MAVEN TOYS

BEST TOYS IN THE WORLD

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- Maven Toys is a business group **providing the largest toys in Mexico**. As of 2018, they already have 50 stores spread across 29 cities in Mexico.

- In 2019 **they intended to expand their business**, but this was only done when there was an increase in sales of 20% in 2018 compared to the previous year.

- To achieve this, revenue in the **4th quarter** of 2018 would **need to reach approximately $1.7 million**.

Revenue in 2017: **$7.48M**

Revenue in 2018 until 3th quarter: **$6.96M**

Service

Maven store provides **offline transaction services**, customers come to the store to shop.

They only started recording sales digitally in **early 2017**.

Company Highlights

829K Transaction
Generated between Jan 2017 – Sep 2018

1.1M Sold Item
Generated between Jan 2017 – Sep 2018

$14.4M Total Revenue
Generated between Jan 2017 – Sep 2018

MAIN OBJECTIVE

We want to determine the **strategic steps to achieve** the Year on Year **revenue target of 20%**

SCOPE DEFINITION

Revenue Prediction

We make predictions for total revenue in the 4th quarter of 2018.

Sales Evaluation

We evaluate the sales for the period Jan 2017 - Sep 2018.

Clustering of Stores

We show data clustering of stores with potensial growth revenue.

Clustering of Products

We present data clustering of products with potensial growth revenue.

Daily Revenue per Store Prediction

We included daily sales guidance data per store for Q4 2018.

RESEARCH QUESTION

1

Is company **possible** aims to enhance its **annual revenue by 20%** in comparison to the previous year ?

2

How is the **sales performance** of Maven toys during the period **Jan 2017 – Sep 2018**?

3

Provide the **company's strategy**, regardless of whether **it achieves** a 20% increase in revenue compared to last year **or not**?

METHODOLOGY

Data Gathering

Data gathering about maven toys.

Data Cleaning

Change Data type, Remove null and irrelevant value using python.

E D A

Result of doing analysis data to get insight and recommendation.

Prediction

Estimate the likelihood of our company achieving the target. and forecast the average daily sales per store.

Clustering

Classification of store & products with potensial growth revenue.

Insight & Recommendation

Forecasting possibility our company achieve target. Create group or category of our customers

Data Visualization
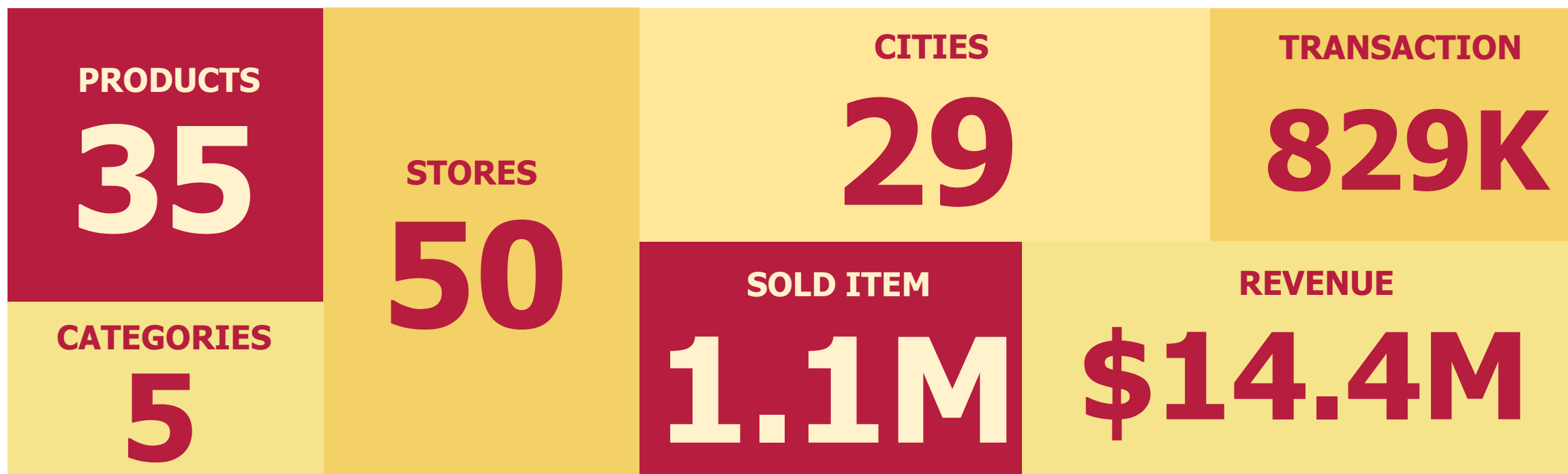
Create sales prediction and sales evaluation dashboards
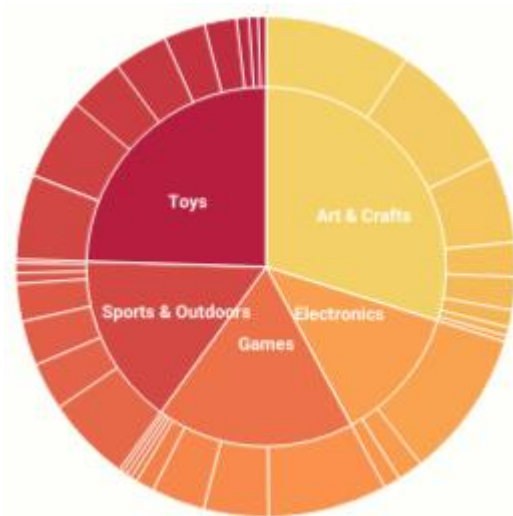
DATA SOURCES
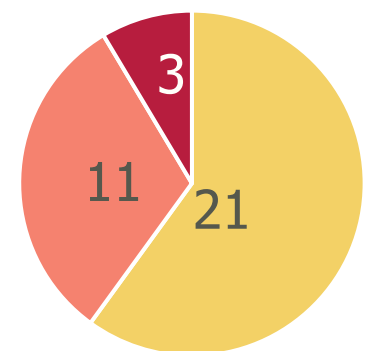
The dataset includes 4 files: **store, products, sales, inventory** and dataset **geolocation** (latitude and longitude) from external resources.

