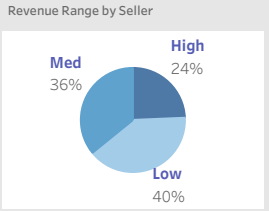
Olist Analysis

Olist Marketplace Analysis:

How was launch performance and what were revenue drivers?

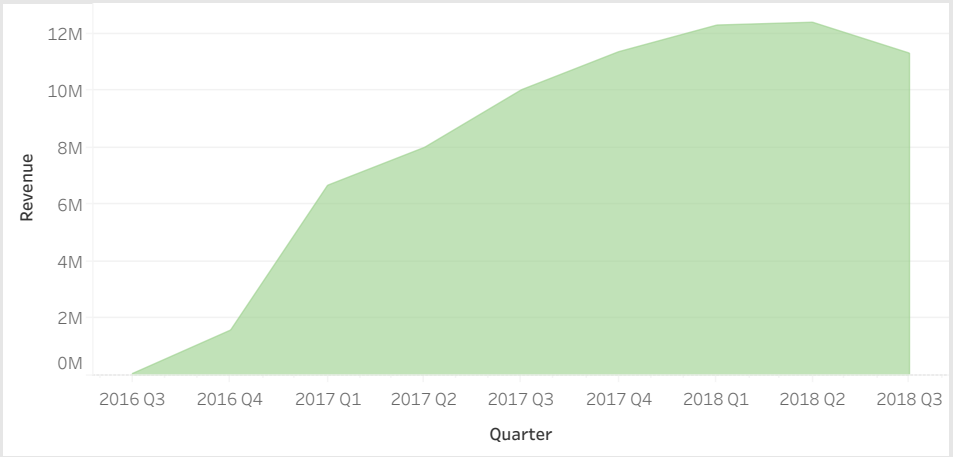


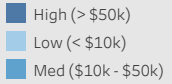
BACKGROUND:
Olist is a Brazilian e-commerce site. They became an offical store on major maketplaces in 2016.

Olist is empowering small merchants to sell online

Objective:
Using Olist's data from Sept 2016 - Aug 2018, this report provides an overview of Olist's performance in its first two years and insights on factors that drive revenue for their sellers, weighing componets such as prices, number of orders, return customer status, and product variety.

Olist seller revenue has grown expontentially from 2016 - 2018.
There are around 3,000 sellers (with revenues ranges from low to high);
analysis of these varying levels can lead to better understanding of revenue drivers and performance.





Citation:
Olist About Us: *About us*. (2015). Olist. https://olist.com/sobre-nos/
Data Source: *"Brazilian E-Commerce Public Dataset by Olist." Www.kaggle.com, www.kaggle.com/datasets/olistbr/brazilian-ecommerce?select=olist_order_items_dataset.csv.*

Olist Analysis

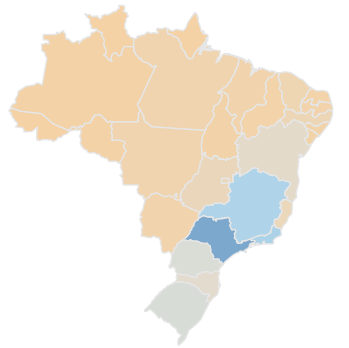
Performance Overview:

From 2016 - 2018, Olist sold over $14M in products from 98.6K orders placed by 66.1k customers from 3k sellers. *Note the closeness of orders to customers - Olist consisted mostly of new customers (more on next tab).*
Customers reside mostly in the **southeast** and buy a variety of products, with a majority in **Home & Garden**. While there is spending seasonality, the end of year is skewed as data is not available for Sept - Dec for 2018. *Use the 'Filters' section to adjust the time period.*

Year
- [x] 2016
- [x] 2017
- [x] 2018

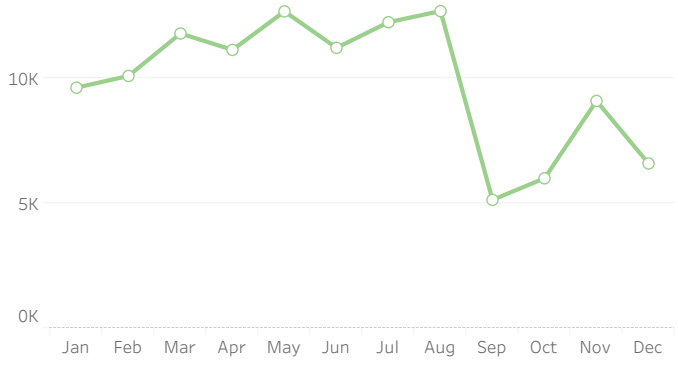
Revenue	Orders	Customers	Sellers
14,273,565	98,664	66,104	3,095

