

Ford Ka Case

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Question #1: In the context of the case, which takes place in the 1990's, the small car market had begun to change, warranting car manufacturers to revisit the methods they traditionally used to segment the market. Traditional market segmentations focused on consumer demographic features, with income and age being the primary features used, and family size being a common secondary feature. In the small car category, the target buyers were primarily low income and younger.

The market was changing, however, with new trends being seen such as more women entering the job market, average family size decreasing, rising fuel costs, and finally, traffic and parking challenges becoming front-of-mind concerns. All of these changing dynamics meant that small car manufacturers had to shift away from the premise that demand was driven by single, cost-conscious, young consumers.

A new segmentation approach would be needed, driven by an "Attitudinal segmentation"¹ strategy that focused on consumer lifestyle and behavior. An example of how this change in strategy was implemented was that car manufacturers had to update their product categories from being defined by size, engine, and price-point² to more psychographic descriptors as seen in Exhibit 1.

Question #2: Please refer to Exhibits 2A and 2B which we designed as a result of our data exploration:

- Preference Group 1 (Chooser): The heatmap (Exh. 2A) and bar plot (Exh. 2B) reveal a high tendency towards trendy cars, with most responses at the top of the agreeableness scale. Marketing for this group should highlight the latest trends and styles associated with the Ford Ka.
- Preference Group 2 (Non-Chooser): The plots indicate a moderate attraction towards car trendiness, with preferences spread across the middle ratings. For this group, advertising should focus on a balanced message that presents the Ka's trendy features alongside other attributes.
- Preference Group 3 (Middle): Despite being termed 'Middle', this group leans strongly towards trendy cars, similar to the Ka Choosers, but without complete disregard for the lower end of trendiness. Marketing to this group can mix messages of trendiness with the overall value proposition of the Ford Ka.

¹ Ford Ka (B),: The Market Research Problem, Insead, page 3

² Ford Ka (B),: The Market Research Problem, Insead, page 5

In summary, the visual data suggests the use of targeted marketing strategies for each preference group with the following points of emphasis: trendiness for the Ka Choosers, a mix of qualities for the Middle group, and a broader range of features for the Ka Non-Choosers.

Question #3: When selecting the optimal k-value to be used for the project, we tried the elbow method, silhouette method and gap-statistic method (Exhibit 3A). The three methods provided us with different optimal k-values of 5, 2, and 8 respectively. To further select k-value, we also produced the plots of Within-SS, Between-SS, and R-squared for k-means (Exhibit 3B). Using the "Honey Stick" method, we decided to choose a k-value of 5 as there is a significant kink after k-value of 5 for the analytic plots.

After analyzing the 5 clusters created using the k-means method, we are able to form the following insights regarding the clusters by comparing the characteristics of individual clusters with the centroids. This comparison can be seen in Exhibit 3C. The 5 demographic clusters are as such: (i) Woman (ii) Older Man (iii) Young Man (iv) Family (v) New User. The profile of a prototypical member of each cluster is in Exhibit 3D.

From our analysis, we have decided that the focus of our marketing should be on women, as it not only is the largest cluster with 28% of population, but also has the greatest interest in FordKa, with 59% interested in purchasing the model (Exhibit 3G).

Question #4: When selecting the optimal k-value to be used for the project, we tried the elbow method, silhouette method and gap-statistic method (Exhibit 4A). The three methods provided us with the same optimal k-values of 4. We also produced the plots of Within-SS, Between-SS, and R-squared for k-means (Exhibit 4B) and confirmed a k-value of 4 is optimal as there is a significant kink after k-value of 4.

For the 62 questions, we categorize them into eight major themes: Appearance, Function, Price, Easy Control, Environment, Small Car Preference, Brand and Service, and Personalization. The categorization method is determined based on the content and nature of the questions.

After analyzing the 4 clusters created using the k-means method, we are able to form the following insights regarding the clusters by comparing the characteristics of individual clusters with the centroids. This comparison can be seen in Exhibit 4C. The 4 psychographics clusters are as such: (i)

Pragmatic Shopper (ii) Budget-Minded Buyer (iii) Feature Enthusiast (iv) Urbanite. The profile of a prototypical member of each cluster is in Exhibit 4D.

From our analysis, we have decided that the focus of our marketing should be on Urbanite, as it not only is the largest cluster with 31% of population, within this group, it also has the greatest combination of individuals around 84% who have expressed interest or have the potential to be interested in purchasing Ka model (Exhibit 4E).

Question #5: The demographic targeted cluster (women) constitutes 28% of the total population with 70 individuals, while the psychographic cluster (urbanite) comprises 31.2% with 78 individuals. In the demographic cluster, 71% show interest or neutrality towards the Ka model, and in the psychographic cluster, it's 83%. Based on these metrics, we recommend targeting the Urbanites for Ka marketing.

However, it is important to note that the demographic clusters and psychographic clusters are not at odds with each other, and we can combine both clusters for a more comprehensive analysis. Out of the 20 possible clusters, we have shortlisted the following top 5 clusters based on population: (i) Budget-Minded Woman (10%), (ii) Urbanite Young Man (8%), (iii) Urbanite Woman (8%), (iv) Budget-Minded Family (7%), (v) Pragmatic Woman (6%). Out of these clusters, Urbanite Women has the highest percentage of Ka Choosers, at 67% (Exhibit 5A). This corroborated our previous analysis, combining the top choices for demographic cluster and psychographic cluster. The typical customer profile can be seen in Exhibit 5B.

