Chow Hound: Food for Thought[1]

Case questions require the following auxiliary data files, available on BB.

- *Orders.txt*

Please write brief responses to be turned in on BB at the end of class, and be prepared to discuss and present your work with the class. You are free to work in teams and use the Internet, but must write up your own solutions and create your own excel files.

Case Questions:

Hierarchical Clustering

1. Using all the original variables EXCEPT JoinDate and adding a new variable for the time since the member joined, build a hierarchical clustering model. (Use the Ward method and standardize the data.) How many clusters would you suggest using? Justify your response. Include the picture of the full dendogram.

2. Next, choose 7 clusters. Interpret each of the clusters in your model. Give them a shorthand name.
   Hint: You may want to generate the coordinate plots or export your data to Excel and use a Pivot Table to study each cluster.

3. We included "Spending" in the above analysis, but "Spending" is the sum of the cuisine amounts in the different variables. Some might argue then that we're "double-counting" the effect of spending. Refit a hierarchical clustering using the same variables but do not include "Spending." Compare and contrast the resulting segmentation to the one in Q2 qualitatively and quantitatively.

4. **(Optional:)** Fit a hierarchical clustering *without* standardizing. (**Warning**: This is generally a bad idea in practice! This is for educational purposes!)
   a. How many clusters do you think there are now? Interpret each of the new clusters.
   b. Are the clusters significantly different than in part 2? Compare/contrast these segments to those in Q2 qualitatively and quantitatively.
   c. Do you think your analysis in Q2 or in this Question is more useful Joan and Harry? Justify your response from the output.

[1] This case was developed for USC Marshall's BUAD 425 by Prof. Vishal Gupta.

K-Means

5. Using all of the original variables EXCEPT JoinDate, but including your new "Time" variable, form K-means clusters for clusters between 4 and 10. How many clusters do you think you should use? Justify your response quantitatively.

6. Next, choose 9 clusters. Interpret each of the clusters in your model. Give them a shorthand name.
   Hint: You may want to generate the coordinate plots or export your data to Excel and use a Pivot Table to study each cluster.

Towards a Recommendation
(*Be prepared to present your responses to these questions to the class.)*

7. Compare the clusters you obtained from standardized hierarchical clustering and k-means with 9 clusters. In particular, can you easily map from one set of clusters to the other? Specifically, if a customer is in Cluster 1 according to the hierarchical clustering method, what cluster (or clusters) are they MOST LIKELY in according to k-means? What about if they are in Cluster 2 according to hierarchical clustering? Repeat for each cluster.

8. Based on your response to the previous questions, which clusters do you think are most significant to the business? What customer segments should Harry and Joan think about when brainstorming new business plans?

9. Based on your analysis, do you agree with Harry's claim that most of Chow Hounds customers are college students? Justify your response.

10. Which types of restaurants do you think Chow Hound should target for new partnerships? Justify your response quantitatively.

11. Joan is proposing moving from their current pricing (a flat percentage of 10% on all transactions) to a flat charge of $1.50 per order. How much money do you expect to gain/lose in each of the clusters identified in part 2 under the new pricing? How much money overall?

12. Do you think they should change pricing?

13. Based on your segmentation, describe two possible interventions the business might take to improve revenues.