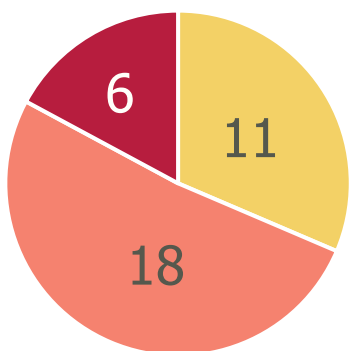|			
PRODUCTS 35	**STORES** 50	**CITIES** 29	**TRANSACTION** 829K
CATEGORIES 5		**SOLD ITEM** 1.1M	**REVENUE** $14.4M

PRODUCT PRICE

COST PRODUCTION

3
11
21

- Affordable   - Moderate   - Costly

RETAIL PRICE

6
11
18

- Affordable   - Moderate   - Costly

PRODUCTS PROFIT

57%
43%
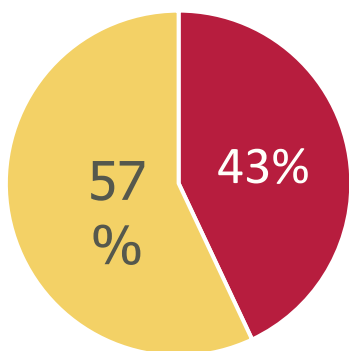
- Significant   - Non-significant

Mexico Toy has 35 different products, there are:

Toys	- 9 items
Art & Crafts	- 8 items
Games	- 8 items
Sports & Outdoors	- 7 items
Electronics	- 3 items

Overall, the products offered are **low production, middle retail price** products with **nonsignificant revenue.**
- 21 products: affordable production < $10
- 18 products: moderate retail price $10 - $20
- 57% products generate nonsignificant profit.

Prices for production range from **$1.99 to $34.99**
Retail prices range from **$2.99 to $39.99.**

PRODUCT CATEGORIES

Category Performance

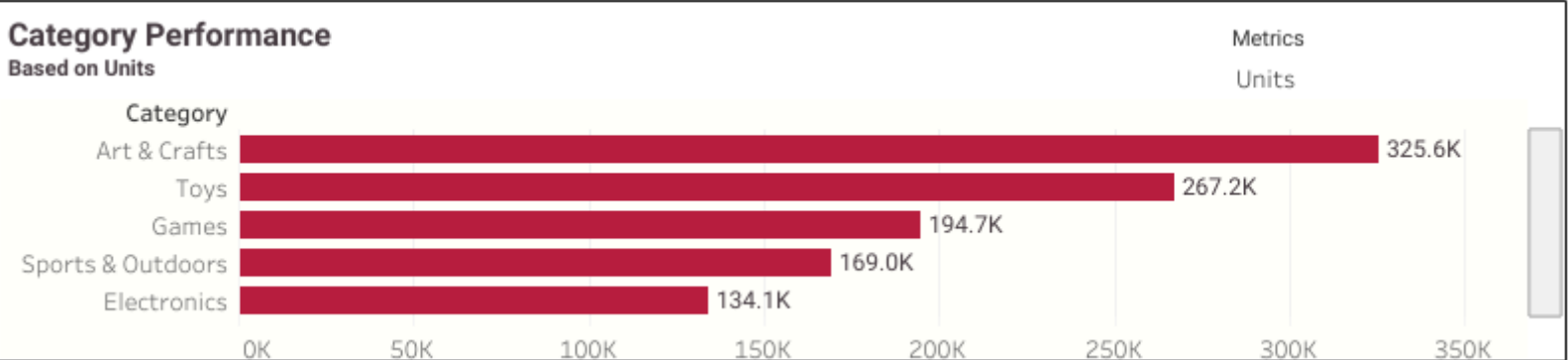
Category Performance
Based on Units

There are 5 categories of products in Mexico Toy,
The category with **Art & Crafts** is the **most preferred** for costumers
Electronics is **Non-preferred** category for costumers

Product Performance

Category Performance
Based on Revenue
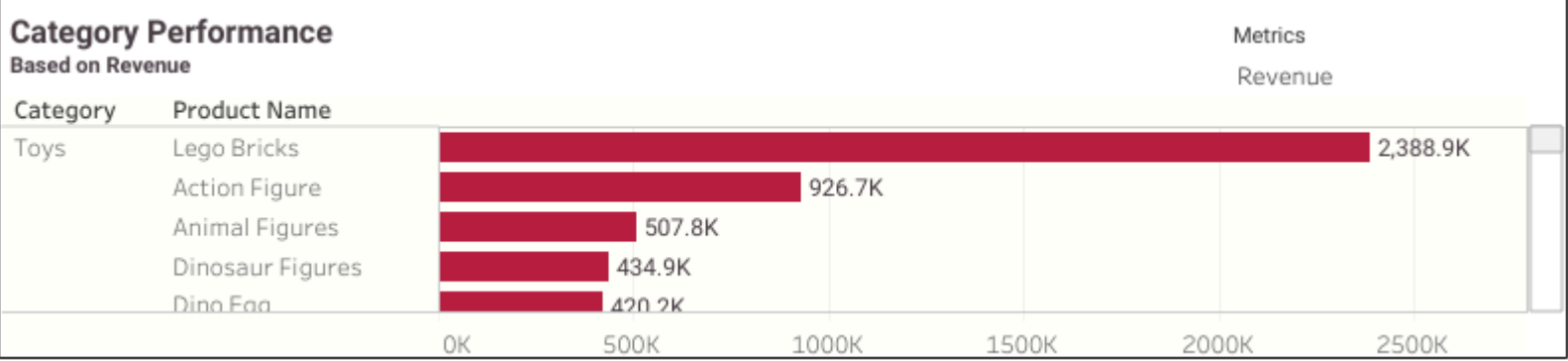
Significant:
- **Lego Bricks** in **revenue.**
- **Colorbuds** in **unit sold and profit.**

