Big Mountain hosts 350,000 skiers and snowboarders a year and visitors are serviced by various facilities such as lifts, T-bars, runs, and so on. The resort’s pricing strategy has been to charge a premium above market average. Now, Big Mountain is investigating if there is an opportunity to revamp ticket pricing by changing facility investment strategies, such that a 5% increase in annual revenue or 5% decrease in annual operating costs is delivered within 12 months of implementation. The approach taken was to predict a ticket price that could be supported by Big Mountain’s facilities today, by building a model based on ticket prices supported facilities of other resorts in the US market.

A dataset containing ski data including weekday prices, weekend prices, and ski facilities at resorts in states across the US was provided. A decision was made to predict weekend ticket prices only because there were fewer missing values for weekend ticket prices. Furthermore, in Montana, weekend and weekday prices are equal across all resorts. No patterns were found in pricing based on state as well.

Fig 1: A graph showing lack of grouping of ticket prices based on state location of resorts.

A graph showing lack of grouping of ticket prices based on state location of resorts.


Today, Big Mountain’s ranks at the top end of distributions for facilities that drive ticket pricing. While Big Mountain’s weekend ticket price is located closer to the higher end of the distribution for the entire US market share, it is located at the top of the distribution for the Montana resort market. However, a random forest regression on the ski data from other resorts across the US predicts that Big Mountain’s facilities can support an increase in its weekend ticket price from $81.00 to $91.09. This would put Big Mountain’s ticket price at the higher end of the total market share distribution.

Fig 2: Big Mountain’s ticket price relative to the total US market.

A graph of a number of blue bars

Description automatically generated with medium confidence

Fig 3: Big Mountain’s ticket price relative to the Montana market.

A graph with blue lines

Description automatically generated

Various scenarios for increasing ticket pricing at Big Mountain were investigated. We recommend Big Mountain pursues a scenario of increasing the vertical drop by 150 feet, adding a chair lift to support visitor traffic to the summit, and finally, adding another run for visitors. Adding these facilities is predicted to support a $0.92 increase in ticket prices; this would increase revenue by $1,602,753.

To support the new facilities, the team recommends adding information on visitor usage and operating costs of each facility into the model. This can be used to understand where opportunities for reducing costs exist (by decommissioning certain facilities which are high cost but have low contribution to revenue). This will facilitate decisions on investments to optimize operating income.

The proposed changes to facilities capture only $0.92 of the potential $10.09 opportunity to increase ticket price. The team recommends that an app be built which provides estimated revenue, and operating costs based on different investment scenarios. The app would be built around the random forest regression (with updates that incorporate visitor usage and operating costs). This app would be owned and used by Big Mountain’s business analysts. It would also be valuable to build a live database the app can draw from for up-to-date data for modeling.