TDI CAPSTONE POWER BI PROJECT DOCUMENTATION

Mexico Toy Sales Review

Abstract

This study analyzes toy sales trends across Mexico, focusing on key metrics such as total revenue, average selling price, profit, and regional distribution. The objective is to identify high-performing product categories, top revenue-generating stores, and seasonal sales patterns to provide actionable insights for business optimization and inventory management. The analysis was conducted using **Microsoft Power BI** for data cleaning, data processing, visualization, and dashboard creation. The dataset included sales records with attributes such as product name, store location, revenue, profit, and quantity sold, inventory and more fields.

The methodology involved data cleaning to ensure consistency, followed by exploratory data analysis to uncover trends. An interactive dashboard was developed using POWER BI.

The dataset analysis revealed a total revenue of $1.4M and a profit of $14.4M, with an average selling price of $13.245. Lego Bricks emerged as the highest revenue-generating product category, while Toys Guadalajara was identified as the top revenue city. The peak revenue month was April, showing a significant sales increase. Additionally, stores with higher quantities sold, such as Toys Cuidad de Mexico 2, demonstrated strong performance. These insights can guide retailers in optimizing stock levels and marketing strategies in high-demand regions.

The findings suggest that toy sales in Mexico are driven by popular categories like Lego Bricks and urban store locations, with seasonal peaks influencing overall performance. These insights

can help businesses allocate resources effectively, enhance customer targeting, and improve profitability. Future research could incorporate customer demographics and competitive pricing data for a more comprehensive analysis of toy sales trends in Mexico.

Introduction

Toy sales are a critical component of the retail industry in Mexico, contributing to economic activity and consumer satisfaction. Understanding sales patterns, including top-performing products, regional variations, and seasonal trends, is essential for retailers, marketers, and inventory planners to optimize operations. This study examines toy sales trends across Mexico, focusing on revenue, profit, product categories, and store performance.

The relevance of this analysis lies in its potential to enhance business decision-making by identifying key drivers of sales success. By analyzing metrics such as total revenue, average selling price, and store-specific performance, this study provides insights that can inform inventory planning and marketing strategies. High-revenue regions, such as Toys Guadalajara, can be prioritized for investment, while peak sales periods like April can guide promotional campaigns.

Problem Statement

Toy sales in Mexico face challenges related to inconsistent performance across regions, varying demand for product categories, and seasonal fluctuations. Despite efforts to boost sales, certain stores and products underperform, while others exceed expectations, creating inefficiencies in inventory management and resource allocation. The lack of detailed, data-driven insights into these patterns limits retailers' ability to optimize their strategies.

One primary issue is the regional disparity in sales performance. Urban areas like Cuidad de Mexico report higher sales volumes than rural locations, raising questions about market saturation and customer preferences. Additionally, the lack of clarity on top-performing product categories makes it difficult for retailers to prioritize stock and marketing efforts.

Another concern is the seasonal variation in toy sales. Certain months, such as April, show spikes in revenue, yet the underlying factors driving these trends remain unclear. Without a clear understanding of peak periods, retailers may struggle to align inventory and promotions, potentially leading to lost opportunities or excess stock.

This analysis seeks to address these problems by providing a data-driven understanding of toy sales patterns in Mexico. Through the examination of regional trends, product performance, and temporal fluctuations, this study aims to support better inventory management, targeted marketing, and improved profitability for retailers.

Objectives

The primary objective of this study is to analyze toy sales trends in Mexico to identify patterns and key factors contributing to revenue and profit. Specifically, the study aims to:

1. Examine Regional Disparities – Identify top revenue-generating cities, such as Toys Guadalajara, with the highest sales performance.

2. Identify Top-Performing Products – Determine the highest revenue-generating product categories, such as Lego Bricks, to understand sales preferences.

3. Analyze Temporal Trends – Investigate peak sales months, including seasonal variations, to provide insights into demand cycles.

4. Assess Store Performance – Evaluate the relationship between store locations and sales metrics, particularly the impact of quantity sold.

5. Enhance Business Strategies – Provide data-driven insights to assist retailers in optimizing inventory, pricing, and marketing efforts.

6. Improve Profitability – Inform retailers about high-profit opportunities associated with specific products and regions to maximize returns.

By achieving these objectives, the study aims to contribute to improved sales performance, efficient resource allocation, and overall growth in the Mexican toy market.