Nonsignificant:
- **Uno Card Game** in **revenue**
- **Mini Basketball Hoop** in **unit sold**
- **Classic Dominoes** in **profit.**

Note : It will be more obvious on the dashboard

SALES PER CITY

Top 5 City
Based on Revenue

Toluca, Xalapa, Ciudad de Mexico, Guadalajara, Monterrey

Top N City

5

Metrics

Revenue

City Metrics (Avg)

305.1K   412.4K

There are 5 top city based on average sales by city
- The **highest city** based on **revenue is Ciudad de Mexico** with revenue > $410K
- The **lowest city** based on revenue is **LaPaz** with revenue $22K

ITEM SOLD PER CITY

Top 5 City
Based on Demand

Top N City
5

Metrics
Demand

City Metrics (Avg)
22.3K   31.4K
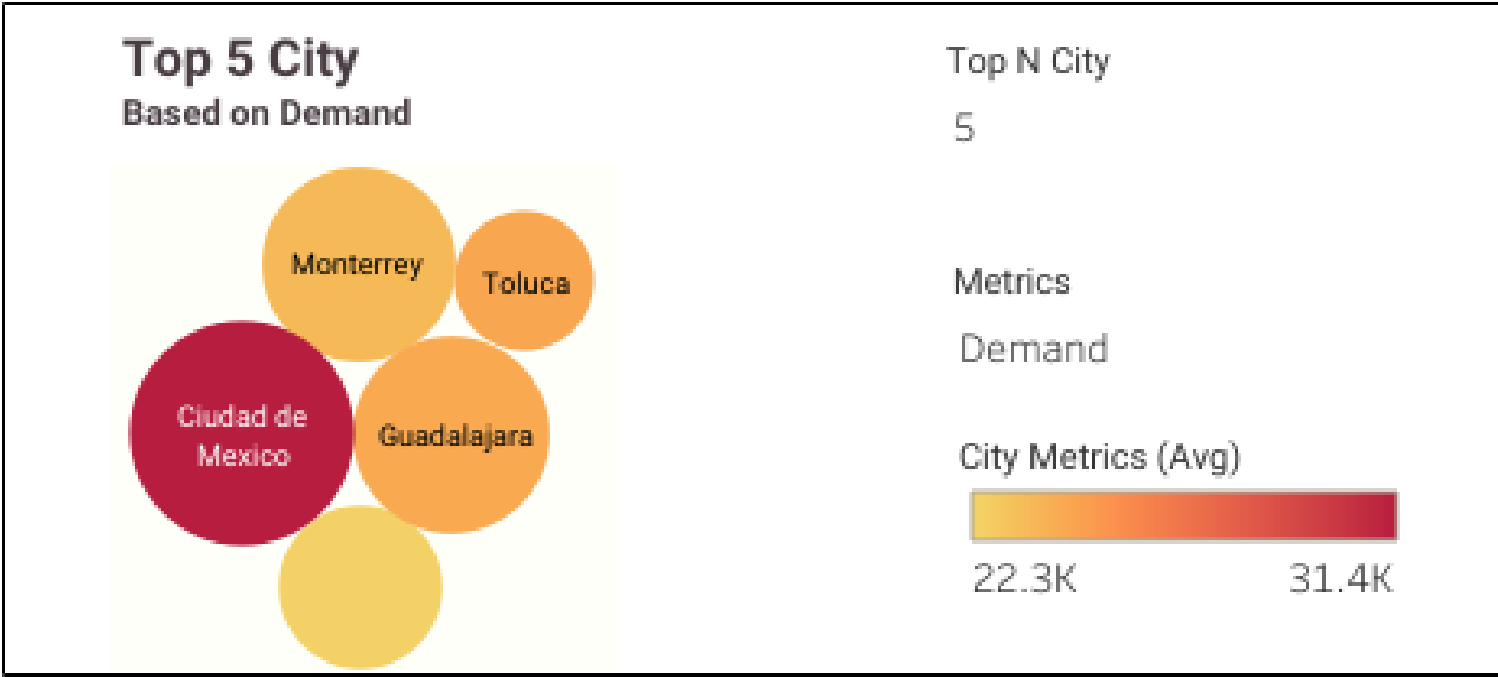
There are 5 top city based on item sold per city
- The **highest city** based on **demand is Ciudad de Mexico** with revenue > 31K
- The **lowest city** based on demand is **LaPaz** with revenue >17K

GROWTH REVENUE QoQ

Growth QoQ (2017-2018)
Based on Location

Loc	Quarter of Date	2018
Airport	Q1	37.39%
	Q2	37.40%
	Q3	37.72%
Commercial	Q1	46.17%
	Q2	12.51%
	Q3	21.50%
Downtown	Q1	40.61%
	Q2	25.13%
	Q3	36.11%
Residential	Q1	33.09%
	Q2	16.14%
	Q3	26.34%

Growth
12.51%   46.17%

Based on % sales growth QoQ by location :
- The **highest growth** location is **Q1 2018 commercial** with 46.17 %
- The **lowest growth** location is **Q2 2018 commercial** with 12.51%
- The **highest average growth** location is **airport** with 37.50%
- The **lowest average growth** location is **residential** 25.19%

