Volvo Cars Data Science Challenge

Instructions

Based on the attached data set (*car_rentals.csv*), please answer the questions below. Provide the answers in text form. The answers can be short. Imagine writing them as an email reply to a non-technical executive that wants your first impressions of the new data set (exception: for questions B1 and B2, imagine writing the the response to a fellow data scientist).

Please provide the complete **python** code used in the analysis that led to your conclusions. The code should run without errors, as long as all modules are installed (any version of Python 3 is fine). The code could be provided as a *.py* text file, or a Jupyter notebook.

First complete questions 1-3, then choose track A or B. Do either one, but not both.

Data

The data for this test is for car rentals in the first 10 months of 2017, by company X, that operates in a major US city.

Questions

1. Please describe the overall scale of Company X's business? Is it growing or declining?
2. Based on this data, when are people's demand for cars at a peak?
3. How many cars, at a minimum, does Company X need to operate their business?

Track A

A1. Looking at the whole population, what is the probability of a car rental on the ***N***th day, given that ***N-1*** days has passed since the previous rental?

A2. Forecast the daily number of rents until the end of the year. What do you expect about the quality of your forecast?

Track B

B1. Given the data, predict whether a given customer will rent a car in November. Note: this problem deserve more time than you have available to solve it exhaustively. Hence do not approach this as a Kaggle competition with extensive feature engineering and trying many algorithms - instead show your first stab at the problem: choose some plausible features and a reasonable algorithm (please explain why you made those choices) and do all the modeling

based on it.

B2. If asked to improve your prediction above, explain how you would go about doing that (do not DO the work, just explain your plans)