Case Study: Logistics

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Business Understanding & Overview

- On-time in-full (OTIF) is a supply chain metric for measuring performance in the logistics industry. OTIF generally refers to a supplier's ability to deliver product within prescribed delivery windows and at full quantities ordered.
- OTIF was designed to improve store operations within Walmart itself and quickly led to a series of major changes as it was quickly adopted by other retailers and companies.
- The data about Orders, Salesperson, Customer and City is given.
- So, we have to find
  1. The OTIF Performance over Time
  2. The Order delivery status over Time?
  3. the Highest OTIF Performances
  4. Key Influencers

Understanding the data

- We need to make a separate column for the status of delivery. Divide that column into three categories of status - In time or Early deliveries, On time deliveries and Late deliveries.

- Order date, Scheduled delivery date, Actual delivery date, Salesperson, Team, Customer, Service channel, City- these are important columns. So, we are going to analyze each of them.

- Only 0.44% percent of the data in column 'Actual delivery date' and 'City' is missing. From looking at the data, we can understand that these missing data indicates, 0.44% of the total deliveries are not happened or cancelled.

- In column 'Scheduled delivery date' only two values are missing. So, drop two rows.

Analysis

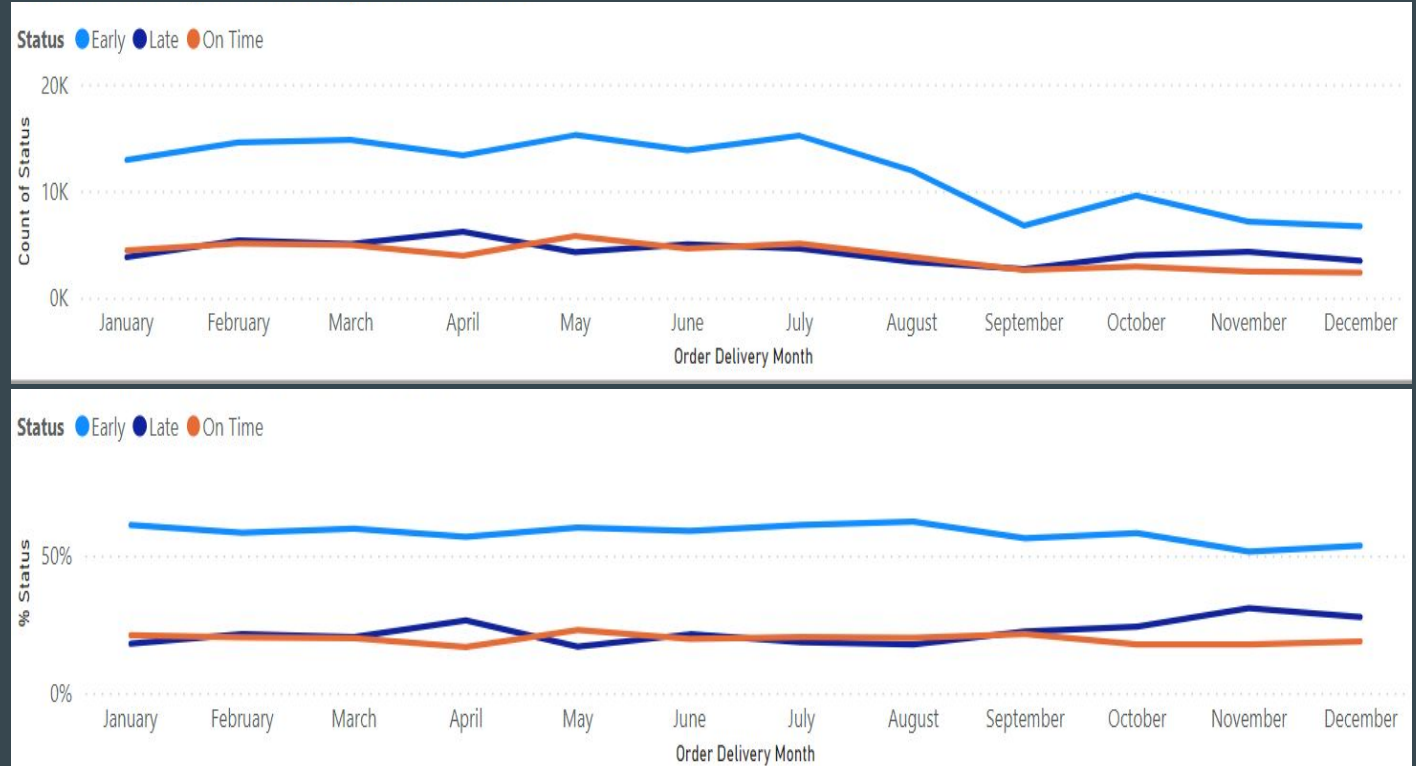Let's do some analysis based on following categories.

