

# MRA Project

Milestone 1

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# Agenda

- Problem Statement
- Executive Summary
- Exploratory Analysis
- Customer Segmentation using RFM

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# Problem Statement

An automobile parts manufacturing company has collected data of transactions for 3 years. They do not have any in-house data science team; thus they have hired you as their consultant. Your job is to use your magical data science skills to provide them with suitable insights about their data and their customers.

- **Agenda & Executive Summary of the data**
  - Contents of the presentation
  - Problem statement
  - About Data (Info, Shape, Summary Stats, your assumptions about data)
- **Exploratory Analysis and Inferences**
  - Univariate, Bivariate, and multivariate analysis using Data visualization
    - Weekly, Monthly, Quarterly, Yearly Trends in sales
    - Sales Across different Categories of different features in the given data
  - Summarize the inferences from the above analysis
- **Customer Segmentation using RFM analysis (make 4 segments)**
  - Which tool used?
  - What all parameters used and assumptions made
  - Output table head
  - If KNIME used, Workflow image to be put
- **Inferences from RFM Analysis and identified segments**
  - Who are your best customers? (give at least 5)
  - Which customers are at the verge of churning? (give at least 5)
  - Who are lost customers? (give at least 5)
  - Who are your loyal customers? (give at least 5)

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# Executive Summary of Data

The dataset consists of 2747 rows and 20 columns. There are 1 datetime64[ns], 2 float64, 5 int64, 12 object data types columns.

The data is of 3 years (2018,2019,2020). We will perform Exploratory Analysis first and then we will perform RFM analysis.

There are no missing values in the data.

The following are features:

ORDERNUMBER :	Order Number	CUSTOMERNAME :	customer
QUANTITYORDERED :	Quantity ordered	PHONE :	Phone of the customer
PRICEEACH :	Price of Each item	ADDRESSLINE1 :	Address of customer
ORDERLINENUMBER :	order line	CITY :	City of customer
SALES :	Sales amount	POSTALCODE :	Postal Code of customer
ORDERDATE :	Order Date	COUNTRY :	Country customer
DAYS_SINCE_LASTORDER :	Days_Since_Lastorder	CONTACTLASTNAME :	Contact person customer
STATUS :	Status of order like Shipped or not	CONTACTFIRSTNAME :	Contact person customer
PRODUCTLINE :	Product line – CATEGORY	DEALSIZE :	Size of the deal based on Quantity and Item Price
MSRP :	Manufacturer's Suggested Retail Price		
PRODUCTCODE :	Code of Product		

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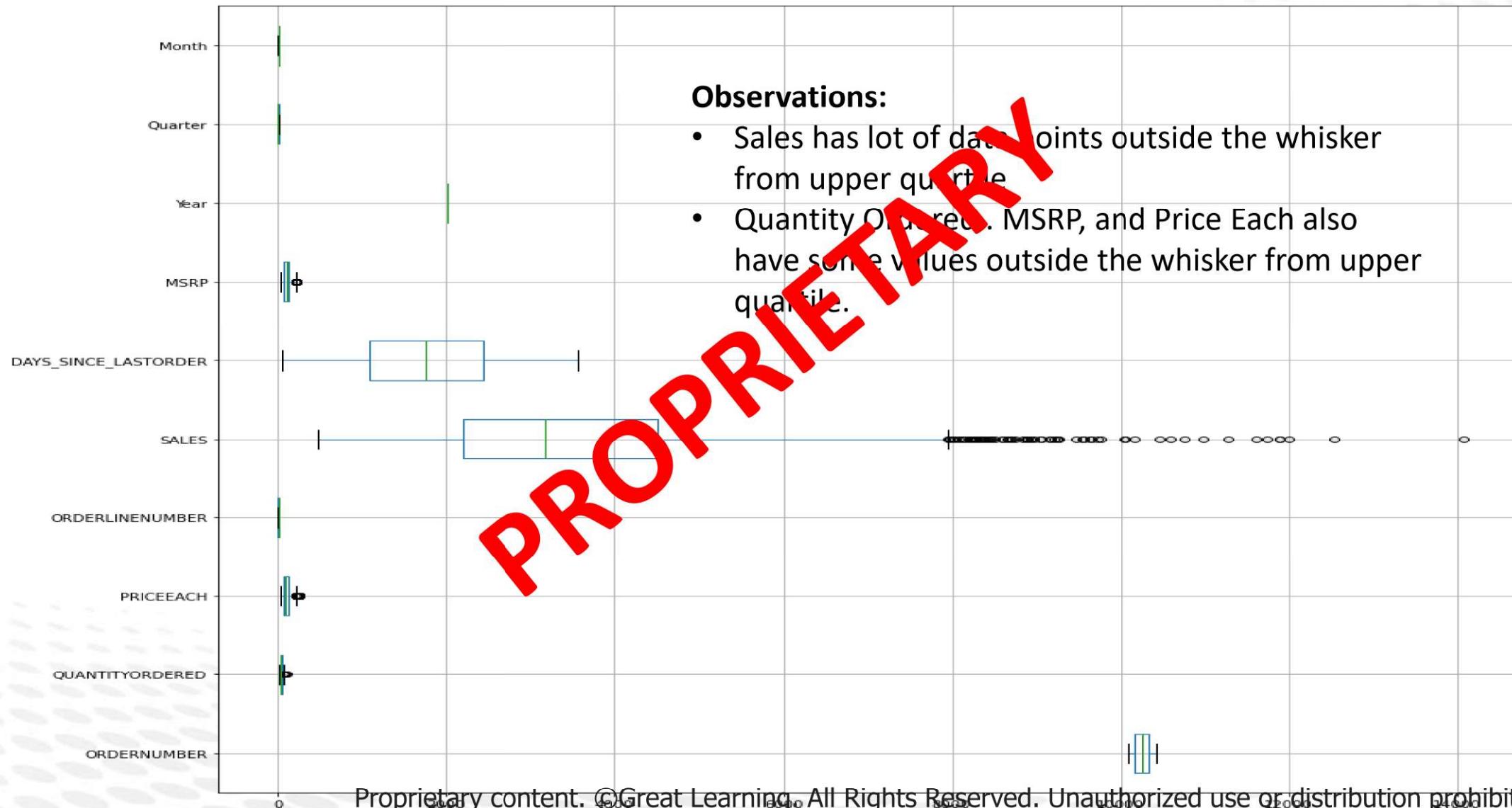


