

ONLINE RETAIL STORE

September 2021



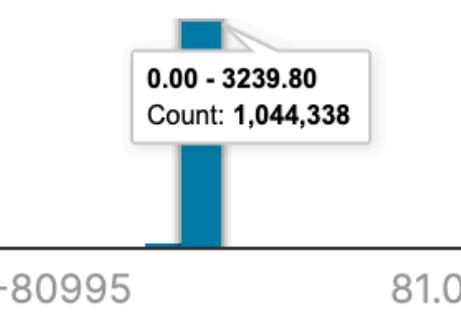
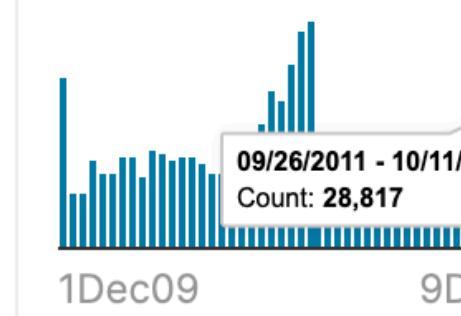
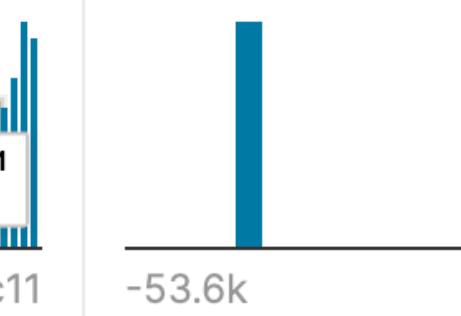
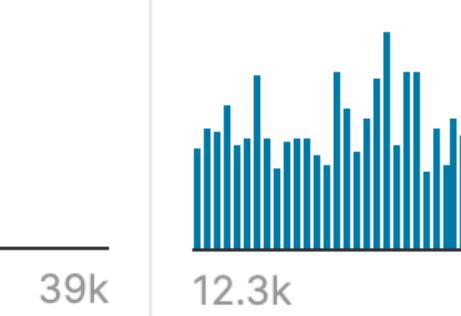
952.05

WHAT IS SO SPECIAL ABOUT THIS NUMBER?

KEY FIGURES

ABOUT THE DATA

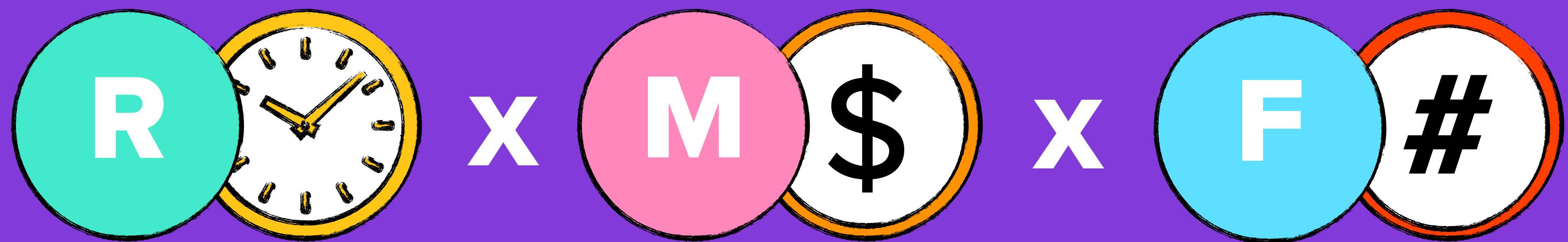
The used data set features **online retail transactions** taken between **01/12/2009 and 09/12/2011** for a **UK-based non-store online retailer**. The company mainly sells unique **all-occasion gift-ware**. Many customers (5,824) of the company are **wholesalers**. It seems YoY revenue of the retail shop seems to stagnate, which demands further insights and investigation.

Invoice	StockCode	Description	Quantity	InvoiceDate	Price	Customer ID	Country
Invoice number. Nominal. A 6-digit integral number uniquely assigned to each transaction. If this code starts with the letter 'c', it	Product (item) code. Nominal. A 5-digit integral number uniquely assigned to each distinct product.	Product (item) name. Nominal.	The quantities of each product (item) per transaction. Numeric.	Invoice date and time. Numeric. The day and time when a transaction was generated.	Unit price. Numeric. Product price per unit in sterling (£).	Customer number. Nominal. A 5-digit integral number uniquely assigned to each customer.	Country name. Nominal. The name of the country where a customer resides.
53628 unique values	5305 unique values	5699 unique values					United Kingdom 92% EIRE 2% Other (68175) 6%

