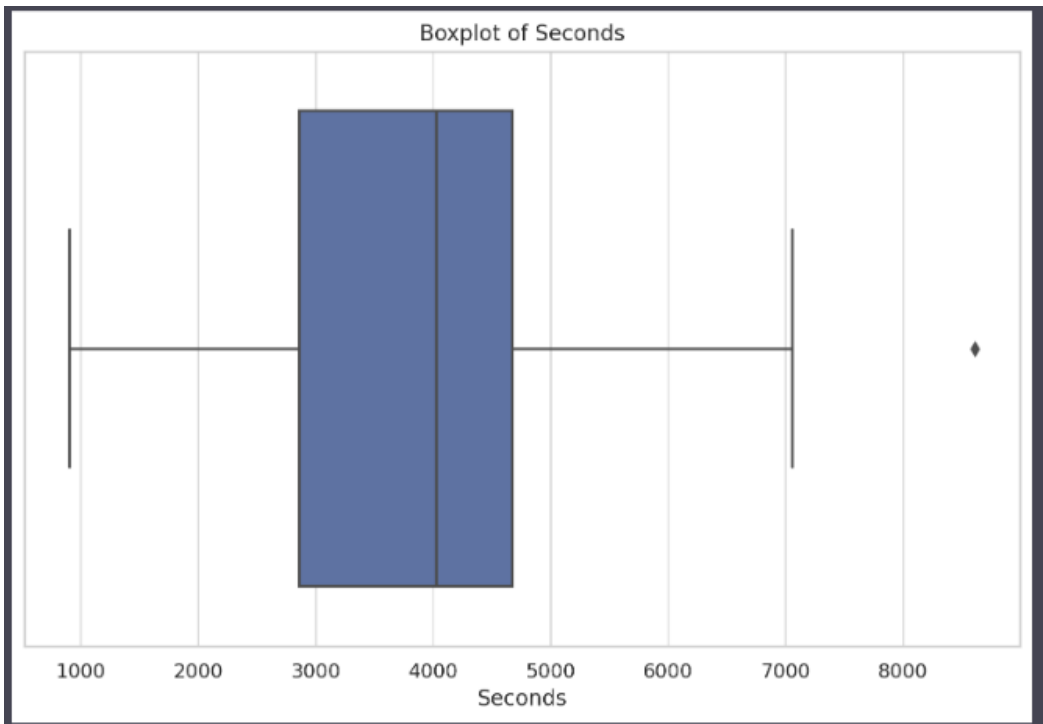# Product analysis

Once I had identified the relevant data columns, I proceeded to clean and transform the data to make it usable for analysis. This involved removing duplicates, checking outliers values, and converting data types for example the event timestamp.

Here we can see in the picture after 8611.25 seconds there is only one value which is most higher compared to the overall values and here is key statistics value for the daily average sessions:

- Minimum: 907.46
- 25th Percentile (Q1): 2859.95
- Median (50th Percentile): 4027.12
- 75th Percentile (Q3): 4678.79
- Maximum: 8611.25

Next, I conducted exploratory data analysis to gain insights into the trends and patterns of the e-commerce platform. I visualized the data using graphs and charts, and tried to identify pattern significant relationships and correlations between data variables.

I have started with some metric in mind to understand more about the insights and pattern for this EDA project which are :

- Daily average sessions that result in purchases or product discussions.
- Average sessions for each device type.
- Total sessions for each device that result in product purchase.
- Pages with the most visits.
- Overview of most frequently visited pages before a purchase is made.
- Pages with the highest exit rates for customers.
- highest visited pages before purchase.

Average session timeseries visualization :
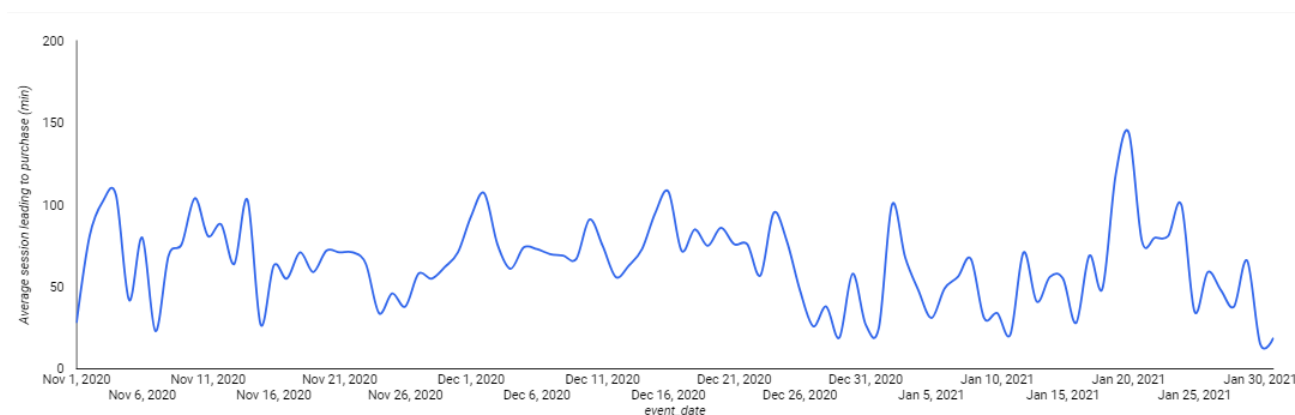
Here we can notice that average session has many fluctuation in the line trend but its noticeable that most active period for the business was between November mid to until December last week as we all know for the black Friday and Christmas eve the people tend to buy more in this period.

