

Problem Statement:

Big Mountain Resort, situated in Montana, seeks to refine its ticket pricing strategy to maximize revenue while ensuring competitiveness within the ski resort market. **The resort management aims to leverage data-driven insights to optimize ticket prices based on facility offerings and market dynamics.**

1. Data Wrangling: Exploration of the dataset revealed insights into resort characteristics and ticket pricing trends. Initial data cleaning involved addressing missing values and identifying unique resort names. Notably, Montana did not rank in the top 10 in terms of the number of resorts nationwide, highlighting the competitive landscape (**Figure 1**). Further analysis examined the relationship between regions and states, facilitating a comprehensive understanding of geographical distribution. We discovered that most prices appear to lie in a broad band from around 25 to over 100 dollars. Some states have significant variability, while others, like Montana, showed small variability and matching weekend and weekday ticket prices (**Figure 2**).

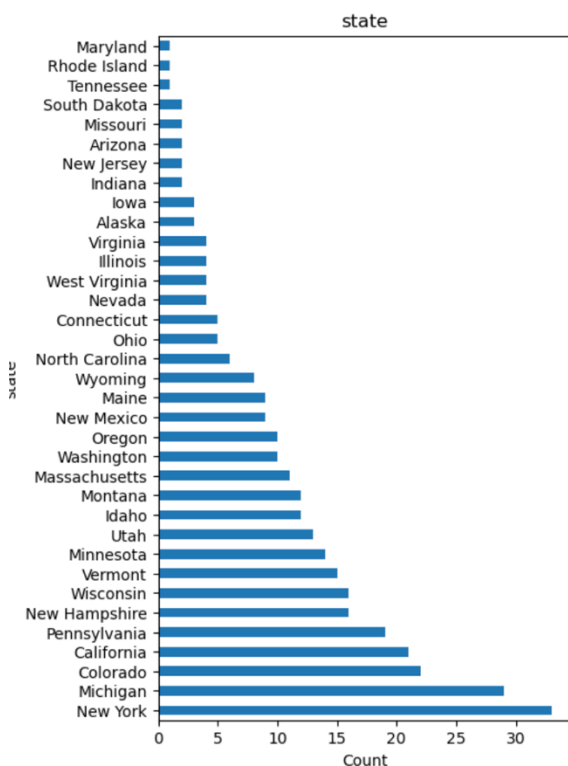


Figure 1

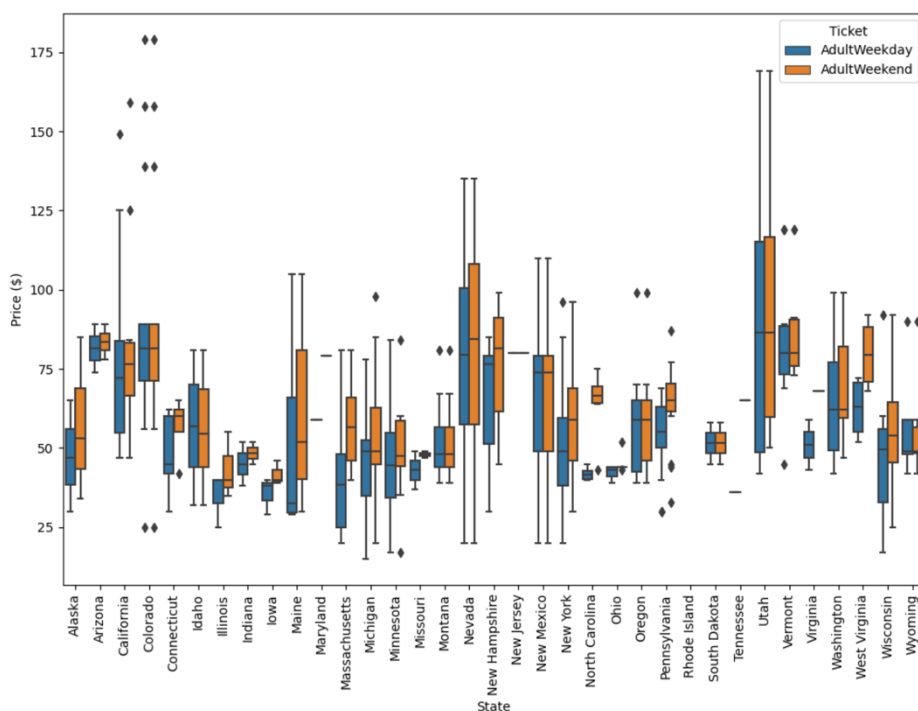


Figure 2

2. Exploratory Data Analysis: An in-depth exploration of resort data uncovered significant trends and correlations between features. We decided to conduct a Principal Components Analysis (**PCA**; **Figure 3**) to understand better the relationships between features and how much variance they explain. Even though we did not see any clear grouping, we did capture potentially relevant state features that might be useful for our subsequent modeling efforts. We calculated ratios to better understand resorts' share of the supply for a given state, after which we created a heatmap to explore correlations and identify patterns (**Figure 4**). We observed that our target feature, ticket price, was positively correlated with fastQuads, Runs, total_chairs, vertical drop, and Snow Making_ac.