- Overall analysis
- In time or early deliveries
- On time deliveries
- Late deliveries

Overall Analysis

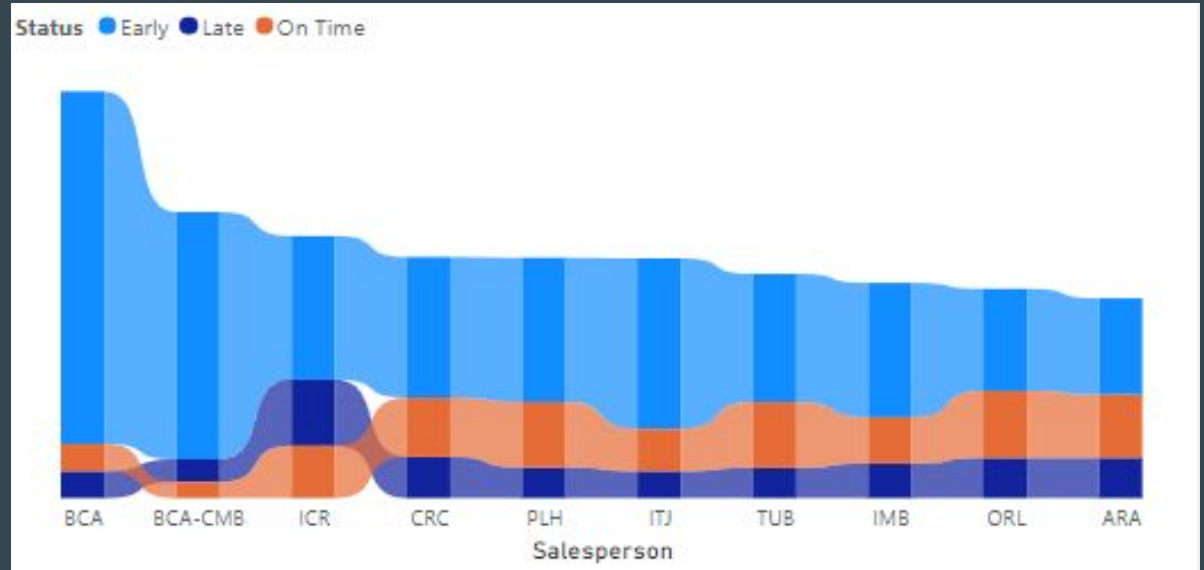1. Months by Total successful deliveries

Findings:

Out of the total successful deliveries, 58.64% deliveries were Early deliveries, 19.84% were On time deliveries and remaining 21.53% were Late deliveries.

# 2. Salespersons by Total successful deliveries

Findings:

