

## **Apprentice Chef, Inc. Insight Report**

### **Insight 1: Percentage of time a customer followed meal recommendations**

Customers with a higher rate in the percentage of time a customer followed meal recommendation tend to subscribe to “Halfway There” promotion. In our dataset, the subscription rate is 100% for all 784 customers who have more than 40% in this metric. They decided to follow the recommendations because they know that it will taste good. According to this article <https://www.earlytorise.com/5-reasons-love-wine-embmcbk/>, When you match the right wine with the right food, it enhances the flavor of your meals. We can make our recommendations more appealing to attract more customers to follow. It will increase the chance of subscription.

### **Insight 2: Working professional customers**

Customers that are working professionals tend to subscribe to the “Halfway There” promotion. We can know it from the registered email. From the dataset, the average subscription rate for professional, personal, and junk domain emails are 80%, 70%, and 42%. We can be sure that people who used professional domains are working professionals, not like personal and junk domains that might include students or retired workers. From this article <https://metro.co.uk/2019/07/30/red-wine-contains-ingredient-really-relieve-stress-anxiety-study-says-10486421/>, drinking wine helps relieve stress, which is a big problem for working professionals. We can contact some companies to promote our promotion to their employees to increase the subscription rate.

### **Recommendation**

We should find a way to get the customer’s occupation data. We can create a new data input box during the registration process to select the occupations. It will help us identify which customers are students, working professionals, or unemployed. Then, we can choose the contents that we will show to each specific group.

We can send more “Halfway There” ads to working professionals. For the other types of customers, we can make a special promotion that is more suitable for them than “Halfway There.” For example, student customers have different needs. They also do not have time because they are busy with studying, and they are price-sensitive because they do not have incomes. It might be better if we can provide them with healthy food at less price. If they eat healthily, they will get more good nutrition and able to study more. According to Chicago Tribune <https://www.chicagotribune.com/business/sns-health-nutrition-better-grades-story.html>, students who eat more fruits, vegetables, and protein with less fat did better on the literacy test than the students who eat foods with high sodium and fat.

We can create more campaigns to become more personalized. It will increase our upsell opportunity and boost up our revenue.

## Final Model

I decided to use Gradient Boosting by adjusting hyperparameters as follow

```
learning_rate = 0.08,  
max_depth    = 1,  
subsample    = 0.7,  
n_estimators  = 170,  
random_state  = 222
```

Then, I predicted the data by using `.predict_proba()`, and calculated the score by using `.score()` and `roc_auc_score()`

```
Training accuracy : 0.816  
Testing accuracy  : 0.809  
AUC Score        : 0.895
```