insights Group

Goal: Optimize toy stock management. **Tasks:**

- Analyze stock levels and turnover rates.
- Visualize overstocked and understocked items.
- Suggest inventory improvement strategies.

3 Market and Customer

Behavior Group Goal: Understand market demand and customer preferences. **Tasks:** Gather demographic and market data. Visualize which toys are popular in different regions or age groups. Recommend product placement strategies.

4

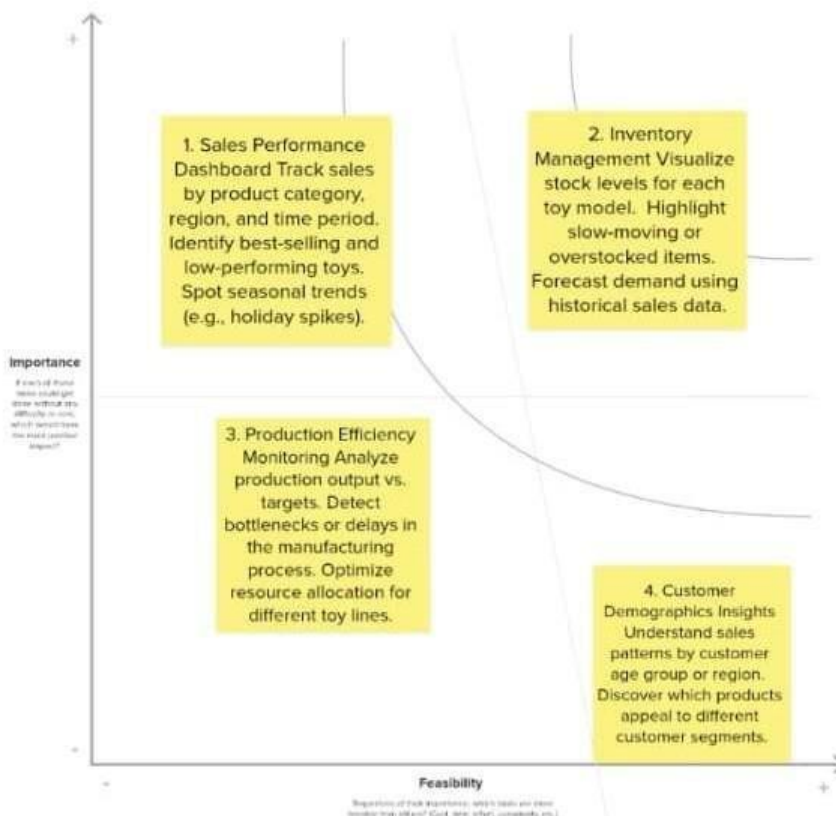
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

⌚ 20 minutes

TIP

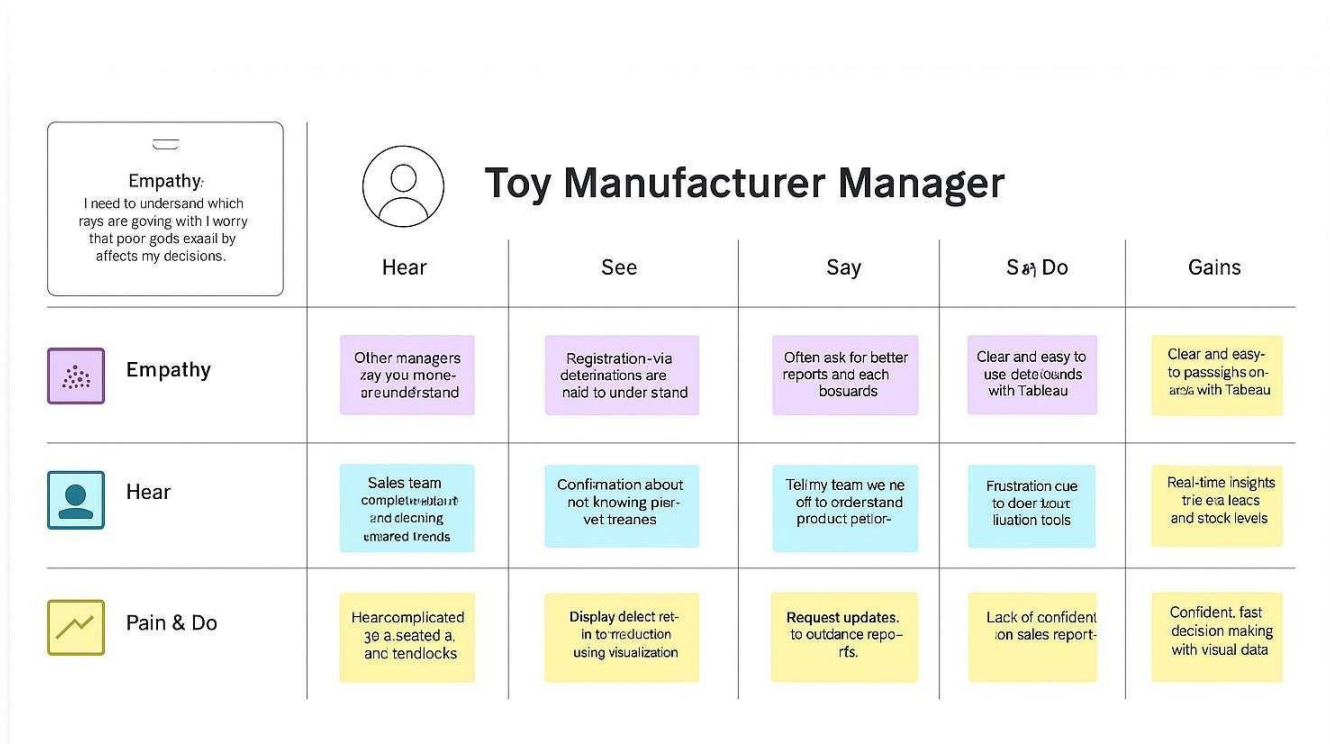
Participants can use their voices to point at where sticky notes should go on the grid. The facilitator can confirm this spot by using the lower pointer (bottom-left key) on the keyboard.