# Exploratory Analysis

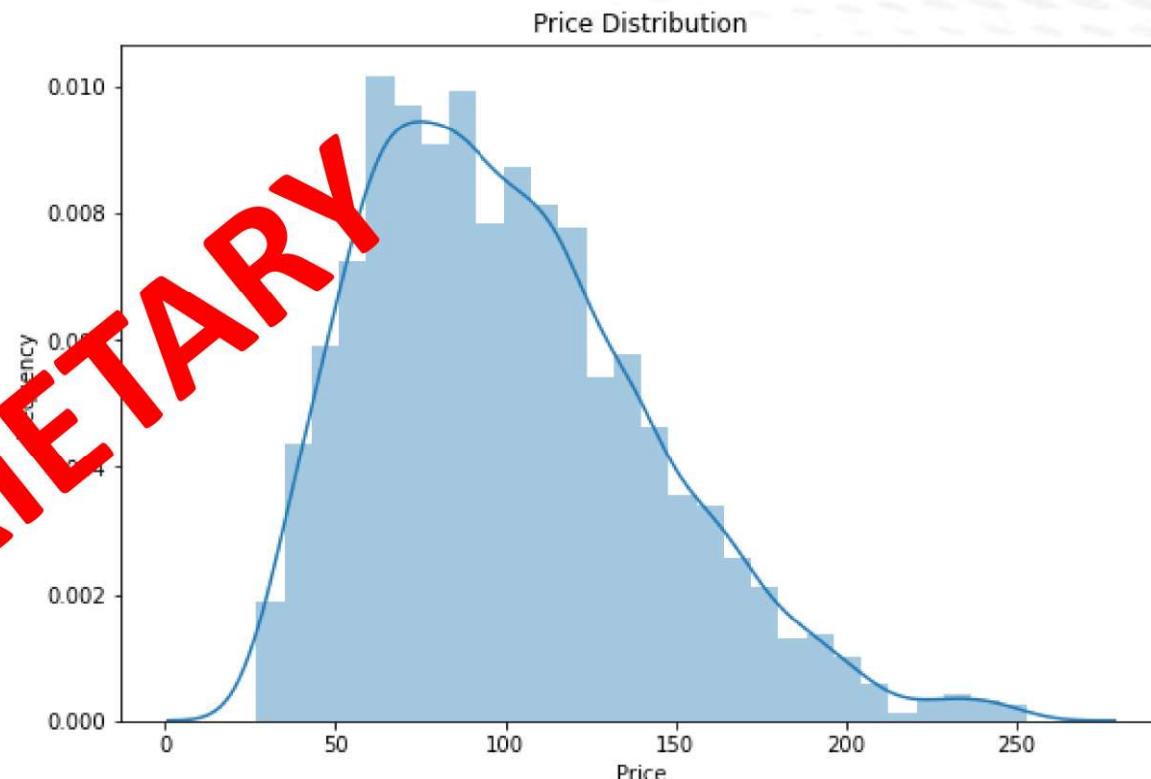
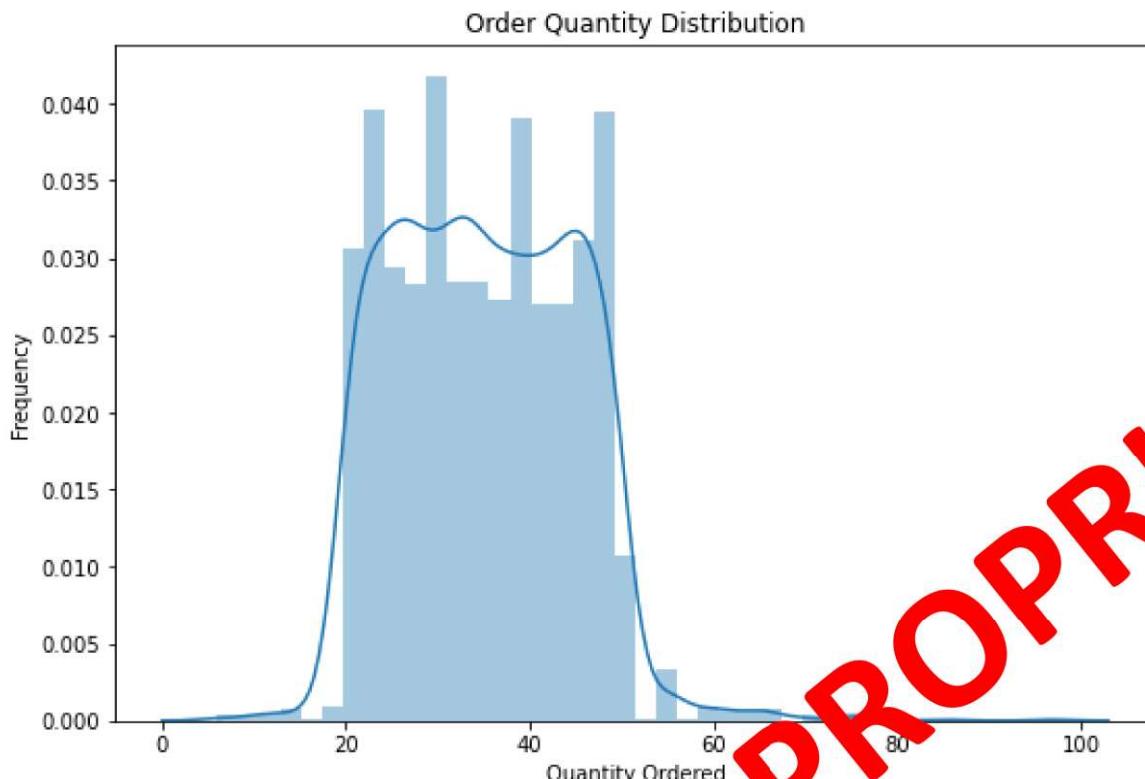
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# Outliers Check



# Distribution Plots



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## Observations:

- Majority of the customers have ordered quantity between 20-40
- Price variable has a tail on the right side.. Price ranges from 26 to 252.