In terms of advertising, the analysis suggests a messaging strategy that is targeted towards the urbanite female market. The psychographic profile should respond well to messaging that emits the characteristics of trendiness, confidence, and ambition. A few slogans that can represent such a strategy are: *"Ford Ka...a small car made for women with big ambitions,"* or *"Ford Ka...its go time"* or *"Ford Ka...I never stop, and neither does my car."* As a potential *brand ambassador* we would suggest Zendaya Coleman, a cultural icon that aligns with the Ford Ka's target audience through her fashion influence and social activism, and boosting campaign reach with her strong social media presence. Some of the visual cues that would support his message are included in Exhibit 5C.

Appendix

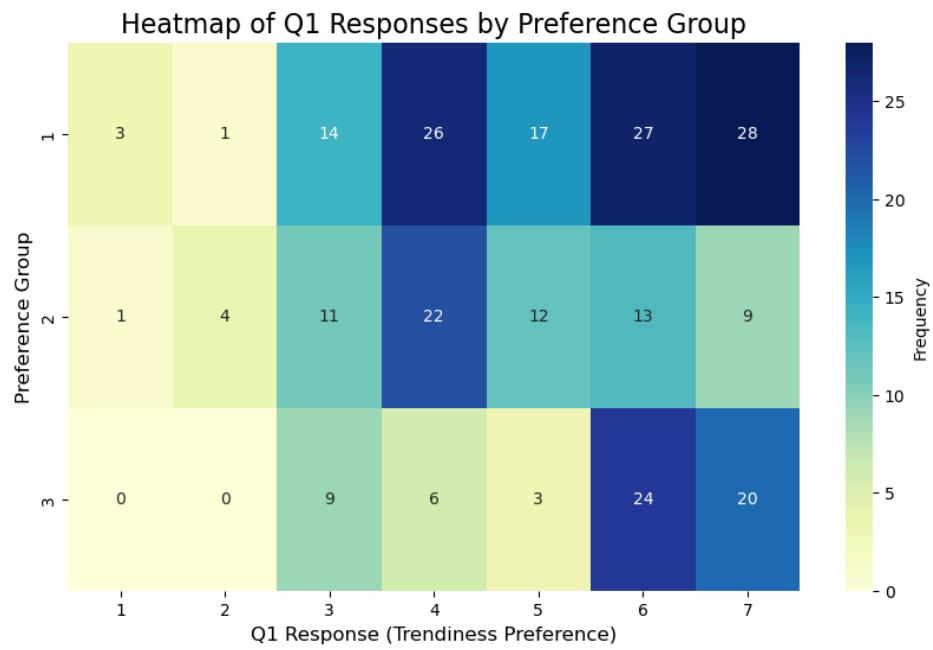
Exhibit 1: Product Categories of the Small Car Market in France

Emerging Product Categories in the Small Car Market in France

| Category | Description | Examples |
|----------------------|---|---|
| A | Practical ‘run-arounds’; less than 360cm long. | Fiat Panda, Fiat Cinquecento, Rover Mini, Seat Marbella |
| Basic-B | Compact, stylish, good value, manoeuvrable urban cars; less than 360cm long. | Citroen AX, Lancia Y, Nissan Micra, Peugeot 106, Renault Twingo, Rover 100 |
| Trend-B | Improved driving dynamics; levels of equipment previously offered only on larger cars; 360cm to 400cm long. | Ford Fiesta, Fiat Punto, Opel Corsa, Peugeot 205, Renault Clio, Volkswagen Polo |
| Other-B ¹ | Luxury and sports derivatives; 360cm to 400cm long. | Mercedes A-Class, Renault Clio Baccara, Peugeot 205 GTI |

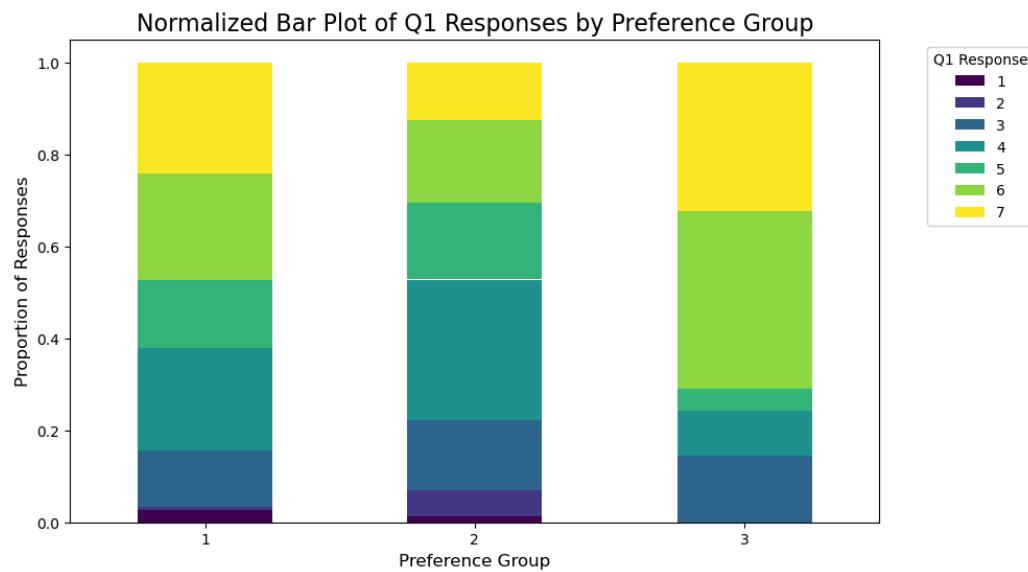
¹ The Other-B sub-category also overlapped with small sports coupes (e.g., Opel Tigra) and small sports utility vehicles (e.g., Toyota RAV4).