OBJECTIVE = PREDICT 3 MONTH CUSTOMER VALUE

CUSTOMER LIFETIME VALUE

— CALCULATION —

$$\text{CLV} = R \times M \times F$$


Recency

(e. g. recency
of last purchase)

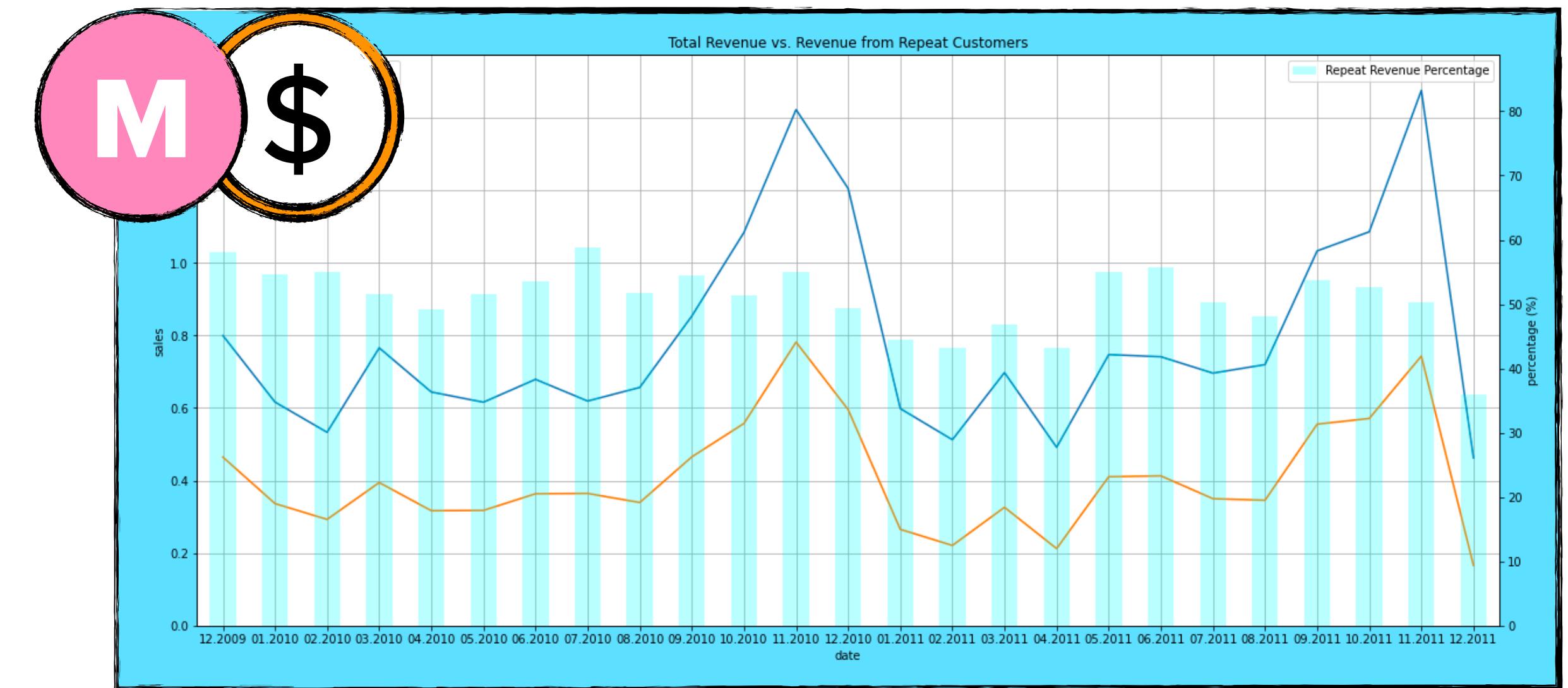
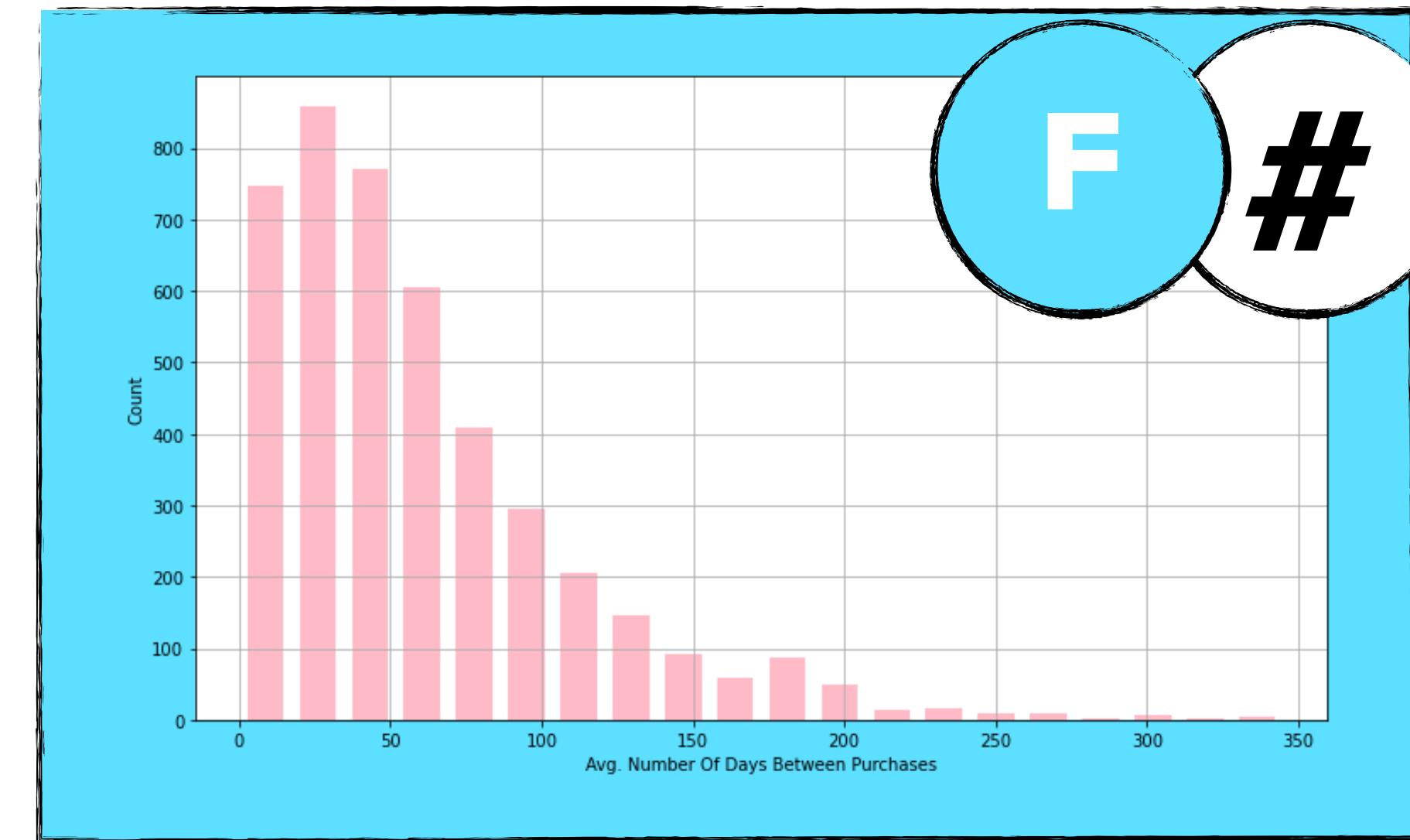
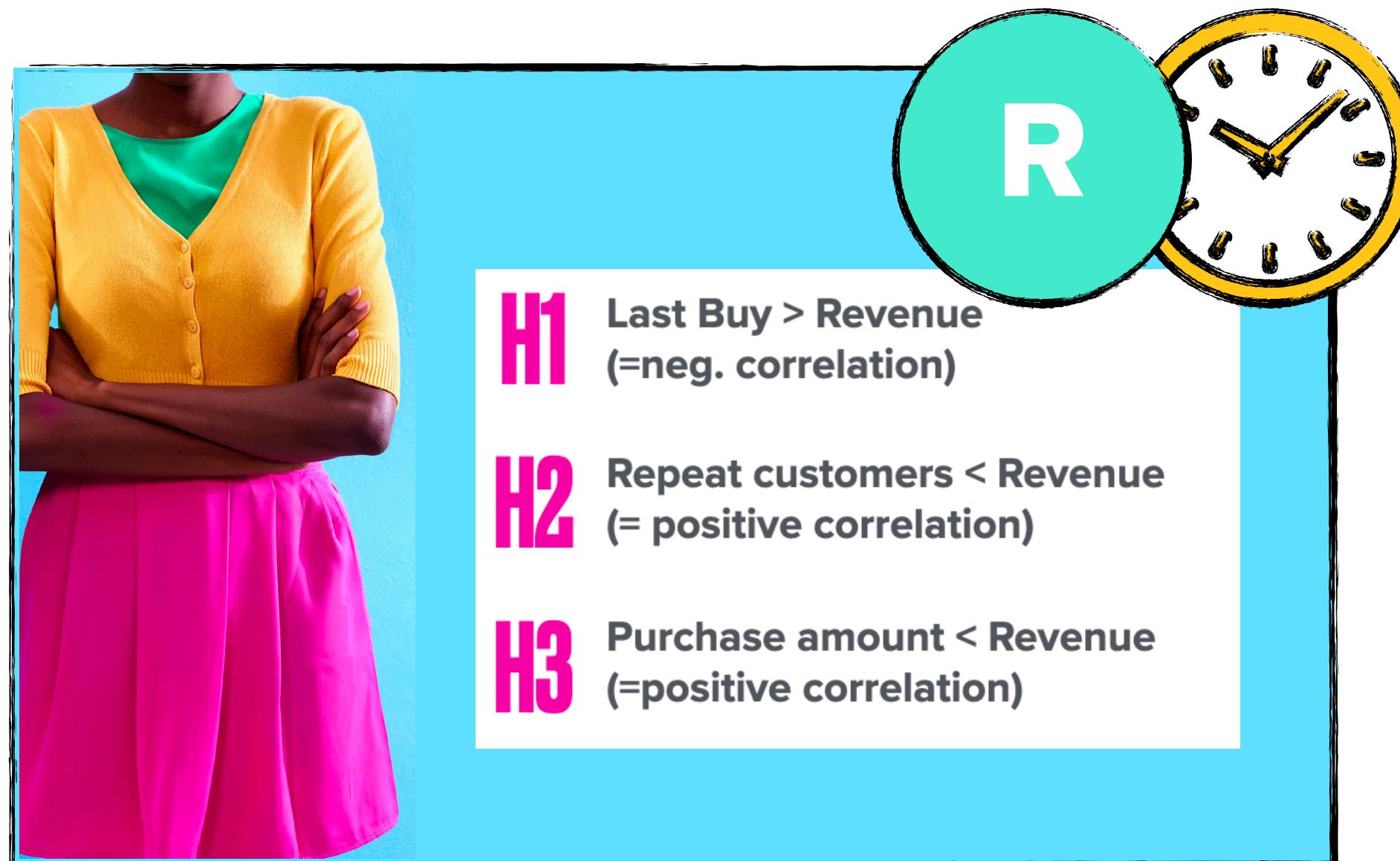
Monetary Value

