

## ASSIGNMENT 4

- Grade: 10 Points (converted to 12% of the Total Grade)
  - Deadline: **11PM on May 13** (Thursday) PT
  - Submission Format: PDF or DOCX file
  - **Submit on CANVAS** ("Assignment" Tab)
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### Question 1: Dimension Reduction (10 points)

**Part I.** Use the data Brand\_Valuation.jmp.

- 1) Subset the data to **Cars**
- 2) Conduct a PCA on 48 'perceptual' attributes.  
*How many components/factors should you retain? (eigenvalue > 1)?* \_\_\_\_\_  
*How much of the total variance (information) is retained by keeping N Components (your answer to the previous question)?* \_\_\_\_\_
- 3) Conduct a **Factor Analysis** using "Principle Component" method and retaining the number of factors you chose.
- 4) Interpret the Factors. Put your chosen names for the first 3 Factors:  
*Factor 1:*  
*Factor 2:*  
*Factor 3:*

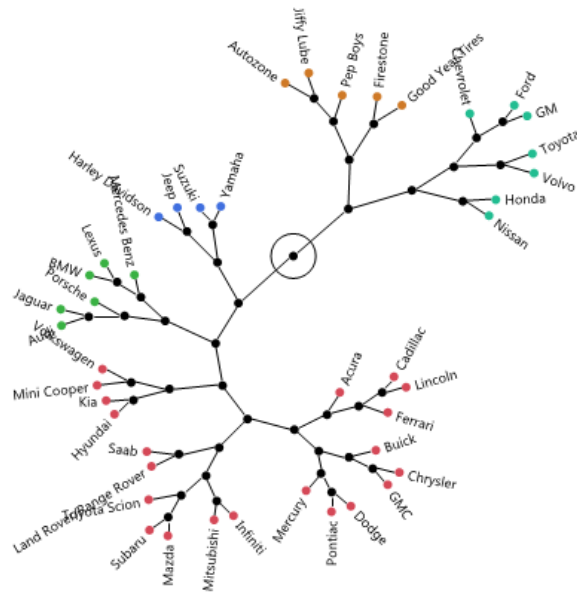
**Also rename these in your data.**

- 5) Save the "rotated components" to data.

### **Part II.**

- 6) Conduct a Hierarchical Cluster Analysis of Brands using
  - a. the following variables: Rotated Components from Step 5 + Total User + Total Preference (in the "Outcome" folder)
  - b. Save 5 Clusters to your data

7) Create a Constellation Map similar to below:



8) Compute average of “Total\_User\_Pct” by Segment/Cluster. *Which segment has the highest average “Total\_User\_Pct”?*  
 Segment # \_\_\_\_\_

### **Part III.**

9) Run a regression with “Brand\_Asset\_C” as dependent variable (in the “BAV” folder) and the saved Factor Scores as predictors. *What is the R-square of this regression?*  
 R-square: \_\_\_\_\_

10) Create a Perceptual Map. Use Factor 1 & Factor 2 as two axis and color brands by “Cluster”. Size the brands by “Total Preference Pct” and show the labels.