

ANALYZING ECOMMERCE BUSINESS PERFORMANCE WITH SQL

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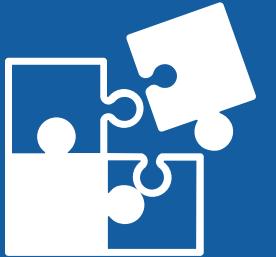
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ABOUT ME



Danu is a data enthusiast with experience in completed Data Science bootcamp and understanding the fields of Data Science, Data Analyst, and Machine Learning. Possessing a solid understanding of essential principles in statistics, mathematics, programming, and machine learning, had successfully applied this expertise to tangible projects.

Proficient in programming languages such as Python and SQL, I demonstrate adeptness in implementing machine Learning algorithms and leverage state-of-the-art tools and frameworks, including TensorFlow and scikit-learn. Additionally, I enhance data visualization using seaborn, Matplotlib, and Tableau. This proficiency empowers me to explore vast datasets and produce comprehensive analyses. When evaluating the effectiveness of machine learning models using performance metrics like accuracy, precision, and recall, I provide valuable business recommendations.



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OVERVIEW

In a company measuring business performance is very important to track, monitor, and assess the success or failure of various business processes. This can help us to see current market conditions, growth analysis, and product analysis, and to develop opportunities for new, more effective business methods. Therefore, this project will analyze the business performance of an eCommerce company, considering several business metrics, namely customer growth, product quality, and payment types.