(e. g. average
purchase amount)

Frequency

(e. g. Number of
Transactions)

TOP INSIGHTS





EXAMPLE

Susan has her own gift store in London, UK. She is a very valuable customer as she bought products worth over GBP 77k (=AMOUNT) within the last year (321 Days).

The data indicate that she orders new items every 3 months (107days = Frequency). Her Last purchase was 18th of Jan.

customer_id	sales				invoice_date				
	min	max	sum	avg	count	min	max	purchase_duration	purchase_frequency
12346	27.05	77183.60	77352.96	25784.320000	3.0	2010-03-02 13:08:00	2011-01-18 10:01:00	321	107.000000

H1 Last Buy > Revenue
(=neg. correlation)

H2 Repeat customers < Revenue
(= positive correlation)

H3 Purchase amount < Revenue
(=positive correlation)

#2 75% OF REPEAT CUSTOMERS MADE 9 OR LESS PURCHASES ON AVERAGE EVERY 2.5 MONTHS (71 DAYS)

Table 2 Number of Orders Distribution

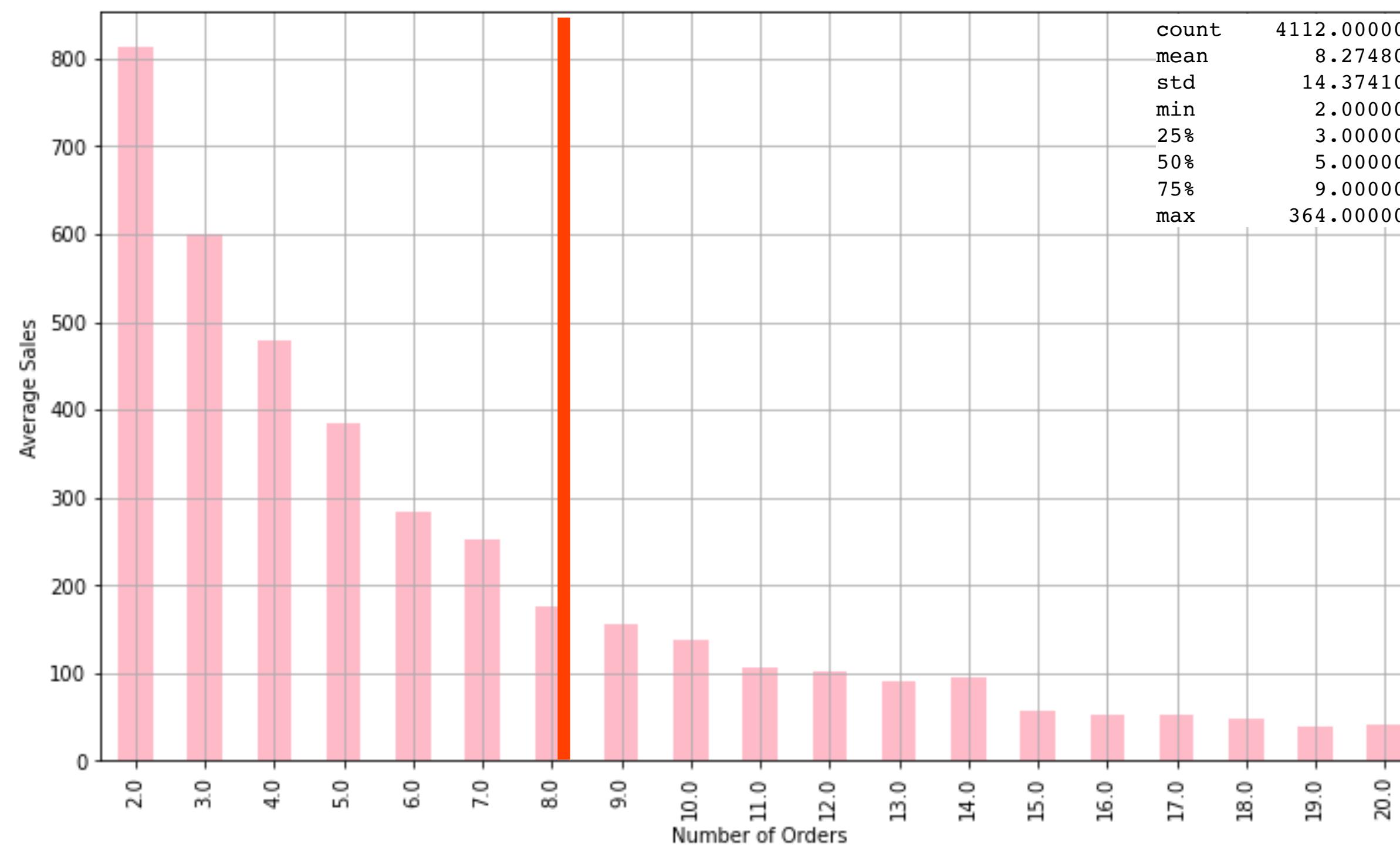
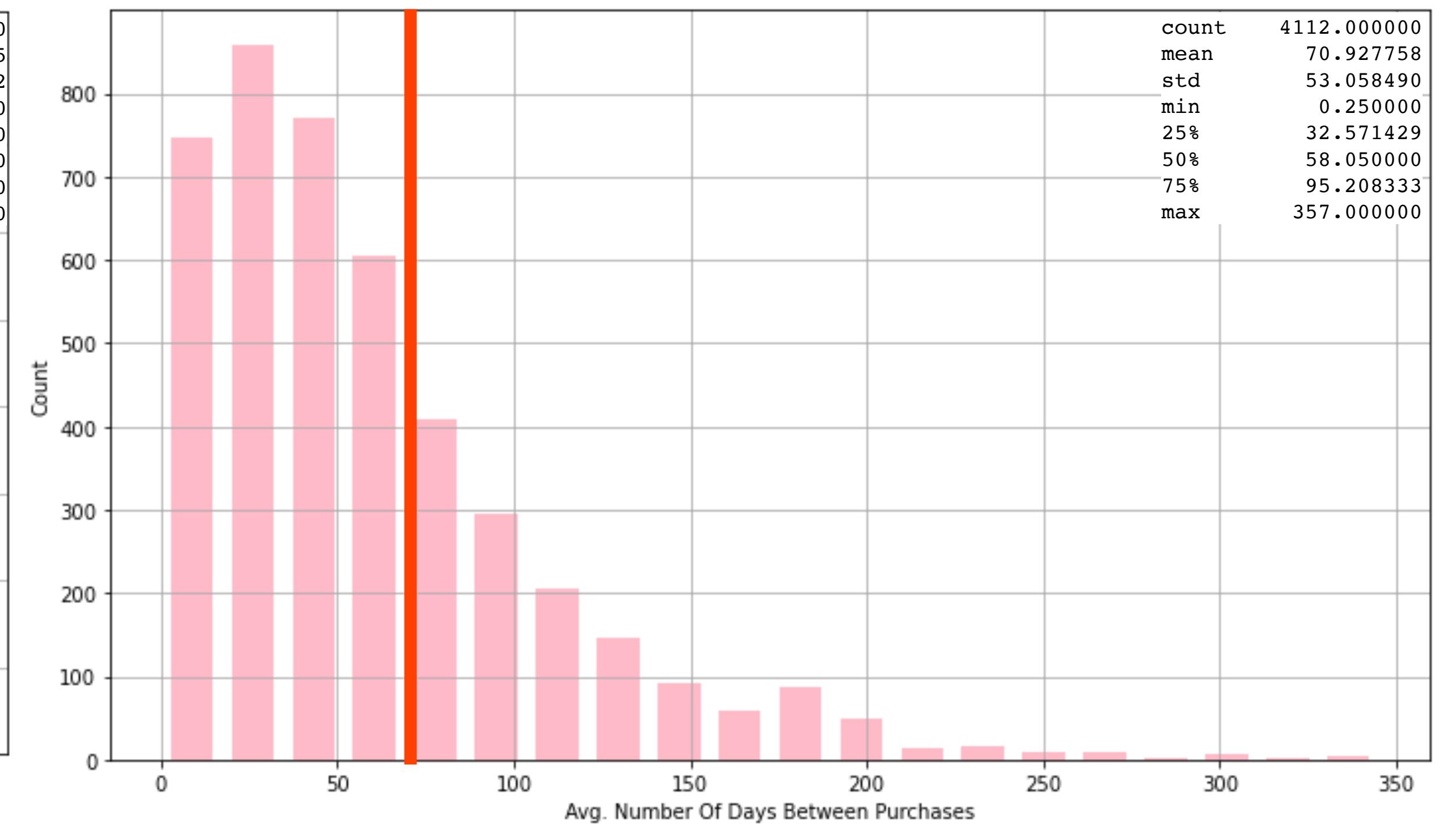


