Report: Main Product Pricing Strategy of ROBOSTPR Company

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Dear ROBOSTPR executives,

To help you develop your blocking spam calls product, I'm writing this report to illustrate my pricing strategy recommendation for you. I will present my pricing strategy by analyzing relevant data sets and statistical analysis.

Data

In this report, I will be using two datasets provided by the Consumer Inquiries and Complaints Division of the Federal Communications Commission, and the United States Census Bureau respectively. The first dataset shows all complaints to the Federal Communications Commission (FCC) from January 2021 to July 2022. It not only includes exact time, method, and main reason for complaining spam calls, but the locations of complainers are also provided. Regarding the second one, it is a subset of data from the American Community Survey (ACS), showing the ZIP code of respondents, and the median income, median age and total population corresponding to each ZIP code. I divided median income information into below average median income and above average median income based on the average median income of all ZIP Code areas: 90579.29 dollars. As for source reliability, the sources of both datasets are credible because they come from the official governmental website: FCC and US Census Bureau. They make the datasets based on the surveys they have done.

Analysis Strategy

Initially, we need to clean our data. In the FCC data, it collected 31979 complaint cases. However, since there is no 00000 ZIP code in California and it is meaningless to consider cases without including the way spam is connected with the individual, we need to filter out these missing data, which shows there are 29983 valid cases. Additionally, I correct the format of issue time for analyzing the time distribution of complaints, and in order to focus on the spam calls, I only analyze the complaint cases about phones. After that, we need to merge ACS data and FCC

data to analyze the demographic characteristics of people who get spam calls more frequently. I extract ZIP codes from ACS and then combine two datasets. I also filter out the rows that miss total population data since it is also meaningless to analyze the location with no population, which shows there are 29290 valid cases. Finally, I analyze the relationship between the number of spam calls cases and median age and median income condition by linear regression analysis.

Pricing Strategy

To analyze the time distribution of spam calls, we can find that most cases occur from 9 AM to 11 AM, and the number of complaints cases is also very large between 1 PM and 3 PM. Most complaints cases reported that they are disturbed by wireless spam calls. Compared with wireless spam calls, the Internet and wired spam calls are much less.

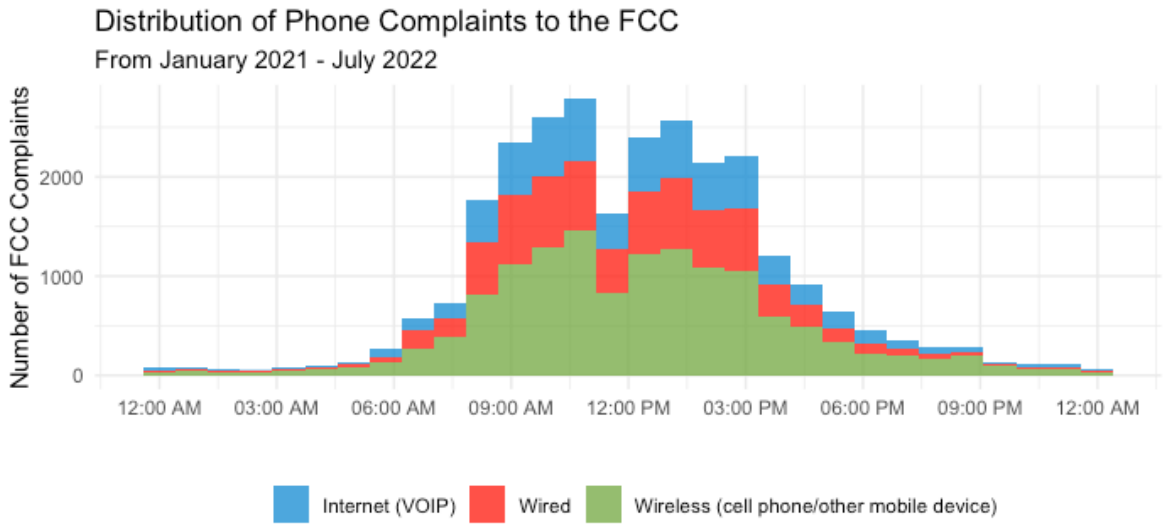

Figure 1

Based on data analysis, areas affected by spam calls most could be explored based on ZIP codes or city names. ZIP codes, 92116, 92130, 91354, 95129, and 90706, are the top five areas with the most spam calls cases between January 2021 and July 2022: there are 1178, 650, 594, 539, and 382 cases in these areas respectively. As for the top five city names with the most spam calls cases, they are San Diego (2776 cases), Los Angeles (1799 cases), San Francisco (1069 cases), San Jose (1054 cases), and Long Beach (928 cases). It is worth mentioning that the spam calls cases in San Diego are more almost 1000 cases than in Los Angeles, which is the largest increase.

Table 1: Top five ZIP codes with the most spam calls

City	ZIP Code	Number of Complaints	Income Status	Median Age
San Diego	92116	1178	Below Average Median Income	36.2
San Diego	92130	650	Above Average Median Income	39.0
Los Angeles	91354	594	Above Average Median Income	37.6
San Jose	95129	539	Above Average Median Income	41.2
Bellflower	90706	382	Below Average Median Income	34.6

Table 2: Top five cities with the most spam calls

City	Number of Complaints
San Diego	2776
Los Angeles	1799
San Francisco	1069
San Jose	1054
Long Beach	928

When it comes to the target demographic characteristics of our product, we will consider median income and median age of each ZIP code area. I use regression analysis to find out what's the effect of median age and median income condition of each ZIP Code area on the number of complaining cases, getting a conclusion that younger median age and above average median income condition will make more complaining cases. To be more specific, most complaints cases come from the ZIP Code areas with a median age between 35 and 42. Consequently, our target ZIP Code areas would generally have the condition of younger median age (optimally from 35 to 42) and above median income. The condition of younger median age and above median income allows us to make relatively higher pricing in these areas since people living there have a strong ability to make money and they are more willing to pay more for our service at a higher price than people living in lower median income level areas.

Besides, in ZIP Code areas with younger median age but below average median income condition and ZIP Code areas with above average median income condition but older median age, I suggest that we should make lower pricing in these areas because we can find that the number of complaining cases is not very high in these areas, which means the demand of our service in these areas is not as great as in our target areas. Finally, there is a relatively lowest

demand for our service in ZIP Code areas with below average median income condition and older median age. Therefore, we may make low pricing there to maximize our profit.

Table 3: Regression Results

	Dependent variable:
	Complaints Number
Median Age	-0.502^{***} $(-0.793, -0.212)$
Below Average Median Income	-11.752^{***} $(-16.806, -6.698)$
Constant	49.703^{***} $(36.772, 62.634)$
Observations	1,323
R^2	0.014
Adjusted R^2	0.013
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 4: Pricing Strategy

		Median Age	
		Younger	Older
Median Income	Below	Median Price	Low Price
	Above	High Price	Median Price

Conclusion

In this report, I provide some relevant information to help us to decide on a pricing strategy. We can conclude that most spam calls occur at 9 AM - 11 AM and 1 PM - 3 PM, and we also find ZIP Codes areas with the most spam calls between January 2021 and July 2022 in California. Moreover, we analyze the demographic characteristics, income and age, of our target areas and conclude a general pricing strategy based on our model. However, our model is limited since there may be some variables we did not consider significantly affecting the number of complaints. Besides, if we have more information about the relationship between the number of complaints and the number of people using any spam block service, we can make a more informed decision on our pricing strategy.