Peak Mountain Resort: Data-Driven Safety & Financial Strategy

BOLT UBC Bootcamp 2025 Case Study Solution

Jeannie Paul, Aryan Jain, Aaryaman Khanna, Manya Jain



Balancing safety, financial sustainability, and guest experience—how can we optimize operations without compromising quality?

Executive Summary

KEY CHALLENGES

Implementing safety measures

Slow emergency response (14.2 min avg)

Aging infrastructure & maintenance costs

\$2.77M financial loss (high ambulance & staff salary expenses)

Overwhelmed staff in peak times

STRATEGY

Cut ambulance costs

Introduce legal protection

Audit internal operations and cut redundant staff

ncrease pricing in both seasons by varying amounts

RECOMMENDATIONS

Improve Safety Protocols

Better triage and medical response protocols

Undergo operational optimization

Reduce capital burden: partnerships, sponsorships

Higher outreach of market: more income

Offer multi-model ticket & rental systems- revenue growth

Financial Status

Metric	Current Situation	After Price Increase and cost reductions
Total Revenue	\$645,000	\$1,263,548
Total Expense	\$3,420,813	\$1,546,813
Net Profit	-\$2,775,813	-\$283,265

IMPACT SUMMARY

What the resort gains from these changes.

PROBLEM STATEMENT

How can Peak Mountain Resort implement cost-effective, data-driven safety measures while ensuring financial sustainability?

Analysis

Strategy

Implementation

Effects

Industry & Market Analysis: How Peak Mountain Resort Compares

Factor	Aspen Snowmass	Whistler Blackcomb	Vail Resorts	Peak Mountain Resort	
Pricing & Passes	Premium pricing, attracts luxury guests, part of Ikon Pass.	High single-day pricing, Epic Pass provides affordability.	Expensive daily tickets, Epic Pass (2.4M sold in 2023) drives loyalty.	Mid-market pricing, affordable for families but lacks multi-resort pass.	
Amenities & Guest Experience	Luxury hotels, fine dining, high-end après-ski scene, Winter X Games.	Diverse lodging, pedestrian village, après-ski scene, Peak- 2-Peak Gondola.	Luxury experience, heated lifts, premium guest services.	Cozy lodges, family-friendly, but limited high-end lodging & dining options .	
Sustainability Initiatives	Methane-to-energy project, powering ski areas.	Olympic-driven sustainability efforts, habitat protection.	"Epic Promise" – zero waste, zero emissions, zero deforestation.	Community-driven efforts, but lacks large-scale green projects.	
Technology & Innovation	RFID passes, app-based guest tracking, smart resort experience.	EpicMix real-time tracking, digital pass integration.	Al-powered customer service, Bluetooth lift passes, automated snowmaking.	Traditional booking system, slow Wi-Fi, older lift infrastructure.	
Emergency Response & Medical Care	Premium emergency care, on-site medical centers, and helicopter evacuation.	Premium emergency care, on-site medical centers, and helicopter evacuation.	Premium emergency care, on-site medical centers, and helicopter evacuation.	15.5 min response time – slow for critical injuries. Limited on-site medical staff; high ambulance costs.	
Preventive Safety Measures & Injury Reduction	Mandatory helmets in terrain parks, Al-driven safety monitoring.	Smart patrol systems, strong safety education programs, real-time risk tracking.	Advanced terrain- based safety measures, Al-driven injury prevention analytics.	Basic safety enforcement, inconsistent protective gear policies, lacks formal injury prevention initiatives.	

Recommendations for Peak



Introduce local season pass or join a collective pass program.

Upgrade dining, hospitality, and premium guest packages.





Develop **visible sustainability projects** (e.g., solar energy, waste reduction).

Invest in RFID lift tickets, Al-driven guest services, digital operations.





Reduce response time by adding ski patrols, invest in one site care, optimise rescue logistics

Mandate protective gear, enforce safety policies, leverage data analytics for injury trend prediction and terrain specific injury



Analysis

Strategy

Implementation

Effects

Case Study: Holiday Valley Resort - Cutting Costs Without Reducing Service

Holiday Valley, a four-season resort in New York, faced high winter labour costs. To optimize efficiency, it modernized its snowmaking system, reducing manual labour while improving service quality. This strategic investment lowered staff costs without compromising the guest experience.