Orders by State

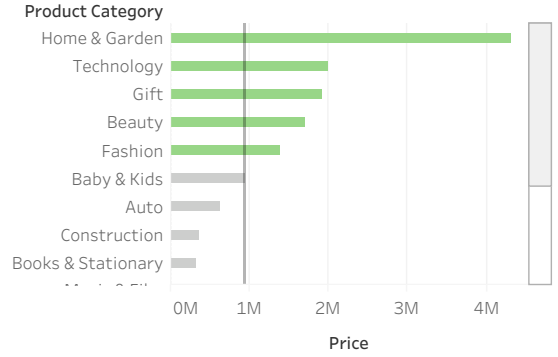


Orders
0 90,000

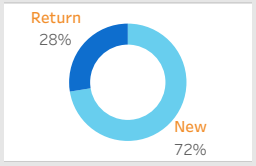
Sales by Month



Sales by Product



Olist Analysis



Customer Behavior by Loyalty:

How do new vs return customers differ? Do return customers drive higher revenue for sellers?

	Avg Orders	Avg Items	Avg Price	Avg Total
New	1.0	1.0	$130.38	$150.73
Return	2.5	2.1	$95.03	$225.92

DIFFERENCES

NEW:

$ Spend more on individual products

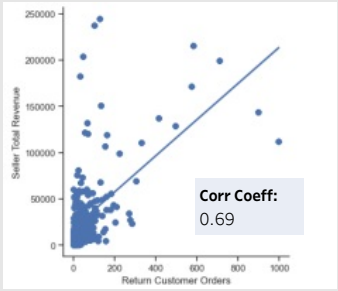
RETURNING:

Order more *(by definition)*, but not by much

Purchase more items in an order

$$ Spend more per order

Effect of return customers on seller revenue

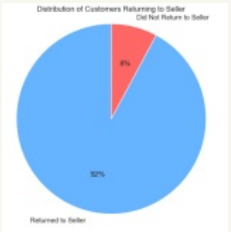


INSIGHTS:

While 72% of all Olist customer are new customers, return customers are an important factor in growth, both for Olist and its individual sellers.

As shown by the scatterplot, there is a **0.69 correlation coefficient** between the Number of Return Customer Orders (per seller) and Total Revenue (per seller). This strong positive correlation indicates that **return customers have a significant impact on seller perfomance**. However, the wide spread of data points indicates that this is **not a determining factor**, particulary for **top sellers who make more with less orders**.

Note: Most return customers (92%) , return to a seller they previously bought from.

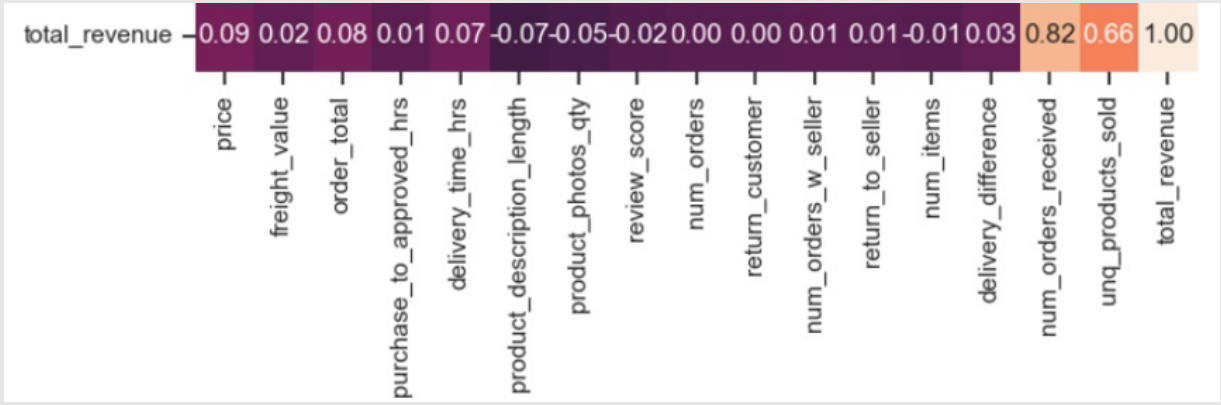


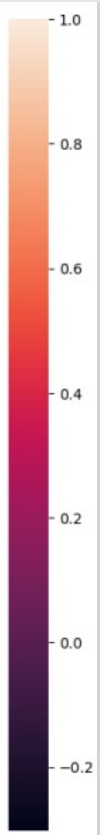
Olist Analysis

Revenue Correlation Analysis:

Given the lower customer return rate, what other factors can be determined key revenue drivers?

A correlation heatmap was generated to identify key drivers of revenue for sellers. Both the **number of orders** and the **number of unique products sold** showed strong positive correlations, indicating significant influence on increasing revenue.