# Year Wise Month Wise Sales



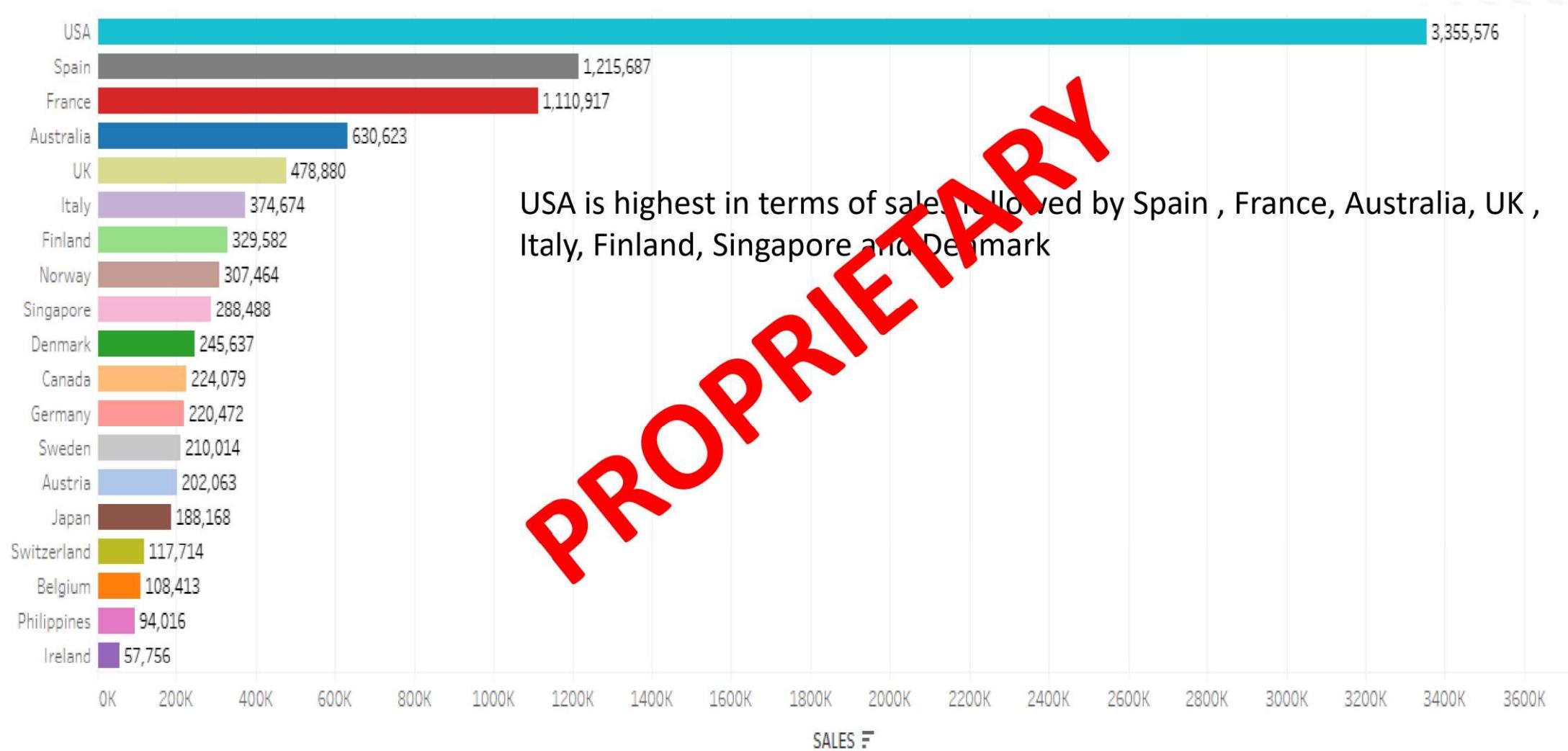
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# Monthly Sales w.r.t Countries



# Country wise Sales



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USA is highest in terms of sales followed by Spain , France, Australia, UK , Italy, Finland, Singapore and Denmark



# Country Wise Yearly Sales

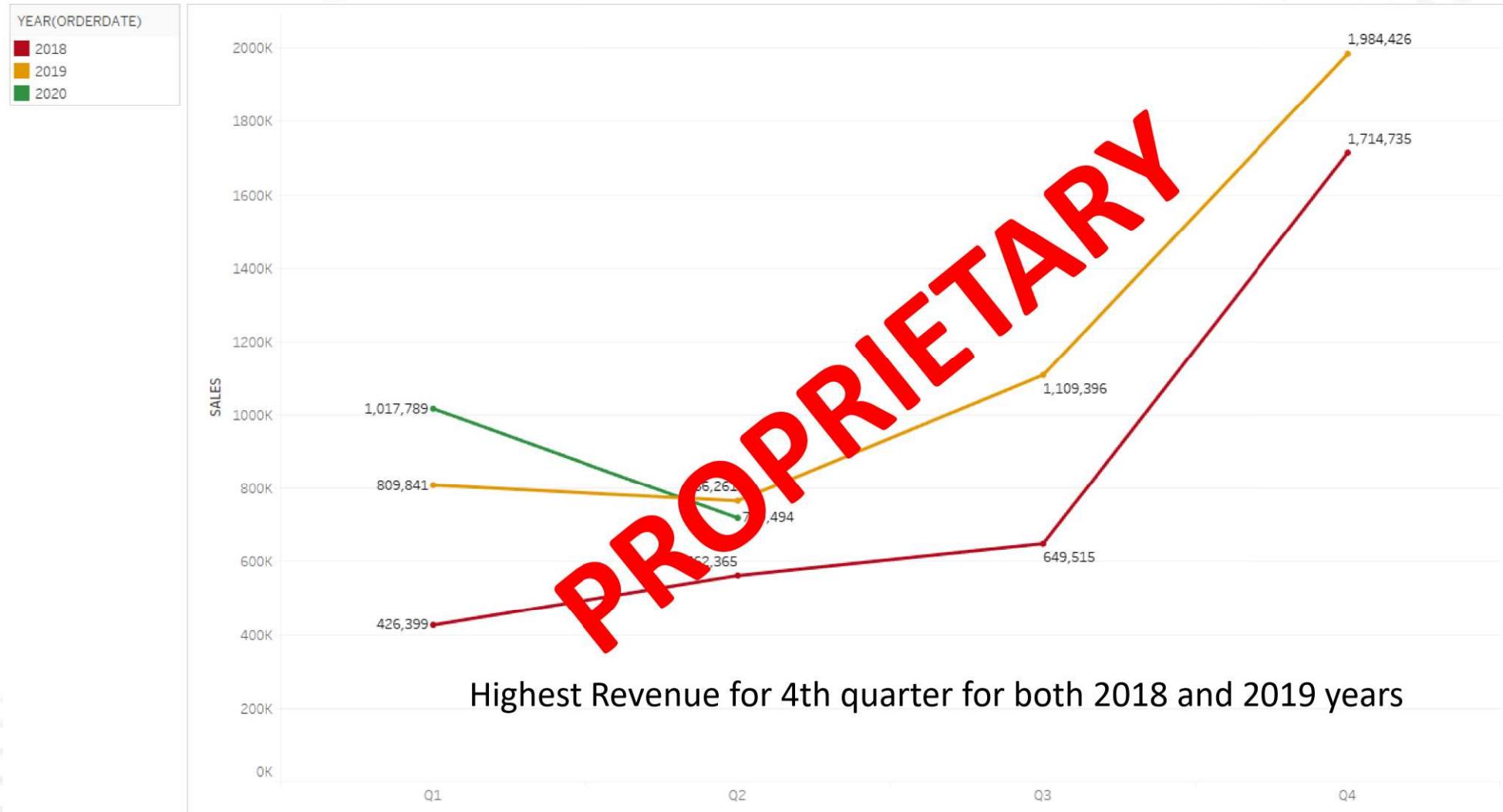


Sales Figures for USA, Spain, France and Canada have increased in 2019 when compared with 2018

