



Data Science Career Track

Guided Capstone - Step One: Problem Identification

The first step of this guided capstone is all about identifying the correct problem to solve. Let's get to it!

Project Steps

1. Review the [Guided Capstone Overview](#).
 2. Read the information about each of the problem statement worksheet sections.
 3. Fill out a [problem statement worksheet](#) for this project. Your answers should be based on the information you learned while reading the overview and subsequent sections.
 4. Save your problem statement worksheet with the title [Your Name] PSW - Guided Capstone.
 - a. If you've filled out your worksheet in a Google doc, be sure to set the Share settings to 'anyone with a link can view' so that your mentor can review your work.
 5. Submit a link to your completed problem statement worksheet and discuss it with your mentor during your next call.
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Guided Capstone Project Overview + Context

company

Your client is Big Mountain Resort, a ski resort located in Montana. Big Mountain Resort offers spectacular views of Glacier National Park and Flathead National Forest, with access to 105 trails. Every year about 350,000 people ski or snowboard at Big Mountain. This mountain can accommodate skiers and riders of all levels and abilities.

These are serviced by 11 lifts, 2 T-bars, and 1 magic carpet for novice skiers. The longest run is named Hellfire and is 3.3 miles in length. The base elevation is 4,464 ft, and the summit is 6,817 ft with a vertical drop of 2,353 ft.

budget increases

Big Mountain Resort has recently installed an additional chair lift to help increase the distribution of visitors across the mountain. This additional chair increases their operating costs by \$1,540,000 this season.

The resort's pricing strategy has been to charge a premium above the average price of resorts in its market segment. They know there are limitations to this approach. There's a suspicion that Big Mountain is not capitalizing on its facilities as much as it could. Basing their pricing on just the market average does not provide the business with a good sense of how important some facilities are compared to others. This hampers investment strategy. You are part of a new data science team brought in to implement a more data-driven business strategy. The business wants some guidance on how to select a better value for their ticket price. They are also considering a number of changes that they hope will either cut costs without undermining the ticket price or will support an even higher ticket price.

Problem Statement Worksheet Sections

What is the business problem you're investigating and what hypothesis can be made to support the business outcome?

Tip: Review the last paragraph of the overview and generate ideas about how to increase revenue for the resort. Once you have an idea or two, use the data overview [provided below](#) to determine if your idea can be evaluated and supported by these data. Keep in mind that this data contains information from 330 resorts in the US that can be considered part of the same market share and we have these same data columns for Big Mountain Resort as well.

Write your response in your problem statement worksheet.

Context

Here is where we define our business initiative to solve the problem the business wants to deal with. **业务措施**

Write your response in your problem statement worksheet.

Criteria for success

This is a key step in any business problem or data science project. You should know what the outcome expectations are, and be able to communicate them clearly to all involved stakeholders in order to succeed. In the absence of clearly defined success criteria and scope, it can be difficult to identify when the project is complete.

Write your response in your problem statement worksheet.

Scope of solution space

The solution space provides more details about the tasks you will complete to reach the solution.

Write your response in your problem statement worksheet.

Constraints

The constraints section helps you, the data scientist, communicate anticipated conflict in implementing recommendations or findings of the project. Take a moment to consider what potential issues could arise when presenting your recommendations to the key stakeholders.

Write your response in your problem statement worksheet.

Stakeholders

Identifying the key stakeholders in your project motivates the trajectory of your work and gives you access to key insights and data to support your analysis. Mapping out all the people with vested interests in your project outcome will help you build the network needed to complete the project, as well as provide an audience to address when writing your data story.

In this project, you're working directly with the Director of Operations, Jimmy Blackburn, and he has connected you with Alesha Eisen, the Database Manager. These are you're only two contacts for this project.

Write your response in your problem statement worksheet.

Data Source(s)

Gaining access to the proper data sources can be difficult — perhaps you need a specific user level access granted to a SQL database or an S3 bucket. In this example, you'll work with a single CSV file that you got from the database manager. You need to carefully review the data columns to ensure it has what you need to answer your business question. The data is loaded below; use this data snippet along with the column descriptions in the metadata to guide you in identifying the important columns needed to complete this project.

