

DATA SCIENCE CAPSTONE

# Pricing Strategy: Big Mountain Ski Resort

Purpose: To come up with a pricing model for ski resort tickets in our market segment.



# Big Mountain and the business problem:

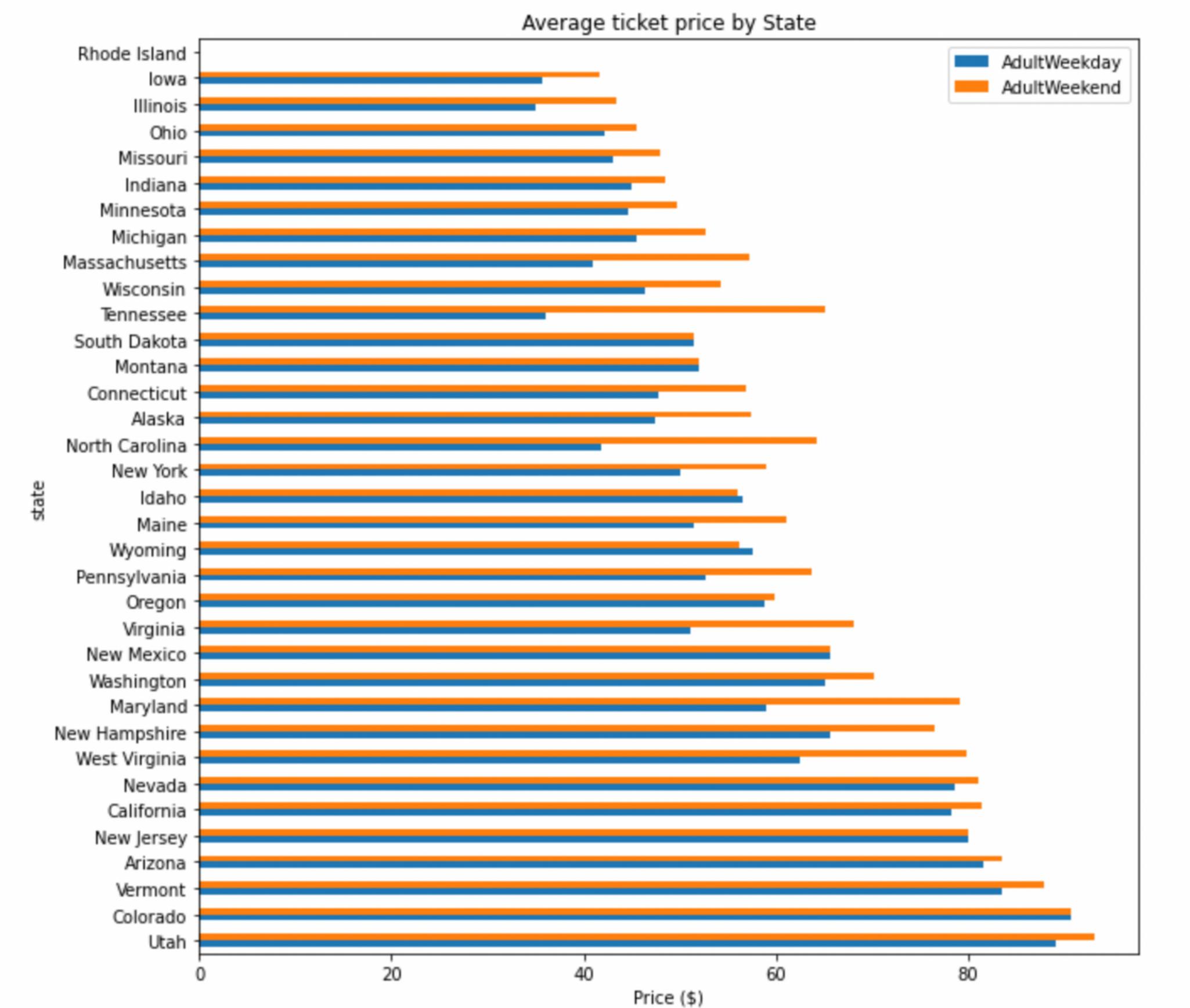
Big Mountain suspects it may not be maximizing its returns, relative to its position in the market. It also does not have a strong sense of what facilities matter most to visitors, particularly which ones they're most likely to pay more for.