Exhibit 2A: Visualization of Q1 Responses by Preference Group



- This heatmap shows the frequency of responses across different preference groups for Q1 (desire for a trendy car).
- The numbers in each cell represent the count of responses for each combination of preference group and Q1 response.
- The color intensity represents the frequency, with darker colors indicating higher frequencies.

Exhibit 2B: Visualization of Q1 responses by Preference Group

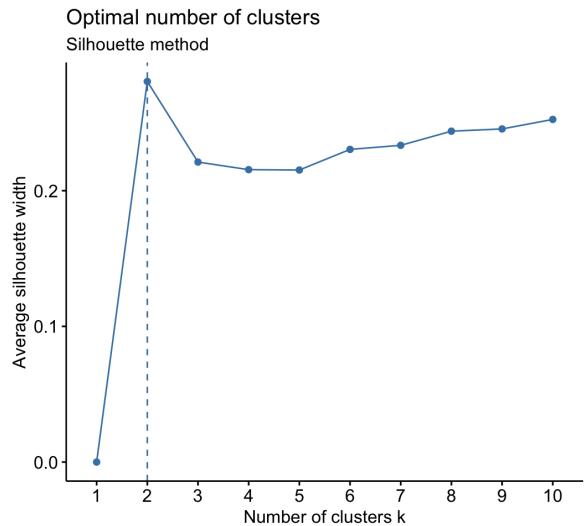
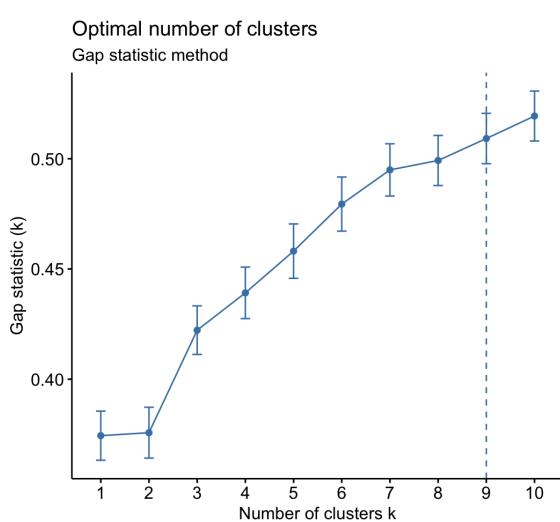
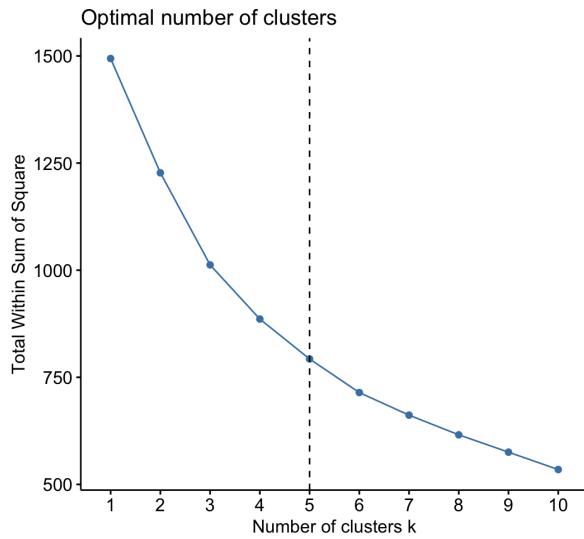


- This bar plot is normalized, meaning that the height of each color segment in the bars represents the proportion of each Q1 response within each preference group.
- The colors correspond to the Q1 responses, with each color representing a different response from 1 to 7.

Based on the above 2 images, we can infer the following:

- Preference Group 1 (Ka Chooser) has a higher frequency of responses indicating a higher agreeableness for wanting a trendy car (responses 5 to 7).
- Preference Group 2 (Ka Non-Chooser) has a more even distribution across the responses, with a notable frequency for response 4.
- Preference Group 3 (Middle) has the highest frequencies for responses 6 and 7, indicating a strong preference for trendiness in this group.

Exhibit 3A: Optimal k values using Elbow method, Silhouette Method, and Gap Statistic Method

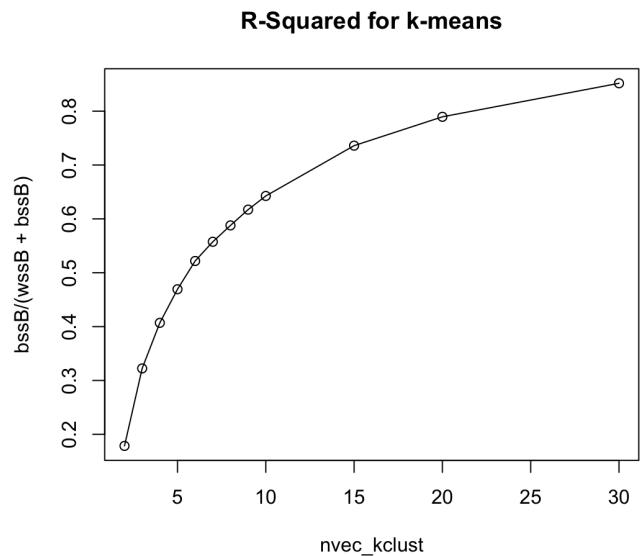


Optimal k-value using different methods (vertical line representing optimality):