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3.. REQUIREMENT ANALYSIS

3.1 Customer Journey map



3.2 Solution Requirement

Functional Requirements:

The following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Upload	Upload toy sales and production data via CSV or Excel file
FR-2	Data Visualization	Generate interactive dashboards using Tableau
FR-3	Sales Trend Analysis	Provide visual reports of sales trends and peak seasons
FR-4	Defect Rate Insights	Display defect rates in production using visualization
FR-5	Export Reports	Export visual reports in PDF and image formats

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

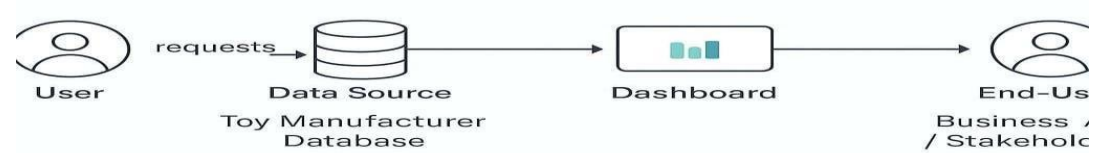
NFR No.	Non-Functional Requirement	Description
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NFR-1	Usability	Easy-to-use interface with drag-and-drop features
NFR-2	Security	Secure login with password protection, role- based access
NFR-3	Reliability	Ensure system handles large datasets without crashing
NFR-4	Performance	Dashboards load within 3 seconds for optimal performance
NFR-5	Availability	System available 99.9% of the time, minimal downtime
NFR-6	Scalability	Support increased data volume as company grows

3.3 Data Flow Diagram

Data Flow Diagram (DFD) – Level 0



Visualizing Sales and Inventory Data for Toy Manufactu

3.4 Technology Stack

Table-1: Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	Tableau Dashboards viewed by users	Tableau, Tableau Public
2	Application Logic-1	Data Preparation for Visualization	Tableau Prep, Python (if applicable)
3	Application Logic-2	Sales, Inventory, and Trends Analysis Logic	Tableau Calculations, Expressions
4	Database	Store Sales, Inventory, and Customer Data	MySQL, CSV, Excel, Google Sheets
5	Cloud Database	Cloud-based storage for scalability	AWS RDS, Google Cloud SQL (Optional)
6	File Storage	Store raw data files, reports	Google Drive, Cloud Storage

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7	External API-1	Integration with sales platforms (if applicable)	Shopify API, Google Analytics API
8	External API-2	Integration with market trend data (optional)	Market Research APIs (Optional)
9	Machine Learning Model	Predictive sales trends and inventory forecasting	Basic ML with Tableau Extensions or Python
10	Infrastructure (Server/Cloud)	Hosting Tableau dashboards and databases	Local Server or Tableau Online

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Using Tableau Public and open-source data processing tools	Tableau Public, Python
2	Security Implementations	Access control for dashboard sharing, data security measures	Password Protection, Cloud Security
3	Scalable Architecture	Cloud deployment for handling large datasets if needed	AWS, Google Cloud (Optional)