# How we tackle the issue?

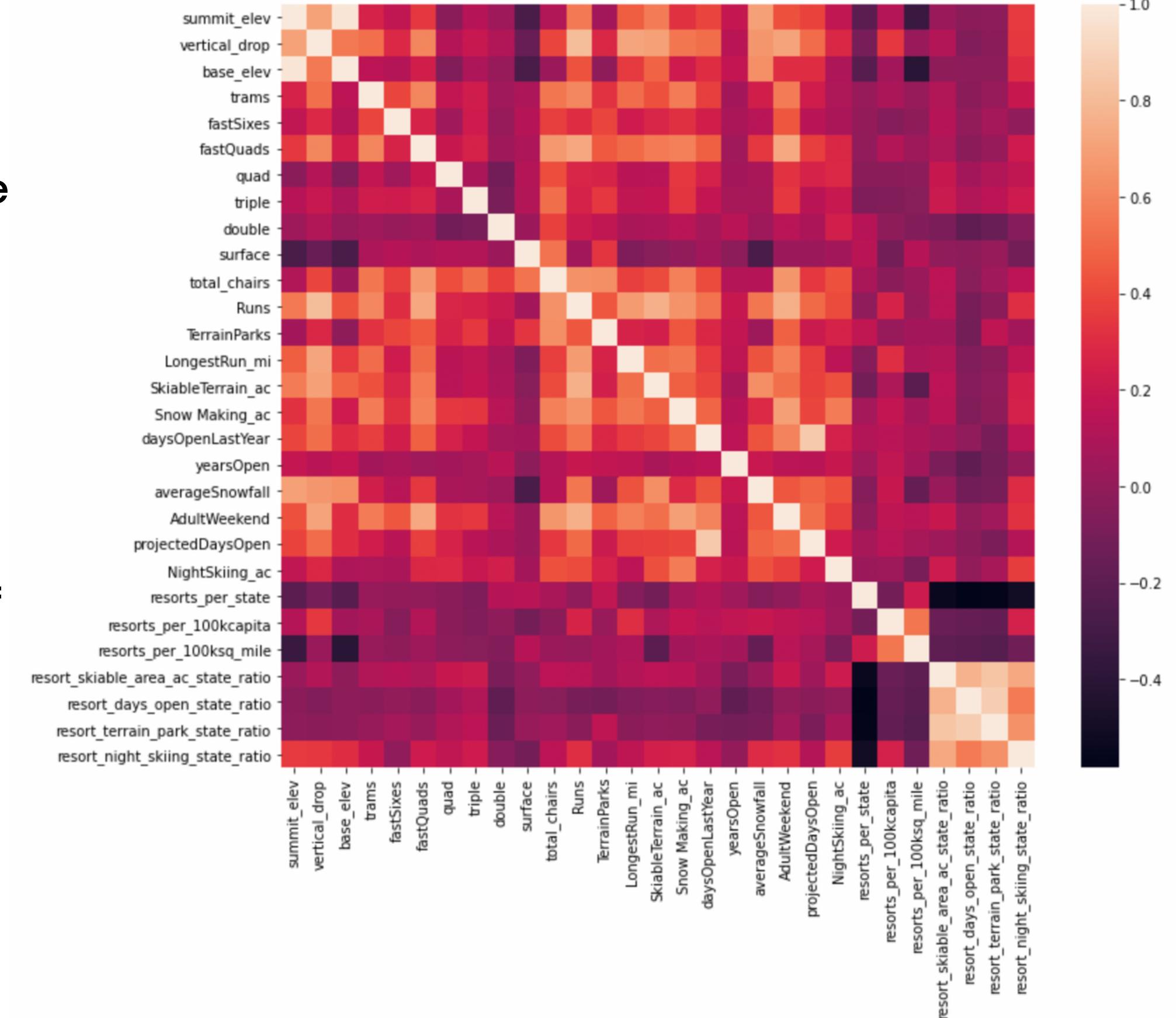
To tackle this issue, we built a predictive model for ticket price based on a number of facilities, or properties, boasted by resorts (*at the resorts*). This model will be used to provide guidance for Big Mountain's pricing and future facility investment plans.

