Case Study for Data Analyst @ Trivago

Submitted by

B.A.

The Case

- Case talks about a campaign run by 3 advertisers A, B and C in partnership with Trivago for year 2019.
- Data about daily clicks, bookings and revenue generated is given across all 3 advertisers
- Daily data also has a distinction or granularity in terms of “Time to Travel” or in simple terms time from booking date to check-in date, categorized in to Short, Medium and Long.
- Analysis is to be done on market trends and advertisers performance

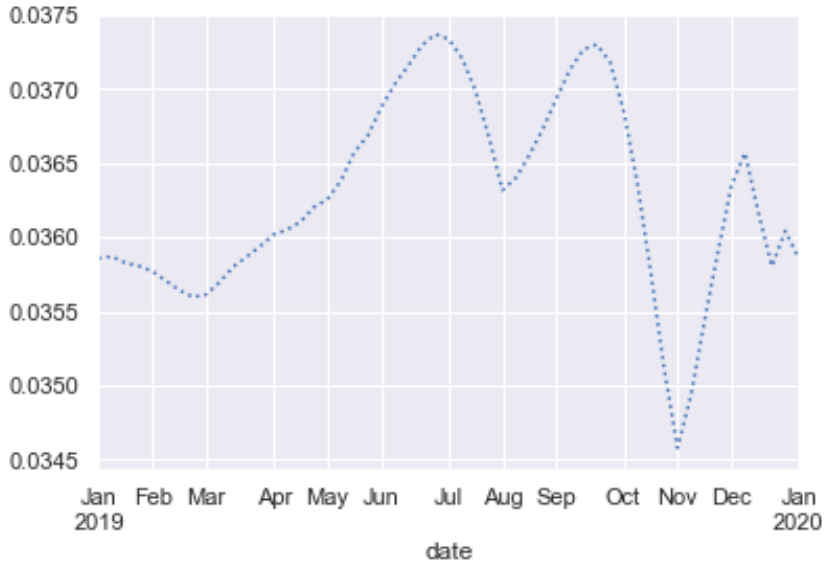
The Data Set

- A csv file containing 1095 rows and 14 columns
- All but 2 columns contain Numerical values. One column contains Categorical value (TTT Group) and One column contains Ordinal values (Date)
- Data dictionary and Meta data is given
- No null or NA values are present