In figure, we can see top 10 salespersons whose customers received maximum no. of deliveries. Customers of salesperson 'BCA' gave highest no of orders (3.88%) followed by 'BCA-CMA' and 'ICR', respectively.
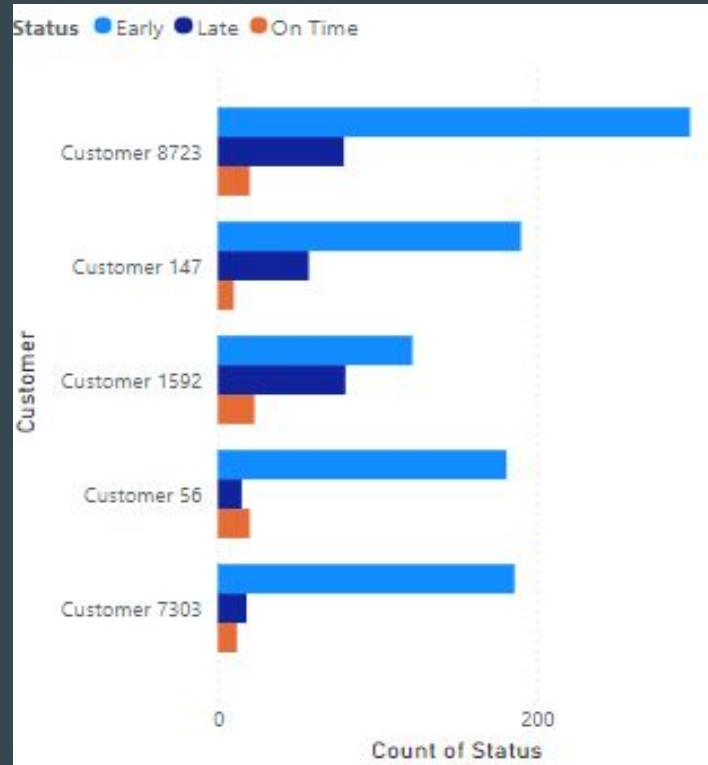
3. City vs Total no. of successful deliveries

Findings:

From figure, we can see top 10 cities according to total no. deliveries. Maximum no. of deliveries happened in Oklahoma city, Cincinnati, Mesa respectively.
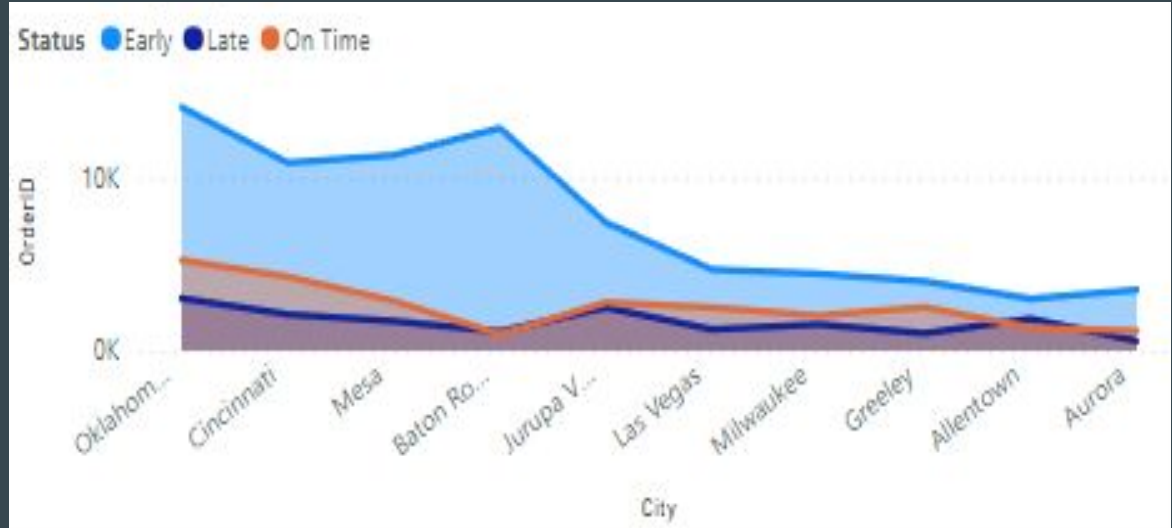
4. Team vs Total no. of successful deliveries

Findings:

Customer 8723 , customer 147, customer 1592, customer 56 and customer 7303 received maximum no. of deliveries so we can say that they are repetitive customers.
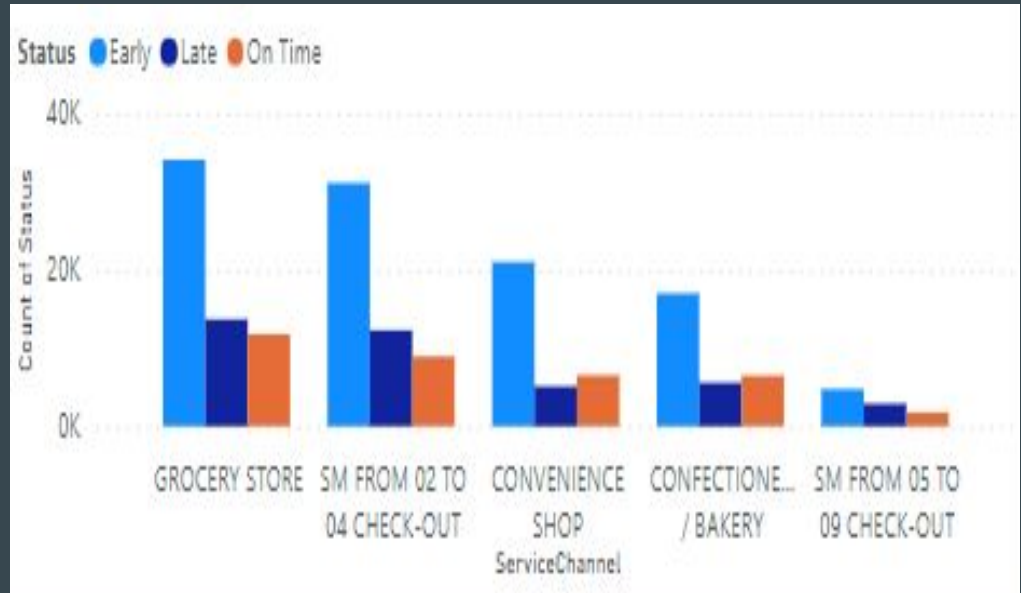
5. Service channel vs Total no. of successful deliveries

Findings:

Maximum no. of orders came from grocery store, SM From 02 to 04 check-out, convenience shop, confectionery/bakery respectively.
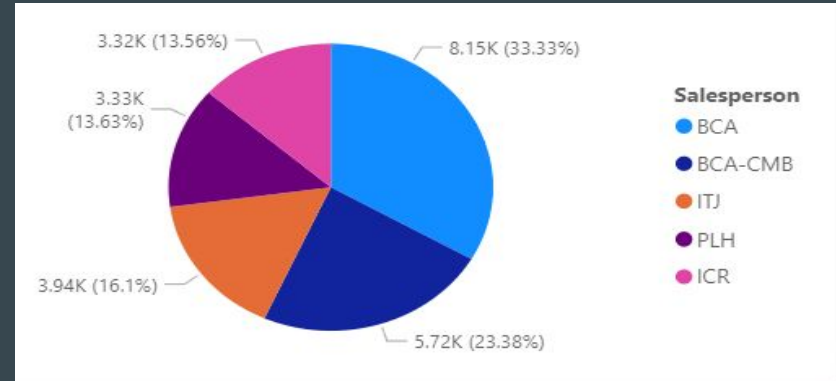
In time or Early deliveries

1. Month vs Early deliveries
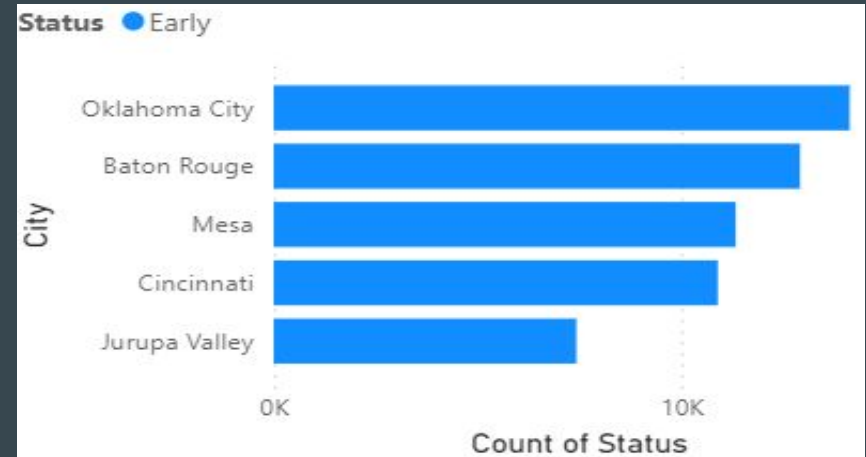

2. Salesperson vs Early deliveries

Findings:

- Maximum no. of Early deliveries happened in May, August and February respectively.
- Customers of salespersons 'BCA', 'BCA-CMA' and 'ITJ' received maximum no. of Early deliveries.
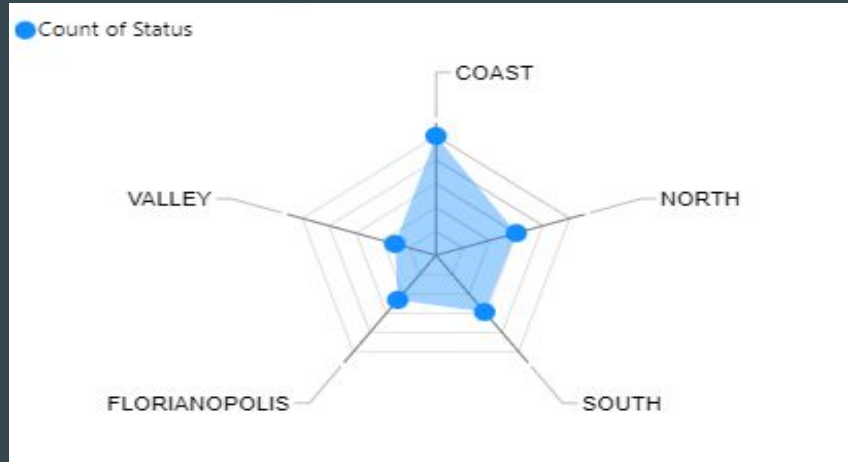
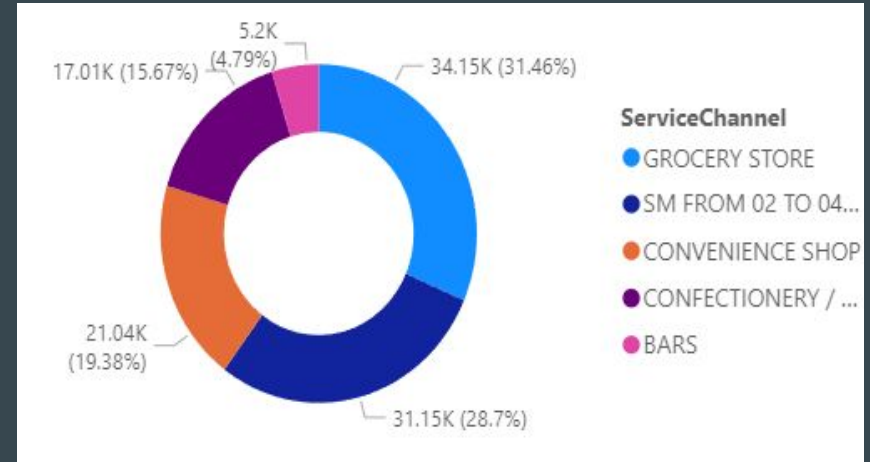## 3. Customers by Early deliveries

4 Cities by Early deliveries

Findings:

- Customer 8723 received maximum no. of Early deliveries.
- Maximum no. of Early deliveries happened in Oklahoma city, Baton Rouge, Mesa and Cincinnati respectively.

5. Teams by Early deliveries

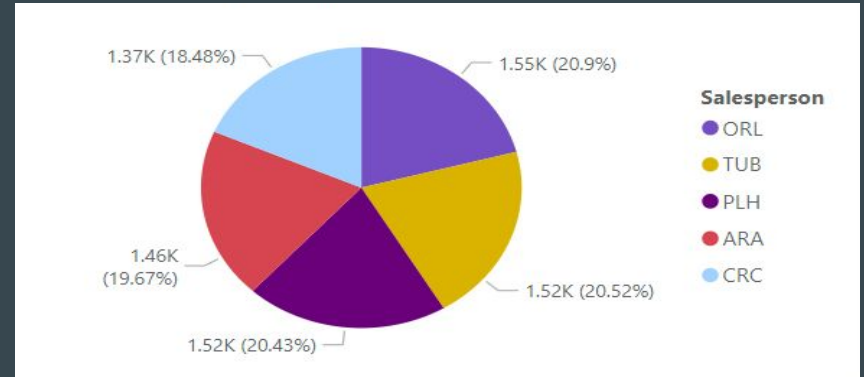## 6. Service channel by Early deliveries

Findings:

- Orders from Team's-Coast, North, South received maximum no. of Early deliveries.
- Service channels-Grocery store, Sm from 02 to 04 check out and Convenience shop received maximum no. of Early orders respectively.

