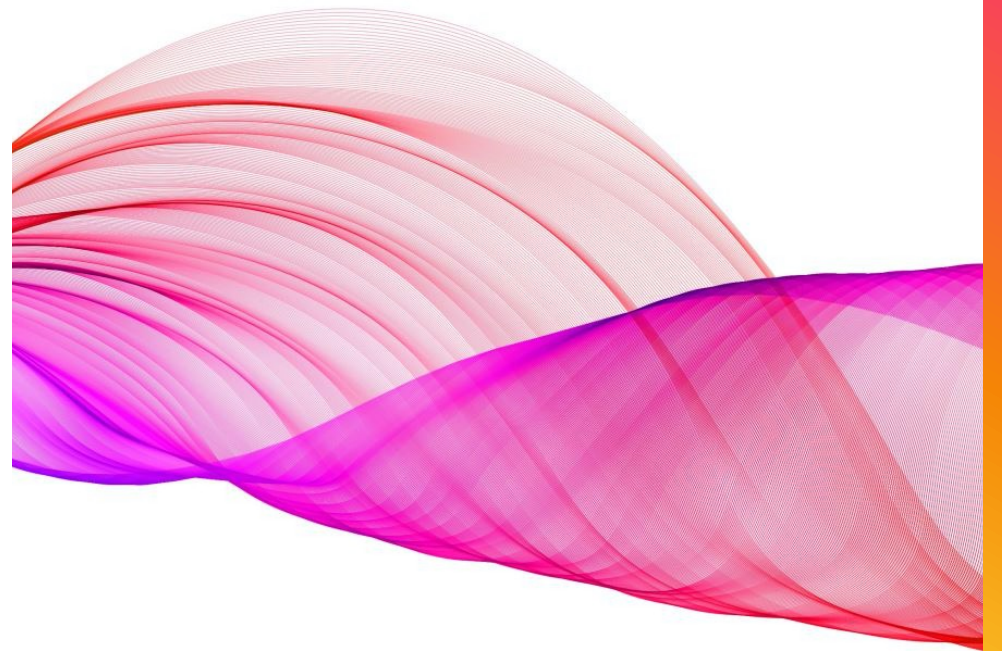


Sales performance Report

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Date: 23/6/2021

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The data

- Purchase information from 2016-12-01 to 2017-02-28
- A total of 31 stores
- 3159 product items
- Price range from free to 175.0 per unit



General conclusions

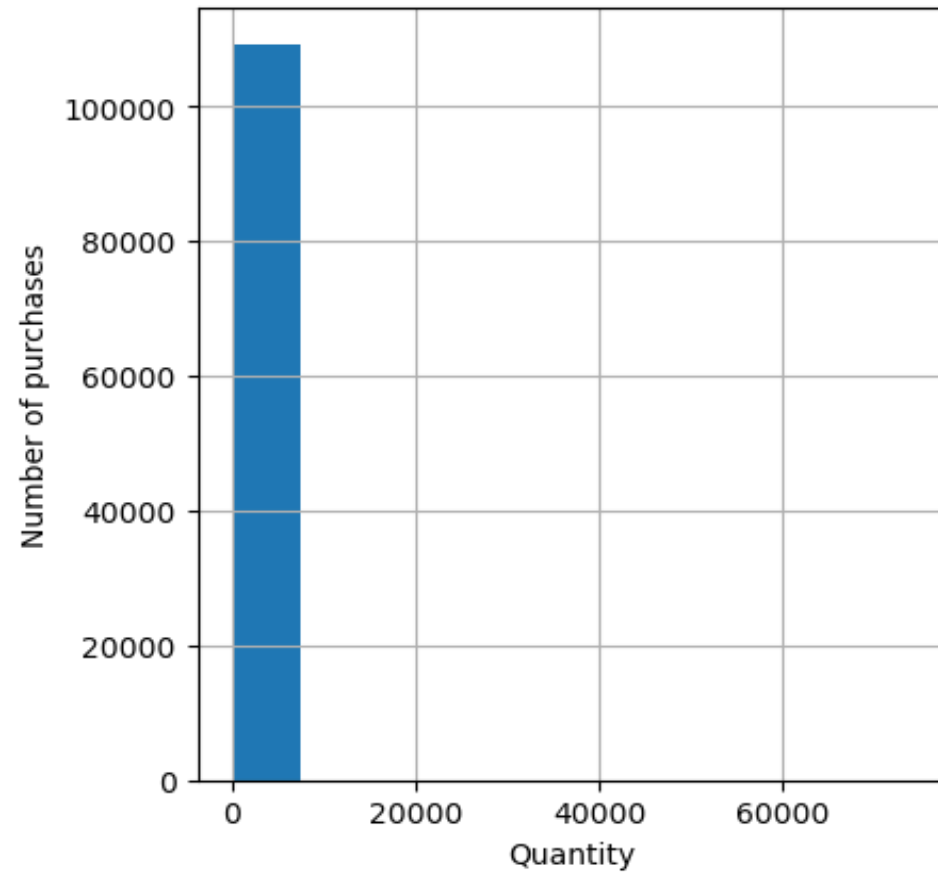
- Shop 0 stands out as the best performing store in its sales quantity and values
- Shop 5, 13, 4 and 25 follow shop 0 to top the performance rank
- Product 85123a, 85099b, and 21212 are the top selling store items
- On average, loyalty program customers make larger quantity purchases and generate higher sale values than the customers not in the program.