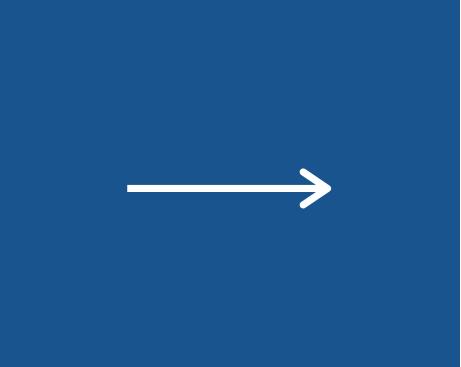
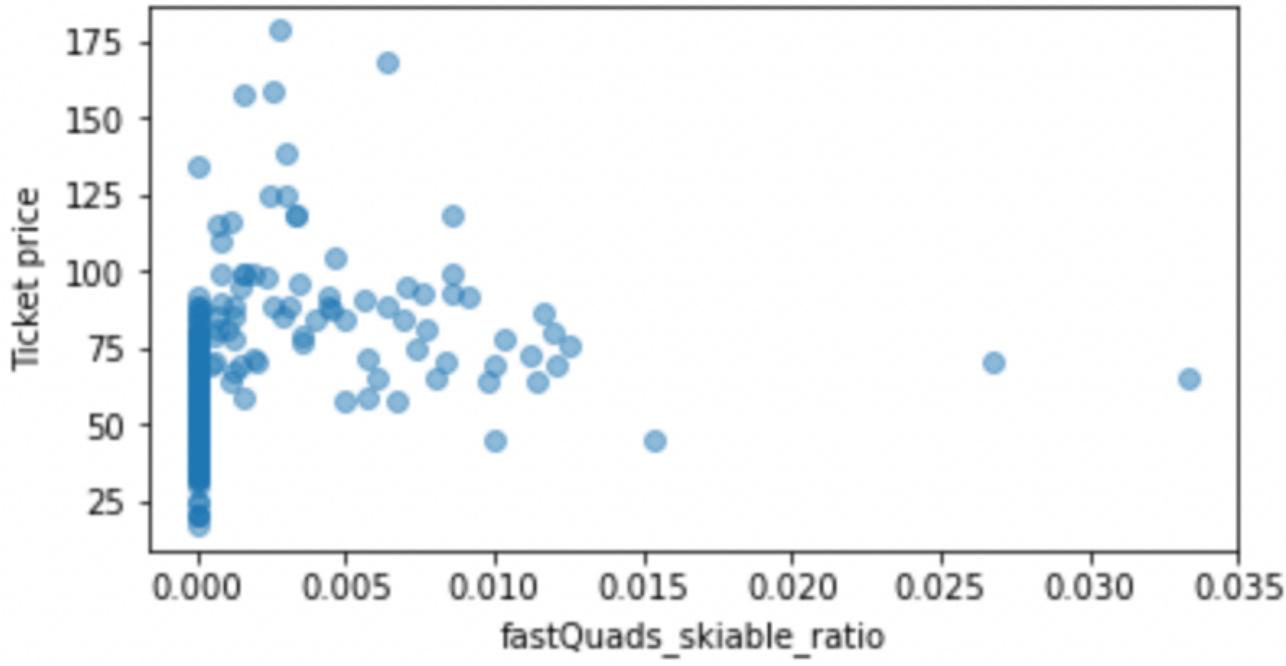
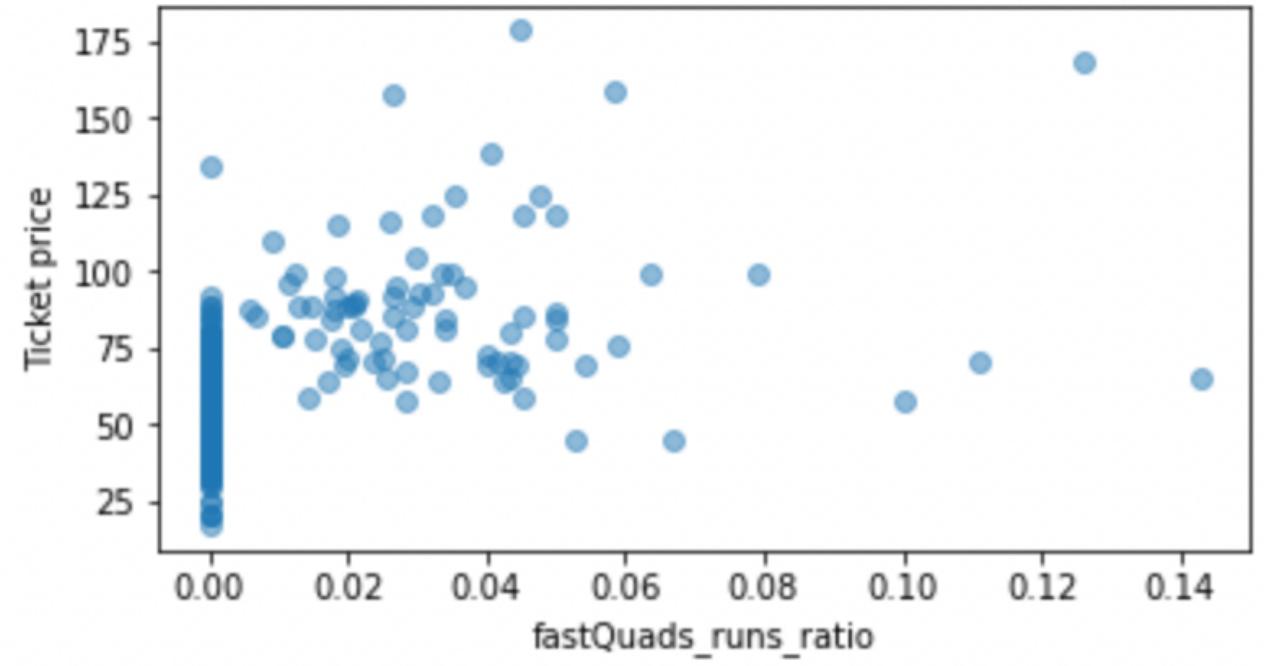
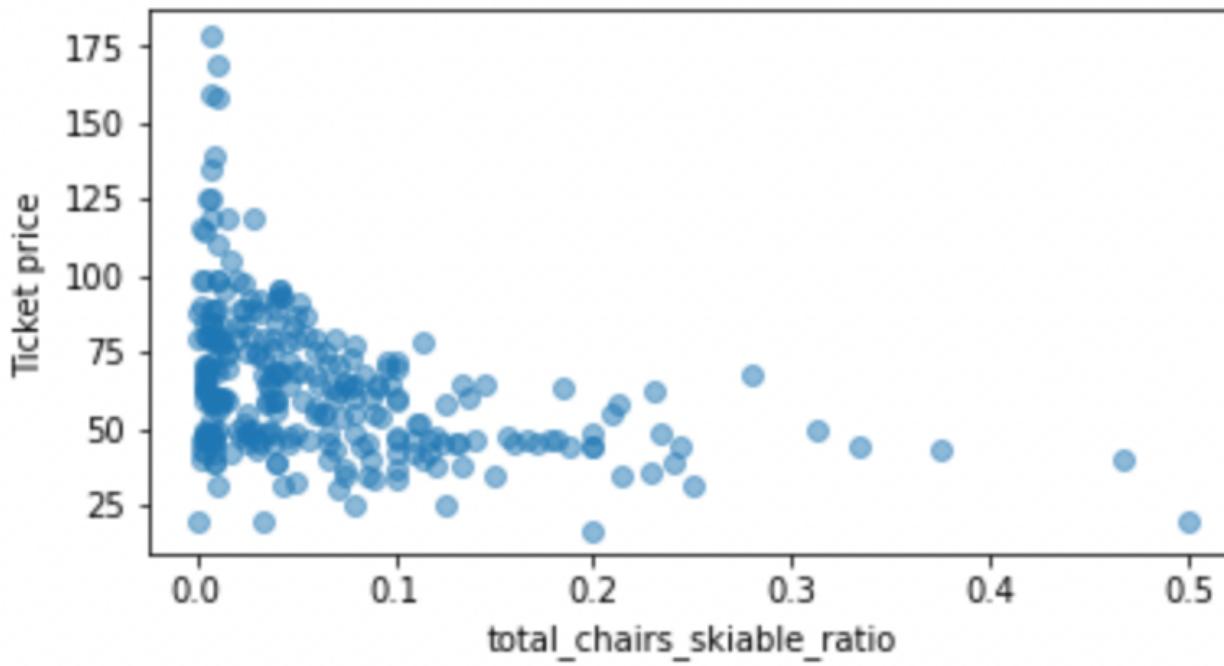