4.. PROJECT DESIGN

4.1 Problem Solution Fit

Toy Craft Tales' Canvas

Toy craft tales: tableau inspired to Toy Manu fer Data



1. CUSTOMER SEGMENT(S)  <p>Describe people affected by the problem. Such as type, age, gender, industry role, family, geography, ..</p> <p>CS</p>	6. CUSTOMER CONSTRAINTS  <p>What constraints inhibit the solution? Re. resources, skills, finances, legislation, cultural or legal issues.</p> <p>GC</p>	PURPOSE / VISION
2. JOBS TO-BE DONE / PROBLEMS  <p>What problems are customers are facing? What needs or goals are not met?</p> <p>JP</p>	8. PROBLEM ROOT CAUSE  <p>How often our job is of our barrier to solve the prob? How do you have been addressed without success?</p> <p>BH</p>	7. BEHAVIOUR  <p>How should + your solve the problem? If=A. ? solve the jobs E=B. ? overcoming V=A. ? profitable</p> <p>BH</p>
3. TRIGGERS  <p>When moment thoughts transform into wanting action over a problem needing solving Events + Occasions + "ts?"</p> <p>TR</p>	10. YOUR SOLUTION  <p>How to solve the problem creatively? If is desirable, "A" solving problems jobs if feasible V overcoming other stakeholder</p> <p>SL</p>	9. CHANNELS & BEHAVIOUR  <p>Where to solve the problem easily? Lay out intended emotional state changes.</p> <p>CH</p>

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4.2 Proposed Solution

S.No.	Parameter	Description
1	Problem Statement (Problem to be solved)	Toy manufacturers collect a lot of data but understanding it can be difficult. This project uses Tableau to turn complex toy data into easy, clear visuals to help improve sales, production, and decision-making.
2	Idea / Solution description	A Tableau-powered interactive dashboard system that visualizes key toy industry metrics – including demand trends, age group preferences, and stock levels – for real-time decision-making.
3	Novelty / Uniqueness	Combines storytelling with data through “Toy Craft Tales” – a narrative-based approach that helps non-technical users interpret complex datasets intuitively.
4	Social Impact / Customer Satisfaction	Increases efficiency in toy production, reduces waste, and aligns products with children’s interests – ultimately leading to higher satisfaction for both customers and manufacturers.
5	Business Model (Revenue Model)	Subscription-based model for manufacturers and retailers; freemium version with limited dashboards, with additional premium analytics and customization for enterprise clients.
6	Scalability of the Solution	The solution can scale across global markets and be adapted for various toy segments, from educational toys to collectibles, with multilingual and regional data support.

4.3 Solution Architecture

The diagram illustrates a multi-tier Tableau dashboard architecture. It starts with a **User** (represented by a person icon) who interacts with a **Tableau-powered dashboard** (represented by a smartphone icon). This dashboard is part of a **Tableau-powered dashboard system**. The user also interacts with a **Tableau-powered dashboard** (represented by a tablet icon) which is part of a **Tableau-powered dashboard system**. Both systems feed into an **Inventory Mgmt dashboard (additional dashboards for enterprise clients)** (represented by a cloud icon). This dashboard is part of a **Tableau-powered dashboard system**. The data then flows to a **Server (Enterprise clients)** (represented by a green server icon). The server connects to **Lambda** (represented by an orange lambda icon), which is part of a **Tableau-powered dashboard system**. Finally, the data is sent to **CloudWatch Logs (Encryption key management)** (represented by a red icon with a plus sign and a database cylinder).

5.1 Project Planning

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Upload	USN-1	As a Data Analyst, I can upload sales and inventory data in CSV format	3	High	Team A
Sprint-1	Dashboard View	USN-2	As a Data Analyst, I can view interactive dashboards in Tableau	2	High	Team A
Sprint-2	Trend Analysis	USN-3	As a Manager, I can analyze seasonal sales trends	3	Medium	Team B
Sprint-2	Inventory Monitoring	USN-4	As a Warehouse Staff, I receive alerts for low inventory levels	2	High	Team B