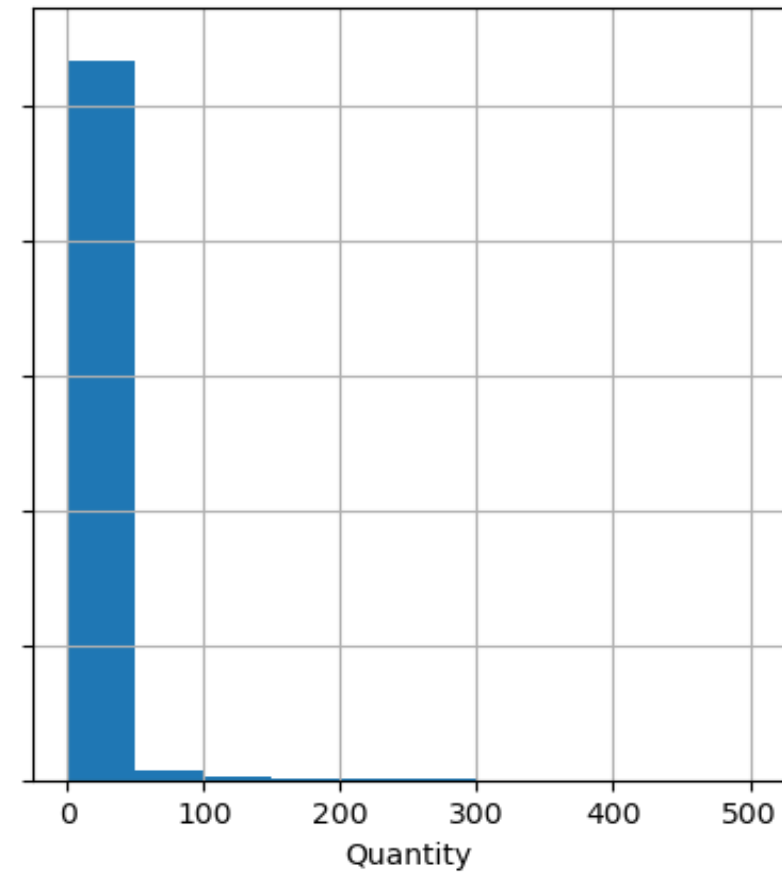
A breakdown discussion of the key findings

Most of the purchase quantities are below 100. There are some extreme outliers on the higher end.