Holiday Valley's Cost Reduction Strategies

- •Automated Snowmaking: Installed computer-controlled snow guns that adjust settings automatically, **eliminating manual labor** and overnight shifts.
- *Upskilling & Cross-Training: Reassigned snowmaking staff to oversee the automated system, training them in technical operations instead of hiring new employees.
- Seasonal Workforce Optimization: Reduced peakseason staffing needs, lowering wage costs without impacting guest experience.



Impact of Automation at Holiday Valley

- •Labor Cost Reduction: Automated snowmaking cut snowmaking crew size by 39% over five years, significantly reducing payroll costs. Savings outweighed the increased pay for specialized staff.
- •Operational Savings: Snow production costs dropped over 60%, from \$1,063 to under \$400 per acre-foot, due to reduced labor, energy, and resource usage.
- •Improved Service Quality: Automation enhanced snow consistency and surface quality, allowing faster terrain openings while maintaining high guest satisfaction.

Supporting Data & Results

- •Labor Savings: Snowmaking payroll needs dropped by 39%, reducing staffing costs significantly.
- •Operational Efficiency: Automation paid for itself, cutting per-acre-foot snow production costs from >\$1,000 to <\$400.
- •Enhanced Snow Quality: More precise control improved snow conditions, proving that resorts can reduce costs without compromising service.

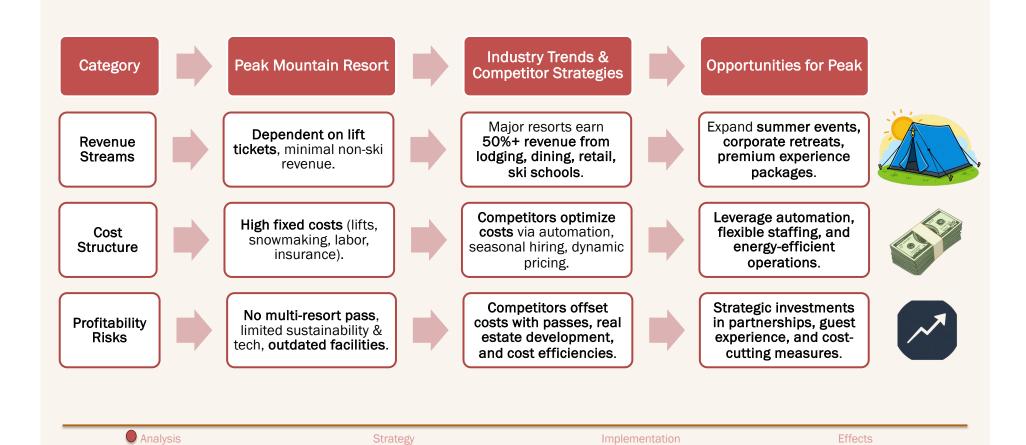


Strategy

mplementation

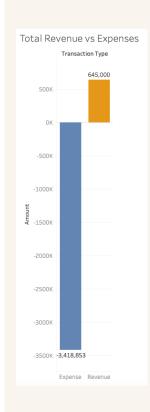
Effects

Industry & Market Analysis: Financial Overview & Profitability Factors



Strategy

Financial Overview



Expenses



- Ambulance Call
- Equipment Maintenance
- Staff Salary

Revenue Generated



■ Rental ■ Ticket Sale

total	average	variation	max	min	median
<dbl></dbl>	<dbl></dbl>	<dbl></dbl>	<dbl></dbl>	<dbl></dbl>	<dbl></dbl>
-2503121	-6484.7694	1484.83656	8992	4011	-6559.5
-675590	-1723.4439	433.70051	2491	1002	-1703.0
594790	1454.2543	2012.58771	7700	100	500.0
-240142	-597.3682	174.59279	899	300	-597.5
50210	122.1655	84.35151	315	30	90.0
	<dbl><dbl> -2503121 -675590 594790 -240142</dbl></dbl>	<dbl> <dbl> -2503121 -6484.7694 -675590 -1723.4439 594790 1454.2543 -240142 -597.3682</dbl></dbl>	<dbl> <dbl> <dbl> -2503121 -6484.7694 1484.83656 -675590 -1723.4439 433.70051 594790 1454.2543 2012.58771 -240142 -597.3682 174.59279</dbl></dbl></dbl>	<dbl> <dbl> <dbl> -2503121 -6484.7694 1484.83656 8992 -675590 -1723.4439 433.70051 2491 594790 1454.2543 2012.58771 7700 -240142 -597.3682 174.59279 899</dbl></dbl></dbl>	<dbl> <dbl> <dbl> <dbl> <dbl> <dbl> -2503121 -6484.7694 1484.83656 8992 4011 -675590 -1723.4439 433.70051 2491 1002 594790 1454.2543 2012.58771 7700 100 -240142 -597.3682 174.59279 899 300</dbl></dbl></dbl></dbl></dbl></dbl>