In this project, an analysis will be carried out using PostgreSQL





DATA PREPARATION

Creating Database & Table
Importing Data
Entity Relationship



Creating Database & Table

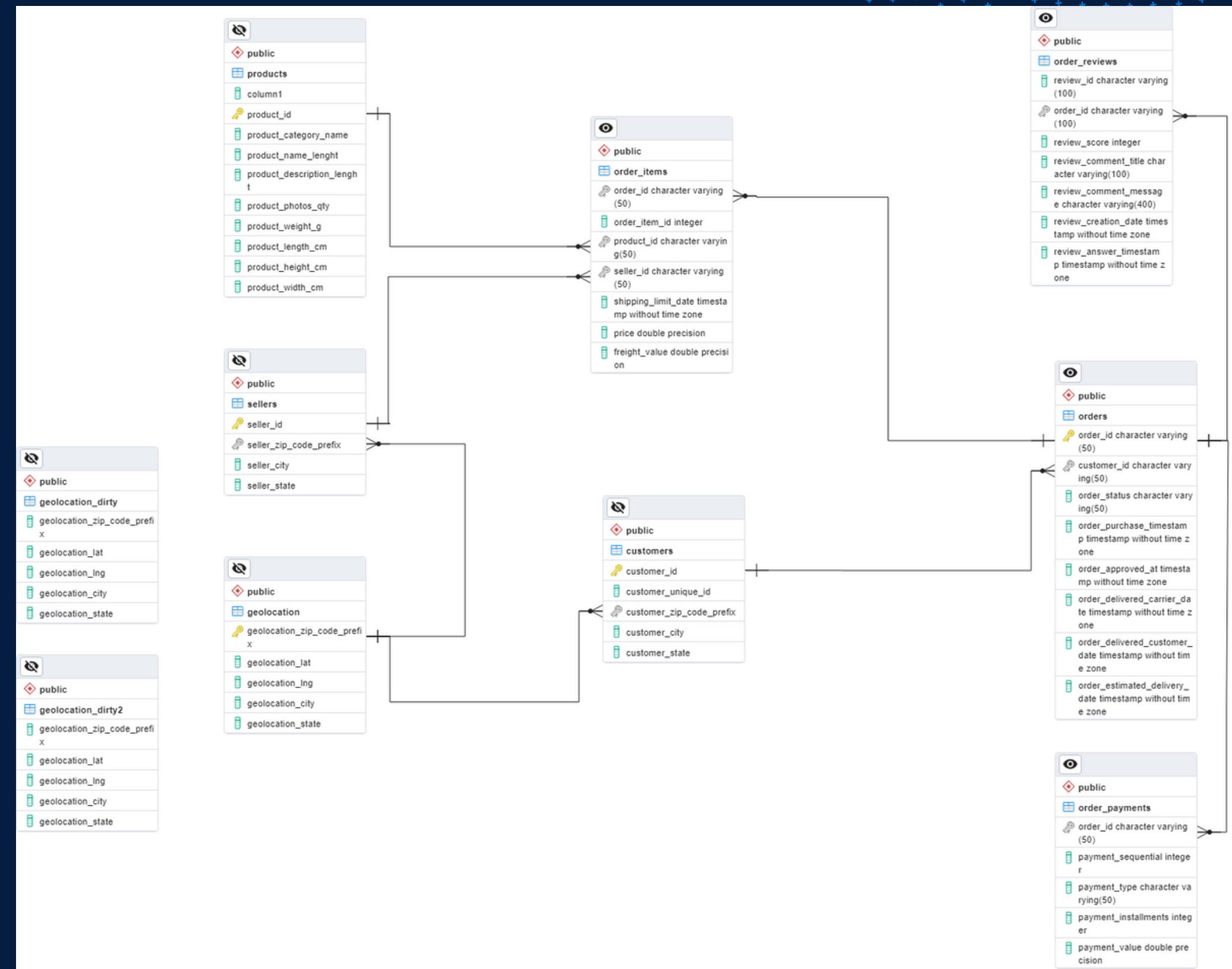
Importing Data

Entity Relationship

Create an ERD by defining the Primary key and Foreign key for each table. Next, link the relationships between the keys by specifying the Constraint name. This results in the formation of an Entity Relationship Diagram (ERD) as illustrated in the picture

