Zip Line Attraction

Analysis of Survey and Recommendations

RFP #: 1.2

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Orange Team #1

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Executive Summary

You have contracted with us to provide recommendations regarding various options for zip line attraction in the Raleigh-Durham-Chapel Hill area of North Carolina. The second phase of the project is to analyze the results from the survey we designed and make recommendations to maximize park profit and attendance. Please see the following table below as a summarization of our recommendations.

Final Recommendations for Zip Line Park		
Factor	**Level**	**Description**
Location	2	SW Raleigh
Price	2	$20
Experience	2	Thrill Seeker
Other/ Attraction	3	Putt-Putt

Table 1: Four factors and individual levels with descriptions for the recommendations.

Analysis

To determine the proper recommendations, we built a logistic regression model. We used the blocking variable created during the design of the experiment stage which accounts for possible bias created by living different distances from the possible park locations. We also used all of the factors and levels recommended in the survey which excluded the "middle of the road" experience and "both arcade & putt-putt" other attraction. In order to determine which level for each factor had the greatest chance at increasing customer attendance and profit, we ran twenty hypothesis tests comparing the levels within a factor to each other. Each test had a null hypothesis that the means of the levels were equal. If the test showed that a statistically significant difference between the means existed we assessed the estimate provided. The experience was the easiest factor to make a recommendation on as there were only two levels to compare and the result for

the estimate was a negative value indicating in favor of thrill seeker. We followed the same logic to evaluate the location and other attraction experience. There were enough statistically significant differences among these hypothesis tests that we were able to evaluate all the magnitude and direction of the estimates. This led to our determination that the location in southwest Raleigh and putt-putt attraction were the top contenders to increase attendance among their respective factors. Finally, we had to make a judgment call regarding price. There was not a clear winner between prices $15 and $20 as the magnitude of the estimate was too low to draw a hard conclusion. Given that in our initial experimental design we had enough power to detect differences in all factor levels and there was no clear distinction between price level $15 and $20 in our analysis, it was clear to go forward with tickets at $20 to increase total profit. This concluded our analysis of the factor levels.

Conclusion

We settled on a logistic regression model to conduct analysis for the second phase of the project. After removing a single level from two of the options, we conducted twenty hypothesis tests to determine the optimal combination to maximize park attendance. We evaluated the results of each hypothesis test based on statistical significance and direction and magnitude of the estimate. This process allowed us to find clear levels among three factors and the analysis along with the goal of increasing profit aided us in determining the appropriate level of the fourth factor. The final recommendations are as follows: location in southwest Raleigh, the price of $20, the type of attraction is thrill-seeker, and the other attraction is putt-putt.

Appendix

A.1 - Source Code for Analysis

```
proc glm data=doe.part2_with_blocks;
        class  block location price experience other ;
        model will_attend =  block location price experience other;
* 5 locations creates 10 comparisons;
        estimate 'location 1 VS. 2' location 1 -1 0 0 0;
        estimate 'location 1 VS. 3' location 1 0 -1 0 0;
        estimate 'location 1 VS. 4' location 1 0 0 -1 0;
        estimate 'location 1 VS. 5' location 1 0 0 0 -1;
        estimate 'location 2 VS. 3' location 0 1 -1 0 0;
        estimate 'location 2 VS. 4' location 0 1 0 -1 0;
        estimate 'location 2 VS. 5' location 0 1 0 0 -1;
        estimate 'location 3 VS. 4' location 0 0 1 -1 0;
        estimate 'location 3 VS. 5' location 0 0 1 0 -1;
        estimate 'location 4 VS. 5' location 0 0 0 1 -1;
        * 4 prices creates 6 comparisons;
        estimate 'price 1 VS. 2' price 1 -1 0 0;
        estimate 'price 1 VS. 3' price 1 0 -1 0;
        estimate 'price 1 VS. 4' price 1 0 0 -1;
        estimate 'price 2 VS. 3' price 0 1 -1 0;
        estimate 'price 2 VS. 4' price 0 1 0 -1;
        estimate 'price 3 VS. 4' price 0 0 1 -1;
        * 1 experiences creates 2 comparisons;
        estimate 'experience 1 VS. 2' experience 1 -1 0;
        * 3 others creates 3 comparisons;
        estimate 'other 1 VS. 2' other 1 -1 0 0;
        estimate 'other 1 VS. 3' other 1 0 -1 0;
        estimate 'other 2 VS. 3' other 0 1 -1 0;
run;
quit;
```