

Delivery Delays & Customer Satisfaction



https://github.com/matthieuco/matthieu-colliaux-data-portfolio/tree/main/projects/delivery_delays%26customer_satisfaction

Context & Objectives

Olist is a brazilian e-commerce marketplace connecting thousands of sellers to end customers.

While delivery delays are relatively infrequent, customer reviews suggest that late deliveries strongly impact customer satisfaction.

🎯 Objectives :

- Quantify relationship between delivery delays and customer satisfaction
- Evaluate logistics performance
- Evaluate business performance (sellers/locations)
- Provide business recommendations



Business Questions

- Is **customer satisfaction** linked to delivery delays and logistical promises ?
- Are **delivery delays** significantly lower customers ratings ?
- Are delivery risks evenly distributed, or concentrated among specific **sellers** and **regions** ?
- What **business impact** could be expected by fixing the most critical delays ?





Methodology

1. Understanding business needs
2. Data Modeling
3. Data Preparation & Transformation (DBT)
4. Analysis & Datavisualization
5. Interpretation & Recommendations





Customer Satisfaction (slide 1/3)

🎯 Objective : Understand customer satisfaction influences



KPIs :

- 92,755 unique customers
- 3.21% recurrent customers
- 12,81% of ratings ≤ 2
- Average rating (all orders) : 4.16
- Average rating on delayed orders : 2.21



Main Insights :

- Customers delivered « On Time » are more likely to assign high ratings (4-5)
- Every extra day of delay costs customer satisfaction
- Customer satisfaction collapses when delivery delays exceed 7 days