Distribution of purchase quantities

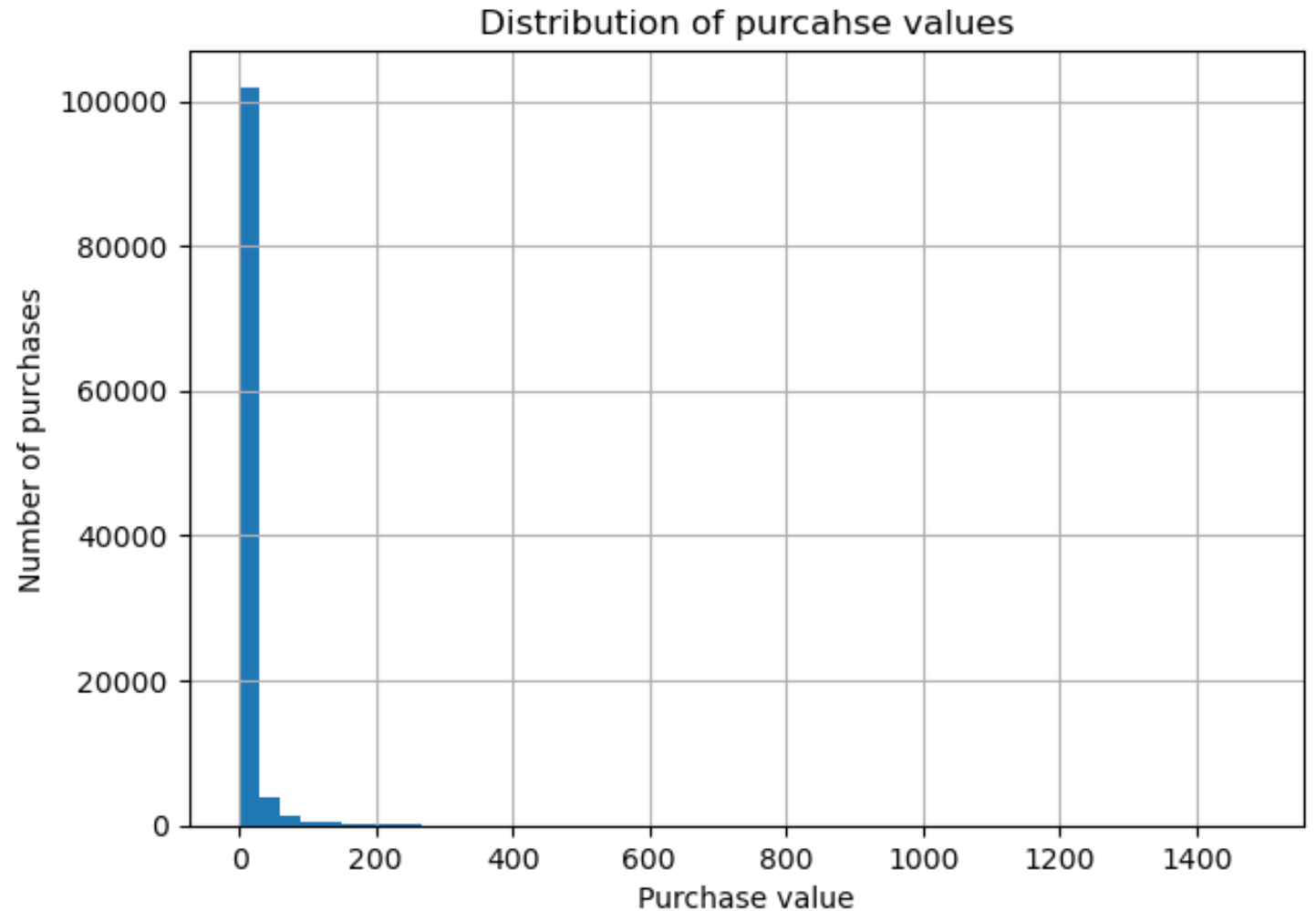


Before removing the outliers

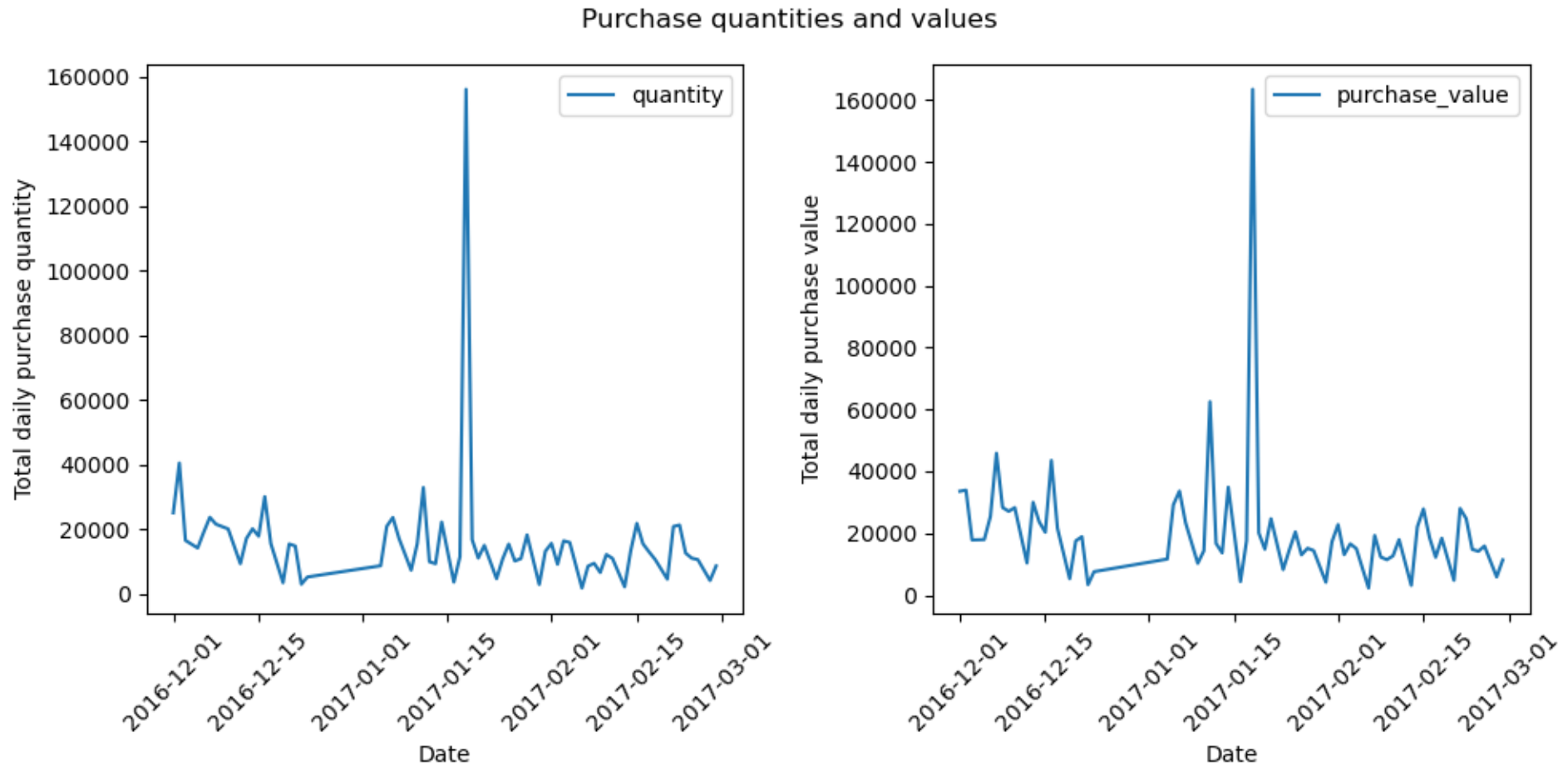


After removing the outliers

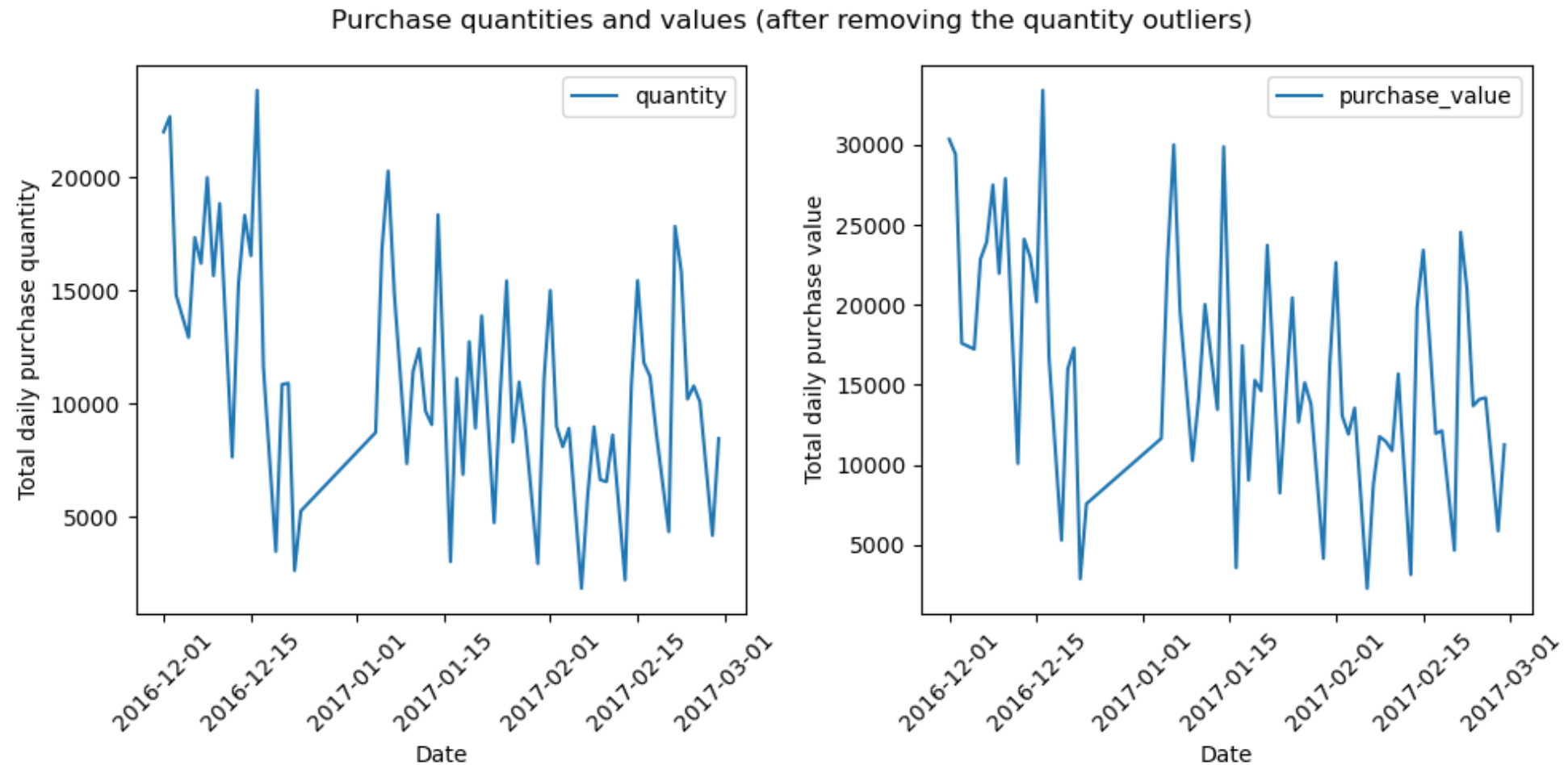
After removing the extremely large quantity outliers, majority of the purchase values are under 200.