AVERAGE REVENUE BY LOCATION

Location Performance
Based on Revenue

$273.3K $429.9K

Airport

Total Revenue: $1.3M
Total Store: 3
Avg Revenue: $429.9K

Downtown

Total Revenue: $8.2M
Total Store: 29
Avg Revenue: $283.4K

Residential

Total Revenue:
$1.7M
Total Store:
6
Avg Revenue:
$276.0K

Commercial

Total Revenue:
$3.3M
Total Store:
12
Avg Revenue:
$273.3K
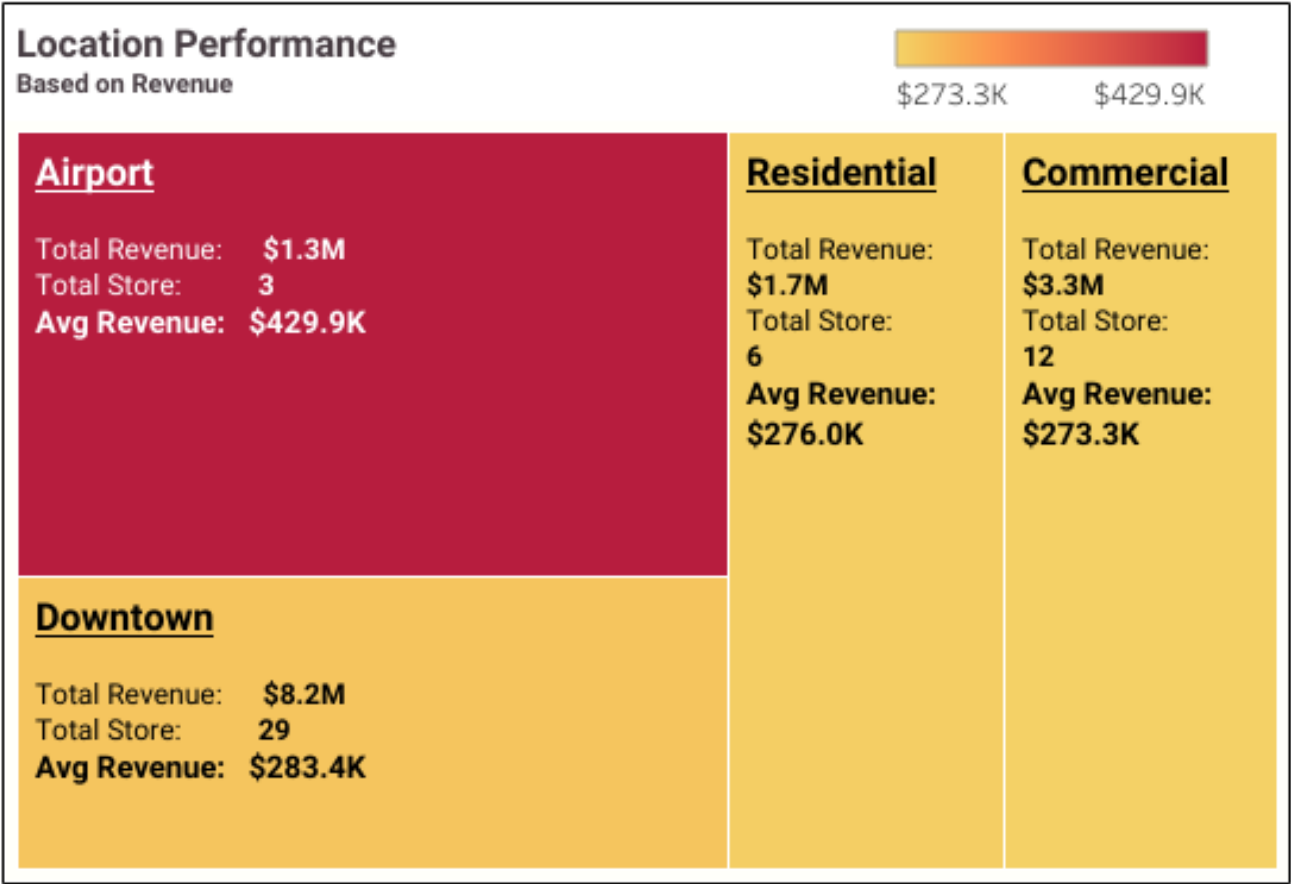
Based on average revenue by location :
- The **highest revenue** by location is **Airport** with $429.9 K
- The **lowest revenue** by location is **commercial** with $273.3 K

PREDICTION SALES

Based on the results obtained, **sales growth is expected to be achieved** or even exceeded, **approximately 30%** compared to sales in the previous year.

MAVEN TOYS
BEST TOYS IN THE WORLD

SALES PREDICTION DASHBOARD

Month   October 2018

TOTAL REVENUE (PREDICTION)
$715.6K

October 2018: **$715.6K**   November 2018: **$733.6K**   December 2018: **$827.6K**

PREDICTION ACCURACY
(Daily Revenue)
86%
XGBoost Model

Average daily predicted sales target per store to **guide the 4th quarter** to achieve the above target.

Sales Benchmark in Q4
Period: October 2018

Revenue

$17.6K $34.1K

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14		16	17	18	19	20
21		23	24	25	26	27
28		30	31			