Total Annual Expenditure: \$3,420,813

- •Staff Salaries: \$2,503,121 (73.21% of total expenses)
- •Ambulance Calls: \$675,550 (2nd highest expense)
- •Equipment Maintenance: \$242,142

Total Annual Revenue: \$645,000

•Ticket Sales: \$594,700

•Other Revenue Streams: \$50,210

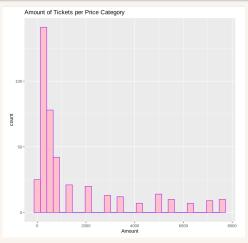
Key Insight: High staff salary costs dominate expenses, far exceeding revenue.

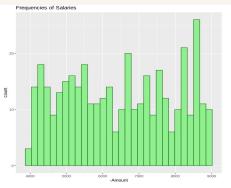
Strategic Cost & Revenue Optimization

- **✓ Reduce** redundant staff salaries.
- ✓ Lower ambulance costs via safety

measures & equipment upgrades.

✓ **Increase** ticket prices by 50%, add premium options, and implement injury protection plans.





Safety & Budget Plan: (1) Activity Incident Count Based Analysis

Allocating Budget for Improving Safety

Severity levels range from 0-10, with 8-10 being the incidences that require hospital transport.

Of the 1000 incidences, Snowboarding and Skiing contributes to 50%. 139 of the 1000 also required hospital transport (ambulances and rarely helicopters) 139 total cases. Climbing (40%), Skiing (27%),
Snowboarding (33%)Hiking & Mountain Biking (0%).
Climbing is high-risk. 35% of incidents required transports with severe injuries (Avg. severity: 7).

Climbing40% of fracture incidents requiring hospital transportSkiing18%Head injuries occur only in Climbing. Targeted safety improvements needed for Climbing infrastructure Focus on Climbing, Skiing, and Snowboarding infrastructure, equipment and safety gear. Reduce total injuries and prevent 8-10 high-severity cases, lowering costly hospital transport.

					A 110016. U A 10		
Activity	hospital	cases	risk_hospital	total_prop_hospital	total_prop_cases	average_response_time	severity
<chr></chr>	<dbl></dbl>	<int></int>	<dbl></dbl>	<dbl></dbl>	<dbl></dbl>	<dbl></dbl>	<dbl></dbl>
Climbing	56	158	35.44304	40.28777	15.8	14.37975	7.145570
Hiking	0	153	0.00000	0.00000	15.3	14.11765	3.738562
Mountain Biking	0	177	0.00000	0.00000	17.7	14.19209	4.700565
Skiing	37	247	14.97976	26.61871	24.7	14.29555	5.805668
Snowboarding	46	265	17.35849	33.09353	26.5	14.20000	6.279245