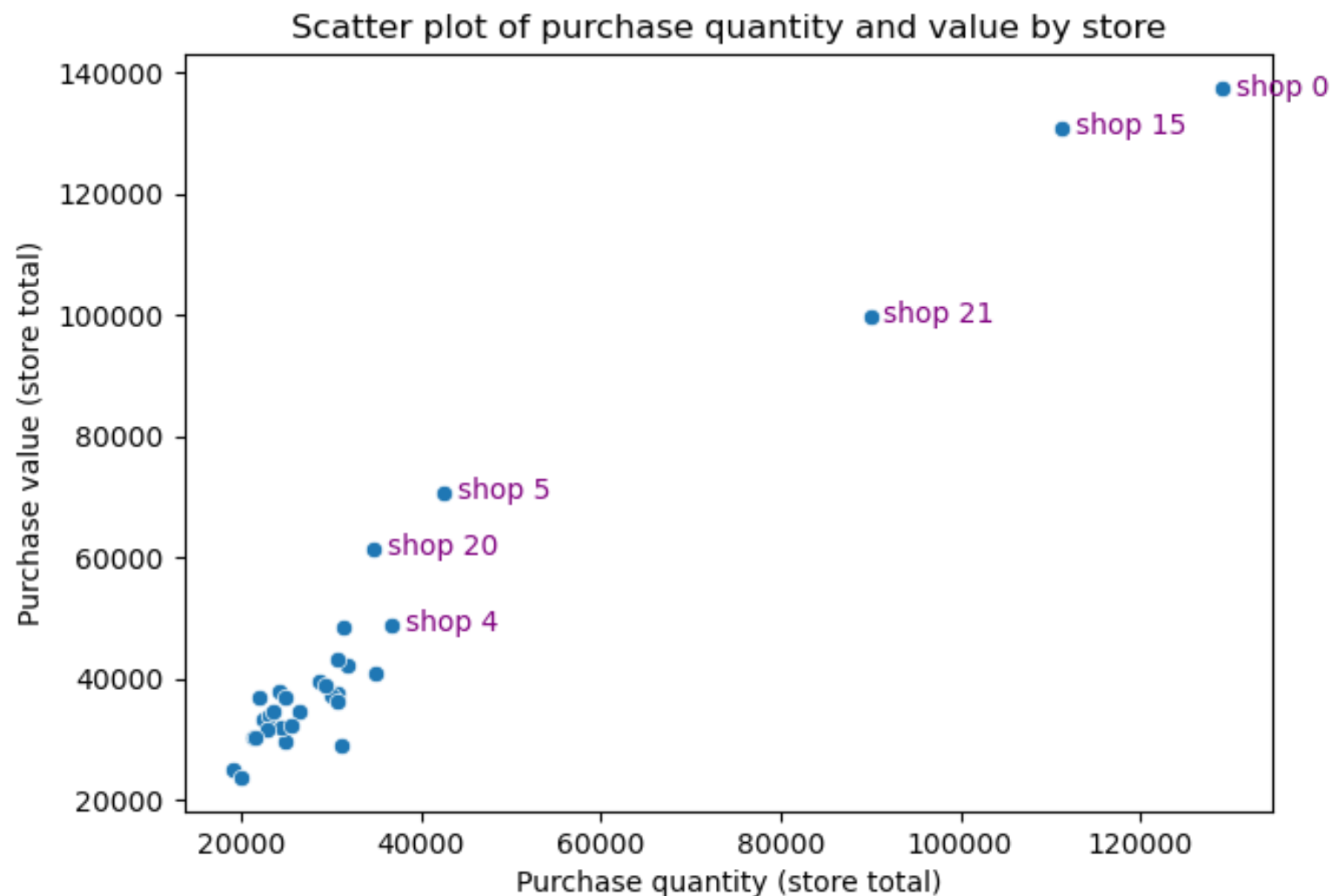
Daily total purchase quantities and values fluctuate throughout the data period except an unusual peak on 2017-01-18, as a result of an extremely large purchase quantity.