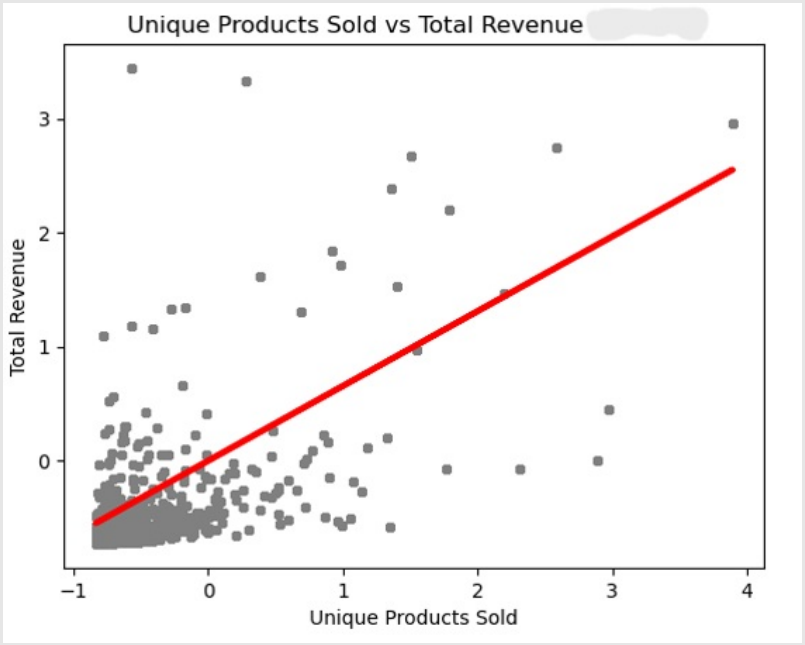


As highlighted in the the previous tab, the majority of Olist activity is new orders of limited items, as such, this can help explain the strength of influence 'number of orders' has on a seller's revenue (correlation coefficient **0.82**). Further analysis will be conducted to better understand the relationship between the number of unique products sold and revenue.

Olist Analysis

Linear Regression:

Exploring the correlation between Number of Unique Products Sold and Total Revenue



A correlation coefficient of **0.66** led to the following hypothesis:

HYPOTHESIS: Olist sellers who are selling a variety of products will have higher total revenue.

To test this hypothesis and further explore the relationship, a linear regression was conducted.

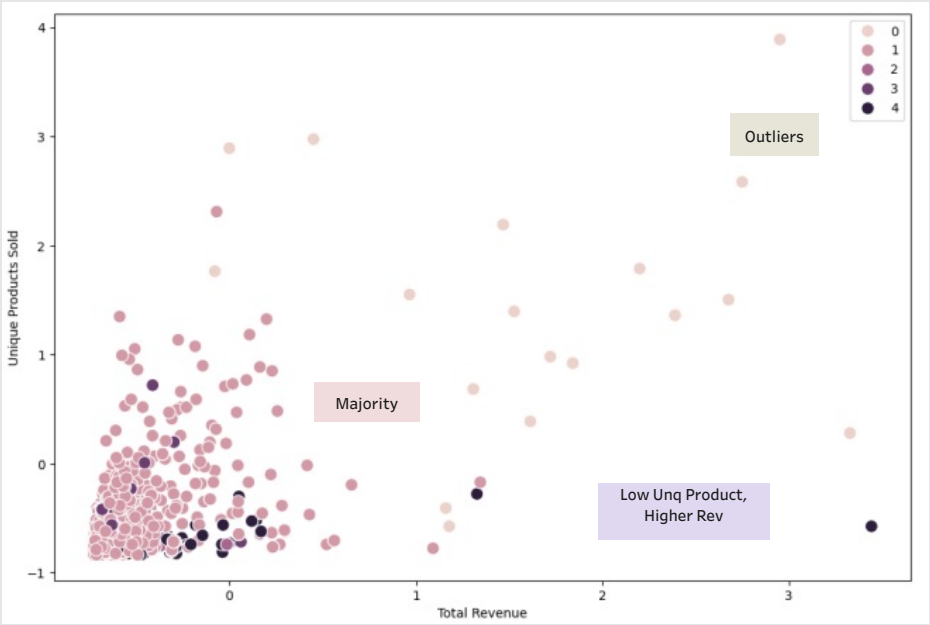
The results showed that the number of unique product sold only contributes about 43% of the trend in the data. The relationship between the two variables is not enitrely linear. There are many points that fall beyond the regression line, with a high density of points around lower unique products sold.

As a linear regression isn't enough to fully explain the data, another approach will be explored.

Olist Analysis

Cluster Analysis:

Continuing exploration using non-linear method



Because a linear regression wasn't enough to prove the hypothesis, a non-linear approach was needed so **a cluster analysis was conducted,** grouping the data into **5** groups.