Data Description

Data Source

The dataset used for this analysis was downloaded from Maven Analytics site, containing detailed records of toy sales across Mexico. The data was compiled into a structured format suitable for analysis, serving as a reliable source for understanding sales trends and store performance. The datasets contain one fact table (sales table) and four-dimension table (store, product, inventory, Calendar Table) with data dictionary which explains each fields in the datasets.

Data Collection

The data was collected from sales records, documenting various attributes such as product name, store location, revenue, profit, quantity sold, and date. The dataset includes structured data files capturing sales transactions over a specified period, providing a comprehensive view of market activity.

Data Characteristics

The dataset consists of key variables that facilitate the analysis of toy sales patterns. The major data attributes include:

· Product Name – Specifies the product category (e.g., Lego Bricks, Magic Sand), allowing for category-specific analysis.

· Store Name – Identifies the store location (e.g., Toys Cuidad de Mexico), enabling geographic analysis of sales trends.

· Revenue – Records the total revenue generated by each product and store, providing financial insights.

· Profit – Captures the profit margin for each sales transaction, highlighting profitability trends.

These data characteristics enable a structured approach to understanding toy sales trends, identifying high-performing regions, and examining patterns based on product categories and store locations.

Methodology

The toy sales dataset was used as the primary data source, containing fields like product name, store name, revenue, profit, and quantity sold. Additional fields, such as average selling price, were calculated using POWER BI functions to enhance the analysis.

Power BI Data Cleaning & Transformation Documentation

1. Product Table – Currency Clean-up

We started by transforming the data types in the Products table. The price column had a dollar sign ($), so we replaced the symbol with a space to clean it up. After that, we changed the data type of the column to Fixed Decimal Number to make sure calculations would work correctly.

2. Calendar Table – Date Formatting

Next, we worked on the Calendar table. The first row contained the word 'Date', so we promoted the first row to become the header.

To ensure the date values were interpreted correctly, we changed the column's data type to Date using Locale. Here's how we did it:

- Right-clicked the dropdown on the date column
- Selected Change Type → Using Locale
- Changed the data type to Date
- Set the locale from English (Nigeria) to English (United States)

This helped prevent regional date format issues.

3. Checking for Missing or Corrupted Data

To ensure data quality, we checked each column for null values, blanks, or errors. This was done by hovering over the small dark green bar just beneath each column header in Power Query. That visual cue helps quickly spot any inconsistencies or missing data.

4. Building Relationships Between Tables

We moved on to check relationships between the tables in the data model.

While trying to create a relationship between the Inventory and Stores tables, Power BI flagged it as a many-to-many relationship — which isn't ideal for a clean model. To fix this, we created a unique identifier in both the Sales and Inventory tables.

We used a calculated column with a concatenation formula to combine multiple fields (e.g., ProductID + StoreID) into one unique key. We made sure to apply the same formula on both the Sales and Inventory tables, and named the new column **Inventory ID** on each table. This ensured consistency and allowed us to establish a proper one-to-many relationship between the tables.

Note: Concatenation simply means joining values from two or more columns together to form a single, unique value.

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We used a calculated column with a concatenation formula to combine multiple fields (e.g., ProductID + StoreID) into one unique key. This new column was named Inventory ID, and it helped us establish a one-to-many relationship between Sales and Inventory properly.

Note: Concatenation simply means joining values from two or more columns together to form a single, unique value.

5. Customizing Date Formats

We also customized how months and days appear in our Calendar table. By default, the Month column showed full names like 'January' to 'December'. So, we created a new column that displayed short month names like 'Jan' to 'Dec', and deleted the old column.

We repeated the same process for the Day column: created a new column that shows short names like 'Mon', 'Tue', etc., instead of the full names like 'Monday', 'Tuesday', etc.

Statistical Analysis

The dataset was analyzed using Microsoft Power BI, leveraging functions such as SUM, AVERAGE, and COUNT to process data efficiently. Key aspects include:

1. Calculating Total Revenue and Profit

· The SUM function was used to determine total revenue ($14.4M) and profit ($4.01M), providing an overview of sales performance.