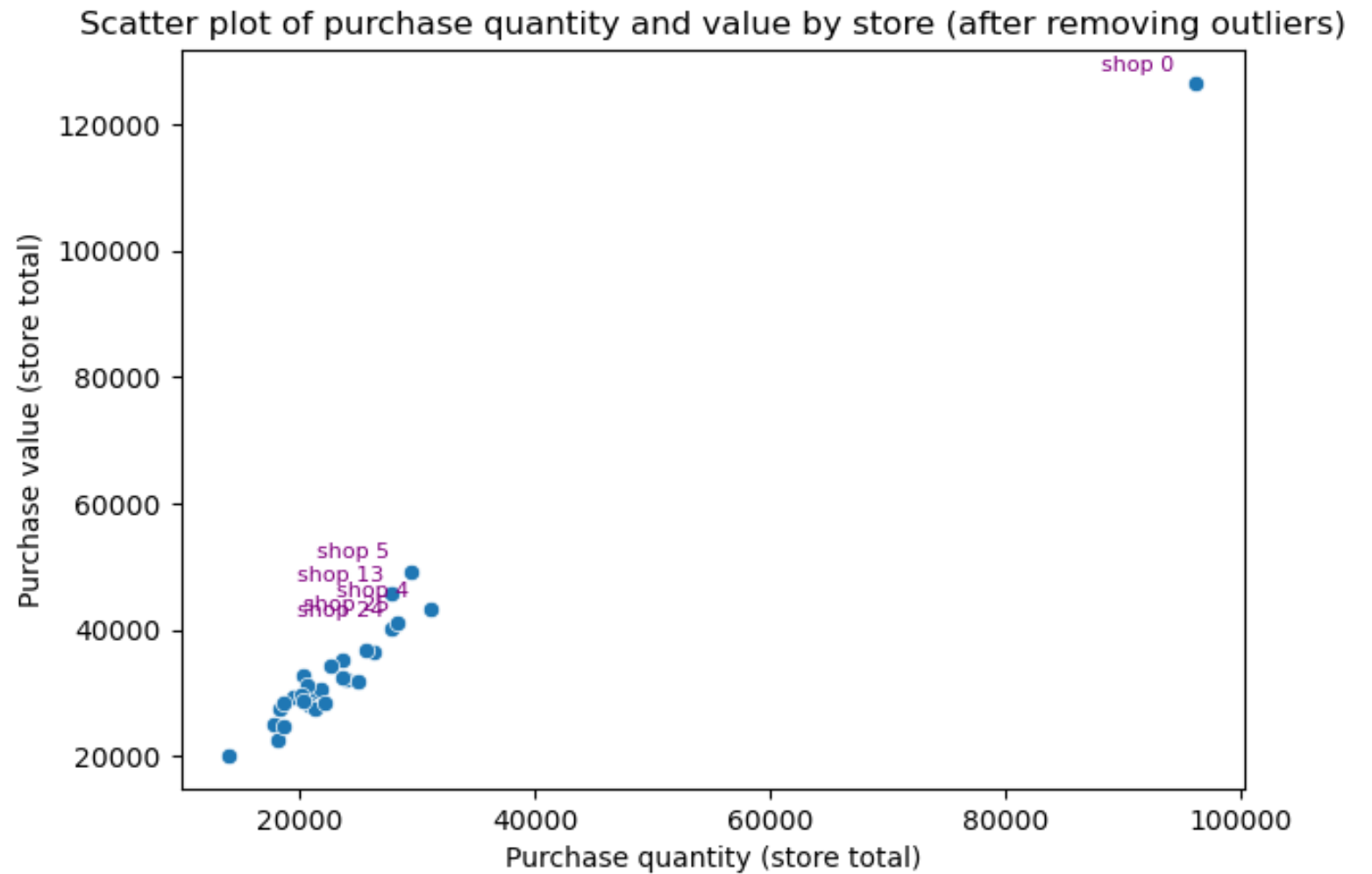
After removing the outlier quantities, daily purchase quantities and values fluctuate throughout the period of data, most likely reflecting weekday and weekend purchase patterns.



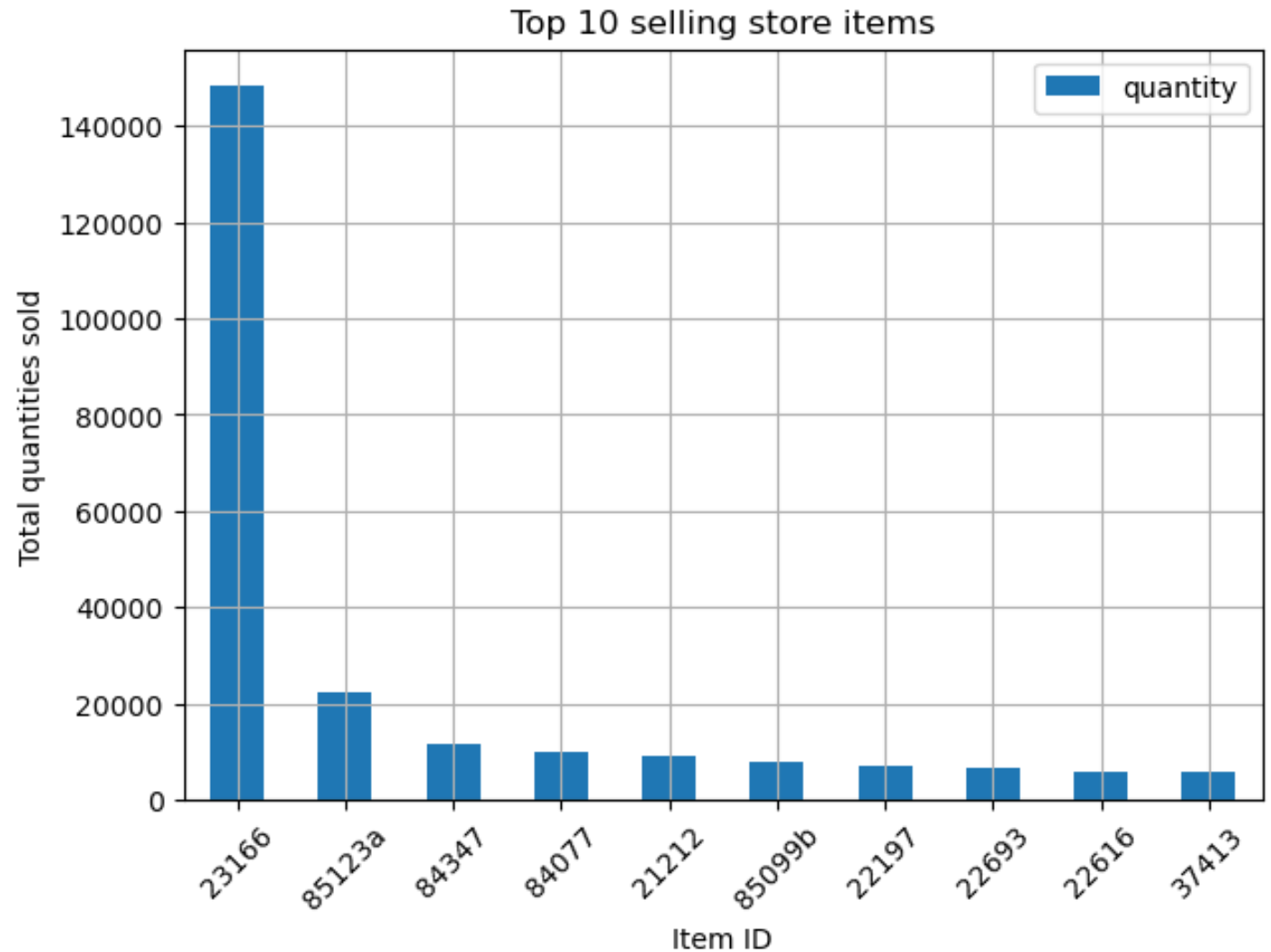
Before removing the large outlier purchase quantities, shop 0, 15, 21, 5, 20 and 4 are the top 5 performing stores in both purchase quantity and values, judging from their store total sales.