Customer Satisfaction

Unique customers

92755

% recurrent customers

3,21 %

% rating <=2

12,81 %

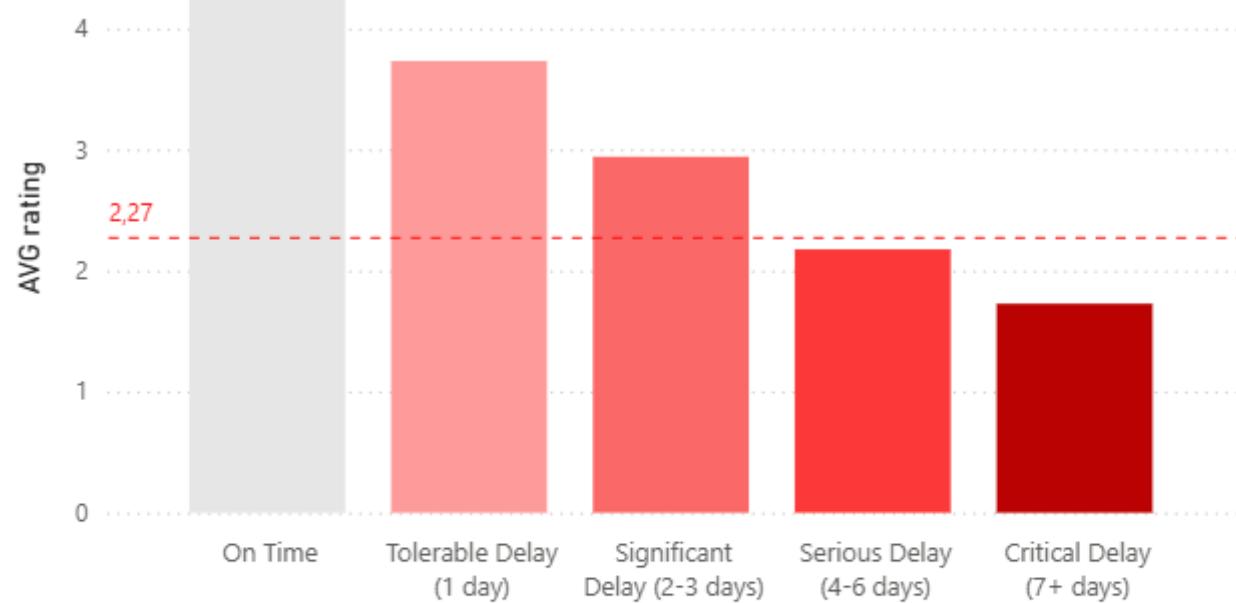
AVG rating

4,16

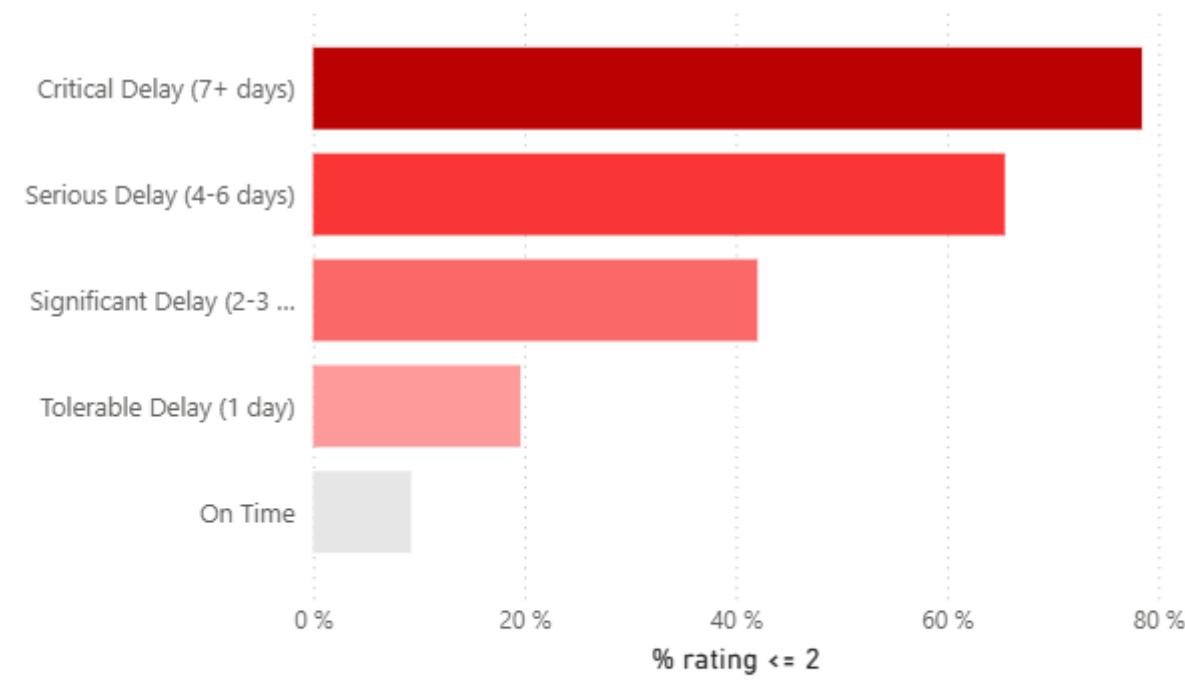
AVG rating delayed orders

2,27

As delivery delays increase, customer ratings drop



Every extra day of delay costs customer satisfaction



 Customer satisfaction collapses when delivery delays exceed 7 days



Logistic (slide 2/3)

🎯 Objective : Evaluate logistic performance and reliability

📈 KPIs :

- 6.66% of delivered orders are delayed
- Median delay : 7 days
- Average delay : 10.52 days
- 6,381 delayed orders

➡ Main Insights :

- A small number of critical delays inflate the average delay (long-tail distribution of delay days)
- 50% of delays turn into critical delays (7+ days)
- Delays are rare but structurally severe when they occur.