List of Tables Created and Importing Data:

- customers
- order_reviews
- geolocation
- orders
- order_items
- products
- order_payments
- sellers



[View or Download ERD here](#)



ANNUAL CUSTOMER ACTIVITY GROWTH



ANNUAL CUSTOMER ACTIVITY GROWTH



Average Monthly Active User (MAU) per year

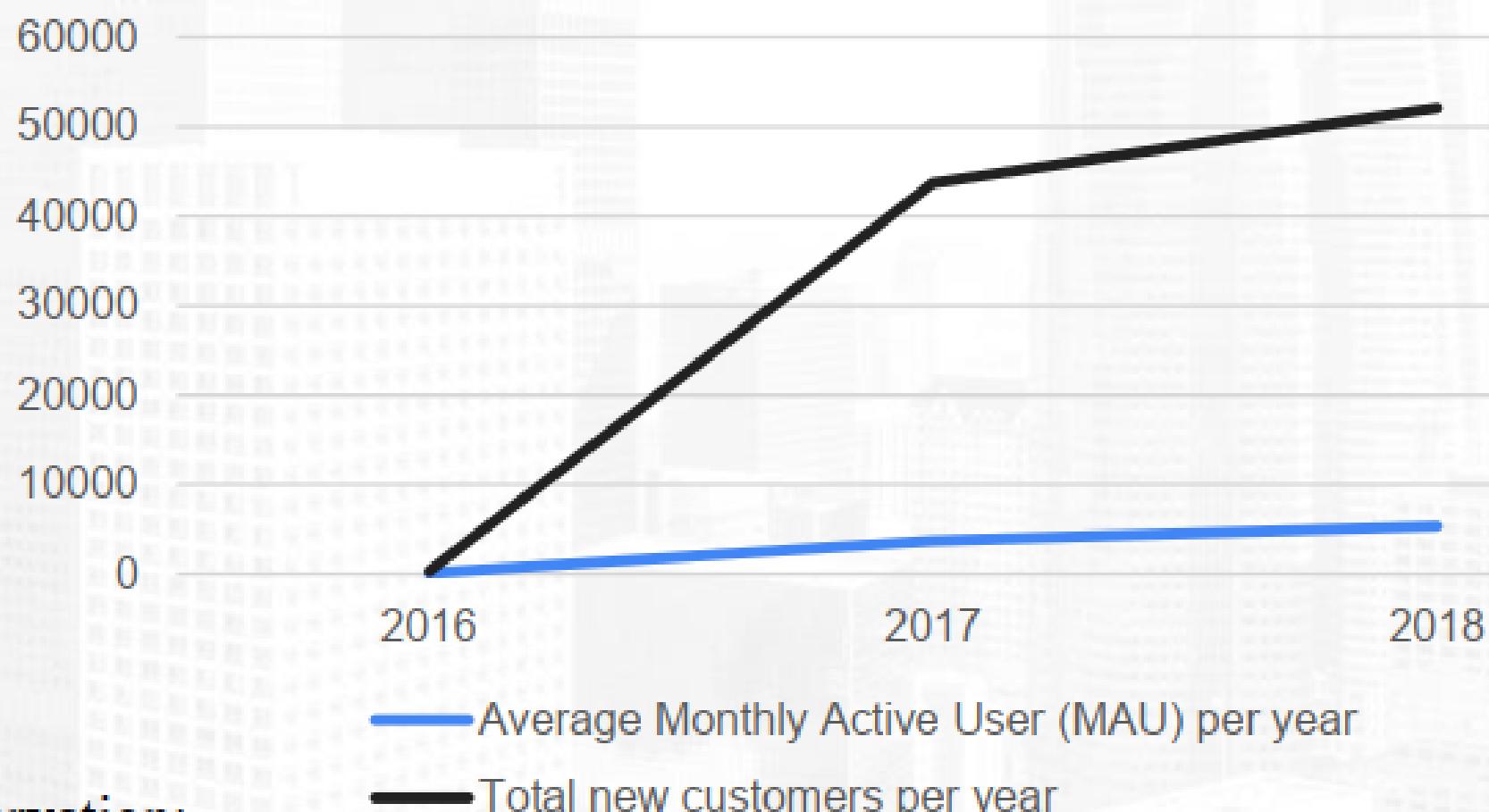
year double precision	average_mau numeric
2016	108.67
2017	3694.83
2018	5338.20