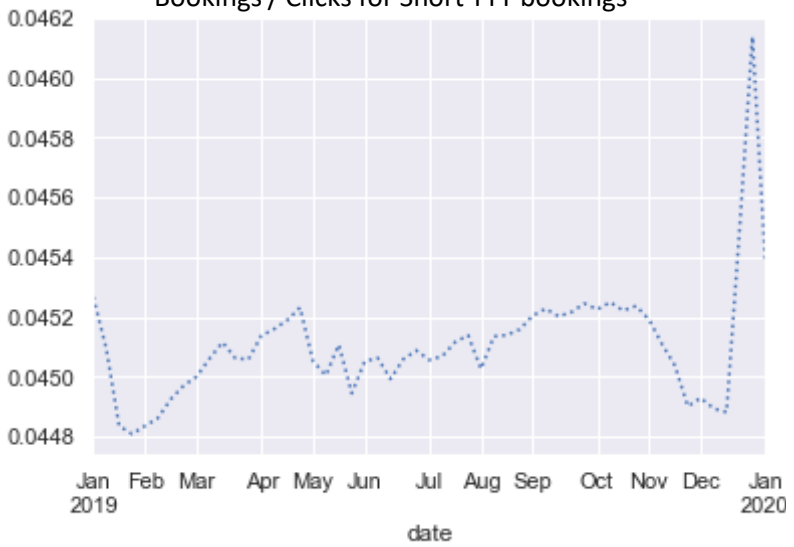
Task -1: **Market trends**

a) Plot the aggregated daily booking conversion for the entire year

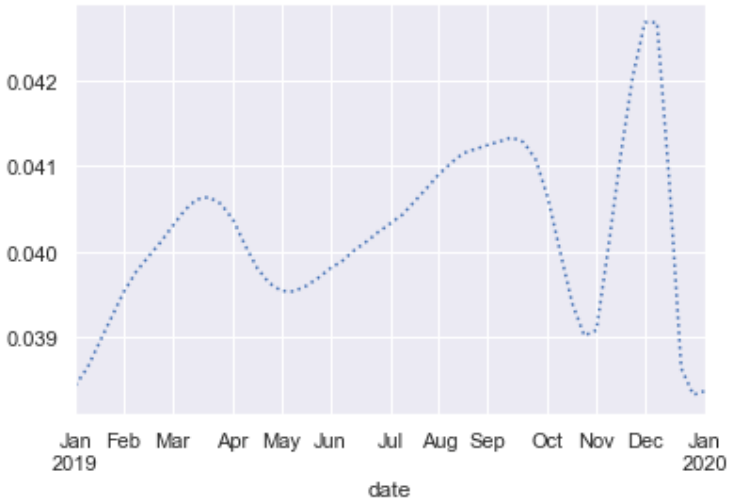
Total Bookings / Total Clicks

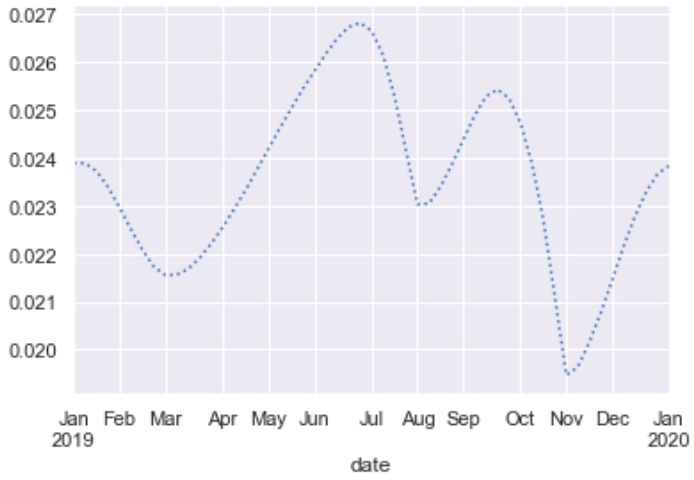


Bookings / Clicks for Short TTT bookings



Bookings / Clicks for Medium TTT bookings





Bookings / Clicks for Long TTT bookings

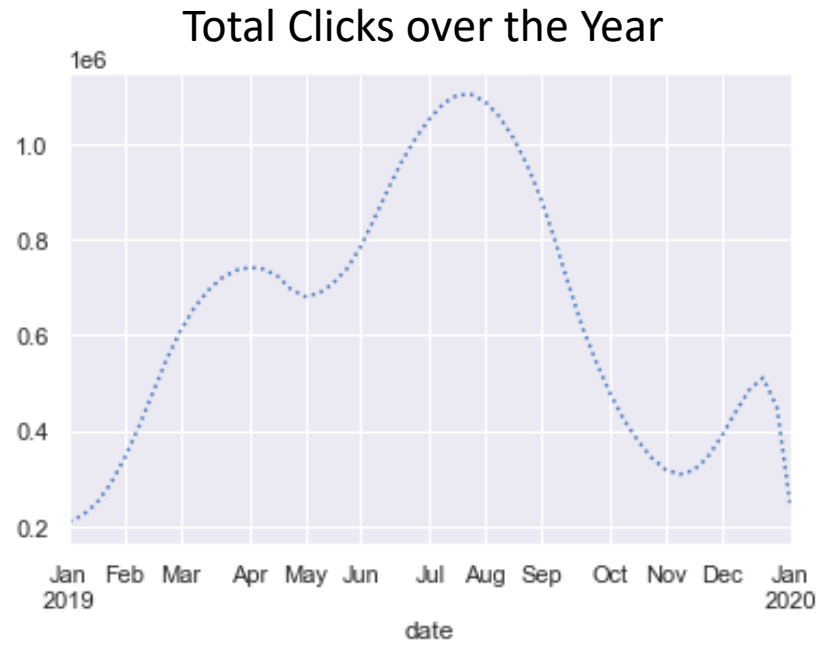
*As the data set has 365 dates, the data points are too many.
Resampling is used to show weekly average on the graphs.