Total orders delivered

95832

Total orders delayed

6381

% orders delayed

6,66 %

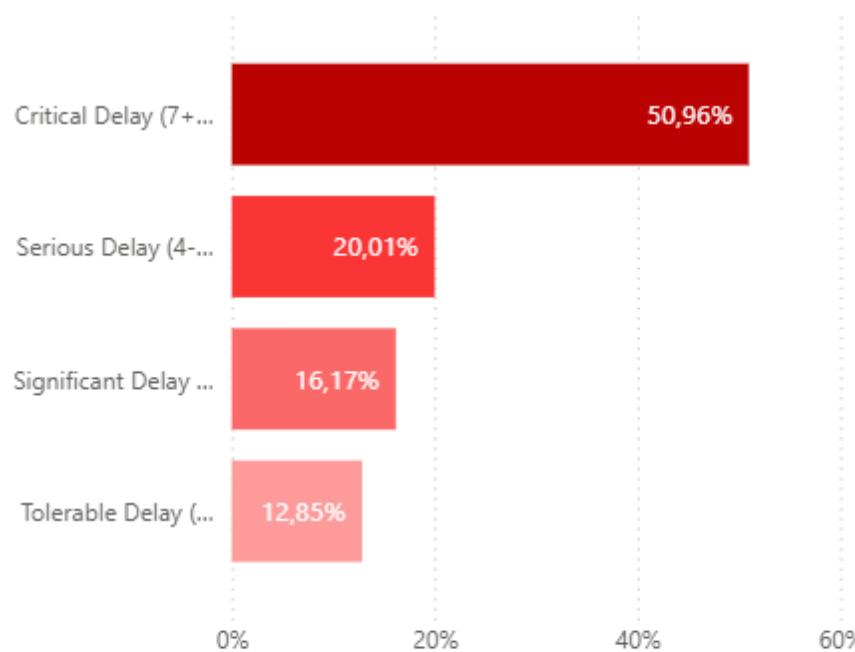
AVG Days Delayed

10,52

Median Days Delayed

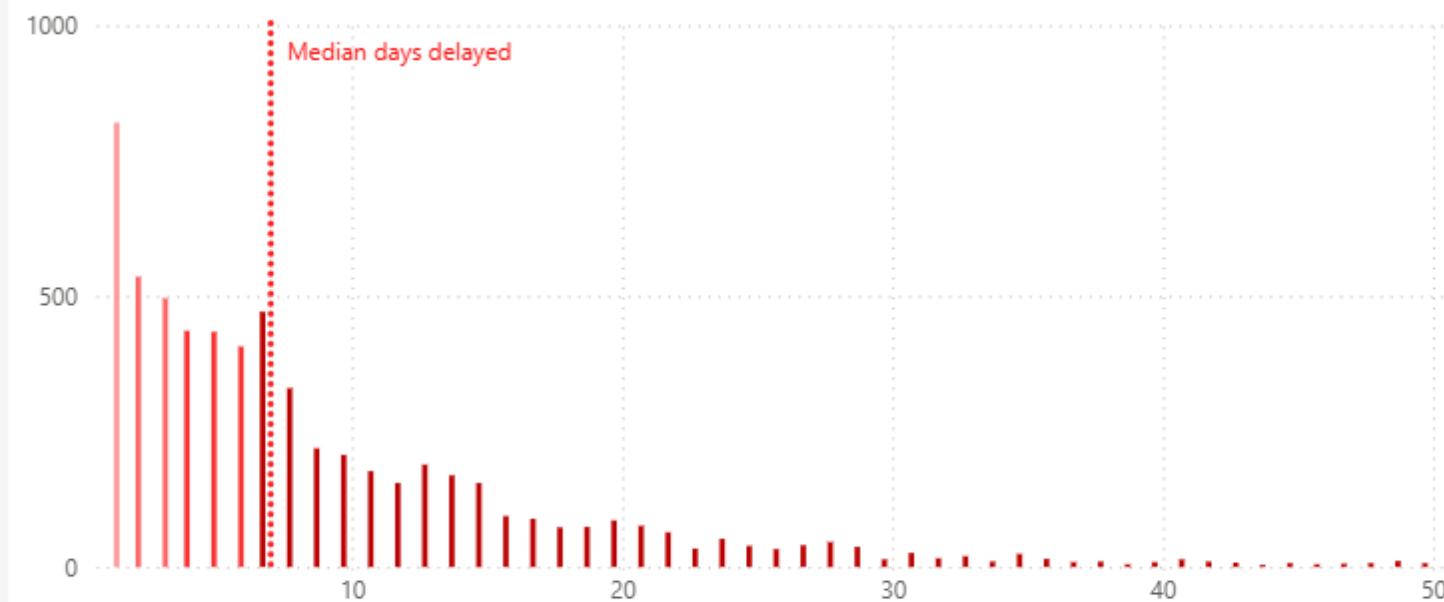
7,00

50% of delays turn into critical delays (7+ days)