Injuries	Activity	hospital	cases	risk_hospital	total_prop_hospital	total_prop_cases	average_response	severity
<chr></chr>	<chr></chr>	<dbl></dbl>	<int></int>	<dbl></dbl>	<dbl></dbl>	<dbl></dbl>	<dbl></dbl>	<dbl></dbl>
Concussion	Skiing	10	84	11.90476	7.194245	8.4	14.23810	5.761905
Concussion	Snowboarding	18	83	21.68675	12.949640	8.3	14.21687	6.518072
Fracture	Climbing	34	88	38.63636	24.460432	8.8	14.51136	7.261364
Fracture	Hiking	0	77	0.00000	0.000000	7.7	14.11688	3.714286
Fracture	Mountain Biking	0	93	0.00000	0.000000	9.3	14.06452	4.827957
Fracture	Skiing	13	71	18.30986	9.352518	7.1	14.18310	5.788732
Fracture	Snowboarding	14	91	15.38462	10.071942	9.1	14.30769	6.230769
Head Injury	Climbing	22	70	31.42857	15.827338	7.0	14.21429	7.000000
Sprain	Hiking	0	76	0.00000	0.000000	7.6	14.11842	3.763158
Sprain	Mountain Biking	0	84	0.00000	0.000000	8.4	14.33333	4.559524
Sprain	Skiing	14	92	15.21739	10.071942	9.2	14.43478	5.858696
Sprain	Snowboarding	14	91	15.38462	10.071942	9.1	14.07692	6.109890

Injuries	hospital	cases	risk_hospital	total_prop_hospital	total_prop_cases
<chr></chr>	<dbl></dbl>	<int></int>	<dbl></dbl>	<dbl></dbl>	<dbl></dbl>
Concussion	28	167	16.766467	20.14388	16.7
Fracture	61	420	14.523810	43.88489	42.0
Head Injury	22	70	31.428571	15.82734	7.0
Sprain	28	343	8.163265	20.14388	34.3

Reducing incidents cuts expenses and can lead to revenue growth

Reduce incident cases and hospital transport cases

Cut expenses from ambulance calls (20% of expenses), lawsuits, on-site medical centre Allocate staff from onsite centre and patrol teams to tasks generating revenue Cut specialized costly staff needed, reducing otal expenses to staff salaries (73% of expenses)

Safety & Budget Plan: (2) Injury Severity Based Analysis

Key Insights

- 1.Activity Type Matters Hiking, Mountain Biking, Skiing, and Snowboarding lead to lower injury severity than the baseline activity. Protective Gear Effectiveness Unclear No significant difference in injury severity between those with or without protective gear. Further study needed on proper usage.
- 2.Minimal Impact of Weather: do not significantly affect injury severity, snowy conditions may slightly increase risk
- 3.Response Time is Critical Every 1-minute delay increases severity by 0.14 points. Faster emergency response is essential.

Analysis on Significant Variables

- •15.5 min response time is too long—faster triage & on-site medical support needed.
- Delayed hospital transport increases medical risks—enhance on-site care to reduce ambulance costs.
- •Protective gear enforcement is weak—improve gear policies & educate guests for injury prevention.

Recommendations

- •Improve response time logistics increase medical staff & enhance communication systems.
- •Investigate protective gear usage ensure proper use & differentiate gear types.
- Consider other missing variables experience level, safety measures, and terrain difficulty.

Linear Regression Model on Injury Severity

```
reg <- lm(Injury_Severity ~ Activity + Weather + Protective_Gear + Response_Time, incidents)
lm(formula = Injury_Severity ~ Activity + Weather + Protective_Gear +
Response_Time, data = incidents)
Residuals:
Min 10 Median 30 Max
-3.434 -1.257 -0.079 1.197 4.040
 (Intercept)
                                                                   0.29283 17.140 < 2e-16 ***
0.17517 -19.413 < 2e-16 ***
0.16816 -14.506 < 2e-16 ***
 ActivityHikina
                                              -3.40054
 ActivityMountain Biking -2.43938
                                                                  0.16816 -14.596 < 2e-16 ***
0.18209 -7.769 2.11e-14 ***
0.18046 -5.051 5.22e-07 ***
0.22070 -0.185 0.8537
0.18484 1.799 0.0738 .
0.17730 0.700 0.4843
0.17090 1.220 0.2229
0.11850 -0.210 0.8338
0.17090 0.0550
ActivityMountain Biking
ActivitySkiing
ActivitySnowboarding
WeatherRainy
WeatherSonny
WeatherSunny
WeatherWindy
                                              -1.41240
                                             -1.41240

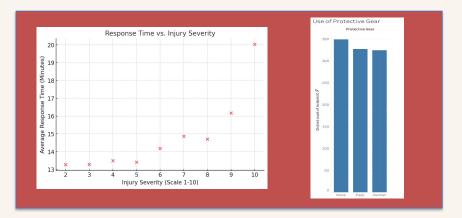
-0.91158

-0.04072

0.33084

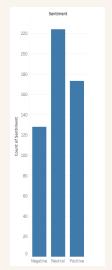
0.12403

0.20845
 Protective_GearNone
                                              -0.02487
 Protective GearPads
                                               0.01133
                                                                   0.12038 0.094
 Response_Time
                                              0.14225    0.01293    11.002    < 2e-16 ***
Residual standard error: 1.531 on 988 degrees of freedom
Multiple R-squared: 0.3901, Adjusted R-squared: 0.3834
F-statistic: 57.46 on 11 and 988 DF, p-value: < 2.2e-16
```