Day of Date: 7
Weekday of Date: **Sunday**
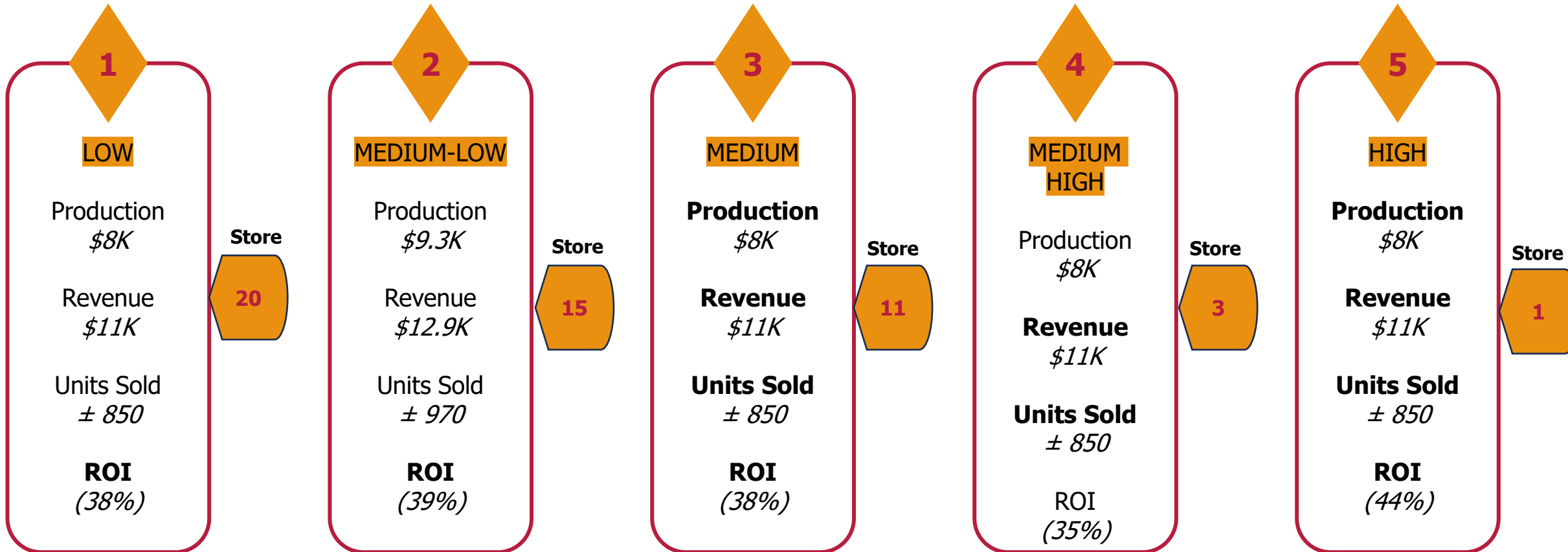**Avg Revenue:** $679.6
Revenue: $33.9K

PREDICTION ACCURACY
(Daily Target Sales per Store)
87%
XGBoost Model

CLUSTER Based on STORE

Cluster of stores **based on average monthly sales** in each store. The clustering is the process of **identifying opportunities** and **keeping** stores **on track**.

1
LOW

Production
$8K

Revenue
$11K

Units Sold
± 850

ROI
(38%)

Store 20

2
MEDIUM-LOW

Production
$9.3K

Revenue
$12.9K

Units Sold
± 970

ROI
(39%)

Store 15

3
MEDIUM

Production
$8K

Revenue
$11K

Units Sold
± 850

ROI
(38%)

Store 11

4
MEDIUM HIGH

Production
$8K

Revenue
$11K

Units Sold
± 850

ROI
(35%)

Store 3

5
HIGH

Production
$8K

Revenue
$11K

Units Sold
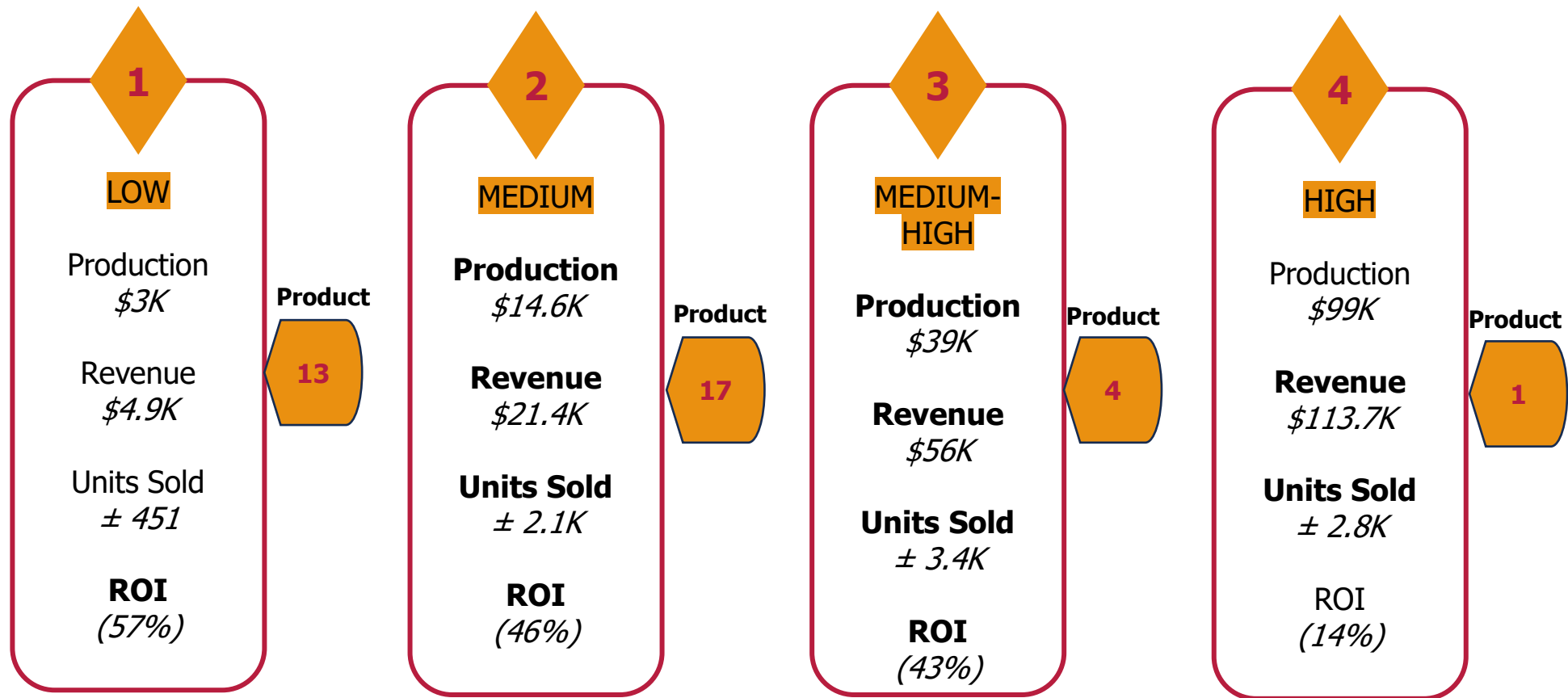*± 850*

ROI
(44%)

Store 1

Note: factors labeled bold indicate the superiority of a cluster

- There are **35 stores** are categorized as **low and medium sales performance.**
- Cities with these stores **must be maintained, especially if >50% of the stores in the city are in the low and middle low cluster**, such as: Guadalajara 2/4, Guanajuato 2/3, Puebla 3/3 Chihuahua 2/2.