Review the metadata file with column descriptions (below).

elevation: 海拔
summit mountain:顶峰山🏔
trams: 电车
terrain park : snow park

| Column | Description |
|-------------------|---|
| Name | The name of the ski resort. |
| Region | The region within the United States where the resort is located. |
| state | The state name where the resort is located. |
| summit_elev | Elevation in feet of the summit mountain at the resort. |
| vertical_drop | Vertical change in elevation from the summit to the base in feet. |
| base_elev | Elevation in feet at the base of the resort. |
| trams | The number of trams. |
| fastEight | The number of fast eight person chairs. |
| fastSixes | The number of fast six person chairs. |
| fastQuads | The number of fast four person chairs. |
| quad | Count of regular speed four person chairlifts. |
| triple | Count of regular speed three person chairlifts. |
| double | Count of regular speed two person chairlifts. |
| surface | Count of regular speed single person chairlifts. |
| total_chairs | Sum of all the chairlifts at the resort. |
| Runs | Count of the number of runs on the resort. |
| TerrainParks | Count of the number of terrain parks at the resort. |
| LongestRun_mi | Length of the longest run in the resort in miles. |
| SkiableTerrain_ac | Total skiable area in square acres. |
| Snow Making_ac | Total area covered by snow making machines in acres. |
| daysOpenLastYear | Total number of days open last year. |
| yearsOpen | Total number of years the resort has been open. |
| averageSnowfall | Average annual snowfall at the resort in inches. |
| AdultWeekday | Cost of an adult weekday chairlift ticket. |
| AdultWeekend | Cost of an adult weekend chairlift ticket. |
| projectedDaysOpen | Projected days open in the upcoming season. |
| NightSkiing_ac | Total skiable area covered in lights for night skiing. |

For more context, a data snippet is provided below.

| | Name | Region | state | summit_elev | vertical_drop | base_elev | trams | fastEight | fastSixes | fastQuads | quad | triple | double | surface | total_chairs | Runs |
|---|---------------------|---------|---------|-------------|---------------|-----------|-------|-----------|-----------|-----------|------|--------|--------|---------|--------------|------|
| 0 | Alyeska Resort | Alaska | Alaska | 3939 | 2500 | 250 | 1 | 0.0 | 0 | 2 | 2 | 0 | 0 | 2 | 7 | 76.0 |
| 1 | Eaglecrest Ski Area | Alaska | Alaska | 2600 | 1540 | 1200 | 0 | 0.0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 36.0 |
| 2 | Hilltop Ski Area | Alaska | Alaska | 2090 | 294 | 1796 | 0 | 0.0 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 13.0 |
| 3 | Arizona Snowbowl | Arizona | Arizona | 11500 | 2300 | 9200 | 0 | 0.0 | 1 | 0 | 2 | 2 | 1 | 2 | 8 | 55.0 |
| 4 | Sunrise Park Resort | Arizona | Arizona | 11100 | 1800 | 9200 | 0 | NaN | 0 | 1 | 2 | 3 | 1 | 0 | 7 | 65.0 |

| TerrainParks | LongestRun_mi | SkiableTerrain_ac | Snow Making_ac | daysOpenLastYear | yearsOpen | averageSnowfall | AdultWeekday | AdultWeekend | projectedDaysOpen |
|--------------|---------------|-------------------|-------------------|------------------|-----------|-----------------|--------------|--------------|-------------------|
| 2.0 | 1.0 | 1610.0 | 113.0 | 150.0 | 60.0 | 669.0 | 65.0 | 85.0 | 150.0 |
| 1.0 | 2.0 | 640.0 | 60.0 | 45.0 | 44.0 | 350.0 | 47.0 | 53.0 | 90.0 |
| 1.0 | 1.0 | 30.0 | 30.0 | 150.0 | 36.0 | 69.0 | 30.0 | 34.0 | 152.0 |
| 4.0 | 2.0 | 777.0 | 104.0 | 122.0 | 81.0 | 260.0 | 89.0 | 89.0 | 122.0 |
| 2.0 | 1.2 | 800.0 | 80.0 | 115.0 | 49.0 | 250.0 | 74.0 | 78.0 | 104.0 |