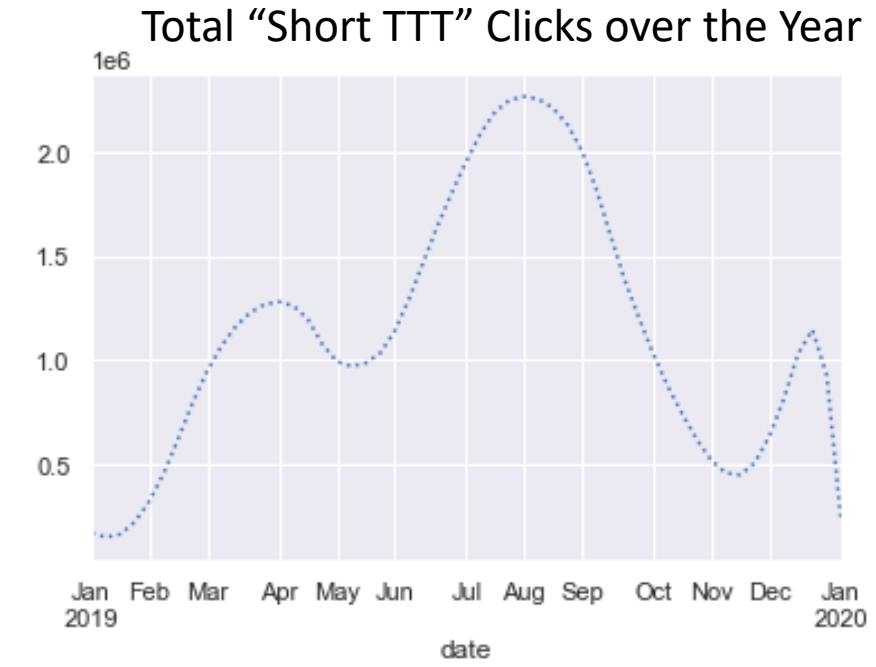
Task -1: Market trends

b) Based on the data that you have available, what is the main driver for the trends that you observed on the chart from the previous question?

Following trend has been observed when TTT group wise clicks data is analyzed.

- Distribution of “Total Clicks” of Short TTT group depicts that there is a surge in enquiries/interest in terms of clicks in the period of May-Sep Click count Peaking in July.
- Distribution of “Short TTT” depicts that there is a surge in enquiries in terms of clicks in the period of Jun-Oct. Click count Peaking in July & Aug. Similar to above overall clicks distribution but shifted to right





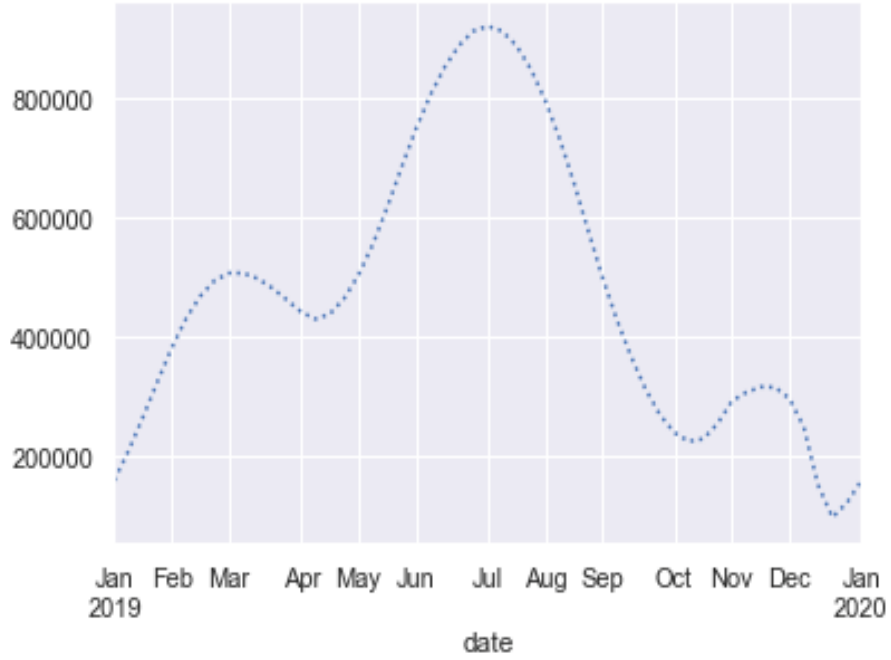
Task -1: Market trends

b) Based on the data that you have available, what is the main driver for the trends that you observed on the chart from the previous question?

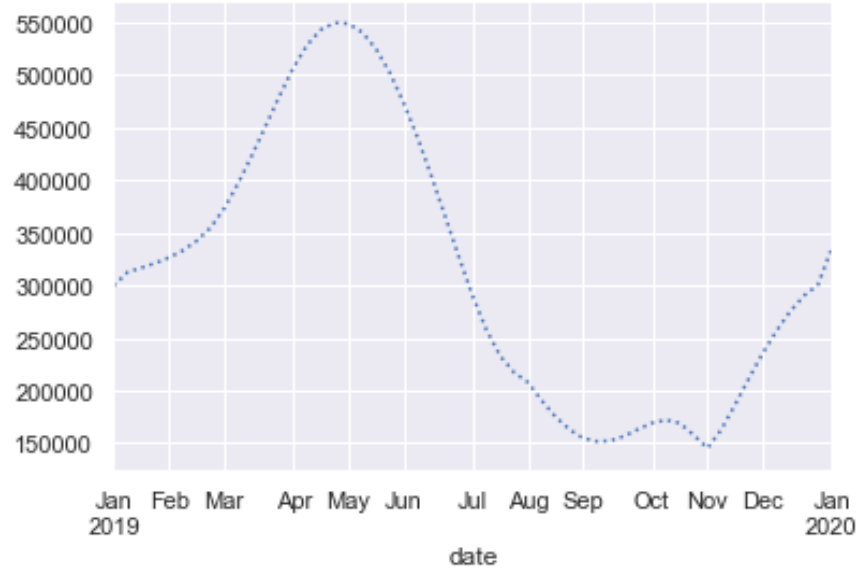
Following trend has been observed when TTT group wise booking conversion is observed.

