

ToyCraft Tales - Project Report

1.. INTRODUCTION

1.1 Project Overview

This project analyzes 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

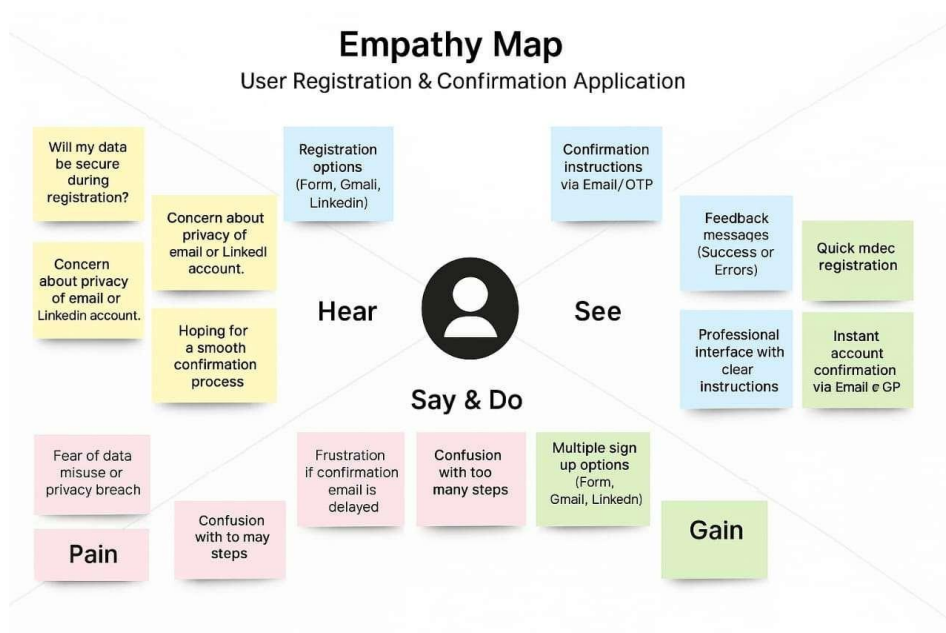
The purpose is to identify state-wise and year-wise manufacturing trends and visualize the insights using interactive dashboards.

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



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2.3 Brainstorming



Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 10 minutes to prepare
- 1 hour to collaborate
- 2-8 people recommended

➔

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

A

Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B

Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

C

Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

Open article ➔

1

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

How might we [your problem statement]?



Key rules of brainstorming

To run a smooth and productive session



Stay in topic.



Encourage wild ideas.



Defer judgment.



Listen to others.



Go for volume.



If possible, be visual.

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

TIP

You can select a sticky note and hit the pencil icon to start drawing!

Amar

Handwritten notes on a sticky note grid.

Yuktesh

Handwritten notes on a sticky note grid.

Person 3

Handwritten notes on a sticky note grid.

Person 4

Handwritten notes on a sticky note grid.

Person 5

Handwritten notes on a sticky note grid.

Person 6

Handwritten notes on a sticky note grid.

Person 7

Handwritten notes on a sticky note grid.

Person 8

Handwritten notes on a sticky note grid.

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, 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