Also its representing that every months first week is also very important period for the business organization. So, delivering smooth performance and marketing campaign in those period can bring more conversation .

Average session by devices & purchase events by devices :
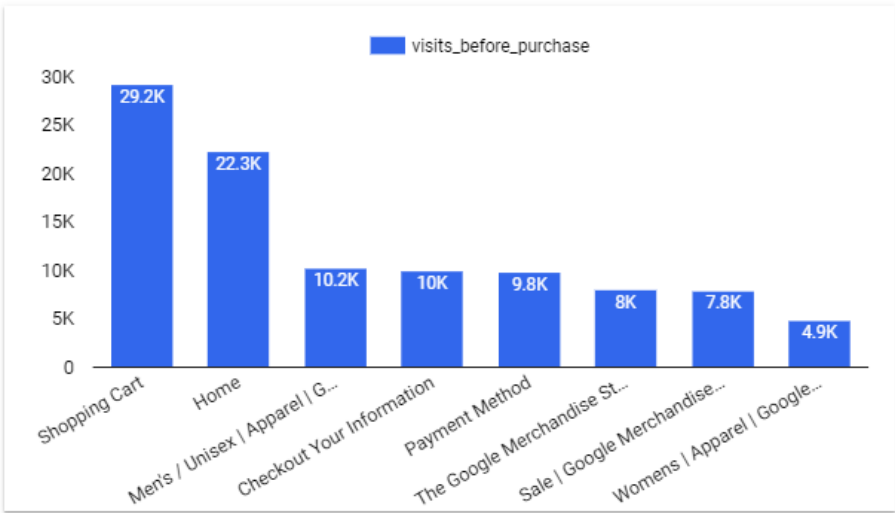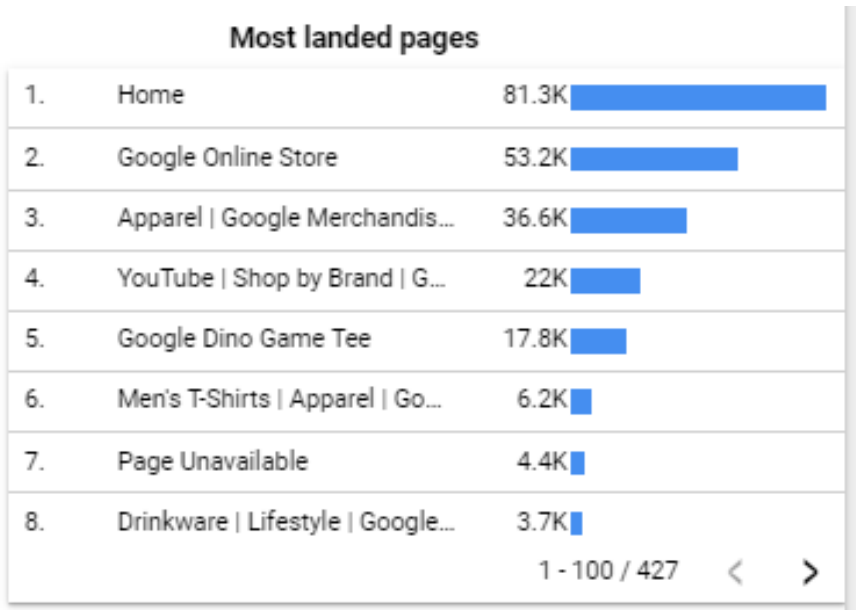

