Big Mountain Resort has been reviewing potential scenarios for either cutting costs or increasing revenue (from ticket prices). Ticket price is not determined by any set of parameters; the resort is free to set whatever price it likes. However, the resort operates within a market where people pay more for certain facilities, and less for others. Being able to sense how facilities support a given ticket price is valuable business intelligence. This is where the utility of our model comes in.

The business has shortlisted some options:

1. Permanently closing up to 10 of the least used runs. This doesn't impact any other resort statistics.
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

The expected number of visitors over the season is 350,000 and, on average, visitors ski for five days. Assume the provided data includes the additional lift that Big Mountain recently installed.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **vertical\_drop** | **Snow Making\_ac** | **total\_chairs** | **fastQuads** | **Runs** | **LongestRun\_mi** | **trams** | **SkiableTerrain\_ac** |
| 2353 | 600 | 14 | 3 | 105 | 3.3 | 0 | 3000 |

We created predict\_increase function to derive Increase in modelled ticket price by applying delta to feature.

Scenario 1: Close up to 10 of the least used runs. The number of runs is the only parameter varying.

The model says 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.

Scenario 2 :

In this scenario, Big Mountain is adding a run, increasing the vertical drop by 150 feet, and installing an additional chair lift.

This scenario increases support for ticket price by $1.99

Over the season, this could be expected to amount to $3474638

Scenario 3:

In this scenario, you are repeating the previous one but adding 2 acres of snow making.

This scenario increases support for ticket price by $1.99

Over the season, this could be expected to amount to $3474638

Such a small increase in the snow making area makes no difference!

Scenario 4 :

This scenario calls for increasing the longest run by .2 miles and guaranteeing its snow coverage by adding 4 acres of snow making capability.

No difference whatsoever. Although the longest run feature was used in the linear model, the random forest model (the one we chose because of its better performance) only has longest run way down in the feature importance list.

Business should consider cutting down the operating costs by checking its impact on price. which can be done using our model.

we can create a user friendly interface for business which will call our model to accept the feature and deltas(changes in feature) as its parameter and suggest its impact on ticket price and revenue. business can run this interface as and when they want.