Person 4

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

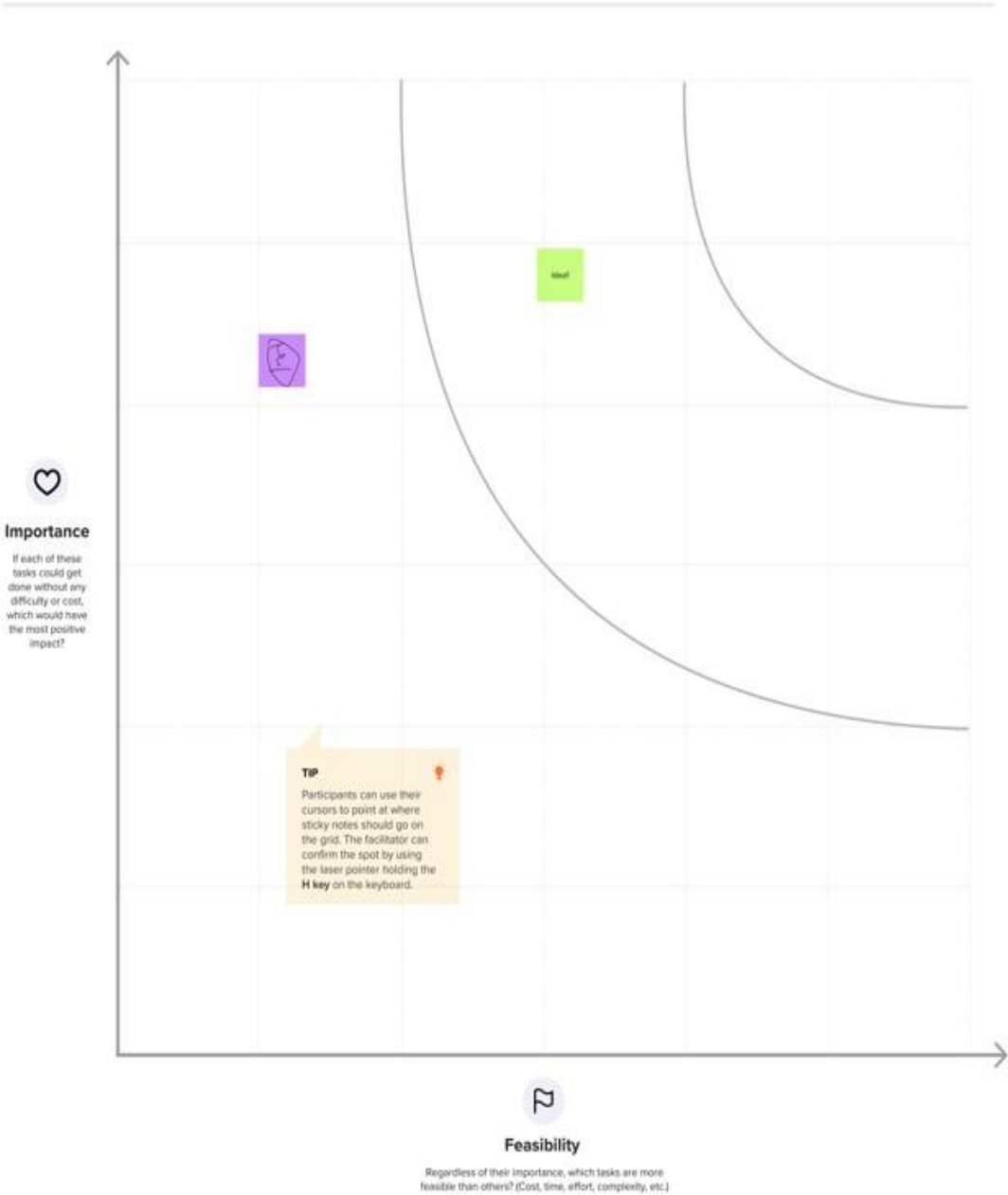
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4

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.