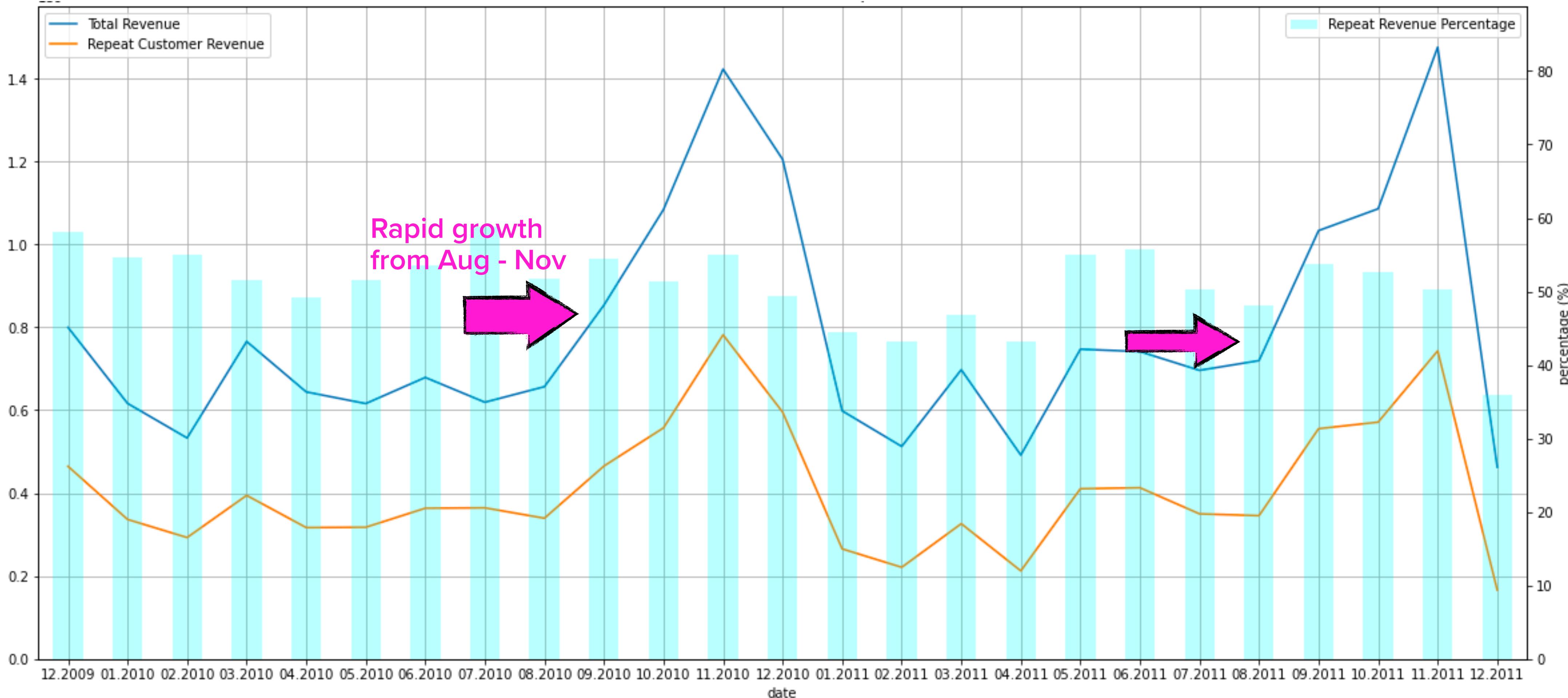
Table 3: Frequency of Orders Distribution