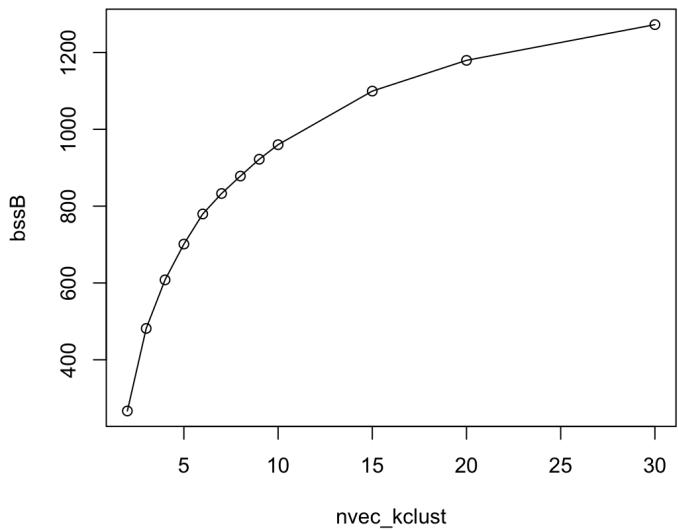
- Elbow Method: k-value = 5
- Silhouette Method: k-value = 2
- Gap-statistic Method: k-value = 9

We ultimately decide to choose a k-value of 5, as a k-value of 2 provides us with insufficient information regarding cluster separation, and a k-value of 9 results in clusters that are more nebulous and harder to interpret.

Exhibit 3B: Analytical Plots supporting optimal k-value of 5



Between SS for k-means



Within SS for k-means

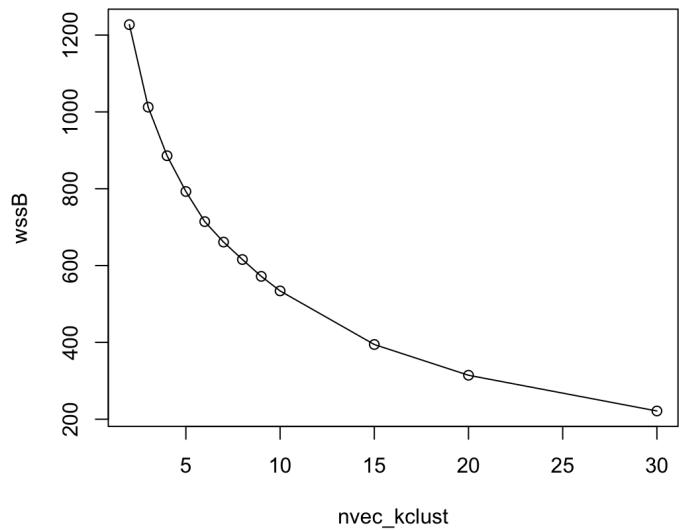


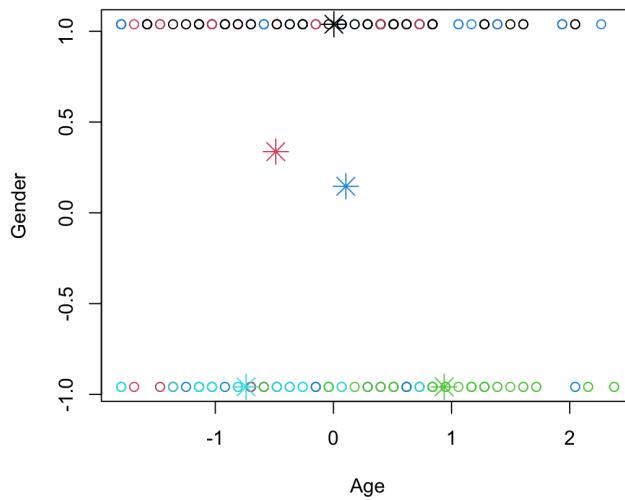
Exhibit 3C: Comparison of Demographic Clusters with Centroid

| Cluster | Age | MaritalStatus | Gender | NumberChildren | IncomeCategory | FirstTimePurchase | Description |
|---------|-------|---------------|--------|----------------|----------------|-------------------|-------------|
| 1 | 0.00 | -0.03 | 1.04 | -0.48 | -0.08 | 0.42 | Woman |
| 2 | 0.94 | 0.20 | -0.96 | -0.51 | 0.52 | 0.42 | Older Man |
| 3 | -0.74 | -0.05 | -0.96 | -0.47 | -0.46 | 0.42 | Young Man |
| 4 | 0.10 | -0.11 | 0.15 | 1.70 | 0.19 | 0.42 | Family |
| 5 | -0.49 | -0.01 | 0.34 | -0.08 | -0.23 | -2.39 | New User |