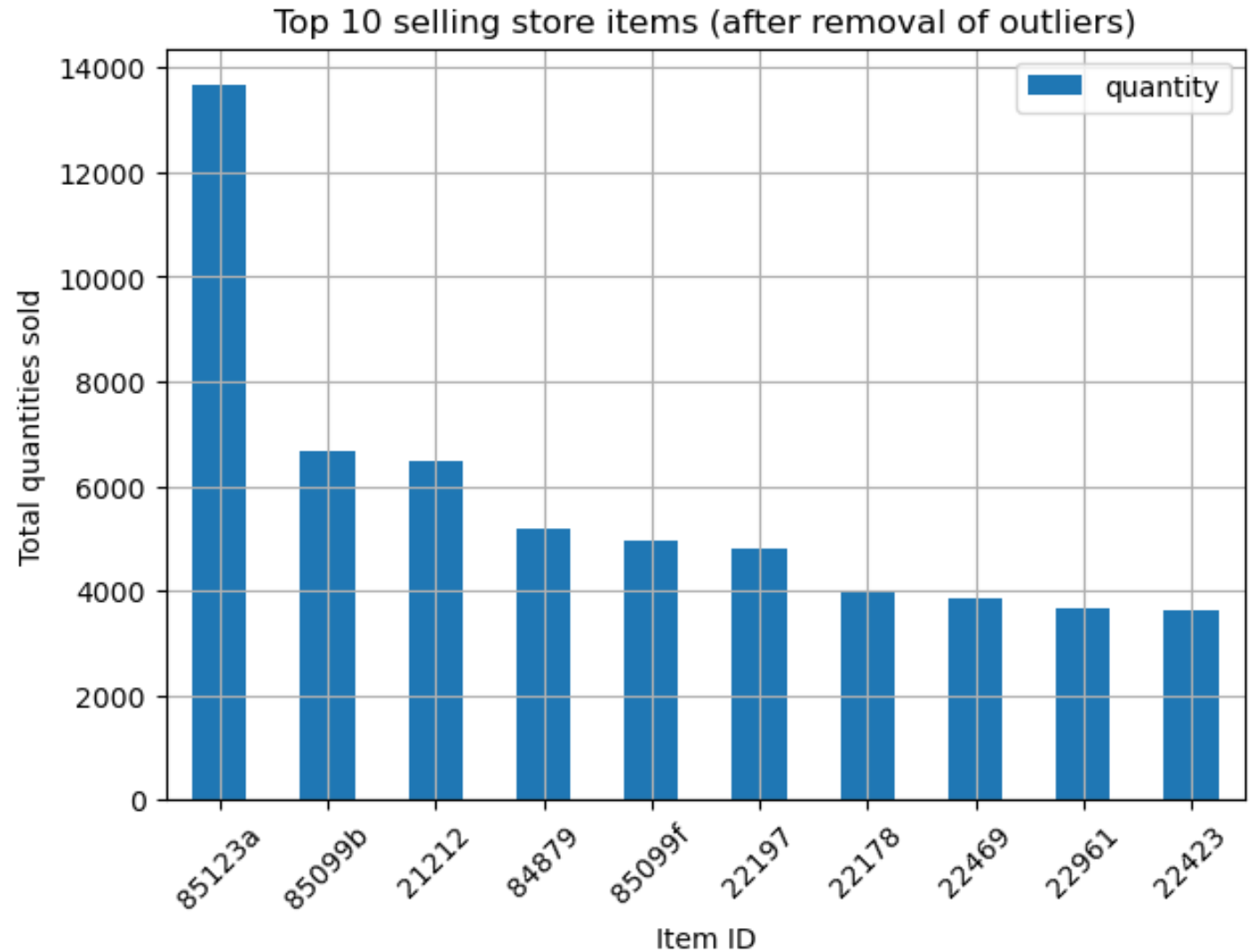
- After removing the large outlier purchase quantities, shop 0, shop 5, 13, 4 and 25 became the top 5 performing stores.
- Shop 0 stands out with or without the outliers.