CLUSTER Based on PRODUCTS

Cluster of products **based on average monthly sales** in each products. The clustering is the process of **identifying opportunities** and **keeping** stores **on track.**

1
LOW

Production
$3K

Revenue
$4.9K

Units Sold
± 451

ROI
(57%)

Product 13

2
MEDIUM

Production
$14.6K

Revenue
$21.4K

Units Sold
± 2.1K

ROI
(46%)

Product 17

3
MEDIUM-HIGH

Production
$39K

Revenue
$56K

Units Sold
± 3.4K

ROI
(43%)

Product 4

4
HIGH

Production
$99K

Revenue
$113.7K

Units Sold
± 2.8K

ROI
(14%)

Product 1

Note: factors labeled bold indicate the superiority of a cluster

We can maximize sales by **focusing on 2 cluster** products, namely **middle high and high** 5/35 (Colorbuds, Magic Sand, Action Figure, Rubik's Cube and Lego Bricks). This classification is a **favourite** for consumers and has a **big impact on sales**.

SUMMARY

- Based on the results **sales growth can be achieved** and even exceeded, **Estimated Q4 revenue** reached **$2.2M** from target of $1.7M, which is **more than ±30% higher** than sales in the previous year with **prediction accuracy** (*daily revenue*) **86%.**

- Overall, the products offered are **low production**, **middle retail price** with **nonsignificant revenue**.

- The category **Art & Crafts** is **the most preferred** for costumers.

- Items such as **Lego bricks** and **Colorbuds** can be considered **individual products** that can **increase** the amount of **revenue, sales and profits**.

- In terms of **average sales revenue and demand per store**, **Ciudad de Mexico** remains the **best-performing city** in the country.

- **Airport** is the location of the **highest average growth** and **highest revenue** compared to other locations.

- **Average daily predicted sales target per store** to **guide the 4th quarter** to achieve the above target. with **prediction accuracy 84%.**

- There are **70% stores** are **categorized as low and medium sales performance.**

- There are **37%** of products categorized **as low sales performance** products with an average of **only 451 per month**.

INSIGHTS AND RECOMMENDATIONS

- Use **average daily sales per store as a benchmark** to identify opportunities and keep stores **on track for revenue targets.**

- **35 Cities** with low and medium sales performance should be **under monitoring**, **especially** if there are **more than 50%** of **indicated** stores in the city, such as: *Guadalajara 2/4, Guanajuato 2/3, Puebla 3/3 Chihuahua 2/2.*

- **Increasing marketing efforts** such as bundling products, targeted ads, and offering discounts at locations with **lowest revenue** and **average growth** like **commercial** (12) **and residential** (6) areas to boost revenue.

  1. **For low-power (revenue)** stores we should prioritize **the Art & Craft category**.

  2. **Sales** can be maximized by **focusing on 2 product classifications** (*Colorbuds, Magic Sand, Action Figure, Rubik's Cube and Lego Bricks*) Because **the product sells well in the market** and **has a big impact on revenue.**

  3. **Changed the prices** of 6 products (*Glass Marbles, Jenga, Mini Basketball Hoop, Mr. Potatohead, Playfoam, Plush Pony*) because the **selling prices** of these items **did not fit the market** due to low production costs, good retail prices, but the profits generated were significant.

  4. We can also **recommend** products with a **low classification** as products that can be **bundled** with more **popular products in the same category**.

- Need to focus on , **Ciudad de Mexico** as the city has a stronger consumer base and more economic opportunities.

- There are other city options such as **Guadalajara, Toluca, and Monterrey** that could provide additional opportunities to increase revenue, considering these cities are also economic hubs.

- Ensure the **availability of products** is always **fulfilled**, especially in **cities** with **high demand and sales**.

DASHBOARD SNAPSHOOT

On this dashboard, you can view the overall sales evaluation.

- **Revenue**
- **Units sold**
- **Revenue Trend**
- **Top city in revenue performance**
- **Location performance**
- **Category Performance**
- **QoQ growth in each location**