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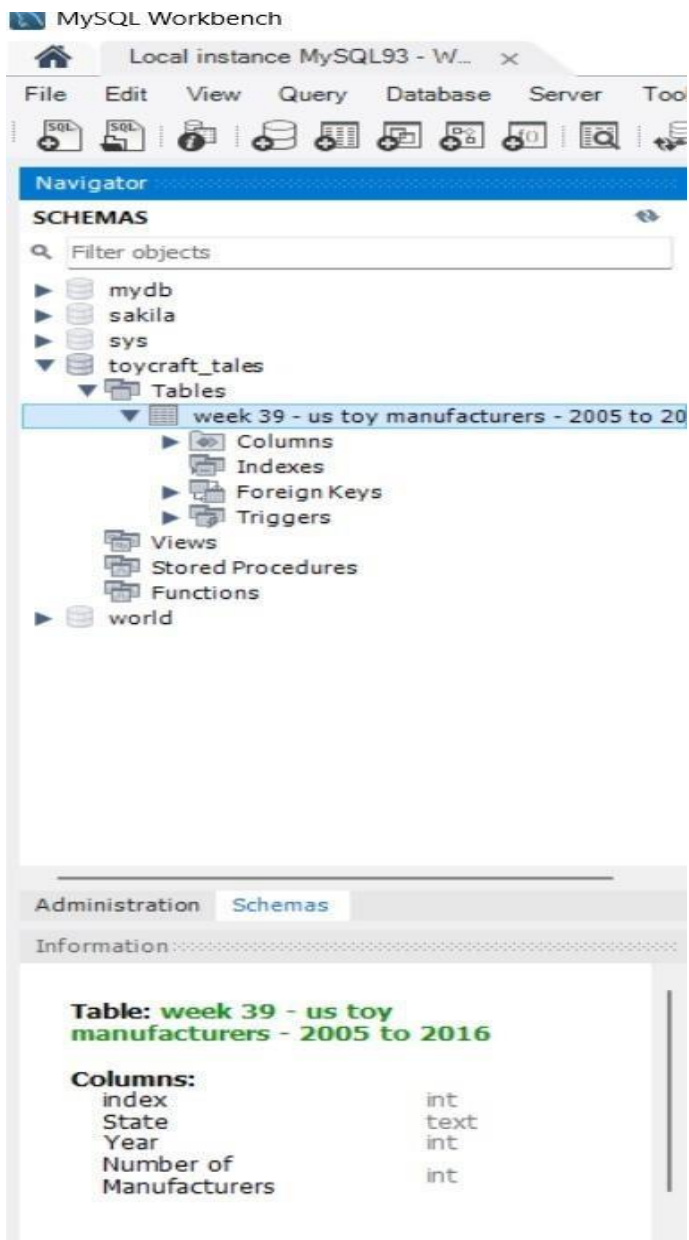
Sprint-3	Report Export	USN-5	As a Manager, I can export dashboards as PDF/image	1	Medium	Team C
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Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date	Story Points Completed
Sprint-1	5	5 Days	11 June 2025	15 June 2025	5
Sprint-2	5	5 Days	16 June 2025	21 June 2025	5
Sprint-3	1	3 Days	22 June 2025	24 June 2025	1

6.. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

MySQL Workbench



Local instance MySQL93 - W...

File Edit View Query Database Server Too

Navigator

SCHEMAS

Filter objects

- mydb
- sakila
- sys
- toy craft tales
 - Tables
 - week 39 - us toy manufacturers - 2005 to 2016
 - Columns
 - Indexes
 - Foreign Keys
 - Triggers
 - Views
 - Stored Procedures
 - Functions
 - world

Administration Schemas

Information

Table: week 39 - us toy manufacturers - 2005 to 2016

Columns:

index	int
State	text
Year	int
Number of Manufacturers	int

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MySQL Workbench

Local instance MySQL93 - W... x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

- mydb
- sakila
- sys
- toy_craft_tales
 - Tables
 - week 39 - us toy manufacturers - 2005 to 2016
 - Views
 - Stored Procedures
 - Functions
- world

Table: week 39 - us toy manufacturers - 2005 to 2016

Columns:

index	int
State	text
Year	int
Number of Manufacturers	int

Table Details

Engine: InnoDB

Row format: Dynamic

Column count: 4

Table rows: 591

AVG row length: 110

Data length: 64.0 KiB

Index length: 0.0 bytes

Max data length: 0.0 bytes

Data free: 0.0 bytes

Table size (estimate): 64.0 KiB

Update time: 2025-06-22 19:20:43

Create time: 2025-06-22 19:20:39

Auto increment:

Table collation: utf8mb4_0900_ai_ci

Information on this page may be outdated. Click [Analyze Table](#) to update it.

Output

#	Time	Action	Message
1	20:17:15	create schema ToyCraft_Tales	Error Code: 1007 Can

Object Info Session

Data Analytics

week 39 - us toy manufacturers - 2...