Average session based on devices
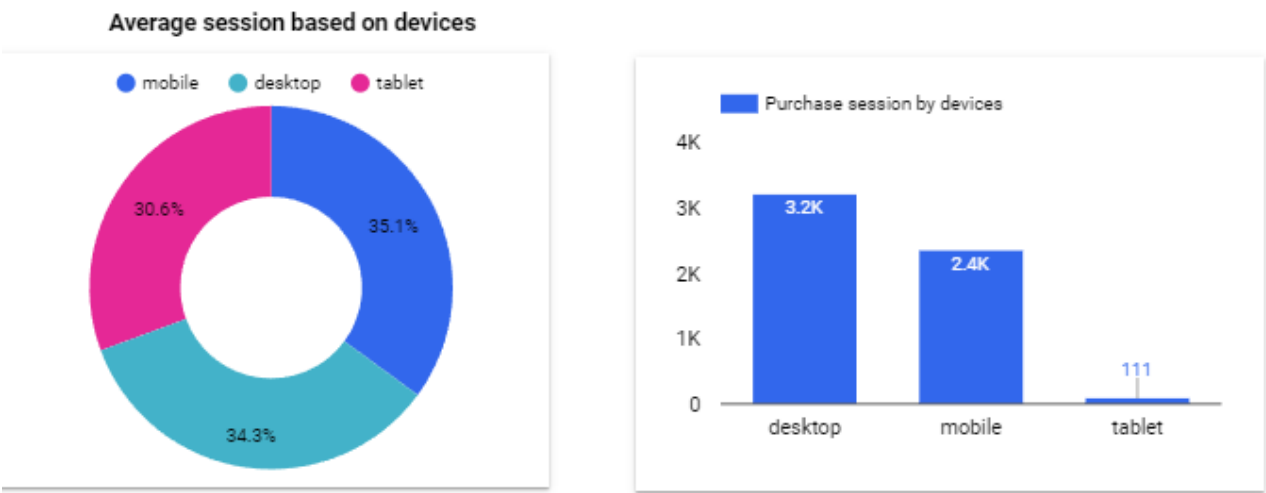
Here if we compare we can see we have many sessions coming from 3 devices but when we analyzing the data from purchase event the 3rd device "tablet" sessions are not converting to sales order.

Here might be some issue with the website view of the tablet version . we need to investigate more in that issue .
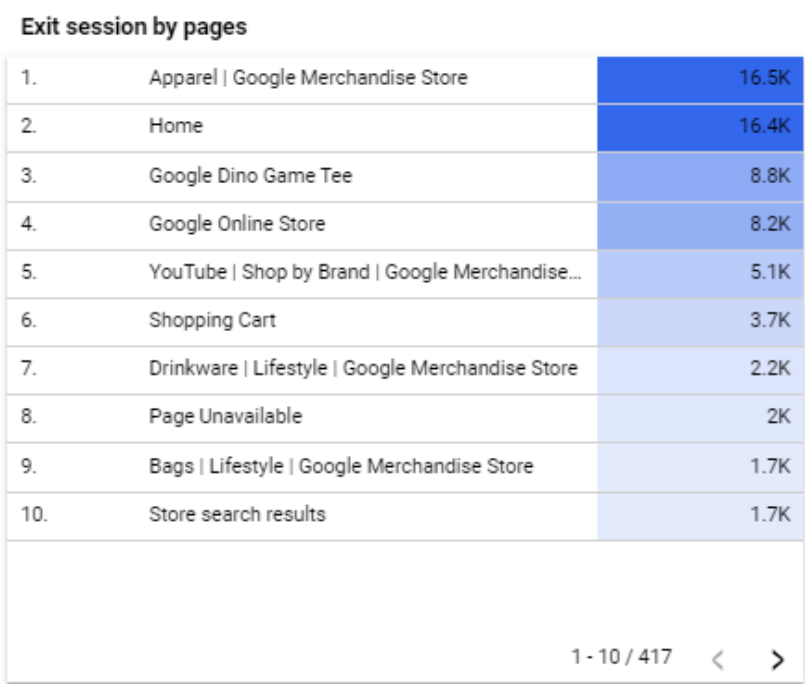
Most visited pages before purchase :

Most landed pages :

Most landed pages

1.	Home	81.3K
2.	Google Online Store	53.2K
3.	Apparel	Google Merchandis...	36.6K
4.	YouTube	Shop by Brand	G...	22K
5.	Google Dino Game Tee	17.8K
6.	Men's T-Shirts	Apparel	Go...	6.2K
7.	Page Unavailable	4.4K
8.	Drinkware	Lifestyle	Google...	3.7K

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Most exited pages :

Exit session by pages

1.	Apparel	Google Merchandise Store	16.5K
2.	Home	16.4K
3.	Google Dino Game Tee	8.8K
4.	Google Online Store	8.2K
5.	YouTube	Shop by Brand	Google Merchandise...	5.1K
6.	Shopping Cart	3.7K
7.	Drinkware	Lifestyle	Google Merchandise Store	2.2K
8.	Page Unavailable	2K
9.	Bags	Lifestyle	Google Merchandise Store	1.7K
10.	Store search results	1.7K

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I tried to illustrate the various session analyzing customer sessions and page performance is essential to improve page quality, segmentation, and increase sales. By breaking down and comparing different customer sessions, we can identify which pages are performing well and which ones need improvement. This will allow us to segment more effectively and generate more sales orders.

- We can see that **Home** pages is driving ⅓ of the landed customers amount to the sales conversions but we need to improve this page quality and identify the user experience issue and improve them to achieve at least 50% sales conversion .

- Also **Apparel** page has most exit as well as 4.5k sales even though it has many landed sessions we have to improve this page quality to avoid most exit session and improve sales order from that page.

Following that **Google online store, Google dino game tree & Youtube** these pages need to improve to give more understanding the products to convince customers to make the purchase.

Overall, this project has been an enlightening experience, providing me with a deeper understanding of the e-commerce industry and the importance of data preparation and analysis in making informed business decisions.

Thanks
Shafin Alam