A small number of critical delays inflate the average delay

● Critical Delay (7+ days) ● Serious Delay (4-6 days) ● Significant Delay (2-3 days) ● Tolerable Delay (1 day)



Half of delivery delays escalate into critical delays (7+ days)



Business (slide 3/3)

🎯 Objective : Measure economic performance and economic part of critical delivery delays

📈 KPIs :

- Total revenue : 15.29M
- Revenue from delayed orders : 1.11M
- Revenue from critical delays (7+) : 590K
- 3,252 orders in critical delay

➡ Main Insight :

- Top 5 sellers concentrate a large share of critical delays
- When delays occur in certain states(RJ,SP) they are longer and more costly
- Delivery risk is highly concentrated and actionable



Nb Sellers

2952

Total Global Revenue

15,29M

Nb Orders in Critical Delivery Delays

3252

Revenue Orders Delayed

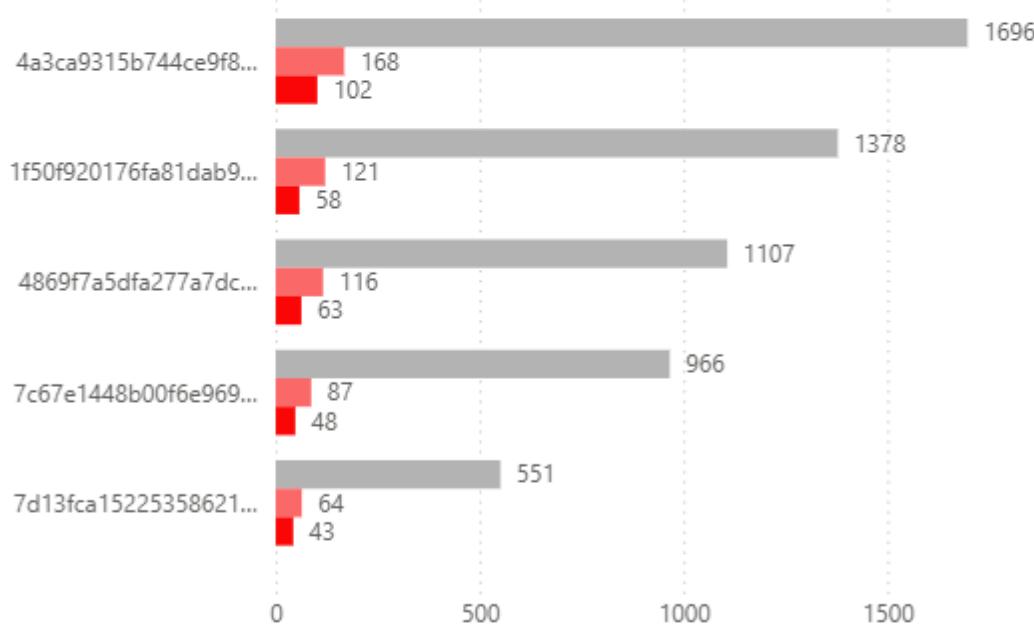
1,11M

Critical delays (7+) revenue

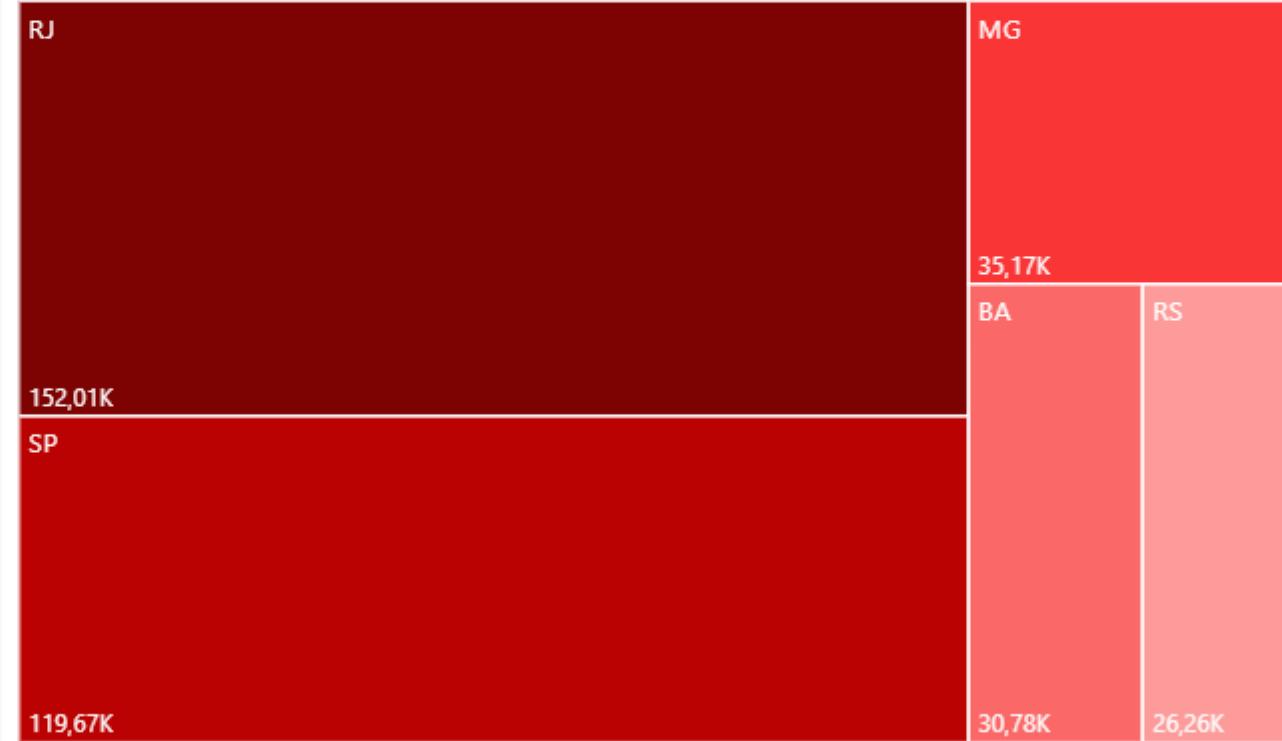
590,13K

Top 5 risky sellers driving critical delivery delays (7+)

● Total Orders delivered ● Total Orders delayed ● Total Orders Critical Delay (7+)



Delivery delay location risks (7+)



→ Most delivery risk comes from a limited number of sellers and locations

🔮 What-if Scenario – Fixing 7+ Day Delays

Hypothesis :

Reducing critical delays would significantly improve customer satisfaction and reduce revenue at risk.