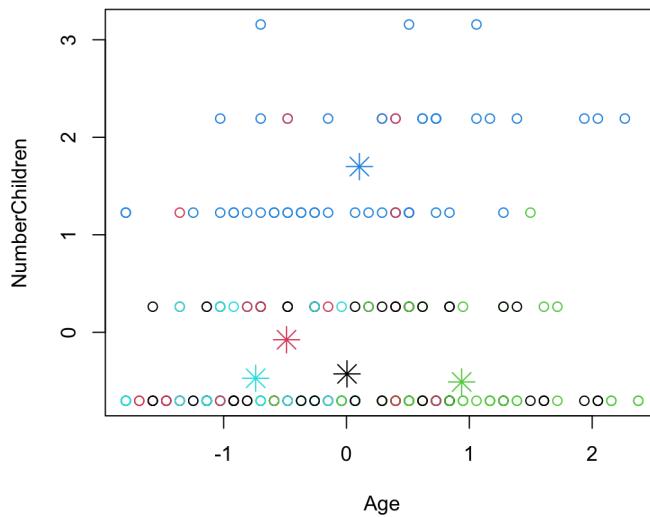
The above table shows the deviation from centroid for the 6 demographic criteria of each cluster.

Legend (The asterisk represents the centroid for the particular cluster.)

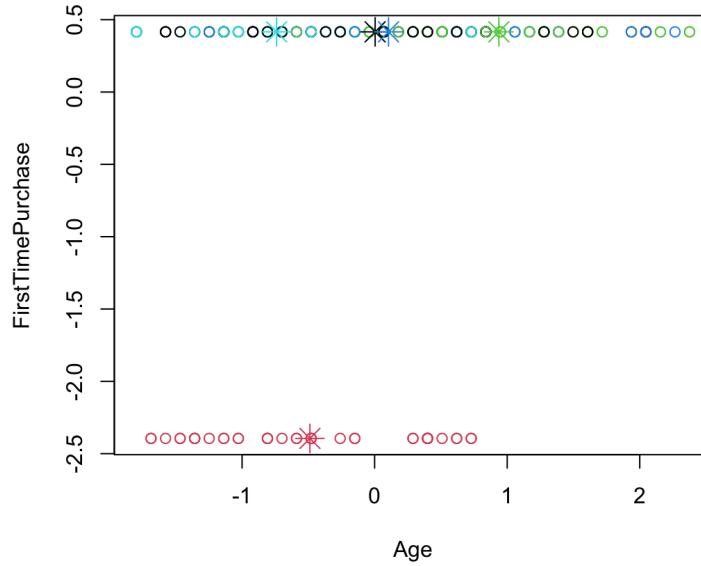
- * Group 1: Woman
- * Group 2: Older Man
- * Group 3: Young Man
- * Group 4: Family
- * Group 5: New Users



The plot above shows the distinctions of Clusters 1,2 and 3 based on Gender and Age. We can see that 3 distinct groups (women, young men and older men) are created.



The plot above shows the distinction of Cluster 4 based on the number of children. As Cluster 4 has significantly more children than the other clusters, we name this cluster “Family” to represent car users who utilize car for family purposes.



The plot above shows the distinction of cluster 5 based on the first time purchase of cars. Cluster 5 are new users of cars.

Exhibit 3D: Profile of Prototypical Customer in each Demographic Cluster

Cluster 1 (Woman): Karen

Karen is a 40 years-old married woman with no children. She earns \$200,000 to \$250,000 a year, and has been purchasing and using cars before.

Cluster 2 (Older Man): Ivan

Ivan is a 47 years-old married man with no children. He earns \$200,000 to \$250,000 a year, and has been purchasing and using cars before.

Cluster 3 (Young Man): Alan

Alan is a 31 years-old married woman with no children. She earns \$100,000 to \$150,000 a year, and has been purchasing and using cars before.