Total new customers per year

year double precision	new_customers bigint
2016	326
2017	43708
2018	52062

Average Monthly Active User and Total New Customers



Observation:

- Monthly Active Users have consistently grown each year, accumulating thousands of customers.
- There was a notable surge in 2017, although this might be attributed to the data being accessible for only four months starting in September. Subsequently, it continued to rise in 2018.
- This indicates that e-commerce performance is correlated with strong engagement that captures customer interest, as evidenced by the upturn in the average active customer. Furthermore, effective branding promotion in e-commerce can attract new customers and encourage initial orders. Additionally, the possibility of offering promotions or vouchers to entice new customers is worth considering.

ANNUAL CUSTOMER ACTIVITY GROWTH



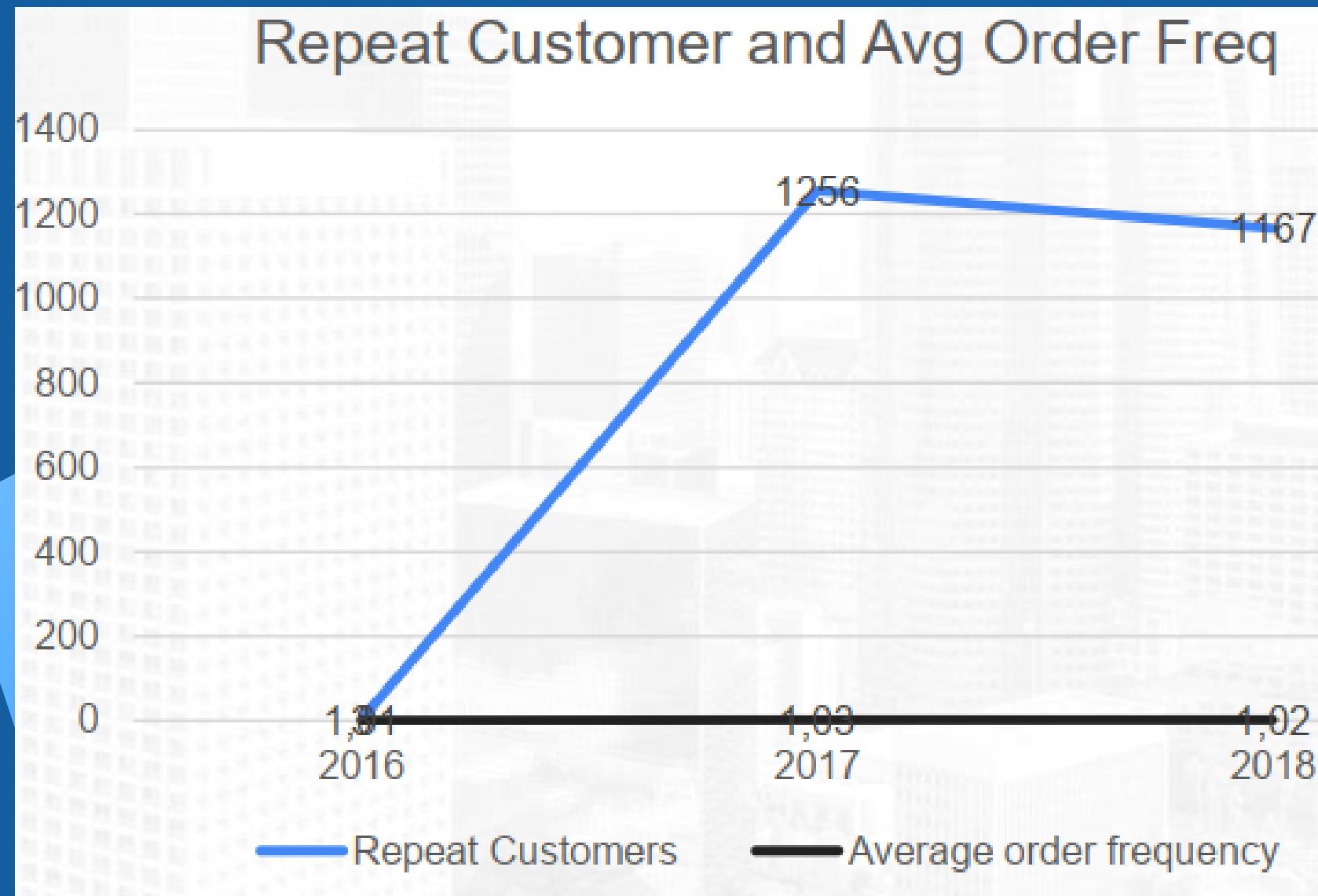
The number of customers who make repeat orders per year

