Car rental demand detection based on price requests from online channels

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Introduction

RateChain provides price management solution in online channels for car rental companies all over the world. RateChain calculates price quote for each request from online distributors and returns it to the distributor. Currently, there are around 2 million price quotes per day. Before there has not been much analysis on the data. The project is supposed to give further insights to the data by answering questions posed by the client.

Data description, data processing and tasks description

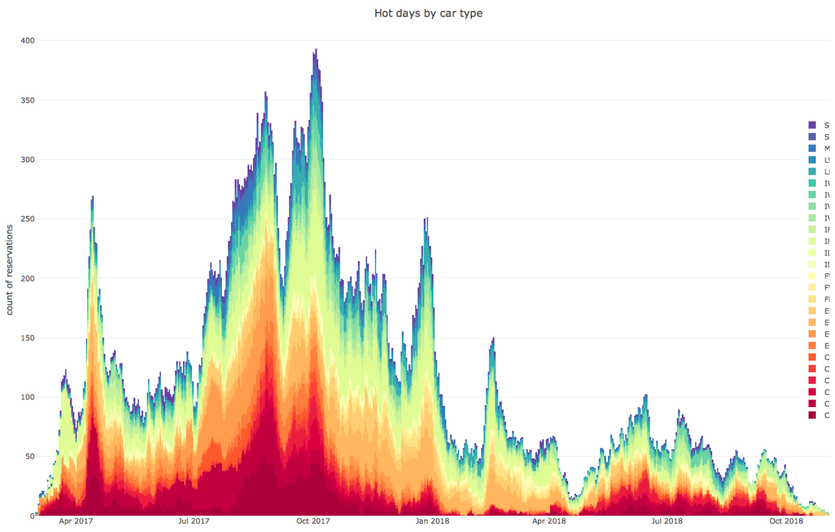
Data description The dataset consists of price quote requests & responses and reservations in Iceland. The price quote data includes price quotes from 1. December of 2017 to 15. December of 2017. The reservation data includes reservations made from summer of 2016 to 15. December of 2017.

Data processing To make analysis faster and less space-consuming one of the first tasks was to reduce data size. This was done by removing unnecessary columns in data and by removing duplicate price requests. After filtering out unnecessary information the row count of price requests reduced ~95% by simple filtering and total of ~98% by further filtering. After filtering, a price quotes datafile of size ~23 GB was reduced to ~10,000 KB.

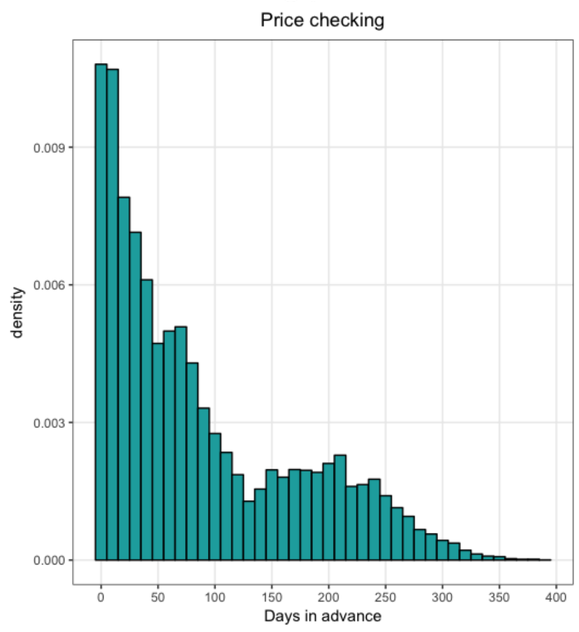
Tasks description In total of 9 questions were proposed by the client and during the project 6 of them were worked with. Some questions were left unanswered due to lack of history of price quote data. After exploring and analysing the data, most of the answers are provided by plotting and making use of interactive graphs.

Future work Instead of having a human aspect in telling if there are unexpected changes in requests or bookings, the client is interested in building an automated system to trigger alarms.