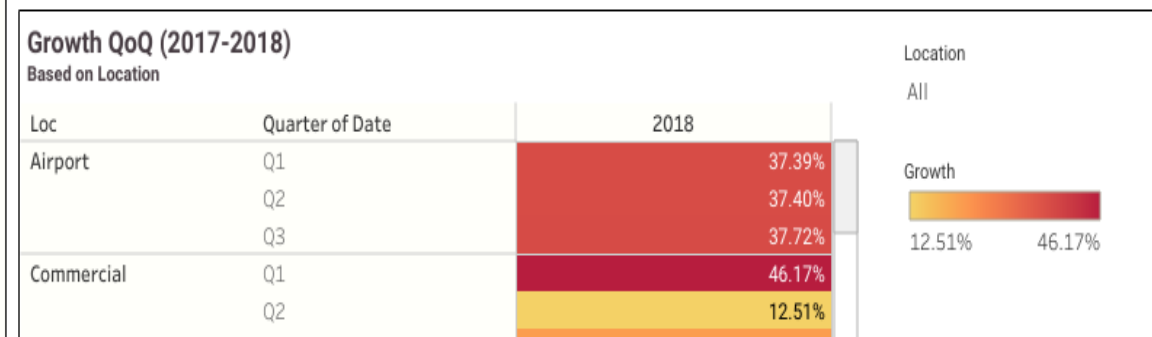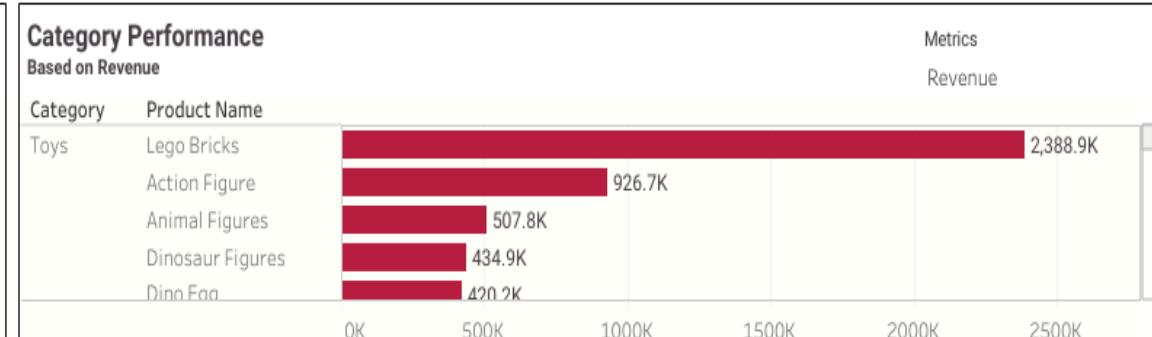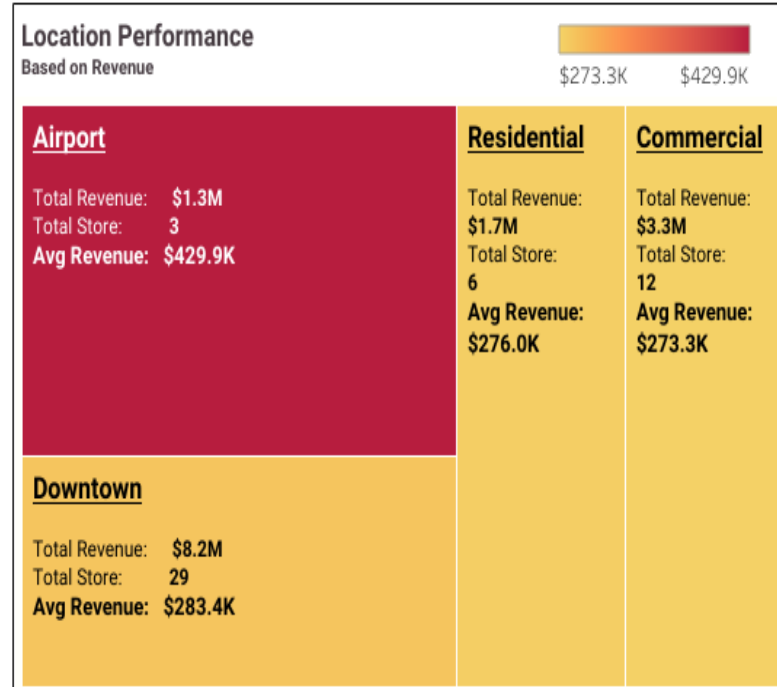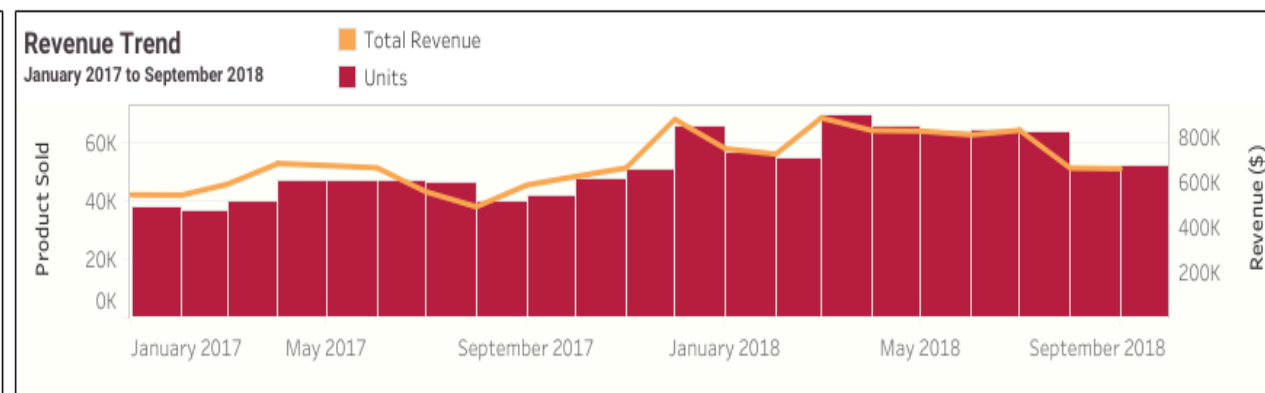Which can be **tracked** by **date**, **category**, **product**, and **city.**

MAVEN TOYS
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SALES EVALUATION DASHBOARD

| Date | 1/1/2017 to 9/30/2018 | Category All | City All | Product All |

TOTAL REVENUE	TOTAL PRODUCT SOLD	TOTAL STORE	TOTAL PRODUCT CATEGORY	TOTAL PRODUCT
$14.4M	1.1M	50	5	35

Top 5 City
Based on Demand

Monterrey, Toluca, Ciudad de Mexico, Guadalajara

Top N City: 5

Metrics: Demand

City Metrics (Avg): 22.3K — 31.4K

Revenue Trend
January 2017 to September 2018

Legend: Total Revenue, Units

X-axis: January 2017, May 2017, September 2017, January 2018, May 2018, September 2018
Y-axis (left): Product Sold 0K, 20K, 40K, 60K
Y-axis (right): Revenue ($) 200K, 400K, 600K, 800K