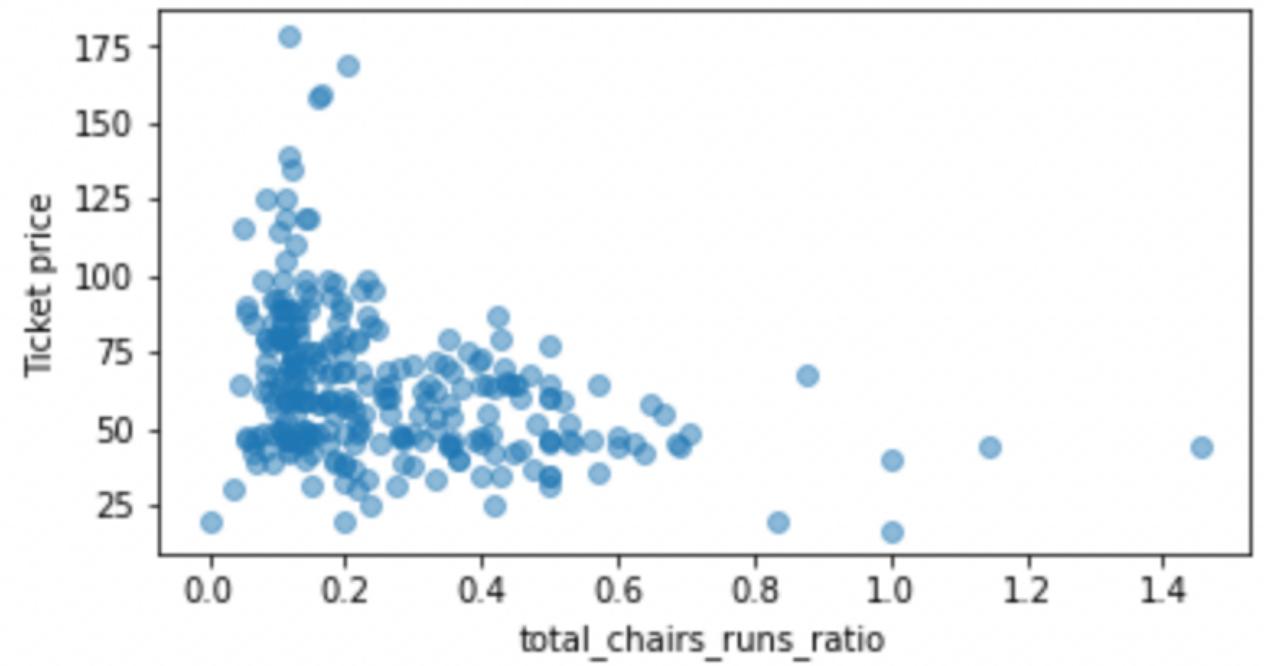
We did with some simple visualization and exploratory data analysis to start with.



