***Background:***

Traditionally the small car market in France was divided into categories around that attributes of the cars: smaller than 360cm (Type-A, about 6% of the market) and larger than 360cm (Type-B).  The large cards themselves were divided into compact (Basic-B, about 40% of the market), improved driving dynamics (Trend-B, about 52% of the market), and luxury/sports derivatives (Luxury-B or Sports-B, about 2% of the market).  The customer base was differentiated as follows:

|  |  |
| --- | --- |
| **Customer Group** | **Major Needs** |
| **Middle-aged buyers**  **Singles**  **Families**  **Women** | Safety, reliability and value  Individuality and personality  Functionality, space and reliability  Combination of all factors, value |

The Renault Twingo was launched with great success in European car market in the 1992 gaining a market share of 8.9% and becoming the third best-selling model in the small car market in France.  In response Ford has decided to launch a new second small car, the Ford Ka, alongside its existing Ford Fiesta.  The Ford Fiesta was its best-selling car.  Ford is concerned that the success of the Twingo demonstrates that the market is changing from traditional small car buyers – singles, income constrained people, and multi-car households.  Ford has undertaken a market research study to understand the motivations and behaviors of a large number of potential small car buyers.

***Instructions:***

The questions for this exercise are based upon the assigned reading for this class, Ford Ka.  Please complete this reading before answering these questions.  Additionally, links for the dataset is here: (either as Excel spreadsheet, CSV or zip)

[FordKaData.xlsxPreview the document](https://canvas.cmu.edu/courses/9526/files/3508791/download?wrap=1)

[FordKaData.csvPreview the document](https://canvas.cmu.edu/courses/9526/files/3508789/download?wrap=1)

[FordKaDemographicData.csvPreview the document](https://canvas.cmu.edu/courses/9526/files/3508794/download?wrap=1)

[FordKaPsychographicData.csvPreview the document](https://canvas.cmu.edu/courses/9526/files/3508790/download?wrap=1)

[FordKaQuestions.txtPreview the document](https://canvas.cmu.edu/courses/9526/files/3508792/download?wrap=1)

[data.zip](https://canvas.cmu.edu/courses/9526/files/3508788/download?wrap=1)

The R script to perform a k-means cluster analysis is also provided here (the first one is simplified, while Extended version includes additional code to generate many cluster solutions):

[FordKa\_Analysis.R](https://canvas.cmu.edu/courses/9526/files/3508773/download?wrap=1)

[FordKa\_Analysis\_Extended.R](https://canvas.cmu.edu/courses/9526/files/3508774/download?wrap=1)

For those that are new to R and would like some more guidance please see these hints:

[FordKa\_Analysis\_Demo.pdfPreview the document](https://canvas.cmu.edu/courses/9526/files/3508795/download?wrap=1)

This exercise is to be completed in your group as listed on Canvas.

Please provide a clear, concise, and well organized essay that addresses at least the following questions.  You are free to address other issues in the case as well.  The intent of the assignment is to have you think critically about the business problem faced in the case and how it can be solved through data mining.  Analyze the quantitative material in the case to support your answers.  Spend most of your time in defining and defending your recommendation for what should be done.

Good answers may require assumptions of facts that may not be presented in the case.  You are welcome to make these assumptions, but please state these assumptions and briefly justify why that are reasonable.  Also, you may use whatever resources you can locate to provide further information about this industry or the web in general.  Please reference your sources.

Your response must be typed, double spaced, with one-inch margins, and a 10 to 12 point font size, and must be a PDF file.  This writeup must not exceed 3 pages in length.  You may attach exhibits, tables, and/or graphs to support your arguments.  These supporting materials must be referenced in the text and do not count toward the 3 page limit.

***Required:***

1. How did Ford (and car manufacturers in general) segment the overall car market? What was the typical small car marketing strategy in the past? Is the existing segmentation approach still applicable?
2. Using the script provided what does the cross-tabulations for PreferenceGroup and Q1 reveal about the relationship between this question and the preference for the Ford Ka? (The code values are defined in the FordKaData.xlsx spreadsheet.)
3. Using the script provided implement a segmentation scheme using k-Means Clustering using only the psychographic data. An example solution using a k=3 solutions is given. Explain your clustering solution using the Centroids (the averages of the questions). (See the lecture notes and separate hints posted for suggestions on performing this analysis.)
4. Using the script provided implement a segmentation scheme using k-Means Clustering using only the demographic data. An example solution using a k=3 solutions is given. Explain your clustering solution using the Centroids (the averages of the questions). (See the lecture notes and separate hints posted for suggestions on performing this analysis.)
5. Using your result from question #3 and #4 above which cluster analysis would you recommend? Which segment would you recommend that Ford Ka target? Support your answer by looking at the cross-tabulation of PreferenceGroup and your cluster solution. What advertising messaging would you suggest based upon your analysis?