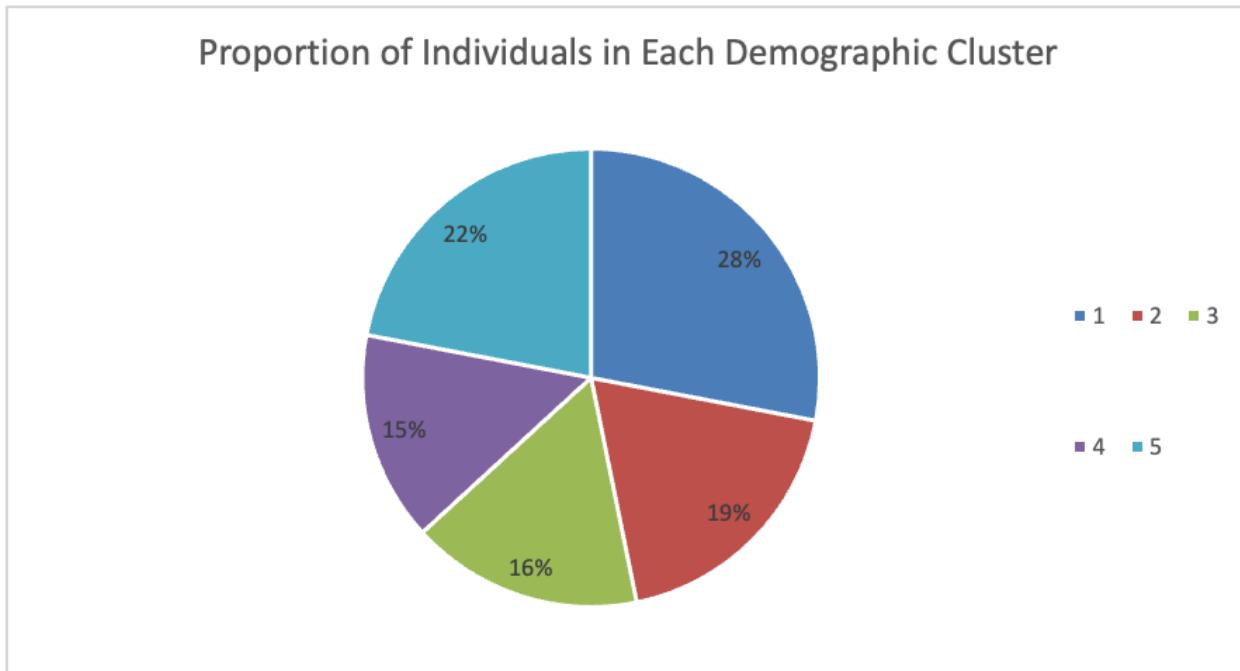
Cluster 4 (Family): Jessica

Jessica is a 43 years-old married woman with 3 children. She earns \$200,000 to \$250,000 a year, and has been purchasing and using cars before.

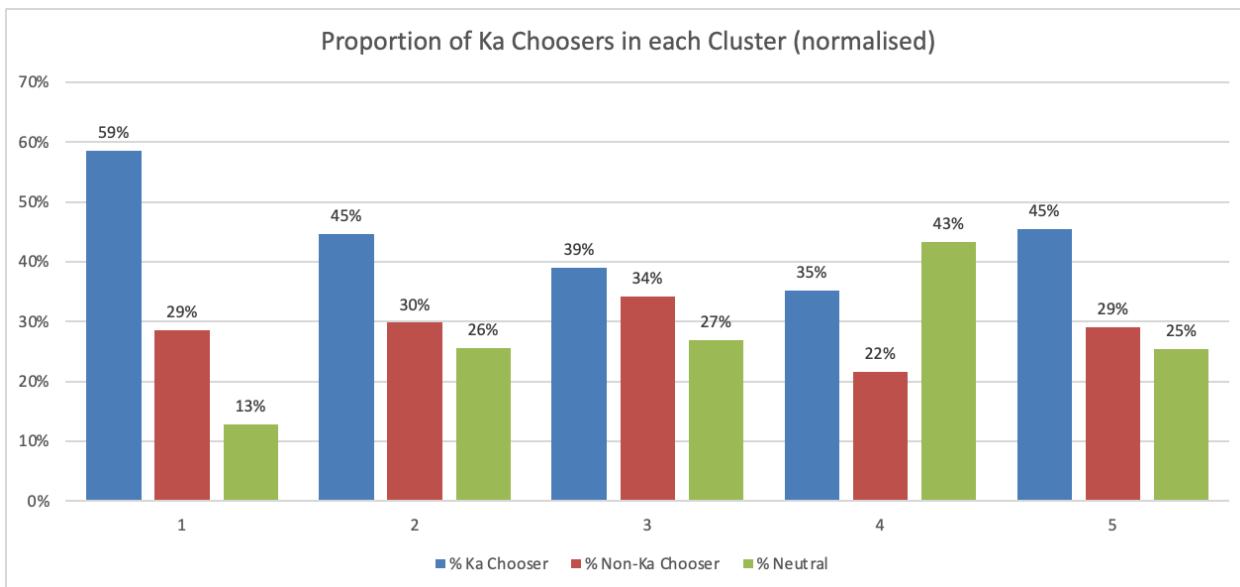
Cluster 5 (New User): Jane

Jane is a 29 years-old single woman with one child. She earns \$150,000 to \$200,000 a year, and has never purchased any car before.