Safety & Budget Plan: (3) Consumer Demand Based Analysis

Overall Sentiment: Neutral





Key Analysis: Trail Safety Issues Dominate Negative Reviews

-

Reviews: Customers point to liability costs with poorly maintained trails. Slippery & uneven terrain reported frequently. Lack of clear signage and poorly maintained paths. Remote trails lack emergency access features.

<u>Plan</u>: Enhance signage and improve trail maintenance. Add emergency call buttons on remote trails. Mandate quality protective gear to reduce injury severity. Introduce crash mats in climbing zones to minimize fractures. Offer injury protection plans and coaching and priority rescue memberships. Safety training before going on slopes.

-

<u>Effect</u>: Reduce liability and ambulance costs. Faster response times with ski-patrol, and ambulance calls. Reduce incident count and injury severity. Increase customer trust and brand reputation.

Further gaps to fill

-

Reviews: Lower skill customers creating dangerous situations in higher difficulty slopes. Some demand for beginner friendly trails. Complaints of limited food options, overpriced food, and overpriced outdated lodges. Long wait times at ski-lifts.

<u>Plan</u>: Introduce more beginner friendly slopes to reduce need to <u>explore</u> other slopes. Introduce partnerships with local brands for dining options to ease upfront capital costs and satisfy guests. Market towards higher-spending clients with introducing corporate retreats . Introduce fast-pass VIP tickets.

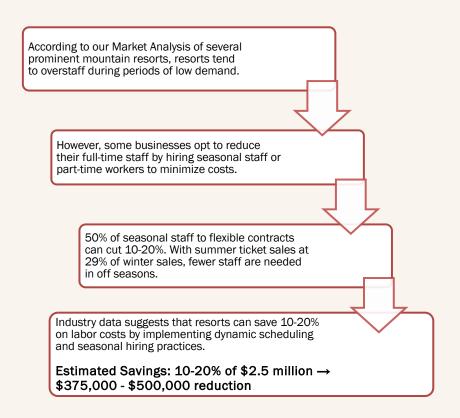
-

Effect: Reduce incident counts. Increase dining options that can be cheaper and more popular to guests. Increase total revenue by reaching higher capital clients and with premium pricing plans.

Overview of Recommendations



Business Review of Recommendation: Optimizing Workforce Efficiency



Analysis

Automation of Routine Tasks

- •Implement: Self-service kiosks, digital check-ins, Al chatbots
- •Impact: Reduces front desk/admin staff by 10-15%
- •Cost Savings: Automating 50-75% of customer interactions saves \$125,000 \$375,000 (5-15% of \$2.5M payroll)

Cross-Training of Staff

- •Strategy: Train employees for multiple roles (e.g., ski instructors in winter, hospitality in summer)
- •Impact: Reduces redundancies, minimizes seasonal hiring costs
- •Cost Savings: \$125,000 \$250,000 (5-10% of \$2.5M payroll)

Some cost-cutting measures (staff salary reductions, automation) may negatively affect **guest experience** or **employee morale**.

Solution: Introduce **contingency plans** for:

- Employee retention (incentives, seasonal contracts).
- Managing guest complaints regarding automation replacing human service.
- Emergency response backup if budget cuts affect safety measures.