On time Deliveries
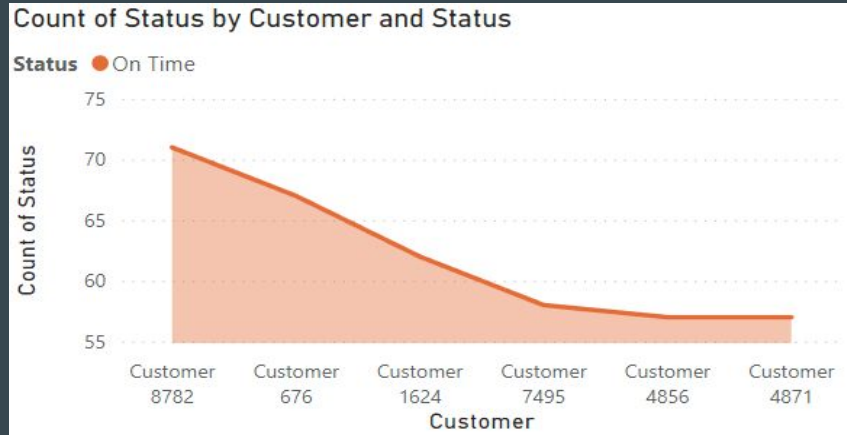
1. Month by On time deliveries
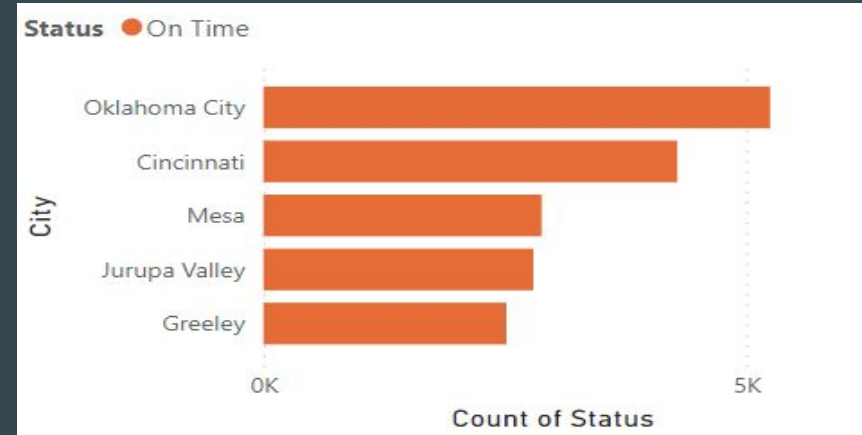

2. Salespersons by On time deliveries

Findings:

- Maximum no. of On time deliveries happened in May, July, February respectively.
- Customers of salespersons ORL, TUB and PLH received maximum no of On time deliveries.
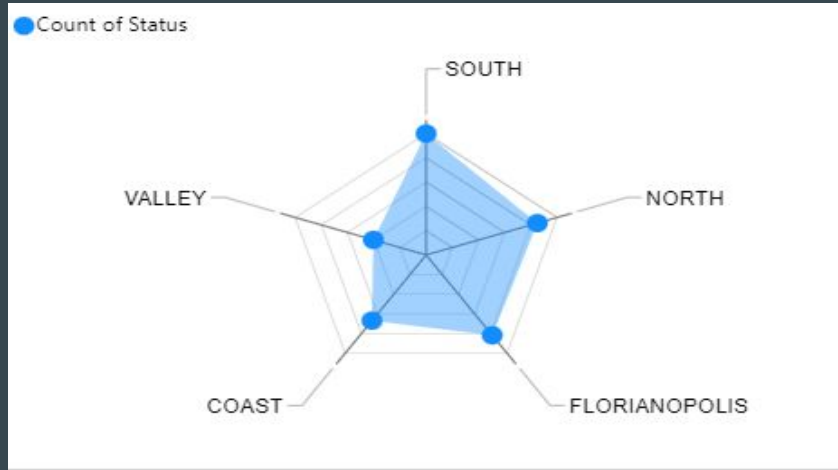
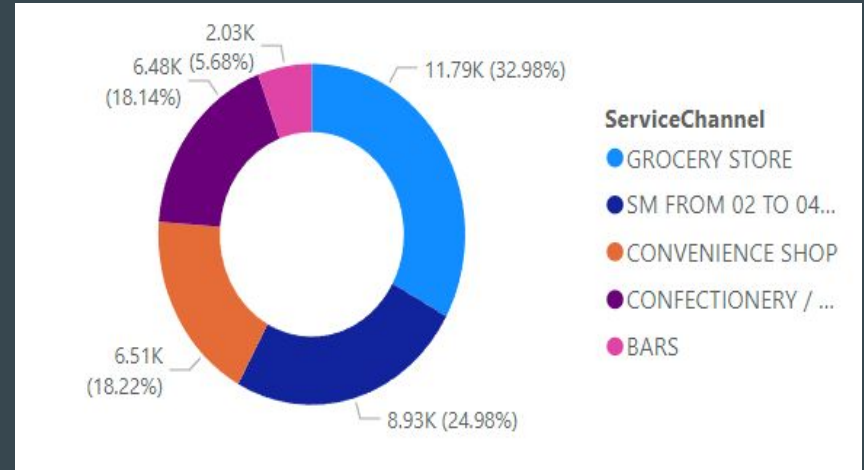## 3. Customers by On time deliveries

4. Cities by On time deliveries

Findings:

- Customer 8782, Customer 676 and Customer 1624 received maximum no. of On time deliveries.
- Maximum no. of On time deliveries happened in Oklahoma city and Cincinnati respectively.

5. Teams by On time deliveries

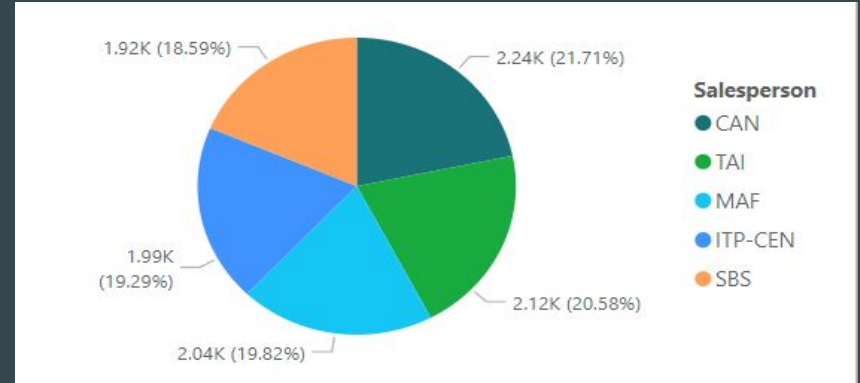## 6. Service channel by On time deliveries

Findings:

- Orders from Team's- South, North and Florianopolis received maximum no of On time deliveries.
- Service channels-Grocery store, Sm from 02 to 04 check out and Convenience shop received maximum no. of On time orders.

Late deliveries

1. Month by Late deliveries

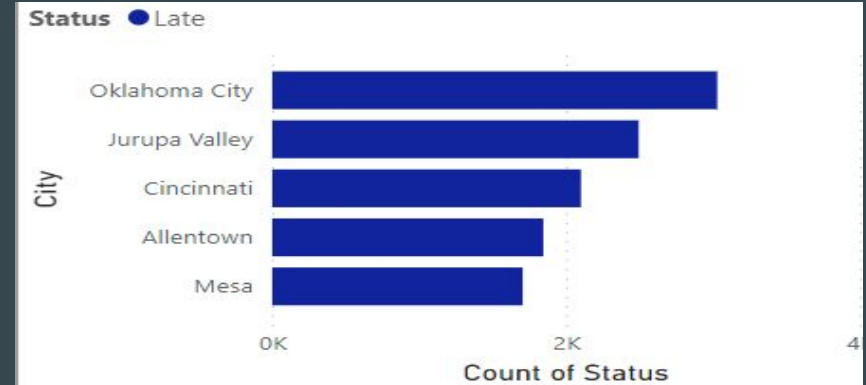## 2. Salespersons by Late deliveries

Findings:

- Maximum no. of Late deliveries happened in April, February and March respectively.
- Customers of salespersons CAN, TAI and MAF received maximum no of Late deliveries.