Search

Tables

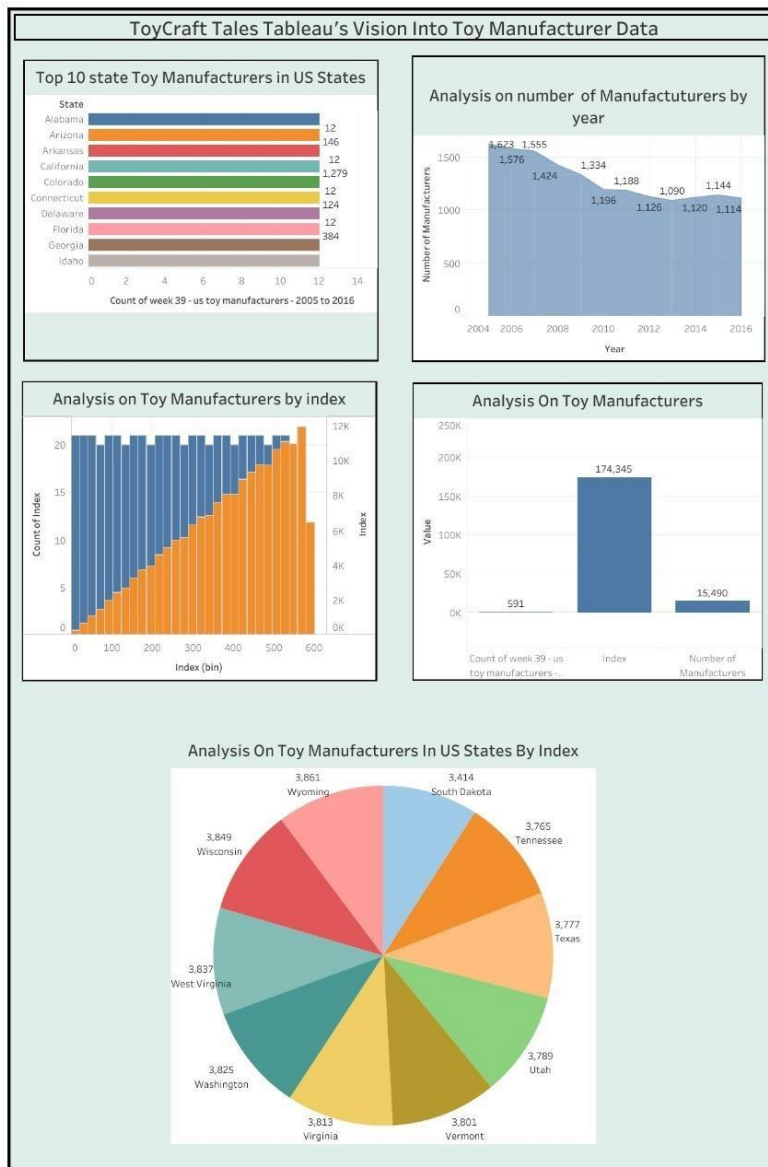
- Index (bin)
- State
- Year
- Measure Names
- Index
- Number of Manufacturers
- Latitude (generated)
- Longitude (generated)
- week 39 - us toy manufacturers - 20...
- Measure Values

7.. RESULTS

7.1 Output Screenshots

Below are the Tableau visualization results based on the dataset:

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8.. ADVANTAGES & DISADVANTAGES

Advantages:

Easy Integration: Tableau can integrate with databases like MySQL, Google Sheets, or Cloud

Storage where user data is stored, allowing seamless reporting.

User-Friendly Interface: Non-technical stakeholders can easily interpret the reports and

KPIs related to registration, confirmation success rates, etc.

Real-Time Data Monitoring: Tableau enables real-time monitoring of user activities such as registrations through different channels (Form, Gmail, LinkedIn).

Disadvantages:

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Cost Factor : Tableau licenses (especially Tableau Server or Tableau Online) can be expensive for small teams or projects with a limited budget.

Limited Interactivity with Core System : Tableau cannot trigger real-time actions like sending confirmation emails or OTPs—it can only report these processes.

Dependency on Data Source : Real-time accuracy depends on how well your databases or APIs integrate with Tableau; poor setup can delay reporting.

9.. CONCLUSION

This project uses Tableau to convert complex toy sales and inventory data into simple, interactive dashboards. It helps the company track sales trends, manage stock, and make better decisions quickly. Though Tableau is not a system development tool, it is ideal for data visualization and business insights, making operations more efficient.

10.. FUTURE SCOPE

Advanced Predictive Analytics: Integrate machine learning models with Tableau to predict toy sales trends, seasonal demand, and customer preferences.

Real-Time Data Integration: Connect Tableau directly to live data sources (e.g., sales platforms, inventory systems) for real-time dashboards and alerts.

Mobile Dashboard Access: Expand Tableau reports for mobile devices, enabling managers to track sales and stock anytime, anywhere

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