Business Review of Recommendation: Injury Prevention Strategies

Projected Cost Savings From Safety Investments

Strategy	Estimated Cost Savings (\$)
Trail Signage & Safety Upgrades (~\$500 per improvement)	25,000
Emergency Call Stations (~\$500 per unit)	20,000
Soft Landing Zones & Crash Mats (~\$2,000 per area)	30,000

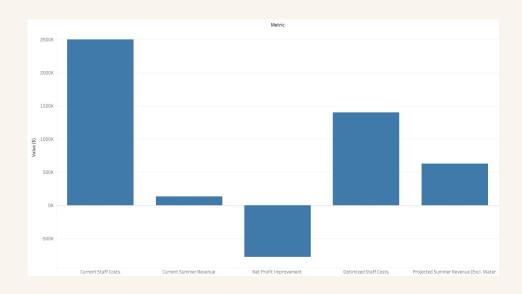
Projected Revenue From Injury Prevention Strategies

Strategy	Estimated Revenue (\$)
Protective Gear Rentals (\$50 per set)	75,000
Mandatory Safety Training (\$30 per session)	60,000
Guided Safety Tours (\$40 per person)	50,000
Total Revenue	185,000



Total Potential Financial Impact: \$265,000 (Revenue + Cost Savings)

Business Review of Recommendation: Expand Summer Potential Revenue



- Since summer ticket sales (\$134K) are only 29% of winter sales (\$460K), we need to maximize summer revenue by expanding offerings, increasing visitor numbers, and optimizing pricing.
- The team unanimously agrees with monetizing underutilized infrastructure in summer season.

Monetize Underutilized Infrastructure in Summer

- Mountain Biking Expansion: Convert ski lifts into bike lifts to create a downhill biking park.
- Revenue Streams: Offer bike rentals & guided tours at \$50-\$100 per rental/tour.

Optimize Pricing for Revenue Growth

- Dynamic Pricing: Increase ticket prices by \$10-\$20 on weekends, offer weekday discounts to drive demand.
- Membership Model: Introduce a \$250 "All-Access Summer Pass" for consistent revenue.
- Premium Upsells: Offer VIP experiences to maximize peak and off-peak pricing potential.

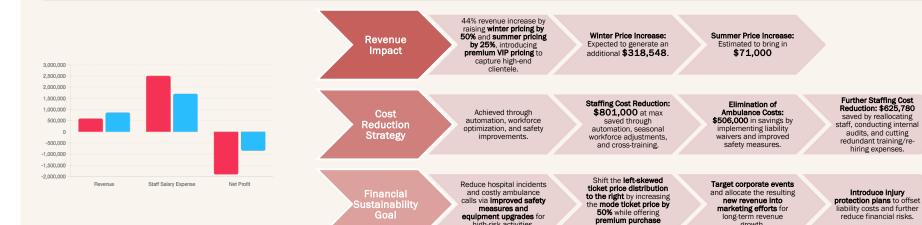
Monetize Unique Overnight Stays

- Luxury Glamping & Eco-Lodges: Offer premium accommodations priced at \$150-\$300 per night.
- Stargazing VIP Packages: Curate exclusive night experiences to attract high-income travelers, influencers, and couples.
- Targeted Upselling: Position these stays as exclusive, nature-immersive retreats to drive premium bookings.

Seasonal Events for Summer Revenue

- Music & Food Festivals: Ticket prices \$30-\$100, partnering with local breweries & musicians (inspired by Rig Sky Resort)
- Obstacle Races & Marathons: Entry fees \$50-\$200, targeting fitness influencers & corporate sponsorships
- Diverse Audience Appeal: Attracts tourists, adventure seekers, and event-goers, boosting off-

Financial Review & Optimization Strategy



By implementing these measures, the resort can significantly improve financial stability, reduce unnecessary costs, and capitalize on untapped revenue opportunities.

Metric	Current Situation	After Price Increase and staffcost reductions
Total Revenue	\$645,000	\$963,548
Staff Salary Expense	\$2,503,121	\$1,701,222.8
Net Profit	-\$1,908,331	-\$843,442.28

options.

growth.

Further Staffing Cost Reduction: \$625,780

saved by reallocating

audits, and cutting

redundant training/re-

hiring expenses.

Introduce injury

reduce financial risks

Implementation Analysis

high-risk activities.

Implementation Timeline

Short-Term Actions (0-6 months)

Automate routine tasks: Install selfservice kiosks, Al chatbots, and digital check-ins.