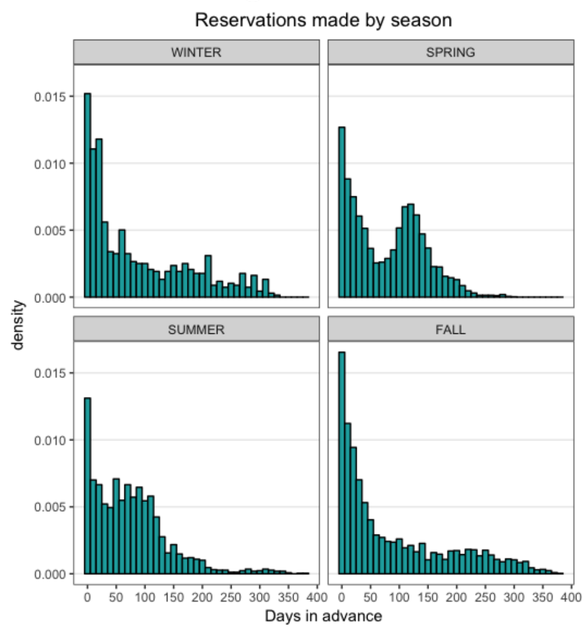
To which time period customers are looking for rental cars now/yesterday/last week/last month?



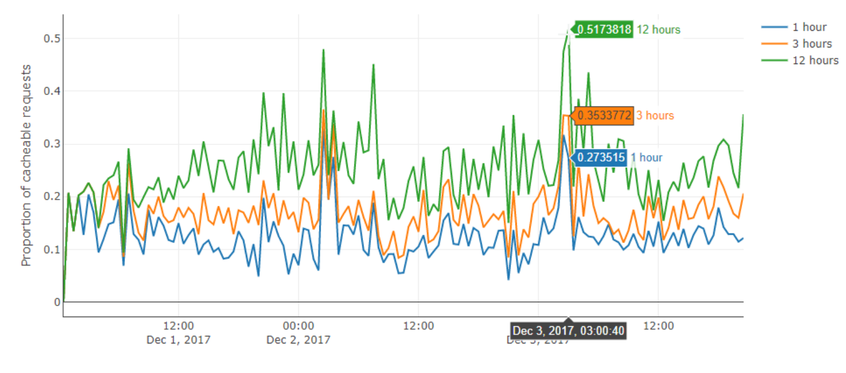
How many days in advance customers are checking prices?



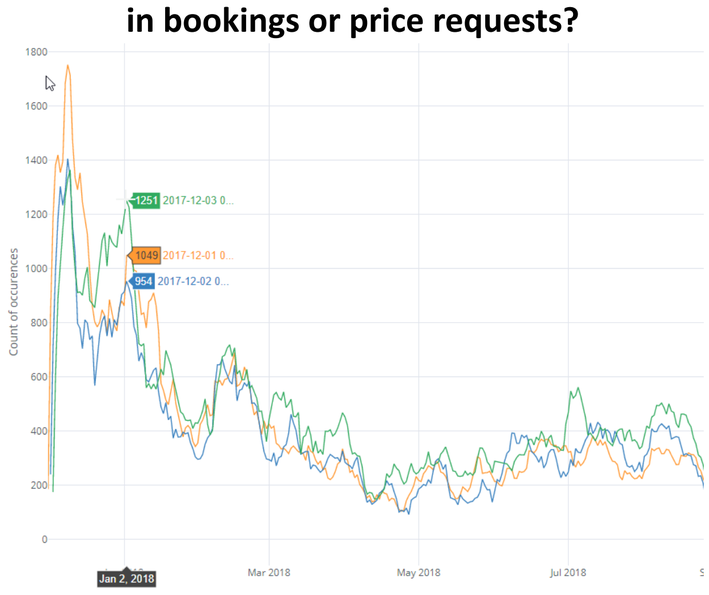
How many days/weeks/months in advance bookings are made?



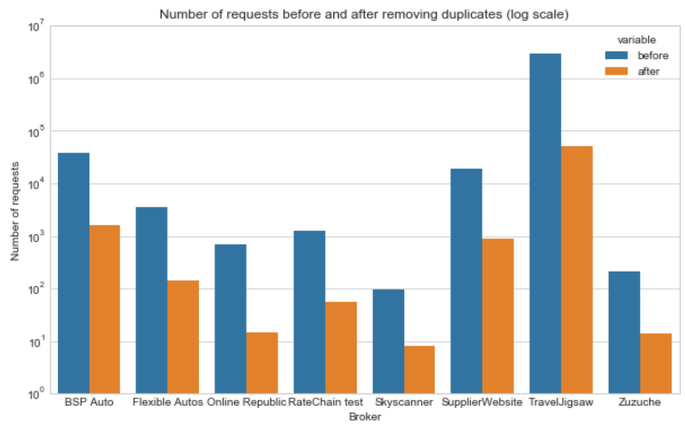
How many price requests could be cached with a cache of 1 hour, 3 hours, 12 hours?



Are there unexpected changes (peaks, drops) in bookings or price requests?



What is the demand after eliminating duplicated requests?



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