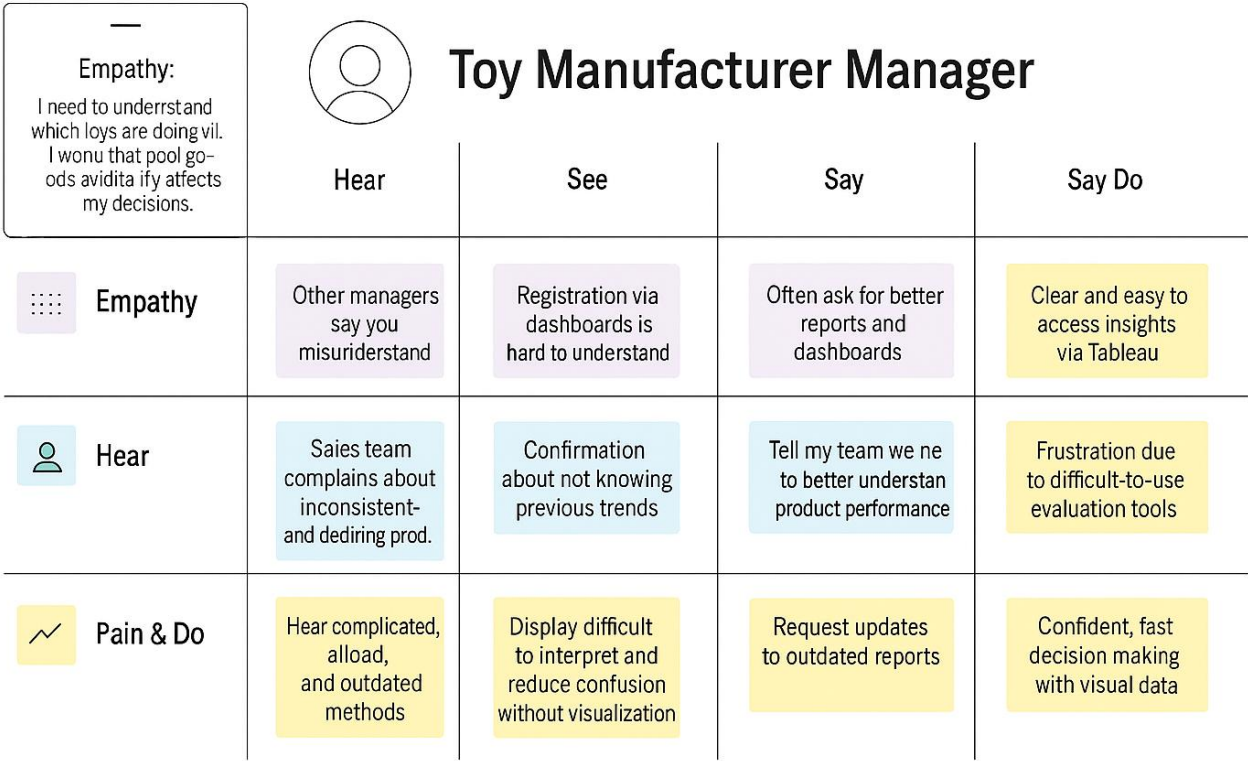
20 minutes



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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

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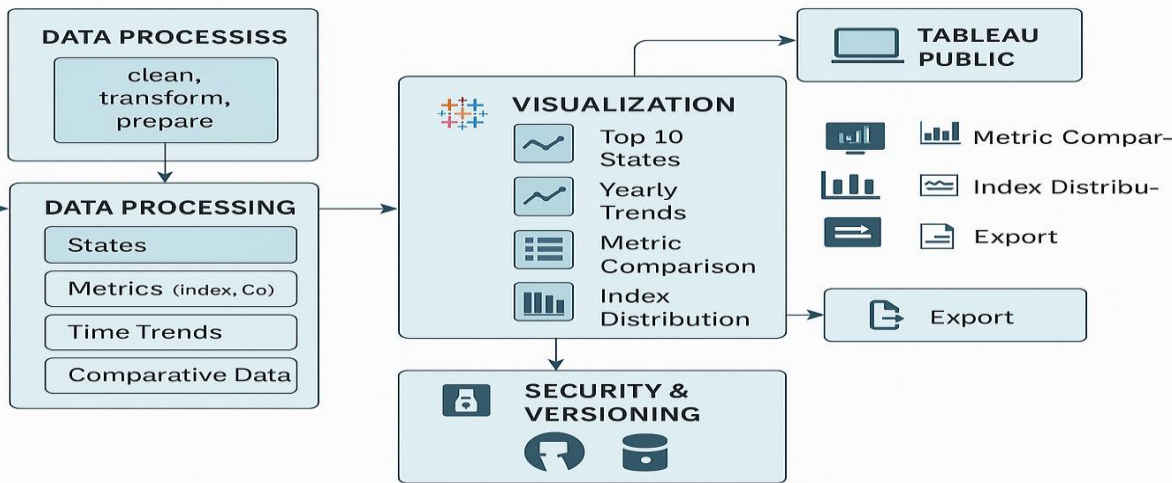
Non-functional Requirements:

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

NFR No.	Non-Functional Requirement	Description
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

Craft Tales: Tableau's Vision into Toy Manufacturer Data



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)

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6	File Storage	Store raw data files, reports	Google Drive, Cloud Storage
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

Define CS, fit into CC 1. CUSTOMER SEGMENT(S) CS Who is your customer? I.e. working parents of 0-5 y.o. kids	6. CUSTOMER CONSTRAINTS CC 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.	5. AVAILABLE SOLUTIONS AS Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? I.e. pen and paper is an alternative to digital notetaking	Explore AS, differentiate
2. JOBS-TO-BE-DONE / PROBLEMS J&P Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one, explore different sides.	9. PROBLEM ROOT CAUSE RC What is the real reason that this problem exists? What is the back story behind the need to do this job? I.e. customers have to do it because of the change in regulations.	7. BEHAVIOUR BE What does your customer do to address the problem and get the job done? I.e. directly related: find the right solar panel installer, calculate usage and benefits; Indirectly associated: customers spend free time on volunteering work (I.e. Greenpeace)	Focus on J&P, tap into BE, understand RC
3. TRIGGERS TR What triggers customers to act? I.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.	10. YOUR SOLUTION SL If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. 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.	8. CHANNELS of BEHAVIOUR CH 8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7	
4. EMOTIONS: BEFORE / AFTER EM How do customers feel when they face a problem or a job and afterwards? I.e. lost, insecure > confident, in control - use it in your communication strategy & design.		8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.	