year	repeat_customers
2016	3
2017	1256
2018	1167



Average order frequency for each year

year	avg_num_orders
2016	1.01
2017	1.03
2018	1.02



Observation:

- There was a substantial rise in repeat orders in 2017. Nevertheless, there was a decline in 2018, amounting to 100 customers.
- By examining the average order quantity, it becomes apparent that the majority of individuals placed just one order in the past three years.

ANNUAL PRODUCT CATEGORY QUALITY ANALYSIS



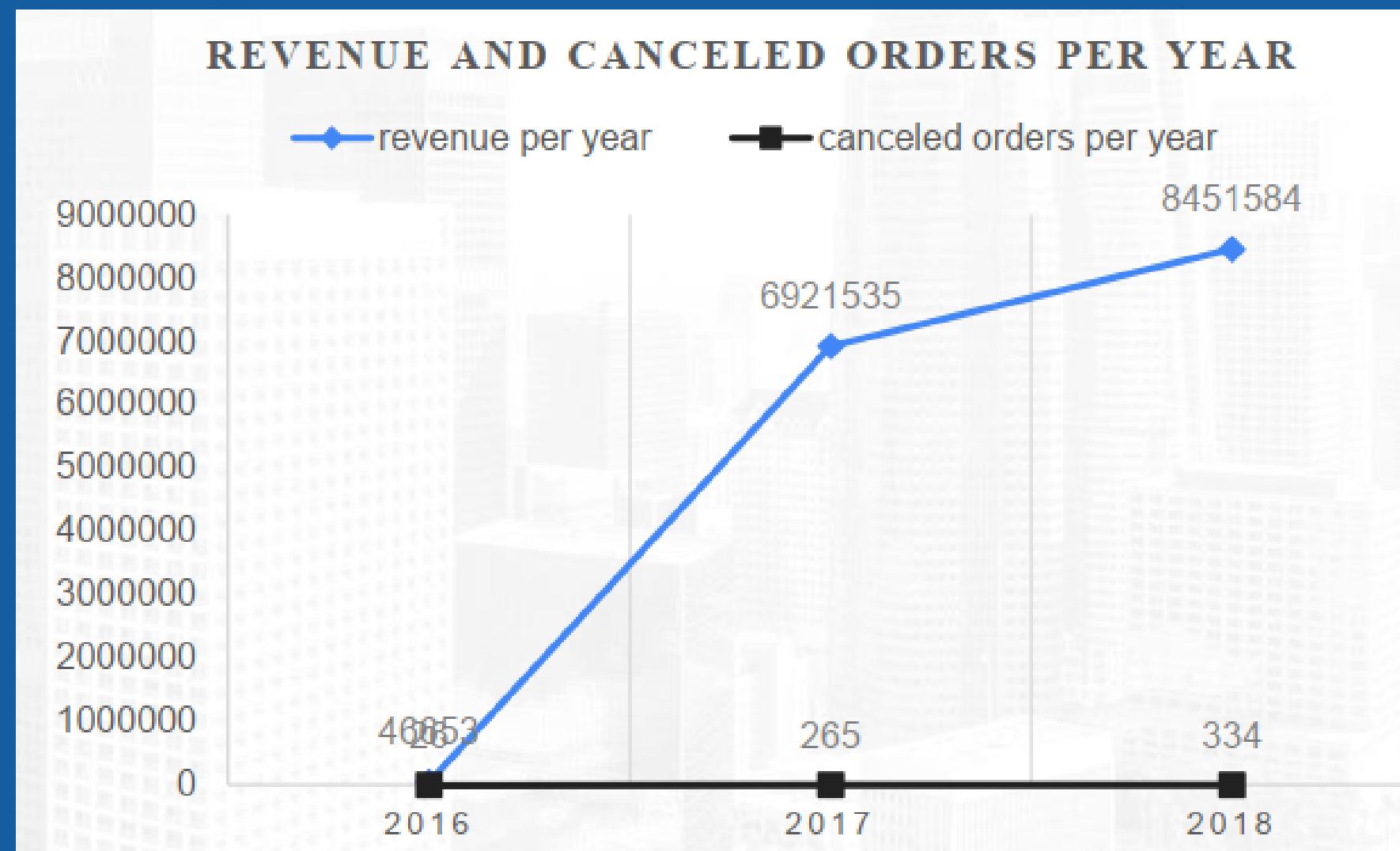
Table of revenue per year

year double precision	revenue double precision
2016	46653.740000000004
2017	6921535.239999719
2018	8451584.769999959



Table of the number of canceled orders per year

year double precision	total_cancel bigint
2016	26
2017	265
2018	334



Observation:

- Revenue has been consistently increasing every year, despite the previous data indicating a decline in repeat orders from 2017 to 2018. This trend may be attributed to a significant rise in the number of new customers each year.
- The number of canceled orders increased from 2016 to 2018, although the scale of the increase remained relatively small, still in the hundreds as opposed to the thousands. It would be advisable to gather additional data on the reasons for order cancellations to prevent a further rise in cancellations in the upcoming year.

ANNUAL PRODUCT CATEGORY QUALITY ANALYSIS

Table of the top categories that generate the largest revenue per year

year double precision	product_category_name character varying	revenue double precision
2016	furniture_decor	6899.35
2017	bed_bath_table	580949.200000002
2018	health_beauty	866810.3399999985

Table of categories that experienced the most canceled orders per year

year double precision	product_category_name character varying	total_cancel bigint
2016	toys	3
2017	sports_leisure	25
2018	health_beauty	27