# Some more interesting EDA

AdultWeekend ticket price: you see quite a few reasonable correlations. fastQuads stands out, along with Runs and Snow Making\_ac. The last one is interesting. Visitors would seem to value more guaranteed snow, which would cost in terms of snow making equipment, which would drive prices and costs up. Of the new features, resort\_night\_skiing\_state\_ratio seems the most correlated with ticket price. If this is true, then perhaps seizing a greater share of night skiing capacity is positive for the price a resort can charge.





AT FIRST THESE RELATIONSHIPS ARE QUITE COUNTERINTUITIVE. IT SEEMS THAT THE MORE CHAIRS A RESORT HAS TO MOVE PEOPLE AROUND, RELATIVE TO THE NUMBER OF RUNS, TICKET PRICE RAPIDLY PLUMMETS AND STAYS LOW. WHAT WE MAY BE SEEING HERE IS AN EXCLUSIVE VS. MASS MARKET RESORT EFFECT; IF YOU DON'T HAVE SO MANY CHAIRS, YOU CAN CHARGE MORE FOR YOUR TICKETS, ALTHOUGH WITH FEWER CHAIRS YOU'RE INEVITABLY GOING TO BE ABLE TO SERVE FEWER VISITORS. YOUR PRICE PER VISITOR IS HIGH BUT YOUR NUMBER OF VISITORS MAY BE LOW. SOMETHING VERY USEFUL THAT'S MISSING FROM THE DATA IS THE NUMBER OF VISITORS PER YEAR. IT ALSO APPEARS THAT HAVING NO FAST QUADS MAY LIMIT THE TICKET PRICE, BUT IF YOUR RESORT COVERS A WIDE AREA THEN GETTING A SMALL NUMBER OF FAST QUADS MAY BE BENEFICIAL TO TICKET PRICE.