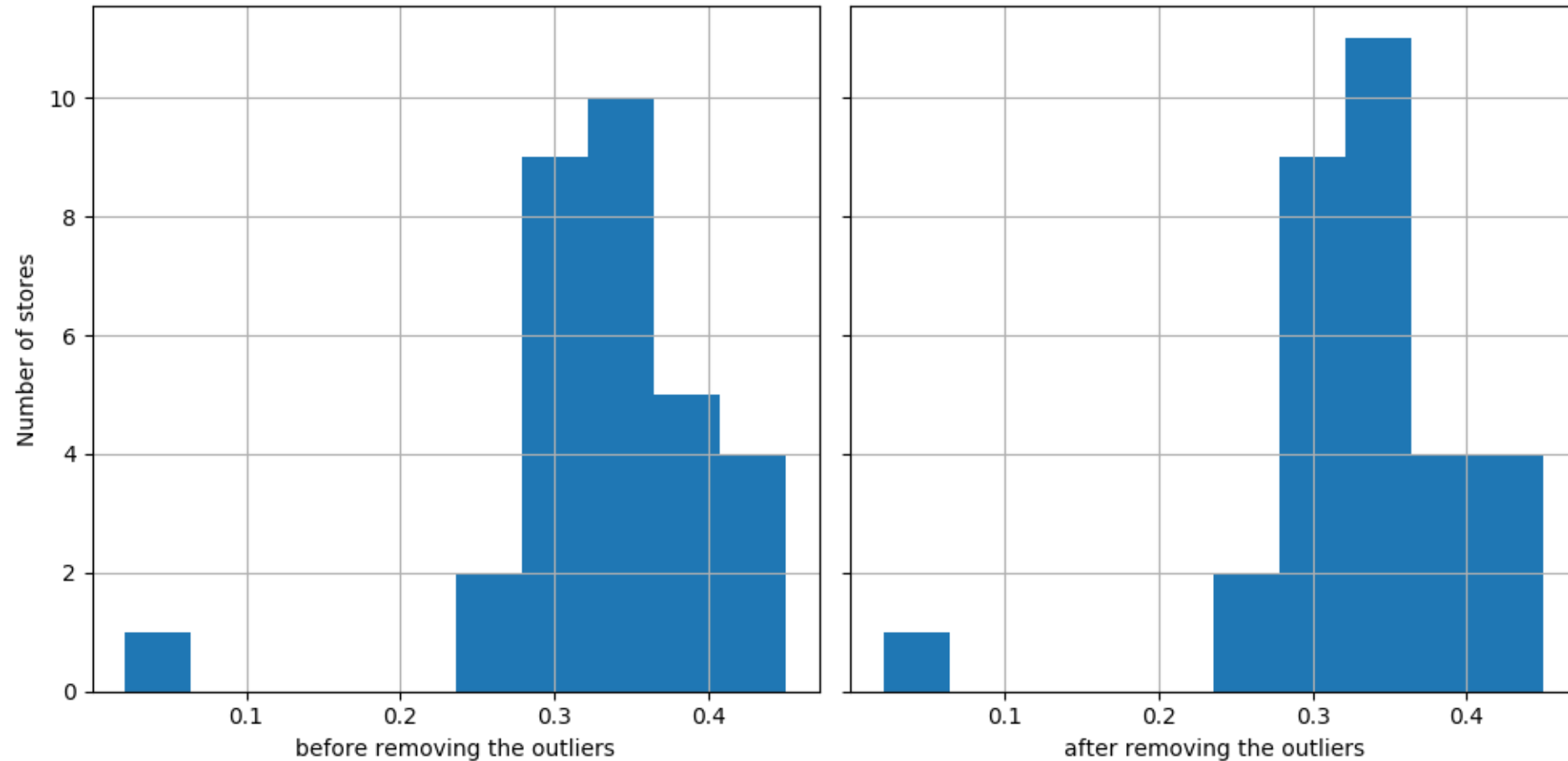
- Before removing the quantity outliers, item 23166 stands out to have had the most sales
- Item 85123a came second.
- The sale quantity of 23166 is 7 times as big as 85123a.