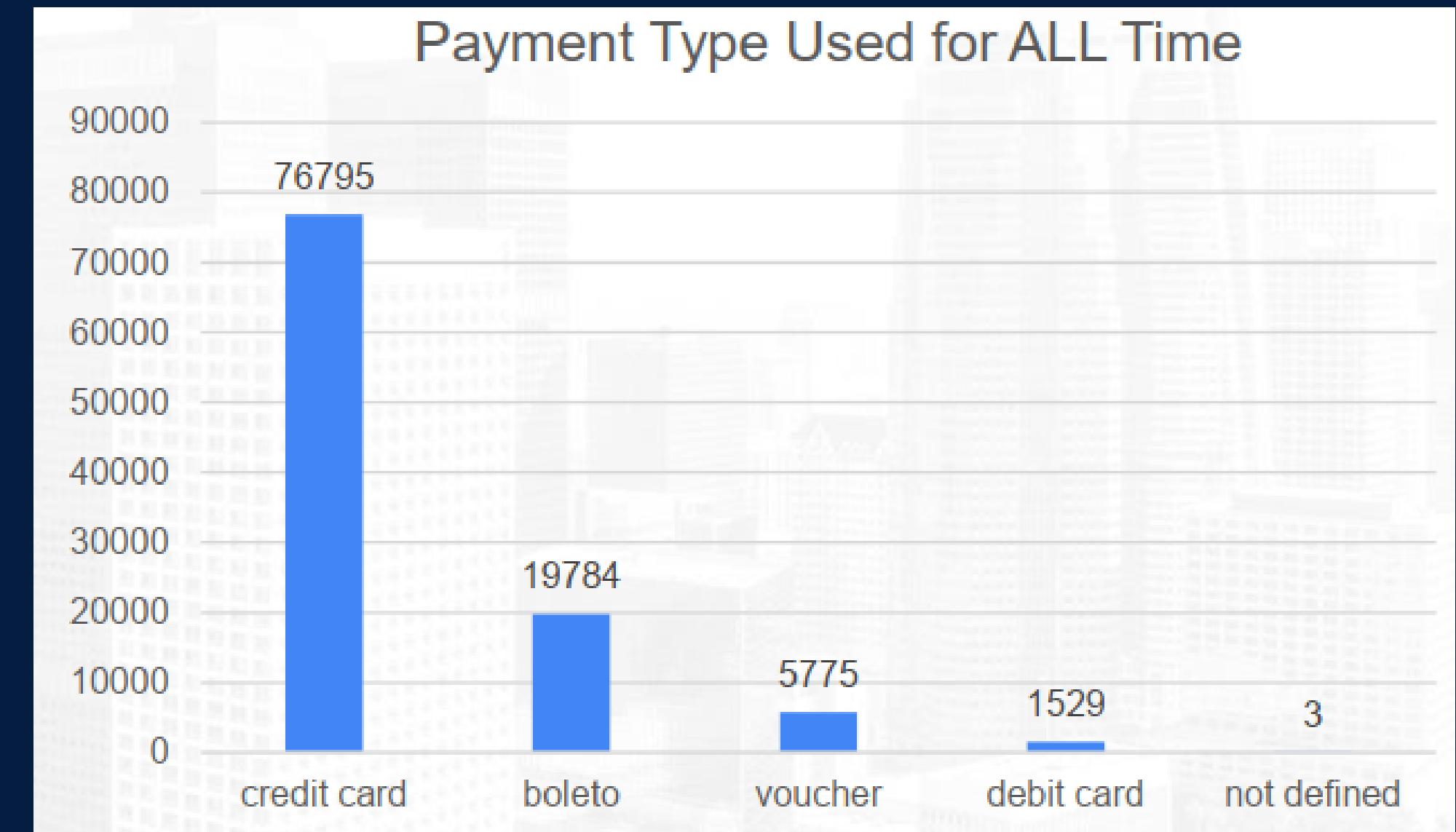
Observation:

- It is apparent that the various product categories, including the ones with the highest revenue and those with the most cancellations, differ every year.
- Nevertheless, an intriguing discovery was made in 2018 when it was observed that the Health Beauty category held the same position for both the highest revenue and the most cancellations. This might be attributed to the fact that a significant number of orders were placed in the health and beauty categories.

ANALYSIS OF ANNUAL PAYMENT TYPE USAGE

Total usage of each type of payment all time

payment_type	num_of_usage
character varying	bigint
credit_card	76795
boleto	19784
voucher	5775
debit_card	1529
not_defined	3



Observation:

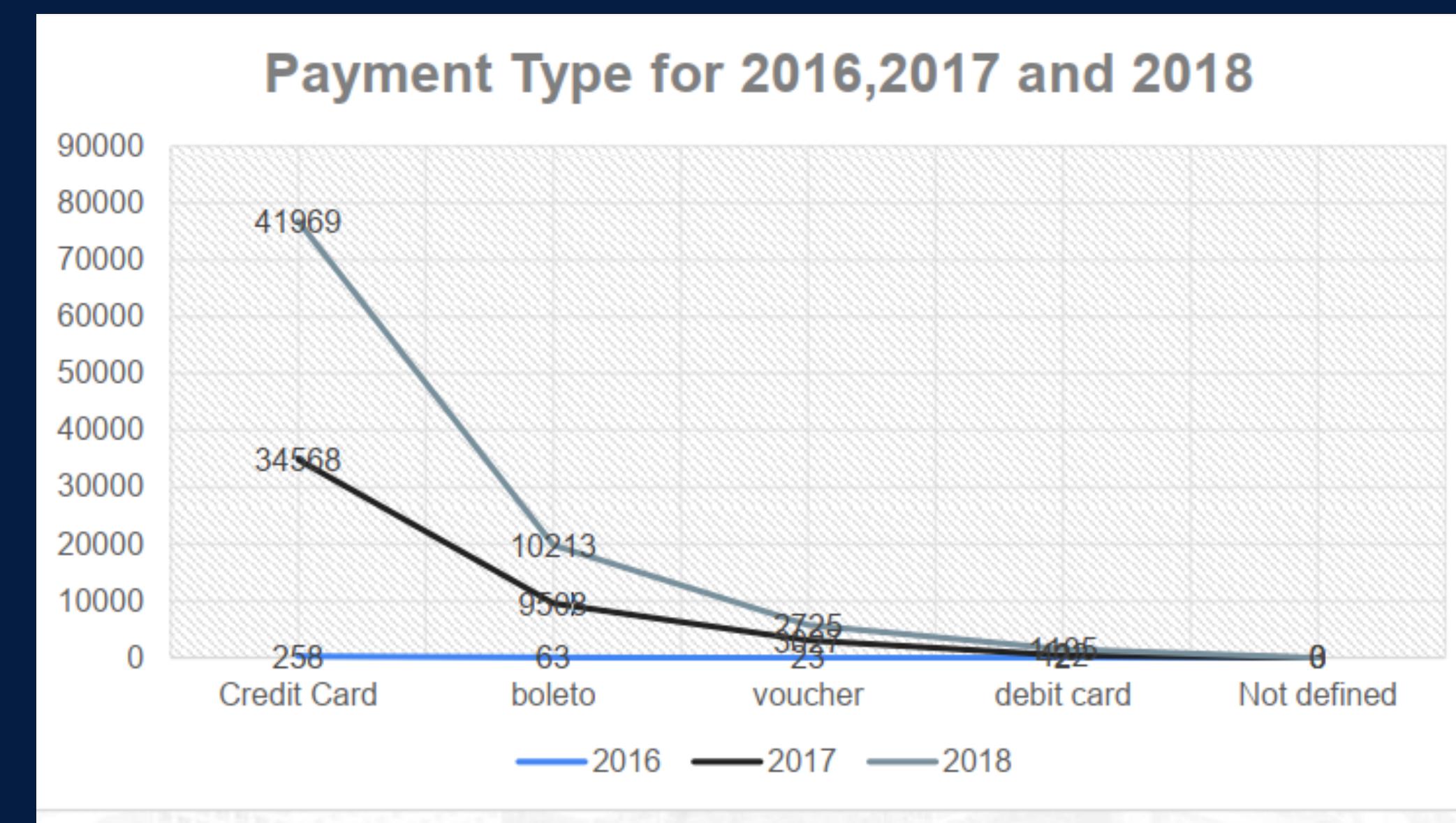
- There are 4 common payment methods, which are Credit Card, Boleto, Voucher, Debit Card.
- The use of credit cards as a means of payment is the most compared to other types of payments. By looking at this, companies can collaborate with credit card provider banks to offer more appealing promotions. Further analysis can be conducted on customer behavior in using credit cards, such as the chosen credit type, which product categories are usually purchased with credit cards, etc.
- Because many customers use credit cards, boleto, and vouchers, bonuses or promotions can be provided that target the most favorite payment types.

ANALYSIS OF ANNUAL PAYMENT TYPE USAGE

Details of the amount used for each type of payment for each year

payment_type	year_2016	year_2017	year_2018
credit_card	258	34568	41969
boleto	63	9508	10213
voucher	23	3027	2725
debit_card	2	422	1105
not_defined	0	0	3

Payment Type for 2016, 2017 and 2018



Observation:

- Additionally, each payment type exhibits a notable annual increase.
- Nevertheless, voucher-based payments experienced a decline in 2018, possibly attributed to reduced voucher promotions.
- Further examination can be conducted by consulting with other departments, including Marketing, Analysis, or Business Development.



SUMMARY

Customer activity experienced growth in every metric from 2016 to 2018, including an increase in the number of new customers and Monthly Active Users (MAU). However, repeat customer orders remained stagnant during this period. Moreover, the average number of orders made by customers was only once



The analysis of Product Category Quality revealed a consistent growth in the company's total revenue each year. Interestingly, the most canceled product categories and best selling orders changed annually. Notably, the health beauty category emerged as both the most sold and the most canceled product category.



Additionally, each type of payment showed a significant increase year over year. Credit cards were the most commonly used payment method from 2016 to 2018. However, payments made using vouchers experienced a decline in 2018

Thank's

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