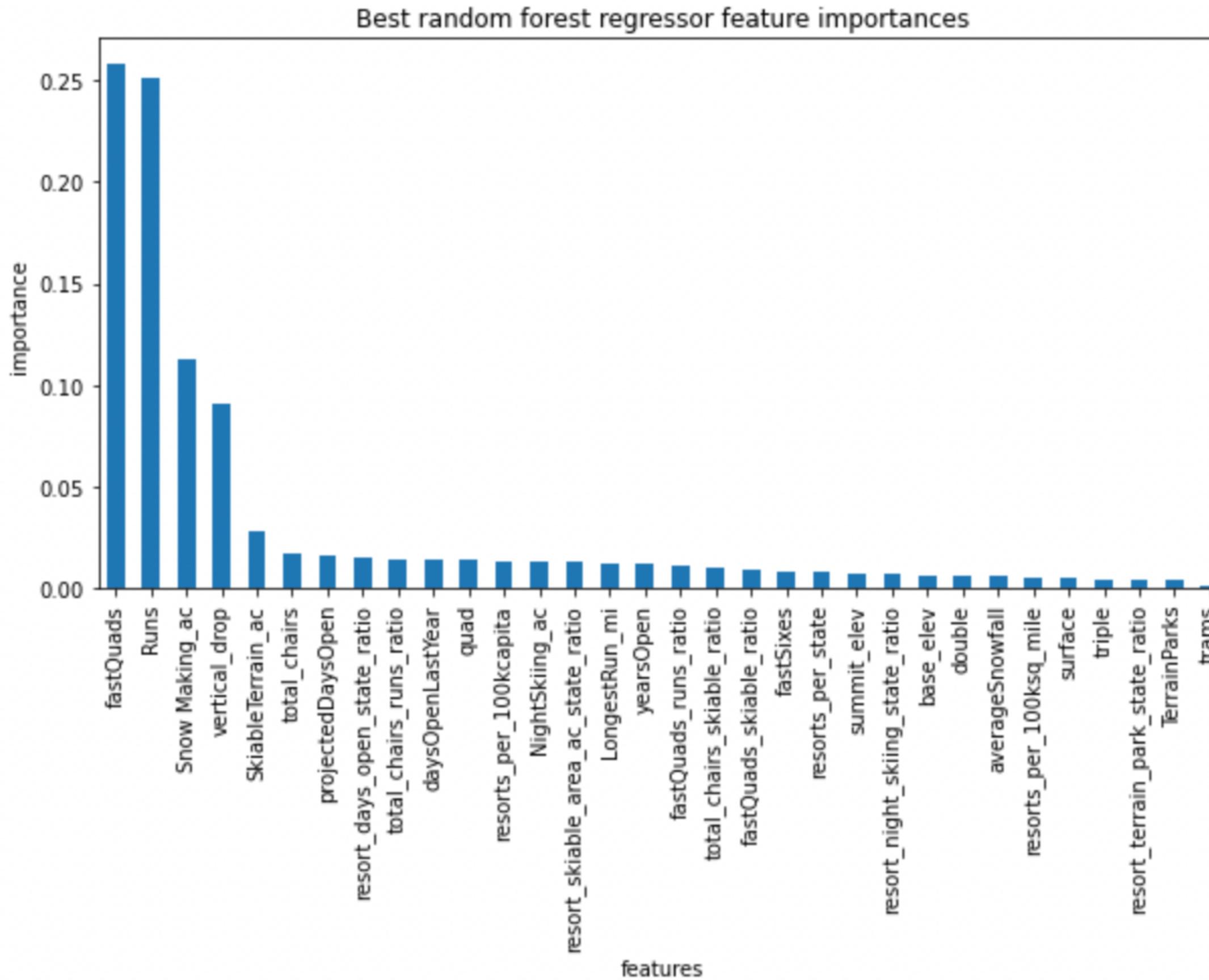
# Linear Model Summary

- Vertical drop : 10.767857
- Snow making area covered: 6.290074
- Total chairs: 5.794156
- fast quads: 5.745626
- Runs : 5.370555
- Longest run: 0.181814
- trams: -4.142024
- Skiable Terrain Area covered: -5.249780