Location Performance
Based on Revenue

$273.3K — $429.9K

Airport
Total Revenue: $1.3M
Total Store: 3
Avg Revenue: $429.9K

Residential
Total Revenue: $1.7M
Total Store: 6
Avg Revenue: $276.0K

Commercial
Total Revenue: $3.3M
Total Store: 12
Avg Revenue: $273.3K

Downtown
Total Revenue: $8.2M
Total Store: 29
Avg Revenue: $283.4K

Category Performance
Based on Revenue

Metrics: Revenue

Category	Product Name	
Toys	Lego Bricks	2,388.9K
	Action Figure	926.7K
	Animal Figures	507.8K
	Dinosaur Figures	434.9K
	Dino Egg	420.2K

X-axis: 0K, 500K, 1000K, 1500K, 2000K, 2500K

Growth QoQ (2017-2018)
Based on Location

Location: All

Loc	Quarter of Date	2018
Airport	Q1	37.39%
	Q2	37.40%
	Q3	37.72%
Commercial	Q1	46.17%
	Q2	12.51%

Growth: 12.51% — 46.17%
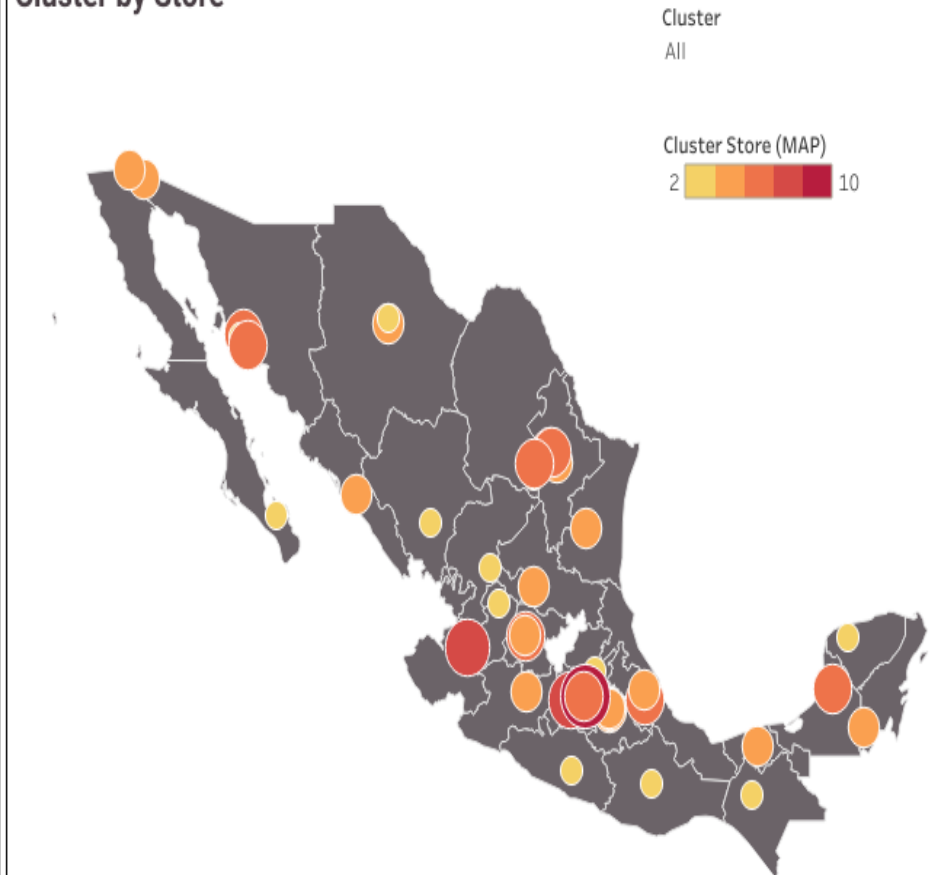
DASHBOARD SNAPSHOOT

On this dashboard, you can view the overall sales prediction.

- **Revenue**
- **Daily revenue per store**
- **Classification store**
- **Classification products**

Which can be **tracked** by **month, cluster**.

MAVEN TOYS
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SALES PREDICTION DASHBOARD

Month   October 2018

TOTAL REVENUE (PREDICTION)
$715.6K

Cluster by Store

Cluster
All

Cluster Store (MAP)
2 — 10

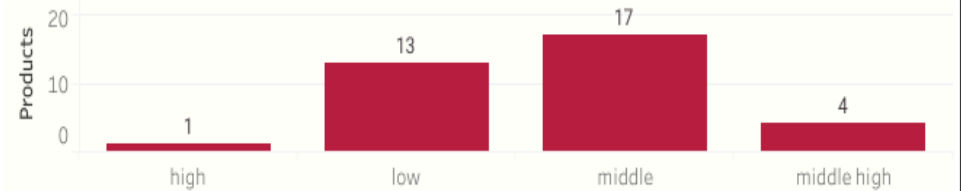### Sales Benchmark in Q4
Period: October 2018

Revenue
$17.6K — $34.1K

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Product Segmented
Based on Revenue and Cost Production

high: 1
low: 13
middle: 17
middle high: 4

Product Name	
Action Figure	
Animal Figures	
Barrel O' Slime	
Chutes & Ladders	
Classic Dominoes	
Colorbuds	
Dart Gun	

Cluster
All

Cluster By Product
- high
- low
- middle
- middle high

APPENDIX

Dataset source: **Maven Toys Store**
Inside of dataset:
- Inventory csv
- Product csv
- Sales csv
- Stores csv
- Geolocation (External resources)

Python   :
- EDA : **Here**
- Prediction total revenue:
  1. XGBoost Model Forecasting: **Here**
- Prediction AVG target revenue per store:
  1. XGBoost Model Forecasting: **Here**
- Clustering stores : **Here**
- Clustering products : **Here**

Tableau (Dashboard) : **Here**

THANKS