What is the graph communicating?

The **majority** of data falls within a range of unique products sold to revenue made. There are some sellers who fall **outside** that range, making either higher revenue, higher unique product sales, or both.

However there is a **group** that, despite lower unique products sold, has slighter to much higher revenue.

*Let's explore what purple represents and why **lower unique products may sometimes result in higher revenue**.*

Olist Analysis

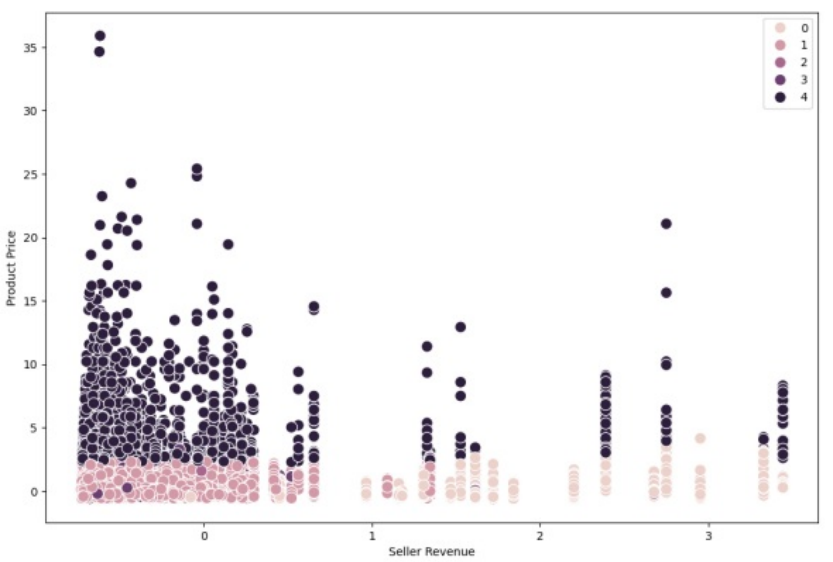
Cluster Analysis Takeaways:

What is purple - why can it drive higher revenue despite lower product variety?

beige
dark purple
light purple
pink
purple

beige
dark purple
light purple
pink
purple

The Product Price vs Total Revenue scatterplot reveals the meaning of the dark purple points.

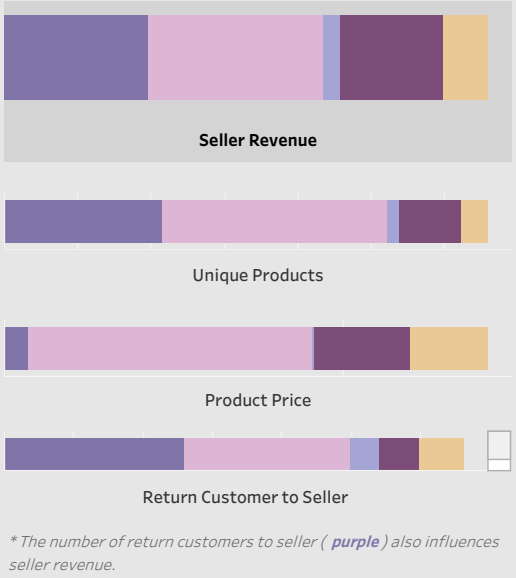


Dark purple = the most expensive product price group. Sometimes higher prices result in higher revenue despite lower product variety. Thus, **product price also influences revenue**.

The bar charts show the cluster distrubtion across various variables.

As a reminder:
pink - majority
beige - outliers
purple - return customers
dark purple - expensive products

Cluster Distribution Across Variables



** The number of return customers to seller (**purple**) also influences seller revenue.*

Olist Performance Overview & Recommendations:

Insights and conclusions

Performance Overview

01. Olist Performance

Within it's first few years (Sept 2016 - Aug 2018), Olist is growing in orders, revenue, sellers, and customers.

02. Customers

Despite Olist's growth, 72% of customers have not placed a second order. Return customers have a higher order total and purchase more items per order.

Returning customers exhibit loyalty, going back to a previously bought from seller 92% of the time.

Revenue Analysis

02. Revenue Drivers

There are 40% of sellers in the 'Low Revenue' category (making less than $10,000 within the 24 months).

Seller revenue is effected by the number of orders, number of unique products sold, and the prices. Generally, each have a positive influence on revenue, but there are many exceptions *(i.e. fewer orders but higher prices, repeat purchases of limited product variety)* .

Another factor that could be considered for further analysis is shipping time and costs.

04. Recommendations

- Create incentives for customers to order again with Olist.

- Increase customer outreach & marketing campaigns, promoting awareness and reminding customers they can use Olist for their next online purchase.

- Initiate seller support forums to promote community and best practice support for their diverse seller base.