Australia, Norway and Singapore has a decreasing trend for year 2019 when compared with 2018

Sales Figures for Switzerland, Japan and Ireland were 0 in 2018

# Quarterly Sales Trend



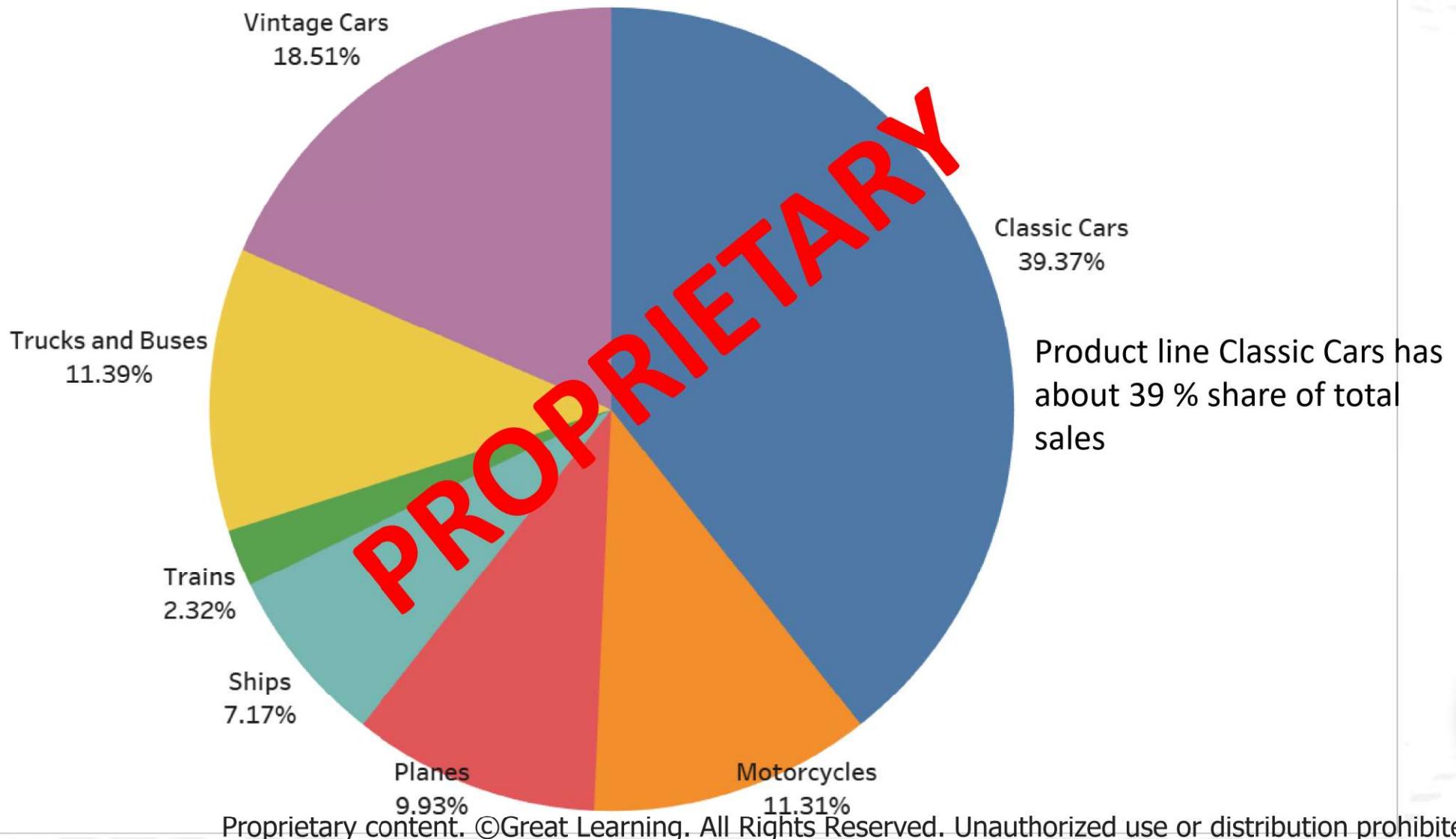
# Quarterly Country wise Sales



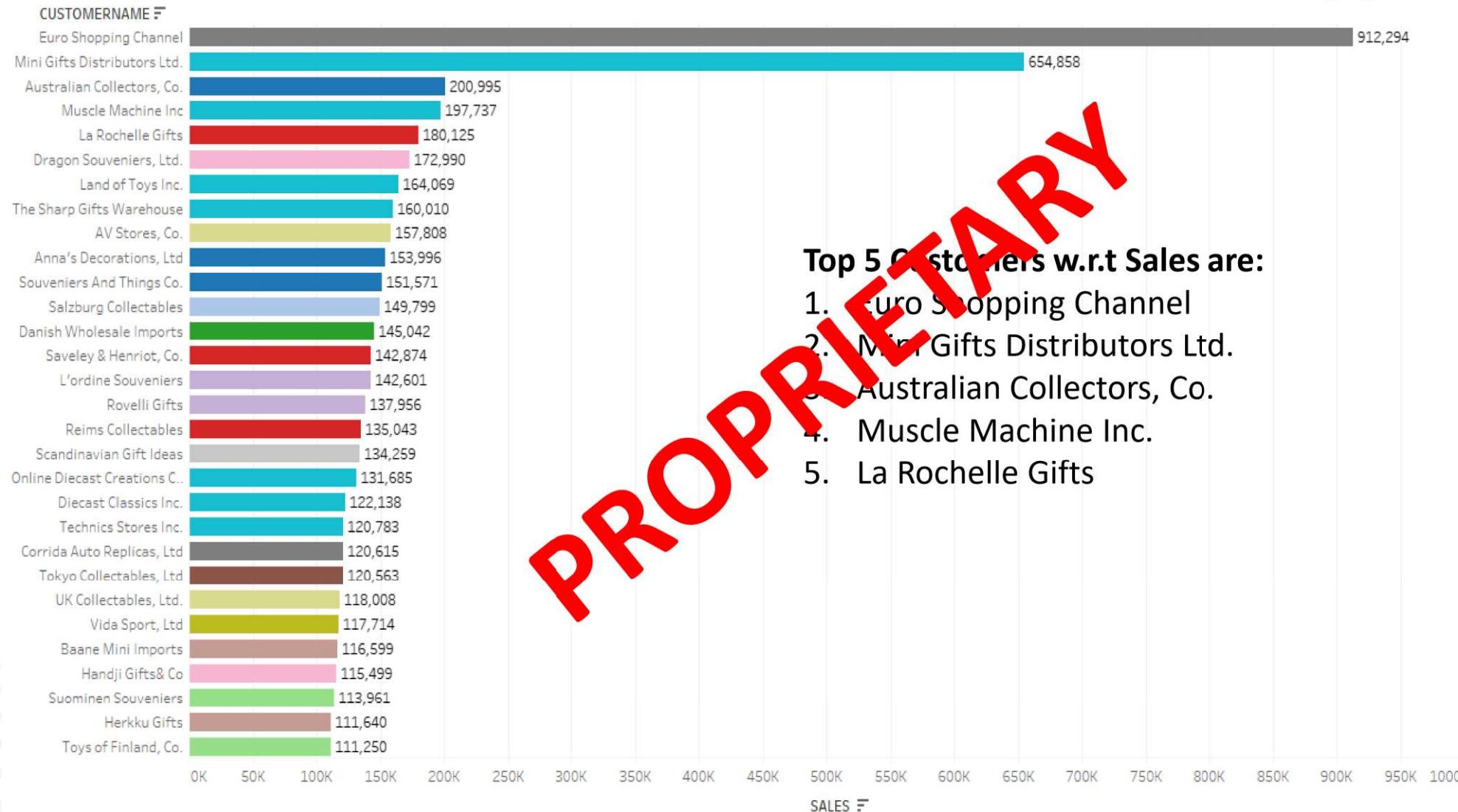
# Season wise Total Sales based on Country