Exhibit 3E: Data Visualization of individual Demographic Clusters

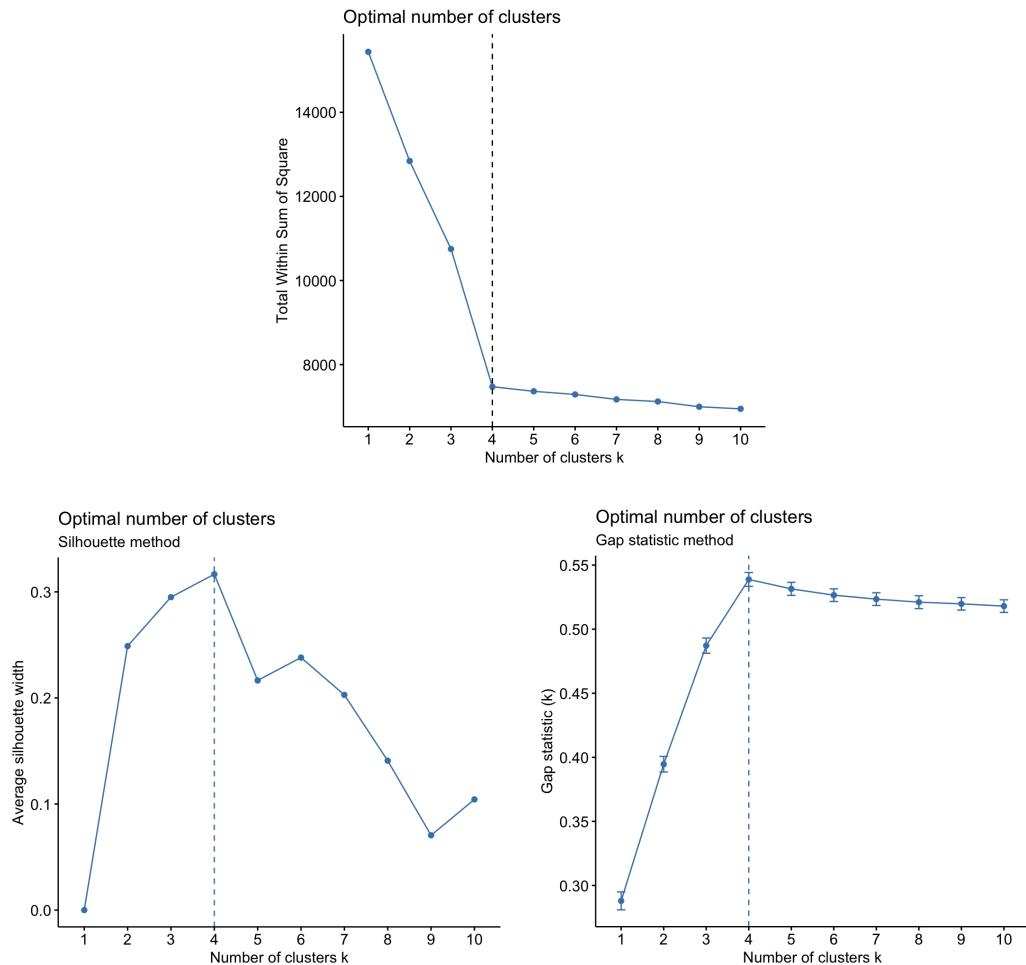


Cluster 1 (Woman) is the largest cluster, comprising 28% of total respondents (70). Targeted marketing to this demographic cluster will be beneficial as it will mean targeting the most individuals.



Furthermore, Cluster 1 (Woman) also has a higher willingness to choose Ka, at 59% of respondents. Hence, targeted marketing to them will be more effective.

Exhibit 4A: Optimal k values using Elbow method, Silhouette Method, and Gap Statistic Method



Optimal k-value using different methods (vertical line representing optimality):

- Elbow Method: k-value = 4
- Silhouette Method: k-value = 4
- Gap-statistic Method: k-value = 4

We ultimately decide to choose a k-value of 4, as all analytical tools provide that as the optimal value of k.

Exhibit 4B: Analytical Plots supporting optimal k-value of 4

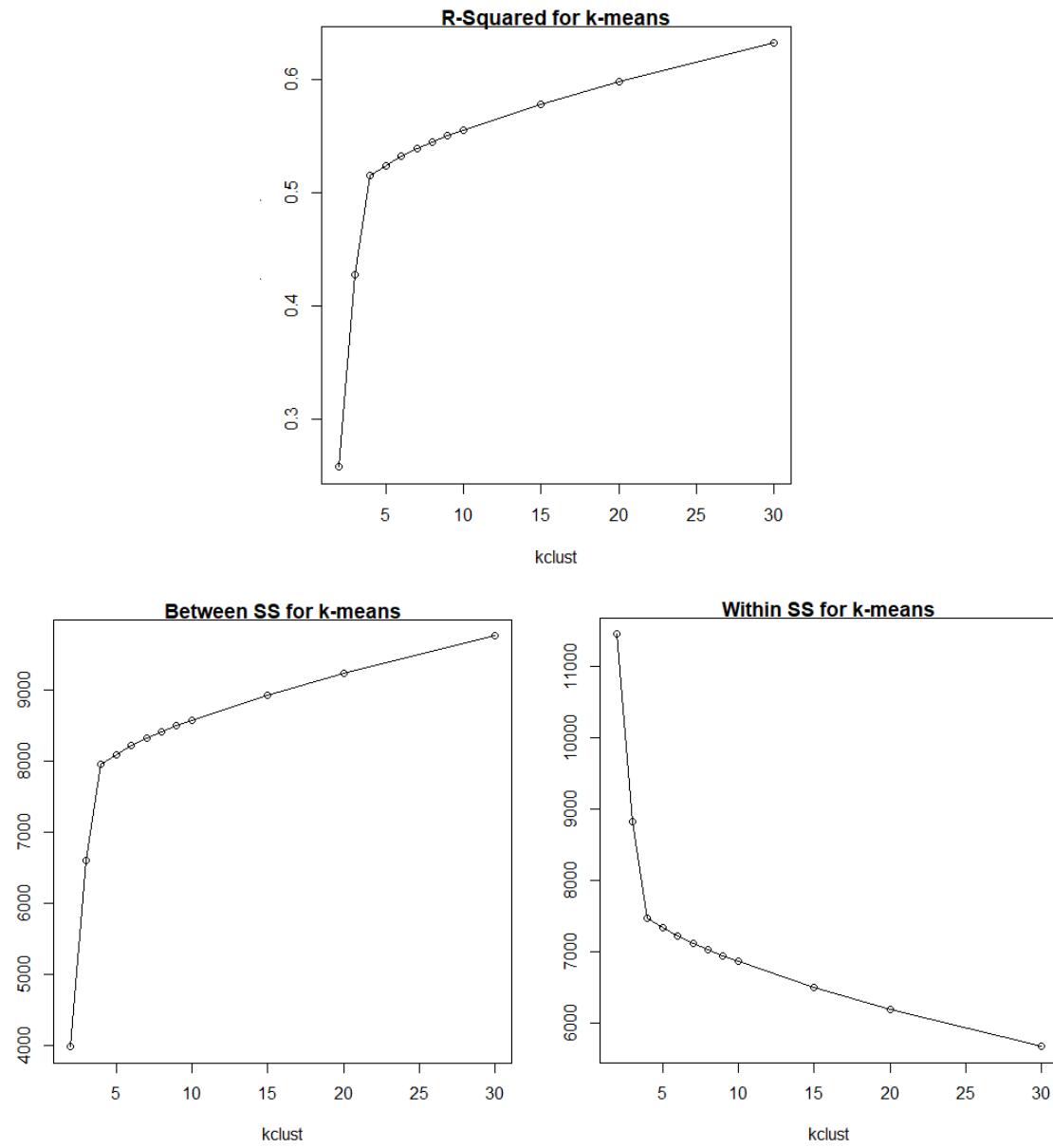
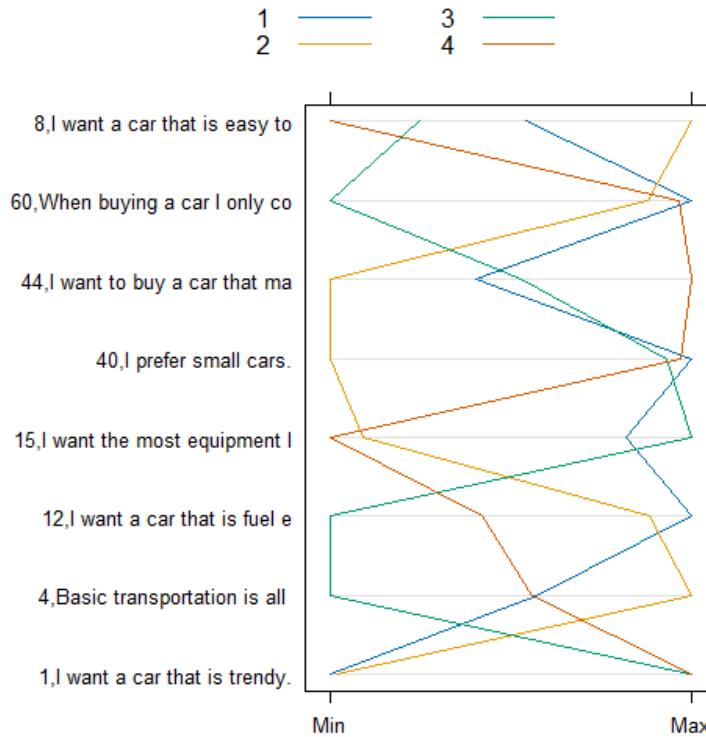