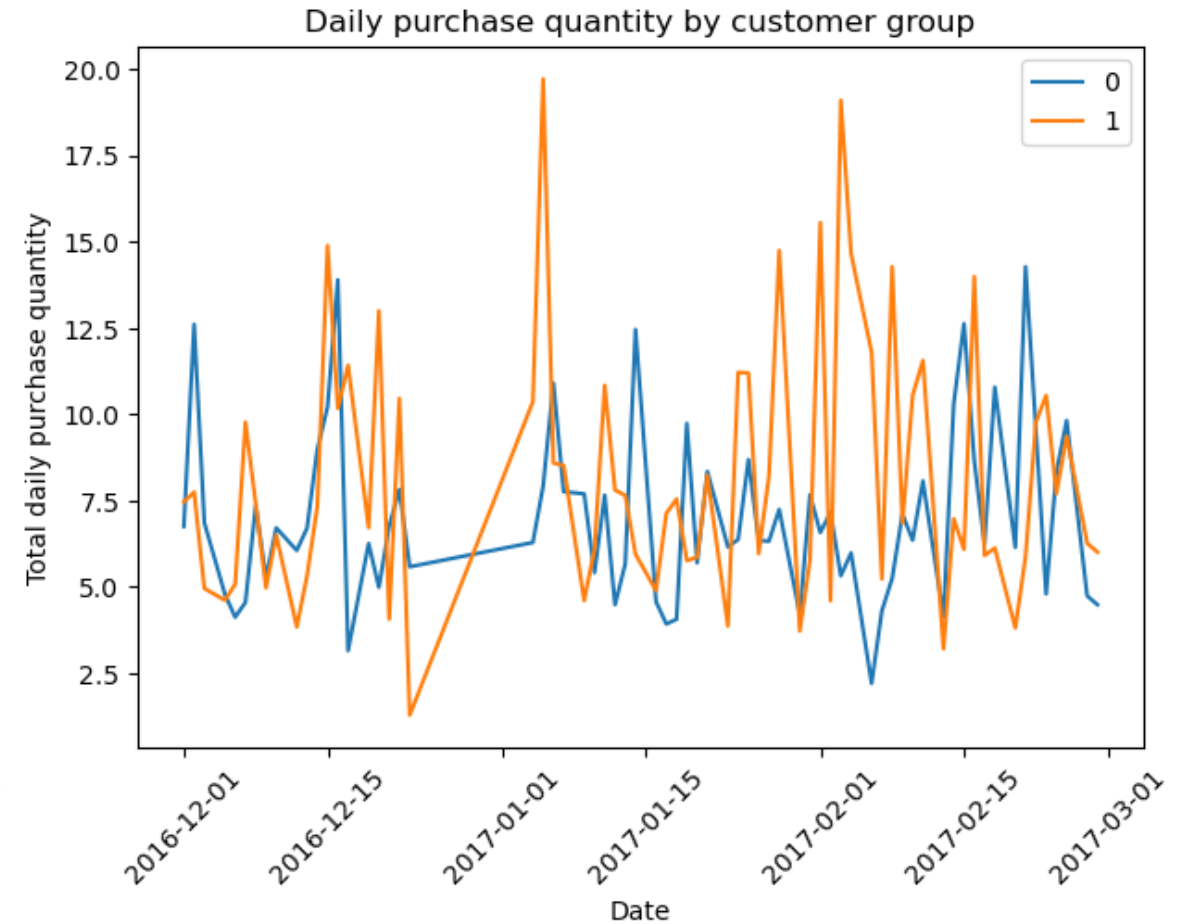
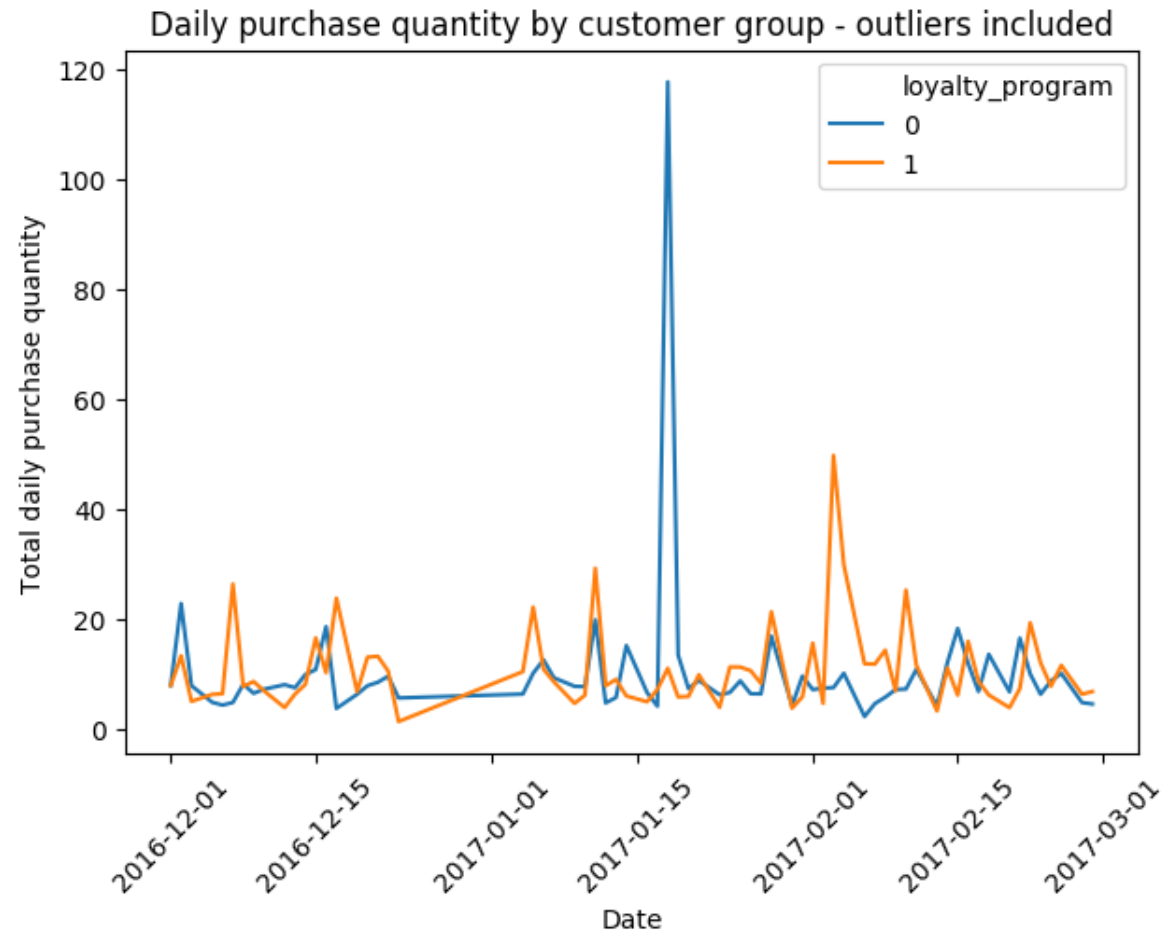
- After removing the quantity outliers, item 85123a became the top selling product
- 85099b and 21212 came second and third
- Top 1 item from previous list, 23166, disappears from the top 10 products.



Distribution of loyalty program purchase percentage among stores



- In both histograms, for majority of the shops, the percentage of loyalty program customer purchase represents around 30 to 40% of total purchases
- The only exception is shop 0, where less than 10% of the purchases are made by loyalty program customers.



- Before removing the outliers, despite an extreme peak caused by non loyalty program customer purchases, overall, orange line is above blue line most of the time.
- After removing the outliers, loyalty program customers overall tend to make larger quantity purchases than those who are not in the program
- Statistical testing also shows that on average, loyalty program customers make larger quantity purchases and contribute to higher purchase values

Suggestions

- + the company could further investigate the top performing stores to find out why they outperformed the others, especially shop 0.
- + The company need to promote loyalty programs among its customers, given that being in the program seems to boost customer purchases
- + One promotion strategy could be to offer free loyalty program membership if monthly spend exceeds certain amount, or free membership for the first 3 months, for example