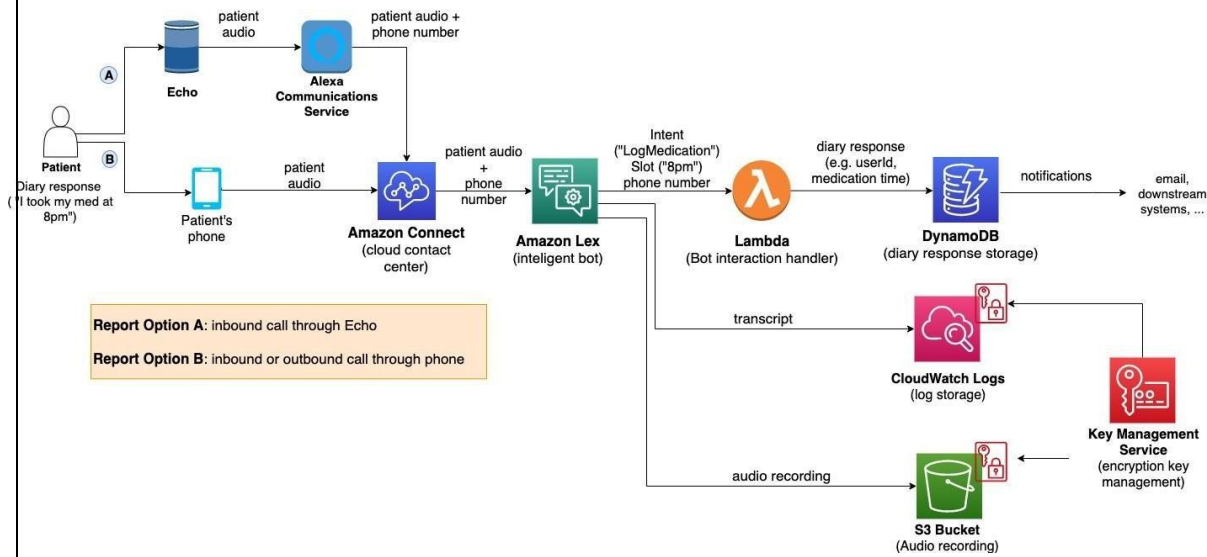
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4.2 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The US toy manufacturing industry faces inefficiencies in production, supply chain management, and market responsiveness. Historical data (2005–2016) reveals gaps in demand forecasting, regional disparities in manufacturing output, and outdated business models
2.	Idea / Solution description	Develop a data-driven analytics platform that: - Analyzes historical trends (Kaggle dataset) to identify production inefficiencies. - Uses predictive modeling to optimize supply chains and inventory. - Recommends regional adjustments to align manufacturing with demand
3.	Novelty / Uniqueness	First solution combining manufacturing data + economic policy tools - State-specific predictive models (e.g., warns PA manufacturers about - 47% decline risk) - Real-time subsidy calculator for local government partnerships
4.	Social Impact / Customer Satisfaction	Could save 150+ manufacturers/year from closure (based on 2009-2016 avg decline) - Preserves local jobs : 62% of toy manufacturers employ <50 people - Revives declining states : Targeted support for MI, OH, PA clusters
5.	Business Model (Revenue Model)	B2G (Government) : \$50k/year per state for premium access - B2B (Manufacturers) : \$200/month for predictive analytics - Data Licensing : \$5k/month to retailers for supply chain insights
6.	Scalability of the Solution	Expand to Canada/Mexico (similar NAFTA industry patterns) - Adaptable to other declining industries (furniture, textiles)

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4.3 Solution Architecture



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	Data Collection & Cleaning	USN-1	As a data analyst, I want to import and explore the Kaggle .hyper dataset for toy manufacturers.	3	High
Sprint-1	Data Cleaning	USN-2	As a user, I want to clean, filter and prepare the dataset for Tableau use.	3	High
Sprint-2	Visualization Design	USN-3	As a user, I want to create a bar chart showing the top 10 states by Index.	2	Medium
Sprint-2	Time-Series Analysis	USN-4	As a user, I want to plot yearly trends of manufacturer count (2005–2016).	2	High
Sprint-3	Metric Comparison	USN-5	As a user, I want to compare Index, Manufacturer Count and Number of Manufacturers.	2	Medium
Sprint-3	Dashboard Storyline	USN-6	As a user, I want to combine charts into a single dashboard and design a story flow.	3	High