# Product Line Sales wise distribution



# Top Customers Sales wise



Top 5 Customers w.r.t Sales are:

1. Euro Shopping Channel
2. Mini Gifts Distributors Ltd.
3. Australian Collectors, Co.
4. Muscle Machine Inc.
5. La Rochelle Gifts



# Top 10 Customers in Sales year wise



Top 10 customers are different for each year. However Top 2 customers are same for each year (those are Euro Shopping Channel and Mini Gifts Distributors Ltd.)

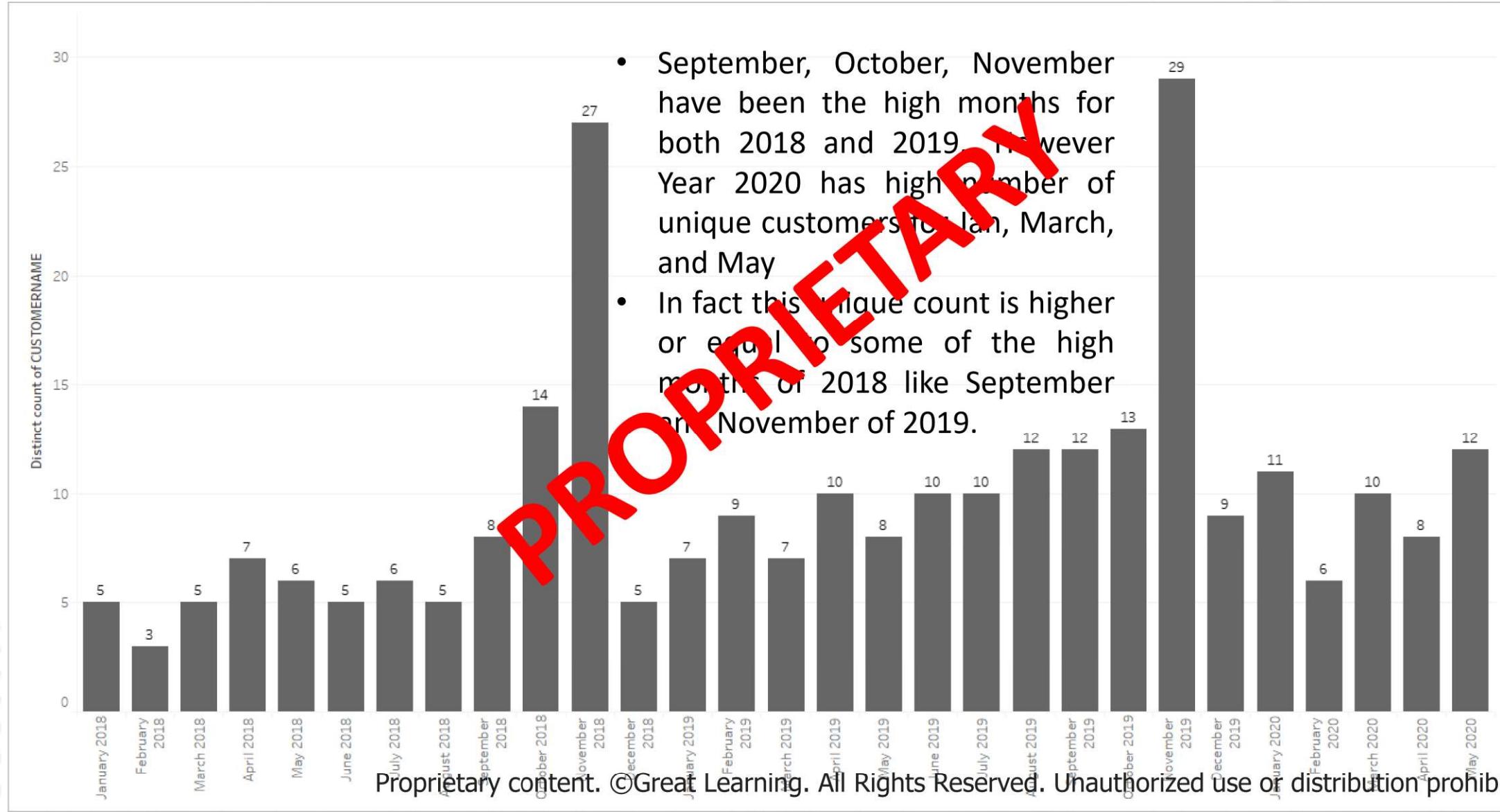
# Top 5 Customers Deal size wise



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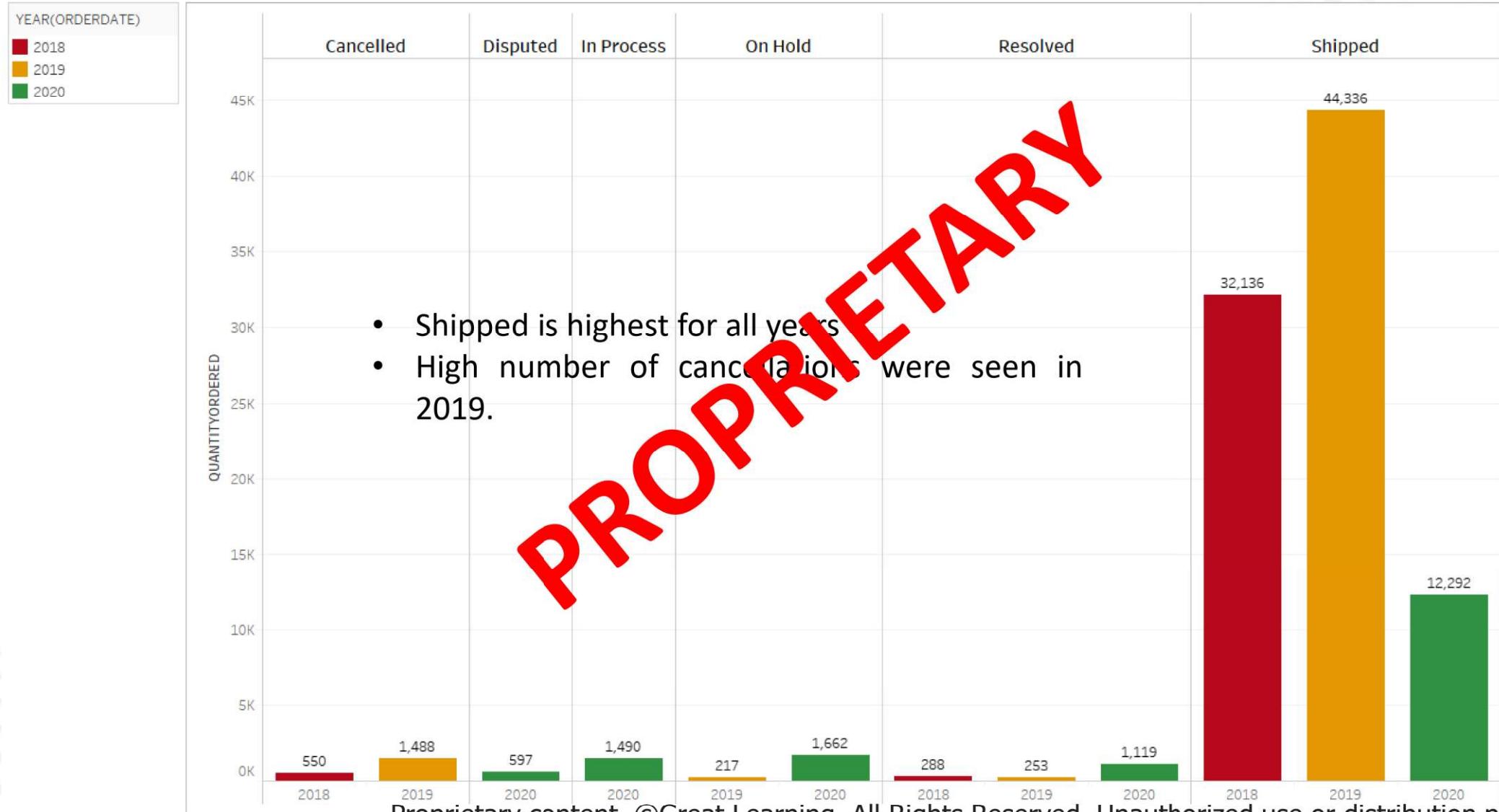
# Monthly Active Customers



# Country Wise Deal Size



# Status wise Order Counts



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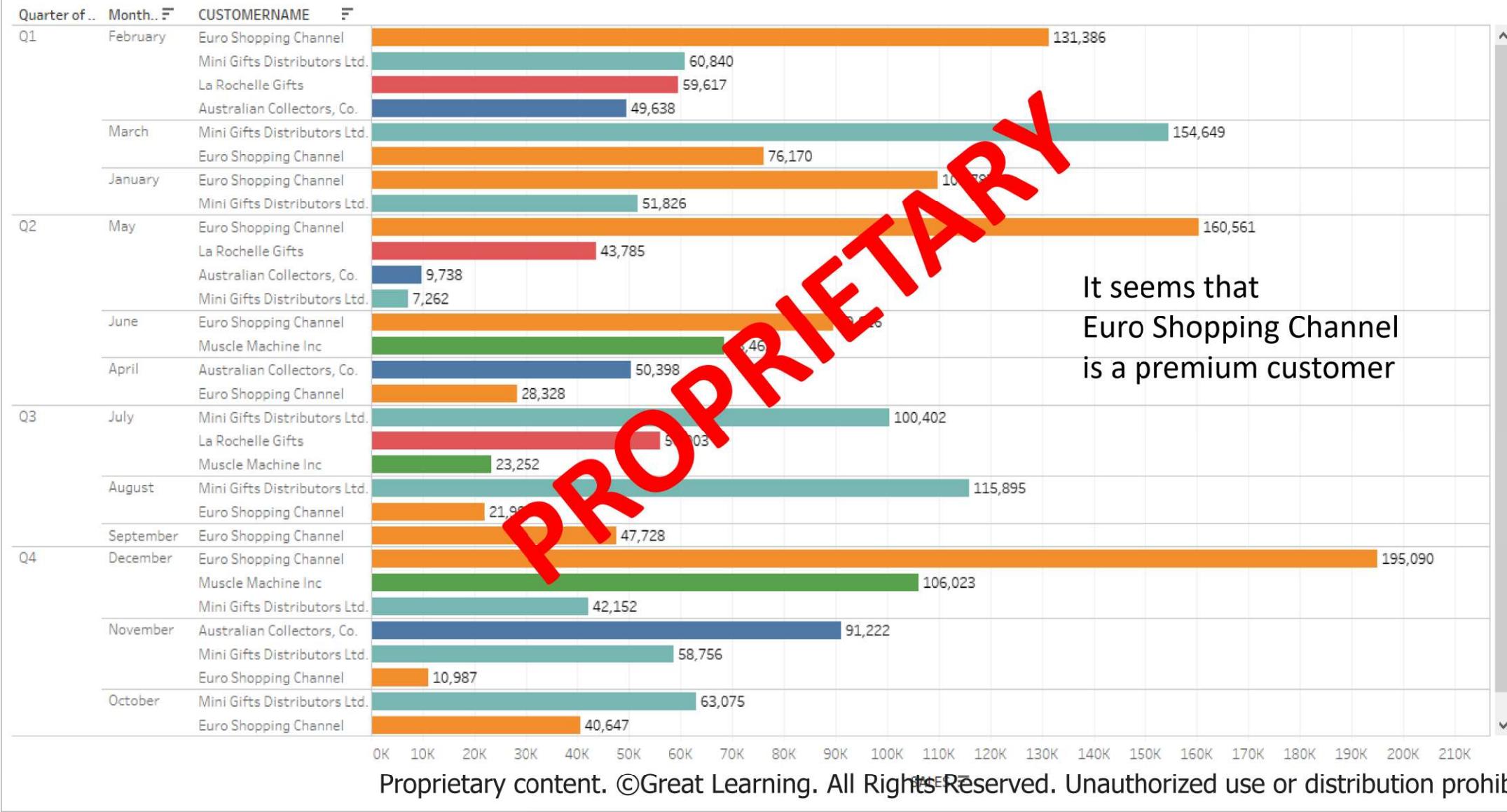
# Sales Trend