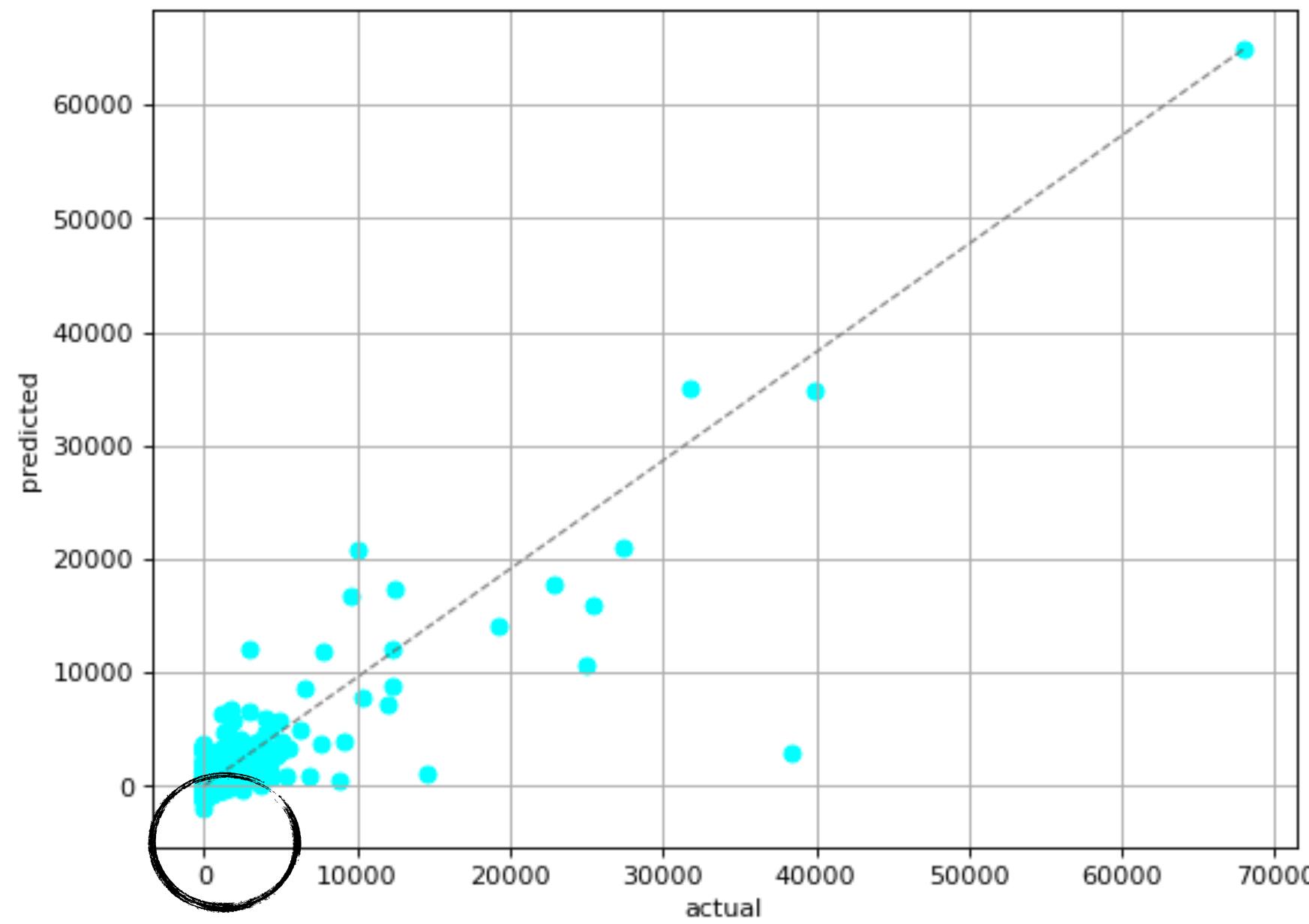
#3

> 70% OF THE REVENUE FROM REPEAT CUSTOMERS
& YOY REVENUE IS STAGNATING (GBP 7.7M)

