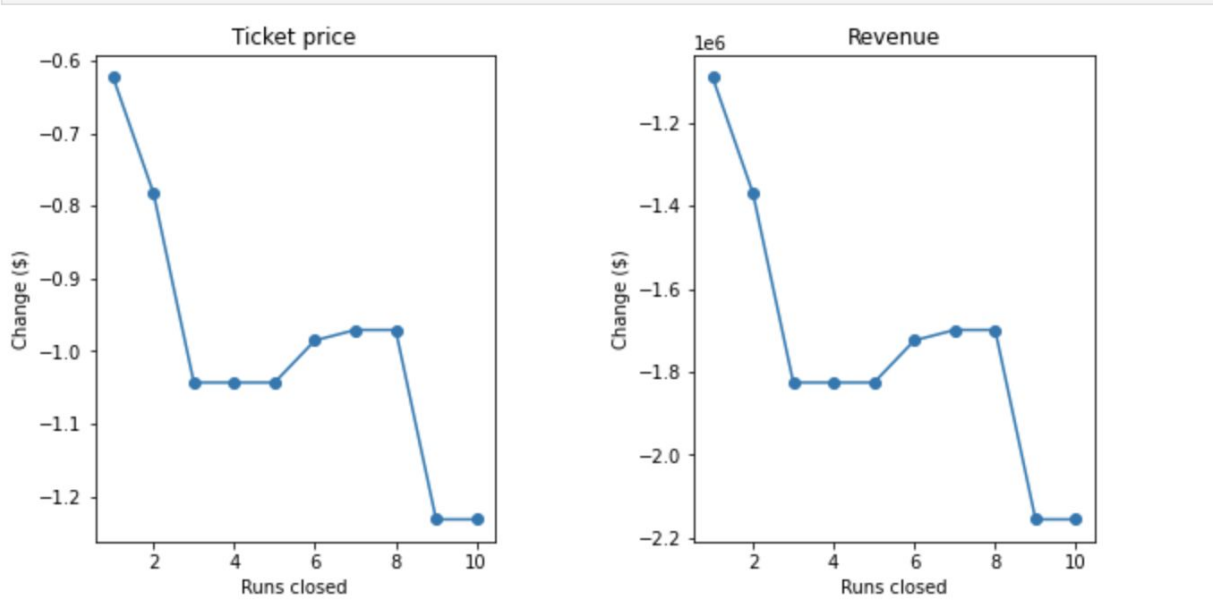
As part of the business strategy to maximize profits and revenue, 4 strategies were shortlisted and presented to the data science team:

1. Permanently closing down upto 10 of the least used runs
2. Increase the vertical drop by adding a run to a point 150 feet lower down but requiring the installation of an additional chair lift to bring skiers back up, without additional snow making coverage
3. Same as number 2, but adding 2 acres of snow making cover
4. Increase the longest run by 0.2 mile to boast 3.5 miles length, requiring an additional snow making coverage of 4 acres

To investigate the impacts of these 4 changes on the supported ticket price and the resort's revenue, a machine learning model was built on the dataset and used to predict supported ticket prices and revenues for the current feature levels of Big Mountain, and then for feature levels reflecting each of these changes individually.

Scenario 1



The above plots illustrate the effects of closing a certain number of runs on the supported ticket price and on revenue. The shapes of the graphs are similar because the revenue delta is calculated using the ticket price delta times some constant scale factor (the expected number of visitors 350,000 times the expected number of tickets each visitor will buy 5)

The graph essentially conveys these facts :

- Closing 1 run will have no impact on the supported ticket price
- 3-5 runs can be closed with the same effect

- Closing more than 6 runs leads to a significant price drop

In conclusion, the data science team therefore recommends either closing 1 run or 5 runs if the expected savings of closing 5 runs exceeds the potentially lost revenue of doing so, reflected by the second graph.

Scenarios 2,3,4

The other 3 scenarios are reflected in the table below

Scenario	Ticket Price Delta	Revenue Delta
2	+ $1.74	+ $3043478
3	+ $1.74	+ $3043478
4	+ $0	+ $0

Evidently, scenarios 1 and 2 are identical in terms of their effect on revenue and price, so obviously scenario 1 should be preferred since it involves less operational costs.

Scenario 4 makes no difference on the supported ticket price or revenue and should therefore be in high consideration to be dismissed.

Conclusion

To summarize the data science team's recommendations :

- **Close 1 run** and still pay no penalty on ticket price and revenue
- **Implement Scenario 2** to increase revenue and the supportable ticket price

These changes are according to the model best expected to maximize profits for the resort. Of course, it must be stated that this model was trained exclusively on the data set provided by the company and some other information regarding state statistics. The model may not truly reflect the effects of other variables involved in supportable ticket prices, and therefore any changes should be advised by these limitations and augmented with other relevant information, datasets, and domain expertise.