- Distribution of “Medium TTT” depicts that there is a surge in enquiries in terms of clicks in the period of May-Sep. Click count Peaking in Jun-July. Almost same to the graph of over all clicks
- Distribution below depicts that there is a surge in enquiries in terms of clicks in the period of Mar-Jun. Click count Peaking in Apr-May

Total “Medium TTT” Clicks over the Year



Total “Long TTT” Clicks over the Year



Conclusion 1: Market trends taking “Clicks” data into account

- Most of the interest shown by users is March to Oct
- When we analyze it TTT Group wise, we can clearly see that demand for long term, medium term and short term varies
- This variation has a time lag which is equal to the definition (No. of days from click to check-in)
- So as per the clicks count goes, there is a demand for check-in dates belonging to Month of July-Aug
- These are summer vacations in Schools in Europe
- Data in terms of number of clicks across the Months validate the logic of short term, medium term and long term bookings.

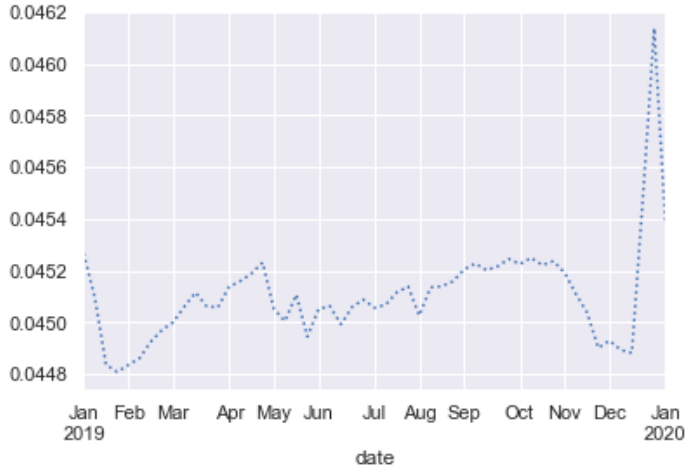
Task -1: Market trends

b) Based on the data that you have available, what is the main driver for the trends that you observed on the chart from the previous question?

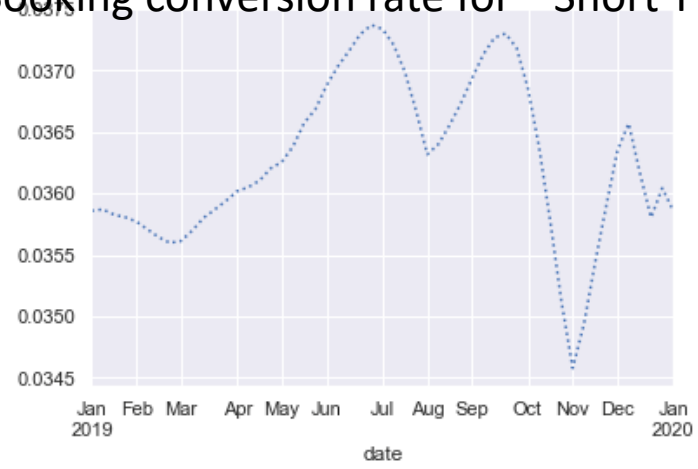
Following trend has been observed when TTT group wise Booking Conversion data is analysed.