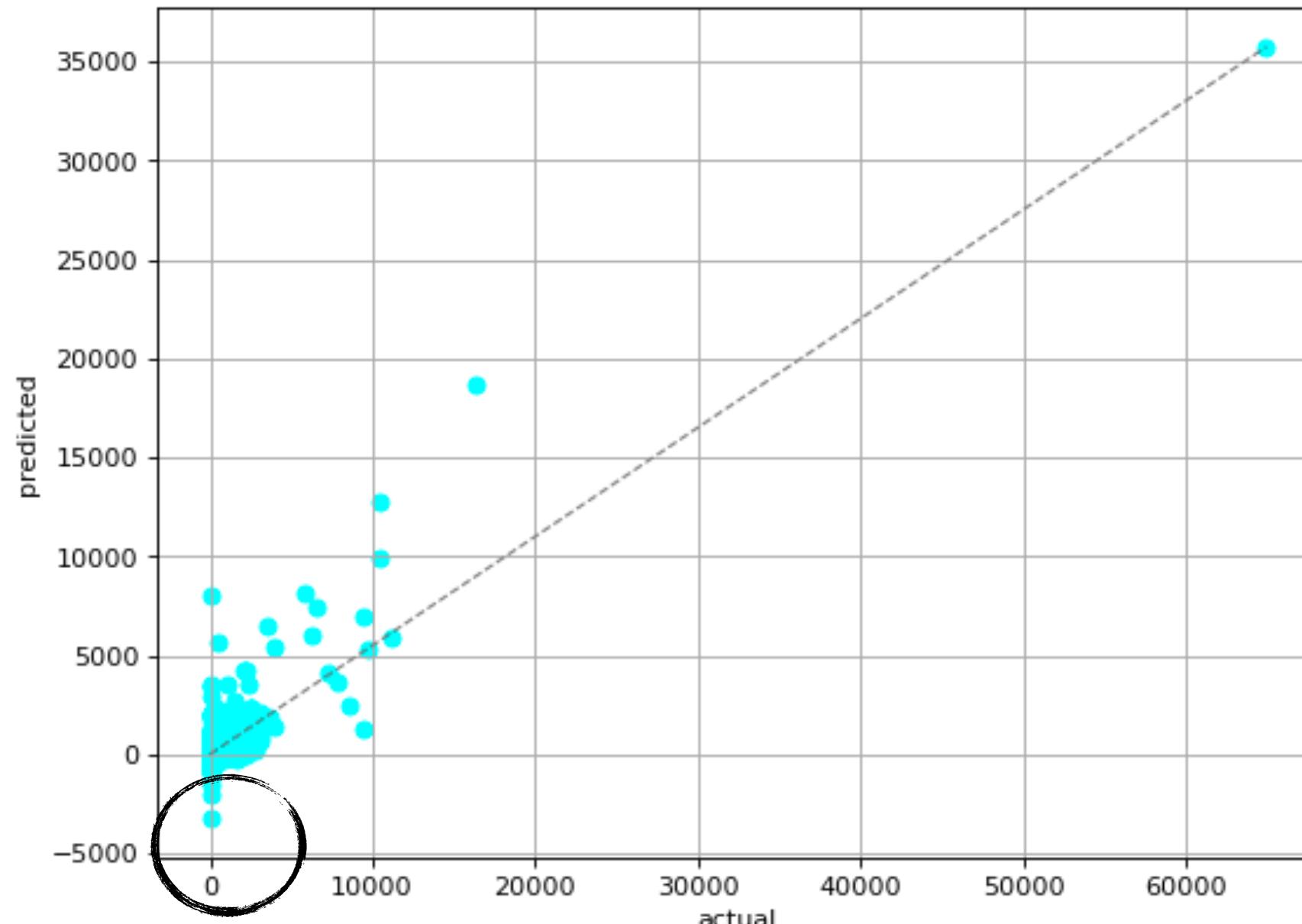
Table 4: Total Revenue vs. Repeat Customer Revenue



Train Set - Actual vs. Predicted



Test Set - Actual vs. Predicted



LINEAR REGRESSION

R-SQUARED

0.7685
(TRAIN)

ADJ. R-SQUARED

0.7305
(TEST)

MAE

0.7669
(TRAIN)
0.7267
(TEST)

130.37
(TRAIN)
141.98
(TEST)

MODEL LIMITATIONS & NEXT STEPS

- Exploring Negative predicted values
- Improve outlier handling (esp. revenue with little number of clients)
- Improve Normalisation of Sales Values
- Explore non-linear relationships with other (regression) models

HOW TO RAMP UP REVENUE AGAIN?

£1.9M

Marketing:

- 3 month campaign budget < £350 per customer to retain positive ROI
- Lead Nurture campaigns (Customer < 2 purchases)
- Special offers for low season periods

Sales:

- Contacting most valuable customers every 3 months

BI:

- Customer Segmentation & Product Analysis
- Deep dive into negative model values
- Lead Scoring Model



Q&A