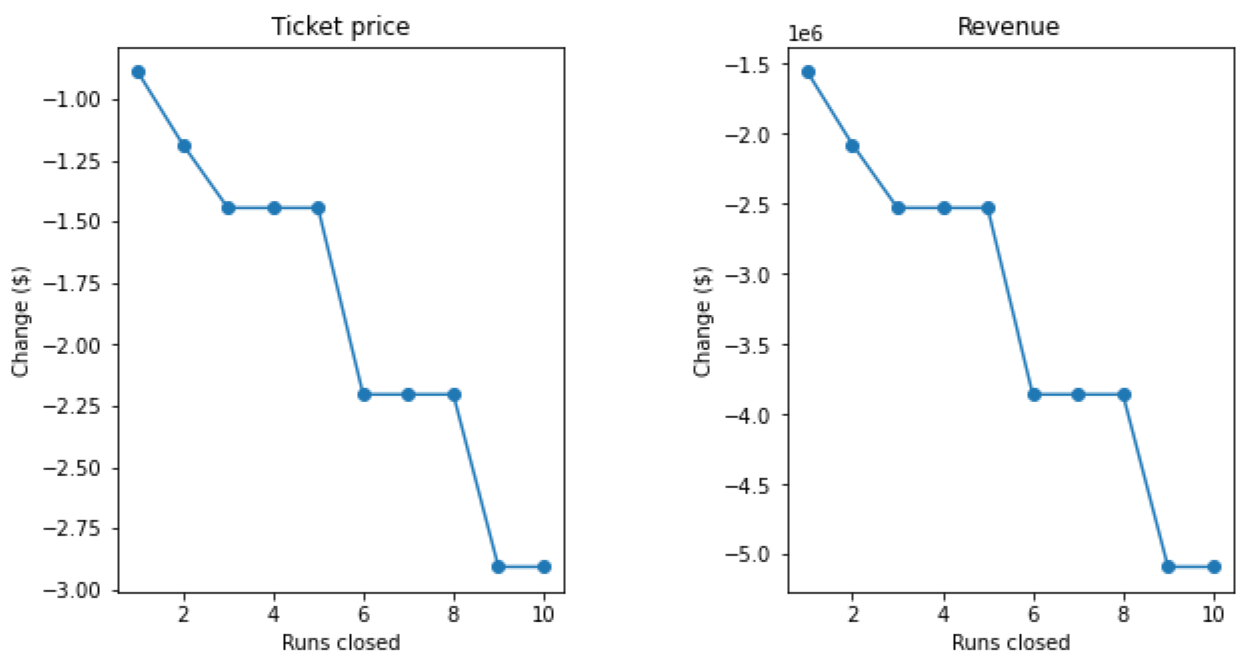
Big Mountain Resort, a skiing resort that recently increased costs of operating by $1.5 million after the installation of a new chair lift, is interested in finding an optimal ticket price to account for premium services in order to maximize company profits. The potential raises in ticket costs will serve as a way to compensate for the increase in the cost of operations due to the services offered at this resort that may not necessarily be offered as well in resorts that sell tickets for a lower price. There were several other changes that were proposed to help justify the ticket price and control costs, such as closing ten of the least used runs in the ski resort. Also, the purchase of an additional lift to carry skiers on a new run that extends 150 feet beyond the longest trail, plus the increase in the length of the longest run in order to carry a single run spanning 3.5 miles in length.

First, we can see the model results of closing runs measured with the change in ticket prices and expected revenue:



It appears closing three runs leads to a minimal loss in revenue, while closing five runs is virtually no different with the lack of change in ticket price. **It is recommended to close five runs** and no more, as more would result in a substantial drop.

Furthermore, with the addition of a large run and chair lift, we can calculate the ticket and revenue change using our features ‘runs’, ‘vertical_drop’, and ‘total_chairs’. Our ticket and revenue functions are used to determine that the **addition of a run with 150 feet and a chair lift will lead to a ticket increase of $7 and a revenue increase of $12250324.** This same method but with an increase in two acres of snow making result in a ticket increase of $8.26 and a revenue increase of $14454028

By repeating the same process from the previous step, but with the addition of .2 miles to the longest run and four miles of snow coverage, will lead to no changes at all.