2. Computing Average Selling Price

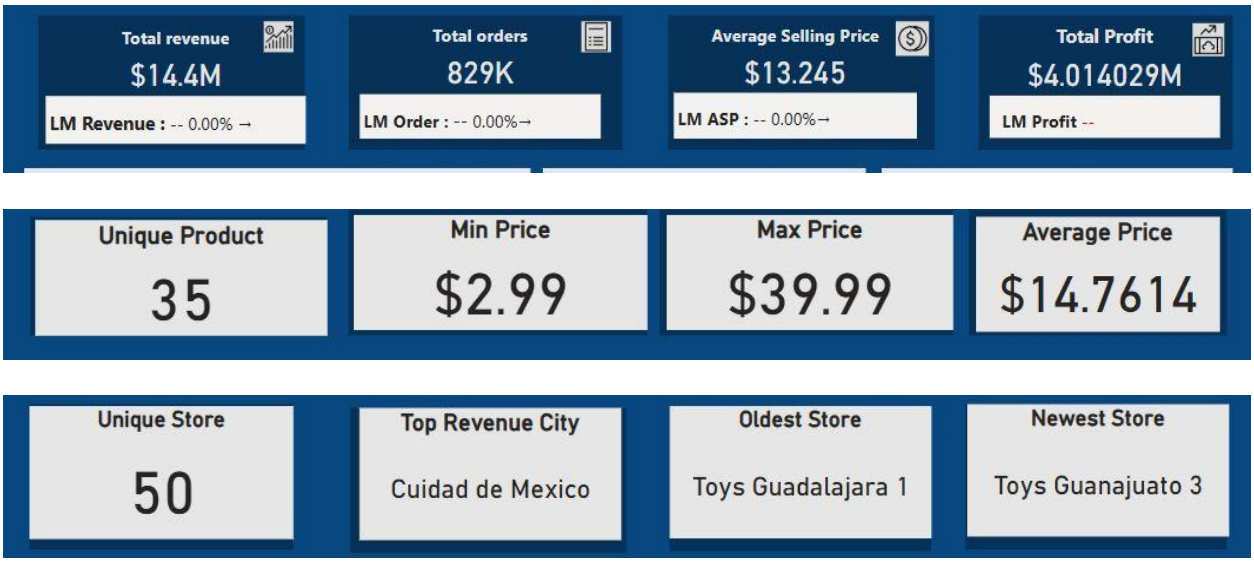
· The AVERAGE function calculated the average selling price ($12.45), offering insight into pricing trends.

3. Quantifying Store Performance

· The COUNT function assessed the number of unique stores (50), highlighting the scale of the retail network.

Exploratory Data Analysis

KPIs



The analysis focused on key metrics to understand toy sales patterns in Mexico. These indicators provide insights into product performance, regional sales, and temporal trends.

Main KPI with the following metrics:

· Total Revenue ($14.4M): Represents the overall sales value, emphasizing market activity.

· Total Profit ($4.01M): Indicates the profitability of toy sales across regions.

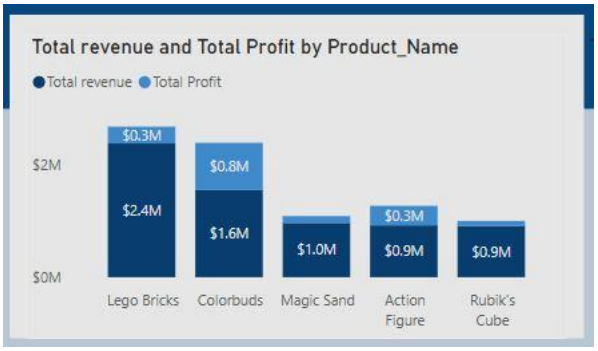
· Average Selling Price ($13.245): Reflects the typical price point for toys sold.

. Total orders (829k): it reflect the number of transactions

· Top Product Category (Lego Bricks): Identifies the highest revenue-generating category.

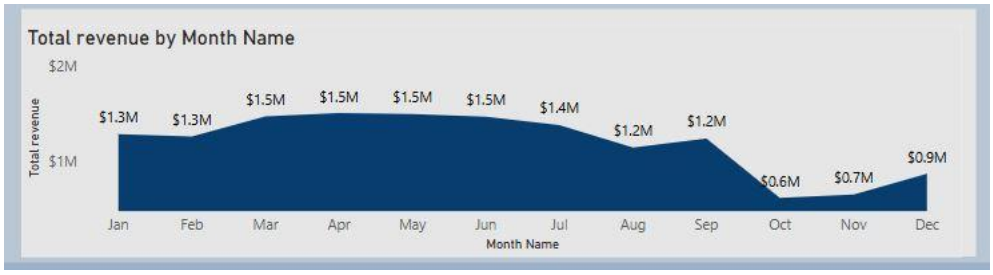
1. Total Revenue and Total Profit by Product Name

The Column chart shows Lego Bricks leading with $2M in revenue, followed by Colorbuds and Magic sand, indicating strong demand for these categories.