Begin workforce optimization: Train staff for multiple roles (e.g., ski instructors take on hospitality roles in summer).

Initiate safety improvements: Install grip-enhanced handrails, better signage, and mandatory protective gear policies.

Adjust pricing model: Increase winter ticket prices by 50%, summer by 25%, and introduce VIP packages.

Mid-Term Actions (6-12 months)

Optimize medical response: Improve triage, on-site medical support, and emergency response times.

Launch cost-cutting initiatives: Reduce ambulance expenses through injury prevention measures and implement seasonal staffing changes.

Implement corporate partnerships: Secure deals with travel agencies and event organizers to boost revenue.

Long-Term Actions (1-3 years) Expand premium offerings: Luxury winter experiences, guided VIP tours, and highend lodging.

Strengthen brand positioning: Invest in marketing to attract high-value customers.

Monitor financial performance: Track revenue growth, injury rate reduction, and cost savings.

Metric	Current Situation	After Price Increase and Cost reductions
Total Revenue	\$645,000	\$1,263,548
Total Expense	\$3,420,813	\$1,546,813
Net Profit	-\$2,775,813	-\$283,265

Implementation
Effects

Stakeholders: Financial Forecast and Plan Overview

Revenue Growth:

- Winter price hike → Additional \$247,000 revenue.
- Summer price hike → Additional \$71,000 revenue.
- VIP premium pricing → Higher profit margins.
- Brand Sponsorships & Corporate Retreats: Projected Revenue is \$150,000 seasonally.

Cost Savings:

- Workforce optimization → \$500,000 payroll reduction.
- Injury prevention measures → \$506,000 ambulance cost savings.
- Al-driven automation \rightarrow \$125,000 \$375,000 in savings.

Breakeven Point Projection: Expected to reach break-even point in 2.5-3 years.

Customer Satisfaction & Market Competitiveness

- •Better customer experience due to faster check-ins and premium services.
- •Enhanced reputation through improved safety and luxury experiences.
- •Stronger competitive positioning vs. Whistler, Aspen, and Vail Resorts.

Business Analysis

- Analyze major agents of revenue and expenses
- Monitor financial performance, track revenue, injury rate reduction

- Prime ticket pricing system with VIP tickets, fast-passes, multi-day passes, and memberships.

- Add low-cost safety fixtures for climbing like crash-pads
 Trail maintenance during peak season

Sources

- 1.Bootcamp Case Mountain Resort Industry Overview (Bootcamp Case Package 2025.pdf) (Bootcamp Case Package 2025.pdf) (Bootcamp Case Package 2025.pdf)
- 2.PitchGrade Ski Resort Competitors and Differentiators (Vail Resorts: Business Model, SWOT Analysis, and Competitors 2024 PitchGrade) (Vail Resorts: Business Model, SWOT Analysis, and Competitors 2024 PitchGrade)
- 3. The Hustle Economics of Ski Resorts (industry trends, consolidation, passes) (Powder and profits: the economics of ski resorts The Hustle) (Powder and profits: the economics of ski resorts The Hustle) (Powder and profits: the economics of ski resorts The Hustle)
- 4.OwnersOasis Ski Resort Revenue and Costs Analysis (<u>How Profitable Are Ski Resorts? OwnersOasis</u>) (<u>How Profitable Are Ski Resorts? OwnersOasis</u>) (<u>How Profitable Are Ski Resorts? OwnersOasis</u>) (<u>How Profitable Are Ski Resorts? OwnersOasis</u>)
- 5. Harvard Business School (Technology & Operations) Climate Change and Ski Resorts (What's a Ski Resort without Snow? Technology and Operations Management)
- 6.Aspen Skiing Company Sustainability Initiatives Ski Magazine News (Aspen Skiing Company Converts Methane from Coal Mine into Electricity)
- 7.Esri Climate Risk Report Impact of Warming on Ski Resorts (Ski Resorts Face Uneven Long-Term Outlook)
- 8.Guest Reviews of Peak Mountain Resort (provided text) (reviews.txt) (reviews.txt)
- 9.https://www.accesso.com/learn/best-practices-for-staffing-vour-ski-resort
- 10. https://www.shiftbase.com/glossary/seasonal-employment

Analysis Strategy Implementation Effects