Expected impact (based on current distributions, actual results may vary) :

- ≈ 50% reduction in negative ratings (<=2)
- +0.2 to +0.3 increase in overall average rating
- ≈ 590K revenue removed from high-risk delivery exposure
- Disproportionate gain for limited operational effort





Business Recommendations

1 Introduce a 7-Day Critical Delay SLA

- Automatic escalation at Day 7
- Proactive customer communication
- Priority logistics handling

2 Actively Manage High-Risk Sellers

- Seller risk score (critical delay rate, avg delay, review impact)
- Targeted support or penalties
- Focus on prevention, not sanctions

3 Optimize High-Risk Regions

- Adjust delivery promises
- Improve carrier allocation
- Consider regional logistics hubs



Tools & Skills Demonstrated :

- Google Cloud/BigQuery DataWarehouse (RAW data and OLAP storage)
- Data Build Tool (DBT) (transform raw data stored in BigQuery into analytics-ready tables consumed by Power BI)
- SQL (data cleaning, window functions, feature engineering)
- Power BI (DAX, calculated tables, advanced visuals)
- Business-oriented storytelling
- Decision-driven analytics

Why this case study matters :

This project demonstrates the ability to :

- Go beyond dashboards
- Translate data into **decisions**
- Prioritize problems based on **impact, not volume**
- Communicate insights clearly to non-technical stakeholders