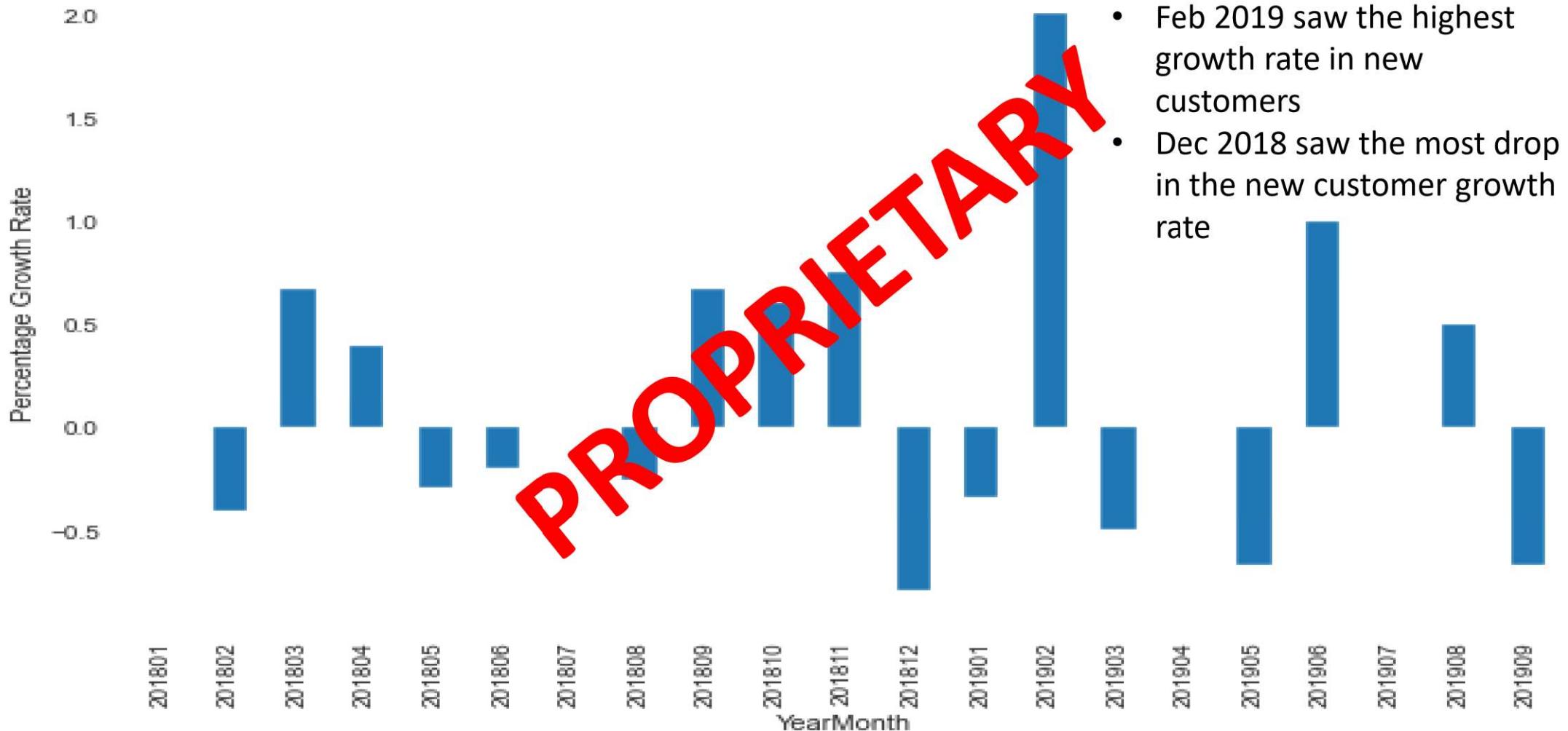
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# Top 5 Customers Quarter-Month wise



# New Customer Growth Rate



# Key Observations from the Data p1

- (Majority of the customers have ordered quantity between 20-40. Price ranges from 26 to 252)
- High sales are generated thru medium deals across countries, the least thru large deals
- Revenue generated for last 3 months for both 2018 and 2019 is quite high and November is a peak for both the years
- Out of 19 countries, USA is the country with Highest Sales followed by Spain, France, Australia, UK, Italy, Finland, Singapore and Denmark
- Sales Figures for USA, Spain, France and Canada have increased in 2019 when compared with 2018. Australia, Norway and Singapore has a decreasing trend for year 2019 when compared with 2018. Sales Figures for Switzerland, Japan and Ireland were 0 in 2018
- For USA, Quarter 4 sees the highest sales (over 1 Million). Quarter 4 seems to be highest sales quarter among Spain, France, Australia, Norway and UK. USA is the only country where sales trend are increasing from Q1 to Q4. Australia, Denmark, France, Germany, Norway and UK had a large difference between sales in any other quarter when compared with Q4. No sale was observed in Quarter 3 for Denmark, Japan, Philippines and UK
- Top 2 customers are same for each deal size

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## Key Observations from the Data p2

- September, October, November have been the high months for both 2018 and 2019.. However Year 2020 has high number of unique customers for Jan, March, and May. In fact this unique count is higher or equal to some of the high months of 2018 like September and November of 2019.
- Top 10 customers are different for each year. However Top 2 customers are same for each year.
- Highest New Customer Growth was observed for Feb 2019.
- These 89 unique customers are from 19 Countries.
- Shipped is highest for all years & High number of cancellations were seen in 2019
- Product line Classic Cars has about 39 % share of total sales
- Sales from Q1 to Q4 for USA is having an upward trend (~ 653k to 1200k) while for Spain Q1 and Q4 have recorded highest sales