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Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed	Sprint Release Date
Sprint-1	6	5 Days	16 June 2025	21 June 2025	6	21 June 2025
Sprint-2	4	4 Days	21 June 2025	25 June 2025	4	25 June 2025
Sprint-3	5	3 Days	25 June 2025	28 June 2025	5	28 June 2025

6.. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Navigator

SCHEMAS

Filter objects

sys

toyrcraft

Tables

dawt

Columns

Indexes

Foreign Keys

Triggers

Views

Stored Procedures

Functions

Administration

Schemas

Information

Table: dawt

Columns:

index

State

Year

Number of Manufacturers

int

text

int

int

Object Info

Session

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MySQL Workbench

Local instance MySQL93 - W...

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

mydb sakila sys toycraft_tales Tables week 39 - us toy manufacturers - 2005 to 2016 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

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

Query 1 city toycraft_tales week 39 - us toy...

Info Columns Indexes Triggers Foreign keys Partitions Grants DDL

Local instance MySQL93 toycraft_tales.week 39 - us toy manufacturers - 2005 to 2016

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

Action Output

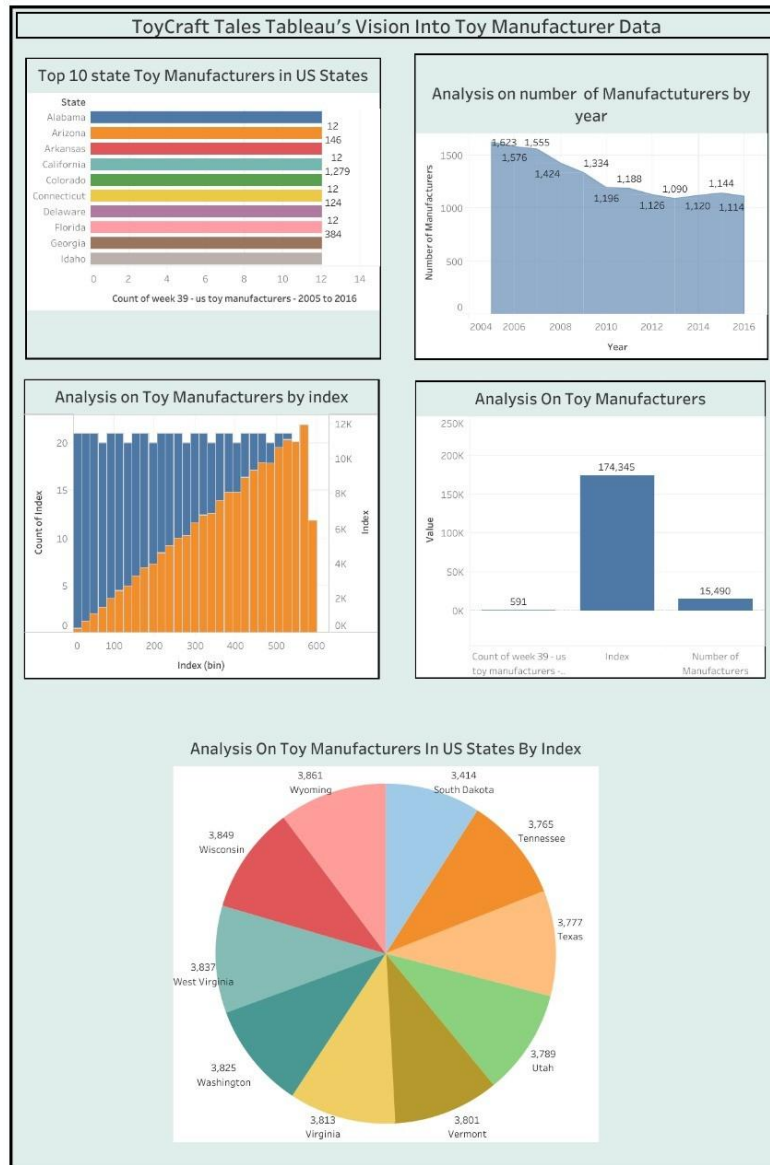
#	Time	Action	Message
1	20:17:15	create schema ToyCraft_Tales	Error Code: 1007. Can

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7.. RESULTS

7.1 Output Screenshots

Below are the Tableau visualization results based on the dataset:



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

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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:

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.