3. Customers by Late deliveries
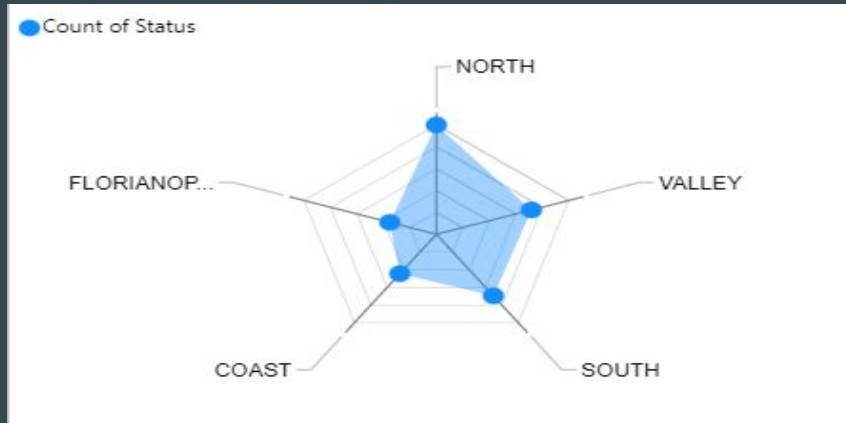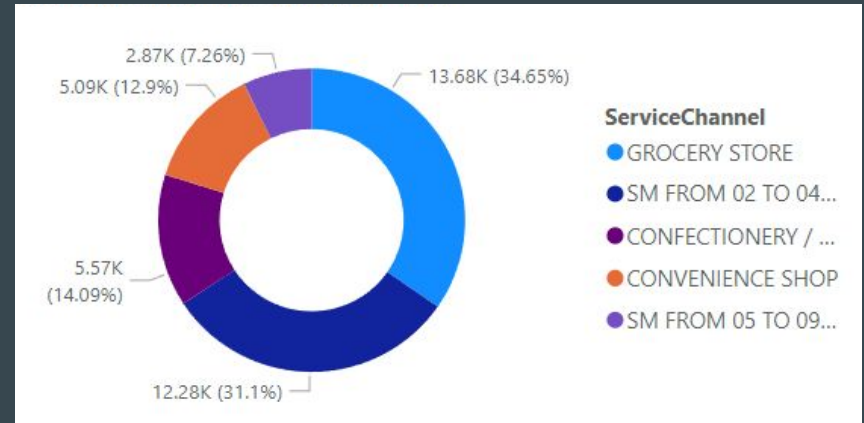

4. Cities by Late deliveries

Findings:

- Customer 4499, Customer 8852 and Customer 196 received maximum no. of Late deliveries.
- Maximum no. of Late deliveries happened in Oklahoma city, Jurupa valley and Cincinnati respectively.

5. Teams by Late deliveries

6. Service channel by Late deliveries

Findings:

- Orders from Team's- North, Valley and South received maximum no of Late deliveries.
- Service channels-Grocery store and Sm from 02 to 04 check out received maximum no. of Late orders.

Final Thoughts

Characters related to	Max. Early deliveries	Max. On time Deliveries	Max. Late Deliveries
Months	May, July, March	May, July, February	April, February, March
Salespersons	BCA, BCA-CMD, ITJ	ORL, TUB, PLH	CAN, TAI, MAF
Customers	Customer 8723	Customers-8782, 676, 1624	Customers-4499, 8852, 196
Cities	Oklahoma city, Baton Rouge	Oklahoma city, Cincinnati	Oklahoma city, Jurupa valley
Teams	Coast, North, South	South, North, Florianopolis	North, Valley, South
Service channels	Grocery store, SM from 02 to 04 check out	Grocery store, SM from 02 to 04 check out	Grocery store, SM from 02 to 04 check out