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# RFM Analysis

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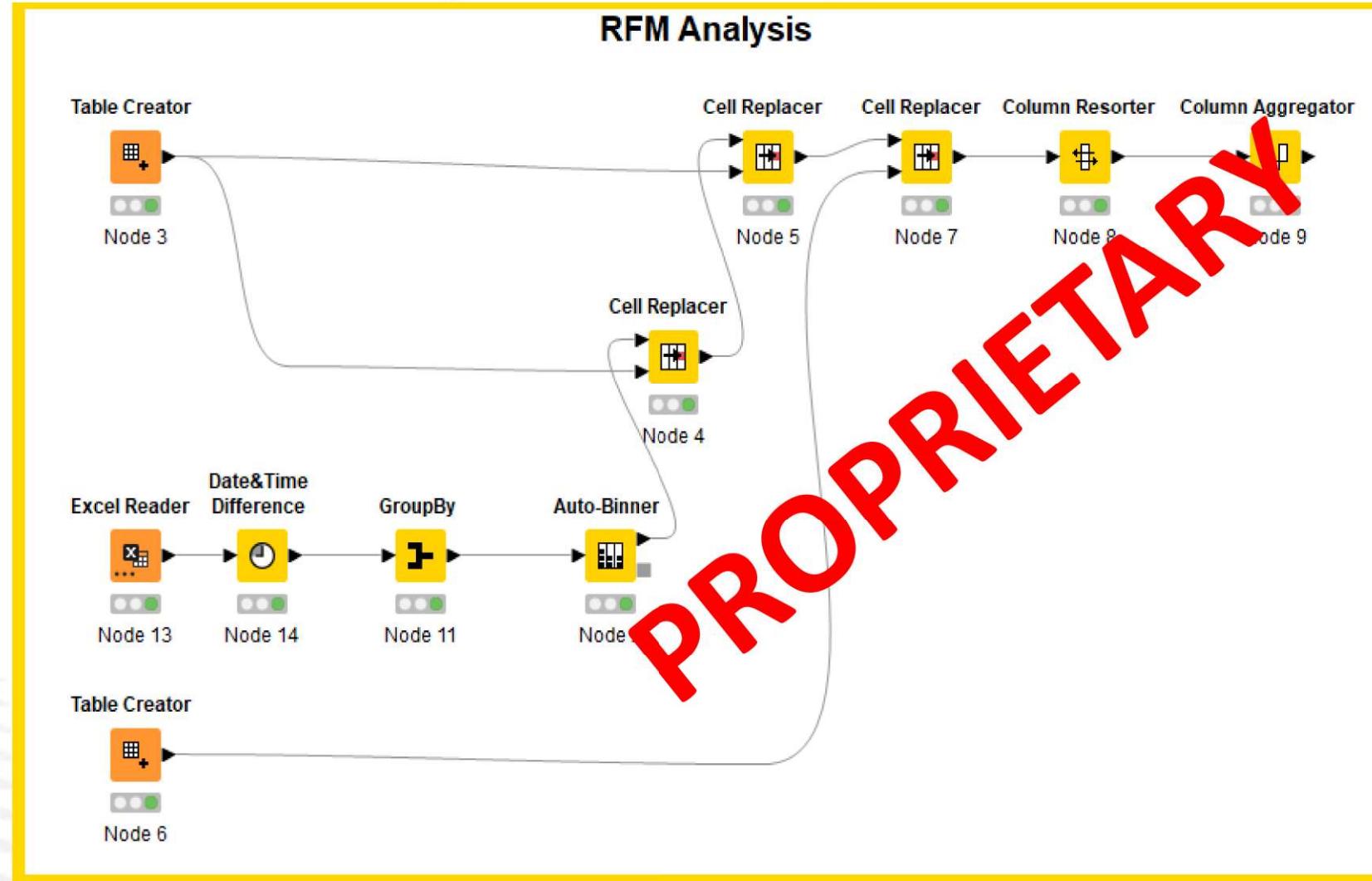
# About Customer Segmentation using RFM



RFM segmentation is a great technique to identify sets of customers for distinctive treatment. RFM segmentation allows marketers to target specific groups of customers with promotions that are more significant for their actual behavior – and hence provides much higher proportions of response and increased loyalty



# RFM Analysis using KNIME



We have Segmented Customers into 4 segments

- Recency – 4 mean most recent
- Frequency and Monetary – 4 means most Frequent and Monetary

We have grouped the data by Customer Name.

Aggregation taken –

- Unique Count(Orders) for Frequency
- Sum of Sales for Monetary
- Minimum of Days Since Last Order (Max Order date – Order Date) i.e. (30-05-2020 – Order Date)



# RFM Results

CUSTOMERNAME	RFM
Danish Wholesale Imports	444
Diecast Classics Inc.	444
Euro Shopping Channel	444
La Rochelle Gifts	444
Mini Gifts Distributors Ltd.	444
Reims Collectables	444
Salzburg Collectables	444
Souveniers And Things Co.	444
The Sharp Gifts Warehouse	444
Handji Gifts& Co	443
Tokyo Collectables, Ltd	443
L'ordine Souveniers	424
Auto Canal Petit	423
Gift Depot Inc.	423
UK Collectables, Ltd.	423
Gifts4AllAges.com	422
Lyon Souveniers	422
Mini Caravy	422
Petit Auto	422
Quebec Home Shopping Network	422
Tekni Collectables Inc.	422
Alpha Cognac	421
Australian Collectables, Ltd	421

Showing top 24 Customers  
with Highest RFM scores

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# Who are your best customers? (BY RFM Class = 444)

## highest recency, highest frequency and highest monetary

Customer	RFM Score	M (Sum Sales)	F (Orders)	R (Recency in days)
Euro Shopping Channel	444	912294.1	26	0
Mini Gifts Distributors Ltd.	444	654858.1	17	2
La Rochelle Gifts	444	10114.9	4	0
The Sharp Gifts Warehouse	444	16010.3	4	39
Souveniers And Things Co.	444	151571	4	2
Salzburg Collectables	444	149798.6	4	14
Danish Wholesale Imports	444	145041.6	5	46
Reims Collectables	444	135042.9	5	62
Diecast Classics Inc.	444	122138.1	4	1

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# Which customers are at the verge of churning? Customers who's recency value is low

Customer	RFM Score	M (Sum Sales)	F (Orders)	R (Recency in days)
Land of Toys Inc.	244	164069.4	4	198
AV Stores, Co.	224	157807.31	3	196
Saveley & Henriot, Co.	124	142374.25	3	456
Rovelli Gifts	224	137955.72	3	201

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# Who are lost customers?

Customers who's recency, frequency as well as monetary values are low

Customer	RFM Score	M (Sum Sales)	F (Orders)	R (Recency in days)
Double Decker Gift Stores, Ltd	111	36019.04	2	495
West Coast Collectables Co.	111	46084.61	2	488
Signal Collectibles Ltd.	111	56218.51	2	476
Daedalus Designs Imports	111	69052.41	2	465
CAF Imports	111	49642.05	2	439

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# Who are your loyal customers?

## Customers with high frequency value

Customer	RFM Score	M (Sum Sales)	F (Orders)	R (Recency in days)
Euro Shopping Channel	444	912294.11	26	0
Mini Gifts Distributors Ltd.	444	654858.96	17	2
Australian Collectors, Co.	344	80095.41	5	184
Muscle Machine Inc	344	197736.94	4	182
La Rochelle Gifts	344	180124.90	4	0

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**Thank you and Happy Learning!**

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