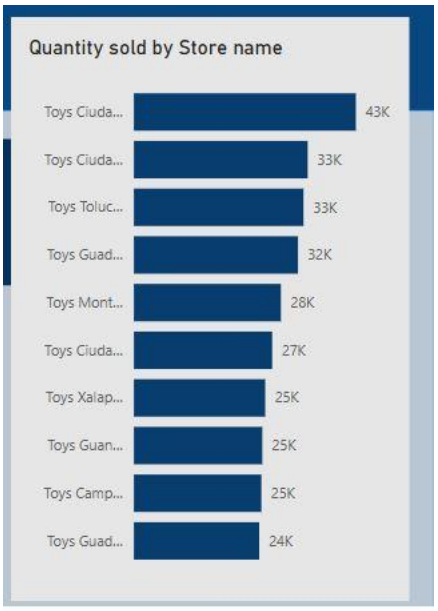
2. Total Revenue by Month Name

The line chart reveals a peak in April at $1.5M, suggesting a seasonal sales surge, possibly due to holidays or promotions.



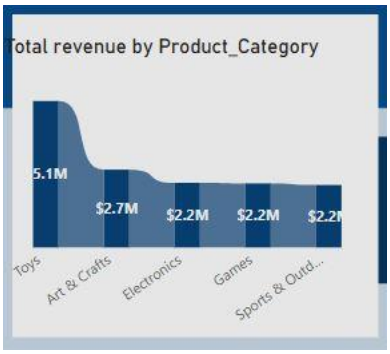
3. Quantity Sold by Store Name

The bar chart highlights Toys Cuidad de Mexico 2 with 43K units sold, underscoring its dominance in sales volume.



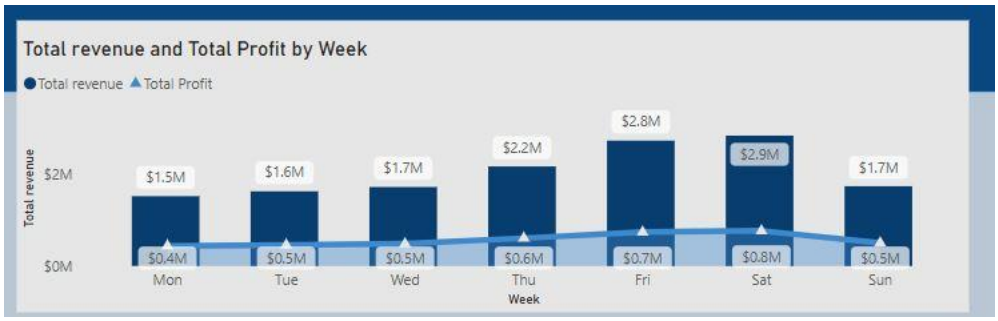
4. Total Revenue by Product Category

The area chart shows Lego Bricks and Toys & Crafts leading with $5.1M, reflecting category popularity.



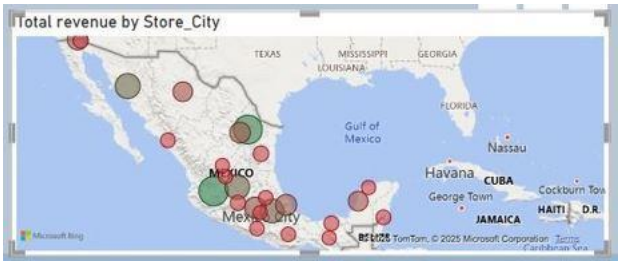
5. Total Revenue and Total Profit by Week

The line chart indicates consistent weekly performance, with peaks around mid-week, aiding resource planning.



6. Total Revenue by Store City

The map visualization identifies Toys Guadalajara as the top revenue city, aligning with urban sales strength.