These results suggest that vertical drop is your biggest positive feature. This makes intuitive sense and is consistent with what you saw during the EDA work. Also, you see the area covered by snow making equipment is a strong positive as well. People like guaranteed skiing! The skiable terrain area is negatively associated with ticket price! This seems odd. People will pay less for larger resorts? There could be all manner of reasons for this. It could be an effect whereby larger resorts can host more visitors at any one time and so can charge less per ticket. As has been mentioned previously, the data are missing information about visitor numbers. Bear in mind, the coefficient for skiable terrain is negative *for this model*. For example, if you kept the total number of chairs and fastQuads constant, but increased the skiable terrain extent, you might imagine the resort is worse off because the chairlift capacity is stretched thinner.



# Random Forest Model Summary



ENCOURAGINGLY, THE DOMINANT TOP FOUR FEATURES ARE IN COMMON WITH OUR LINEAR MODEL:

- FASTQUADS
- RUNS
- SNOW MAKING\_AC
- VERTICAL\_DROP

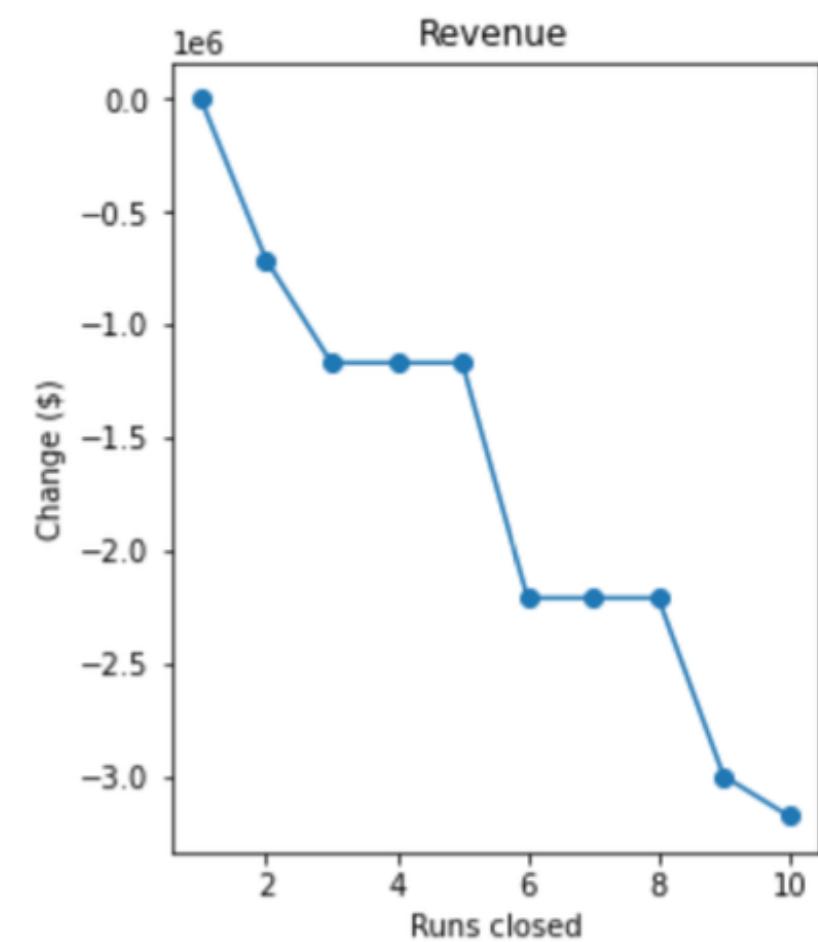
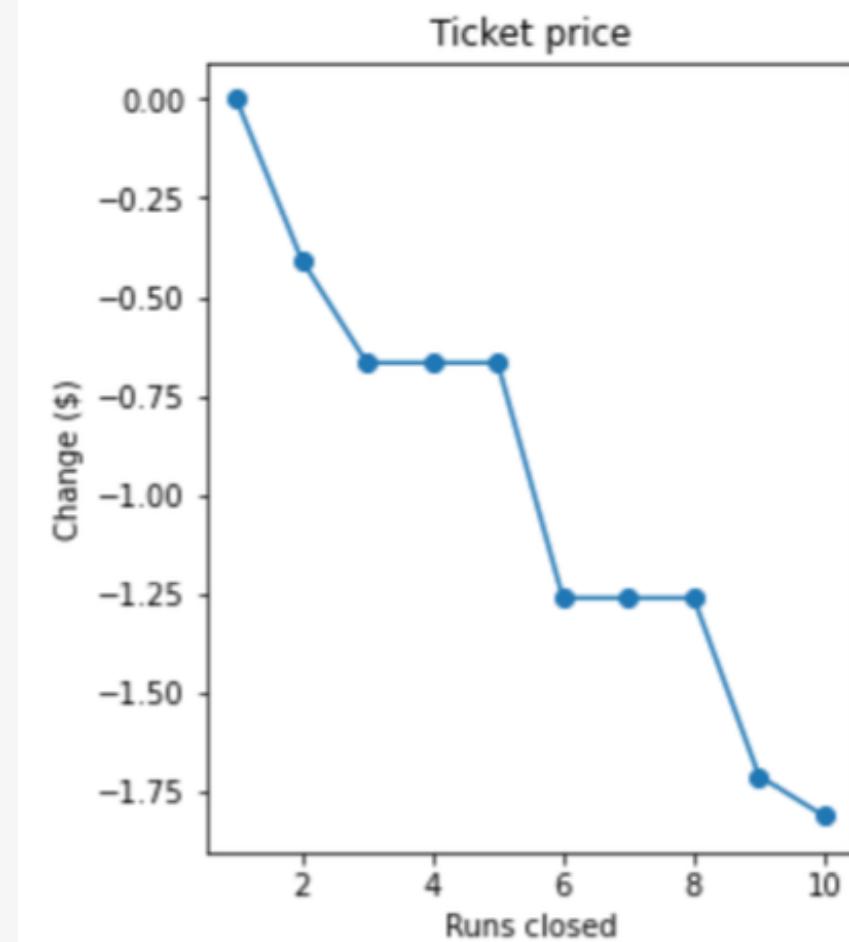
# FINDINGS SUMMARIZED