- Distribution of Booking Conversion Rate for "**Short** TTT" show **major surge (Peak) in booking conversion after first week of December**.
- Plausible Reason could be Christmas is 0-15 days away (Which is the no. of days between click and check-in). We need to see that same pattern is observed in Medium and Long term booking to support the argument

Booking conversion rate over the Year



Booking conversion rate for "Short TTT"



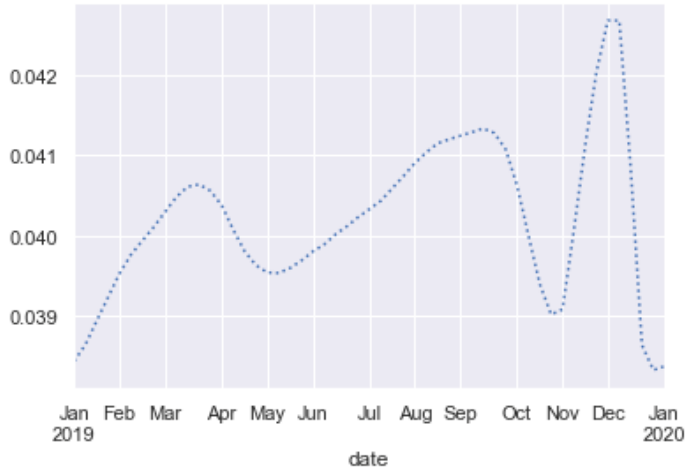
Task -1: Market trends

b) Based on the data that you have available, what is the main driver for the trends that you observed on the chart from the previous question?

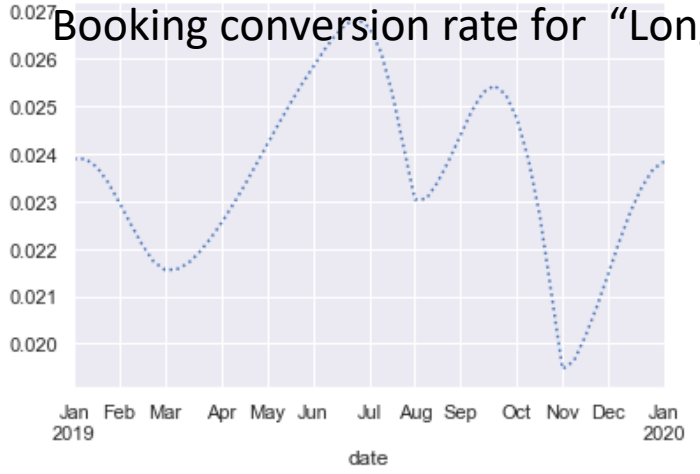
Following trend has been observed when TTT group wise Booking Conversion data is analysed.

- Distribution of Booking Conversion Rate for "**Medium** TTT" shows **Major surge (Peak) from late October to last Nov (15-60 days away from Christmas)**
- Distribution of Booking Conversion Rate for "Medium TTT" show there is huge dip after Oct (60 days prior to Christmas), before it there were peaks in the data distribution.

Booking conversion rate for "Medium TTT"



Booking conversion rate for "Long TTT"



Conclusion 1: Market trends taking “Booking Conversion” data into account

- By seeing distribution of conversion rate of booking or Bookings / Clicks data, we can see that summer vacations of Schools do not much impact here as they had in Total Clicks data
- Major impact is of the Festive season around Christmas week. Where in although the average number of clicks are not huge but conversion rate is very much significant. A more intensive advertisement campaign is advised for next year during this period.

c) Given the values and patterns in the data can you guess which market this is? How do you inform your guess?

- From above analysis it looks like the interest/enquiry shown by clicking and bookings are done by corporate employees with families who get leisure time time in summer/winter vacations.

Task-2: Advertiser performance

a) Assuming a constant profit margin of 15% (across advertisers and market segments) over the gross booking revenue, calculate the total profit of each advertiser for the entire period.

Net Profit is calculated as => ((Revenue * 15%) – Advertisement Cost)

#	Advertiser Name	Net Profit from the Campaign	Per Click Net Profit
1.	A	49,489,193.20	0.156
2.	B	280,939.39	0.338
3.	C	902,586.50	0.205

Task-2: **Advertiser performance**

a) Assuming a constant profit margin of 15% (across advertisers and market segments) over the gross booking revenue, calculate the total profit of each advertiser for the entire period.

Now Analysing if profit sustains across all TTT categories

TTT ⬇ / Advertiser ➡	A	B	C
Short	0.163	-0.006	0.321
Medium	0.139	0.155	0.145
Long	0.0843	-0.061	-0.251

1. Advertiser B is incurring loss in short and Long TTT bookings by running this campaign
2. Advertiser C is incurring loss in Long TTT bookings by running this campaign

Task-2: Advertiser performance

b) Based on the trends you observe in the data what recommendations would you give each of the 3 advertisers to improve their campaign in 2020?

- Above Analysis suggests that the offerings given by B and C for long term and for B in short term too are not that attractive.
- Either they may analyse the market better in terms of rates/facilities offered or they may completely focus on the markets which give them highest profit per click
- Such market for C is short term, for B it is medium term Where as for A it can be prioritised - short > medium > Long

THANK YOU!