7. Quantity Sold and Current Stock by Store Name

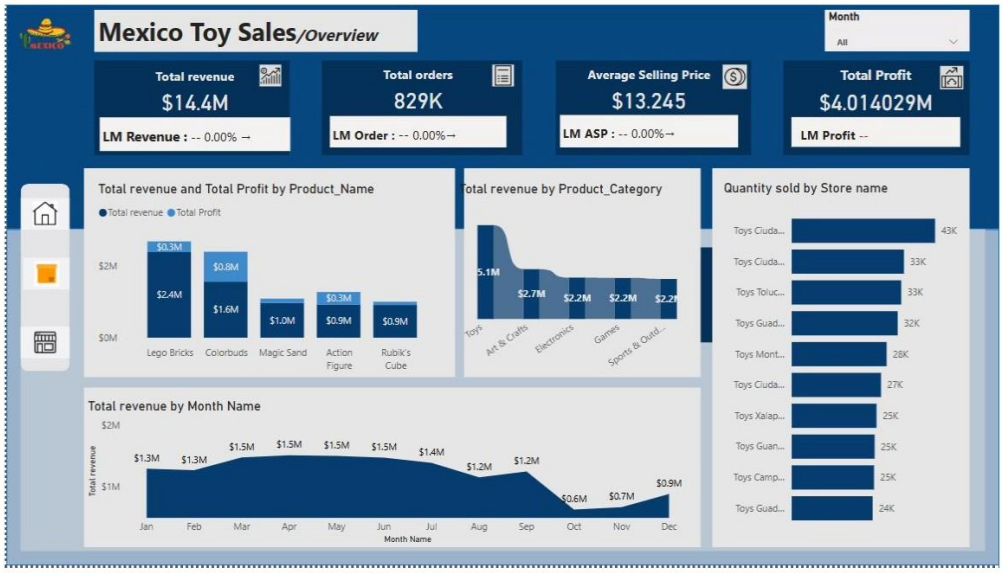
The bar chart shows Toys Cuidad de Mexico 2 leading with high sales and stock levels, guiding inventory decisions.

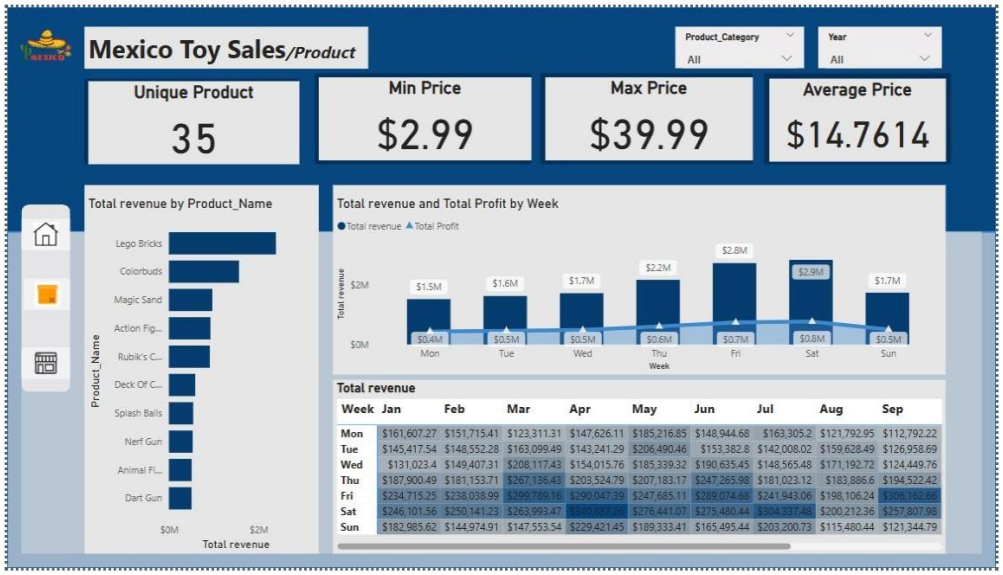
Detailed Insights from the Mexico Toy Sales Dashboard

The analysis of toy sales data in Mexico provides key insights into revenue, profit, and store performance. Total revenue reached $14.4M, with a profit of $4.01M, Total order 829k and an average selling price of $13.245. Lego Bricks emerged as the top product category, generating $5.1M in revenue, while Toys Guadalajara led as the highest revenue city.

Store performance varied, with Toys Cuidad de Mexico selling 43K units, indicating strong urban demand. The peak sales month, April, saw $1.5M in revenue, suggesting seasonal influences. Older price ranges (min $2.99, max $39.99) showed diverse pricing strategies, with an average of $14.76.

By leveraging these insights, retailers can optimize inventory for high-demand products, target marketing in key cities, and align promotions with peak seasons to maximize profitability.