Our efforts are always to solve the business problem and drawing a meaningful conclusion

Current Position	Contradiction	OTHER FINDINGS
<ul style="list-style-type: none"><li>Currently, the Adult ticket is priced at \$81. We are assuming 350,000 visitors will ski in the coming season, our model predicts a \$3,474,638 increase in revenue for a \$1.99 increase in ticket price.</li></ul>	<ul style="list-style-type: none"><li>However, the model does not take into account the additional capital expenditure and on-going operation since this data has not been provided. It is assumed that the additional chair lift would increase the operating cost by 1.54 million.</li></ul>	<ol style="list-style-type: none"><li>1.Closing one of the least used runs is expected to have no impact on existing revenue.</li><li>2.Big Mountain is doing well for vertical drop, but there are still quite a few resorts with a greater drop.</li><li>3.Big Mountain is very high up the league table of snow making area.</li><li>4. Big Mountain has amongst the highest number of total chairs, resorts with more appear to be outliers.</li></ol>

# OUR MODEL PREDICTS-

- CLOSING ONE RUN MAKES NO DIFFERENCE.
- CLOSING 2 AND 3 SUCCESSIVELY REDUCES SUPPORT FOR TICKET PRICE AND SO REVENUE.
- IF BIG MOUNTAIN CLOSES DOWN 3 RUNS, IT SEEMS THEY MAY AS WELL CLOSE DOWN 4 OR 5 AS THERE'S NO FURTHER LOSS IN TICKET PRICE. INCREASING THE CLOSURES DOWN TO 6 OR MORE LEADS TO A LARGE DROP.



- Big Mountain compares well for the number of runs. There are some resorts with more, but not many.
- Big Mountain has one of the longest runs. Although it is just over half the length of the longest, the longer ones are rare.
- Big Mountain is amongst the resorts with the largest amount of skiable terrain.

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THANK YOU!

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