Mexico Toy Sales/Overview
Month
All
Total revenue
$14.4M
LM Revenue : -- 0.00% →
Total orders
829K
LM Order : -- 0.00%→
Average Selling Price
$13.245
LM ASP : -- 0.00%→
Total Profit
$4.014029M
LM Profit --
Total revenue and Total Profit by Product_Name
Total revenue
Total Profit
$2M
$0M
$0.3M
$2.4M
$0.8M
$1.6M
$1.0M
$0.3M
$0.9M
$0.9M
Lego Bricks
Colorbuds
Magic Sand
Action Figure
Rubik's Cube
Total revenue by Product_Category
5.1M
$2.7M
$2.2M
$2.2M
Toys
Art & Crafts
Electronics
Games
Sports & Outd...
Quantity sold by Store name
Toys Ciuda...
43K
Toys Ciuda...
33K
Toys Toluc...
33K
Toys Guad...
32K
Toys Mont...
28K
Toys Ciuda...
27K
Toys Xalap...
25K
Toys Guan...
25K
Toys Camp...
25K
Toys Guad...
24K
Total revenue by Month Name
$2M
$1M
Total revenue
$1.3M
$1.3M
$1.5M
$1.5M
$1.5M
$1.5M
$1.4M
$1.2M
$1.2M
$0.6M
$0.7M
$0.9M
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month Name


Mexico Toy Sales/Product
Product_Category
All
Year
All
Unique Product
35
Min Price
$2.99
Max Price
$39.99
Average Price
$14.7614
Total revenue by Product_Name
Lego Bricks
Colorbuds
Magic Sand
Action Fig...
Rubik's C...
Deck Of C...
Splash Balls
Nerf Gun
Animal Fi...
Dart Gun
Product_Name
$0M
$2M
Total revenue
Total revenue and Total Profit by Week
Total revenue
Total Profit
$2M
$0M
$1.5M
$1.6M
$1.7M
$2.2M
$2.8M
$2.9M
$1.7M
$0.4M
$0.5M
$0.5M
$0.6M
$0.7M
$0.8M
$0.5M
Mon
Tue
Wed
Thu
Fri
Sat
Sun
Week
Total revenue
Week Jan Feb Mar Apr May Jun Jul Aug Sep
Mon $161,607.27 $151,715.41 $123,311.31 $147,626.11 $185,216.85 $148,944.68 $163,305.2 $121,792.95 $112,792.22
Tue $145,417.54 $148,552.28 $163,099.49 $143,241.29 $206,490.46 $153,382.8 $142,008.02 $159,628.49 $126,958.69
Wed $131,023.4 $149,407.31 $208,117.43 $154,015.76 $185,339.32 $190,635.45 $148,565.48 $171,192.72 $124,449.76
Thu $187,900.49 $181,153.71 $267,136.43 $203,524.79 $207,183.17 $247,265.98 $181,023.12 $183,886.6 $194,522.42
Fri $234,715.25 $238,038.99 $299,789.16 $290,047.39 $247,685.11 $289,074.68 $241,943.06 $198,106.24 $306,162.86
Sat $246,101.56 $250,141.23 $263,993.47 $340,787.25 $276,441.07 $275,480.44 $304,337.48 $200,212.36 $257,807.98
Sun $182,985.62 $144,974.91 $147,553.54 $229,421.45 $189,333.41 $165,495.44 $203,200.73 $115,480.44 $121,344.79


Mexico Toy Sales/Store
Store_City
All
Year
All
Unique Store
50
Top Revenue City
Cuidad de Mexico
Oldest Store
Toys Guadalajara 1
Newest Store
Toys Guanajuato 3
Total revenue, Total Profit and Total orders by Week
Total revenue
Total Profit
Total orders
Mon
Tue
Wed
Thu
Fri
Sat
Quantity sold and Current-Stock by Store name
Quantity sold
Current-Stock
Toys Ciudad de M...
Toys Ciudad de M...
Toys Toluca 1
Toys Guadalajara 3
Toys Monterrey 2
Store name
Quantity sold and Current-Stock
Total revenue by Store_City
TEXAS
MISSISSIPPI
LOUISIANA
GEORGIA
FLORIDA
Gulf of Mexico
Nassau
Havana
CUBA
George Town
Cockburn Tow
HAITI
D.R.
JAMAICA
MEXICO
Mexico City
Total orders and Total Profit by Store_City
Total orders
Total Profit
$0.4M
$0.2M
Cuidad de Mexico
Guadalajara
Monterrey
Hermosillo
Guanajuato

Conclusion

The findings from this analysis highlight the significant impact of toy sales in Mexico, with Lego Bricks and urban stores driving revenue and profit. Seasonal peaks, particularly in April, suggest the influence of external factors on sales trends.

To enhance performance, retailers should prioritize stock for top categories, increase presence in high-revenue cities like Toys Guadalajara, and align promotions with peak months.
Implementing data-driven strategies can lead to improved sales, efficient inventory management, and sustained growth in the Mexican toy market.