Exhibit 4C: Comparison of Psychographics Clusters with Centroid

| Cluster | Appearance | Function | Price | Easy Control | Environment | Small Car Preference | Brand and Service | Personalization |
|---------|------------|----------|---------|--------------|-------------|----------------------|-------------------|-----------------|
| 1 | -0.8198 | 0.0361 | 0.1649 | 0.3782 | 0.4381 | 0.2144 | 0.2169 | -0.2897 |
| 2 | -0.1981 | 0.2943 | 0.2310 | -0.6351 | 0.0777 | -0.9870 | -0.2926 | -0.0119 |
| 3 | 0.1833 | 0.4085 | 0.1716 | 0.5167 | -0.1980 | -0.4883 | 0.2193 | 0.8731 |
| 4 | 0.8864 | -0.4475 | -0.4214 | -0.1297 | -0.4047 | 0.7961 | -0.1123 | 0.1353 |

The above table shows the deviation from centroid for the 8 psychographic criteria of each cluster. The data is taken from categorizing all 62 questions, and averaging the deviation from centroid for all questions in each category.

A representative question is chosen from each category, and a parallel plot is presented below for the 4 clusters.



The eight representative questions are as such:

- **Appearance:** Q1, I want a car that is trendy.
- **Function:** Q4, Basic transportation is all I need.
- **Easy Control:** Q8, I want a car that is easy to handle.
- **Environment:** Q12, I want a car that is fuel economic.
- **Price:** Q15, I want the most equipment I can get for my money.
- **Small Car Preference:** Q40, I prefer small cars.
- **Personalization:** Q44, I want to buy a car that makes a statement about me.
- **Brand and Service:** Q60, When buying a car I only consider a national make.

Take the centroid values' average for the eight categories of questions and applying conditional formatting, we can identify the following features of the clusters:

Cluster 1 (Pragmatic Shopper)

- Care about the environment, brands, and customer service. Less focus on car appearance and personalization.

Cluster 2 (Budget-Minded Buyer)

- Care about the price of the car. Less focus on if the car is easy to control or not. Don't like to have small cars. Brands and service don't matter a lot for them.

Cluster 3 (Feature Enthusiast)

- Care about the function, personalization of the car. Prefer an easy-handled car.

Cluster 4 (Urbanite)

- Care about appearance. They love small cars and also care about personalization. They don't really focus on function, price, and environment when buying a car.

Exhibit 4D: Profile of prototypical customer in each Psychographic Cluster

Cluster 1 (Pragmatic Shopper): Olivia

Olivia is adventurous and loves spending time outdoors. Although she is in middle age, she actively supports environmental initiatives. She always chooses products that align with her values and appreciates reputable and high-quality car brands.

Cluster 2 (Budget-Minded Buyer): Michael

Michael is a devoted family man with a large family. Michael is focused on budgeting to provide for his family's needs, but he still enjoys spending quality time with his family, and finding cost-effective ways to make life enjoyable for everyone.

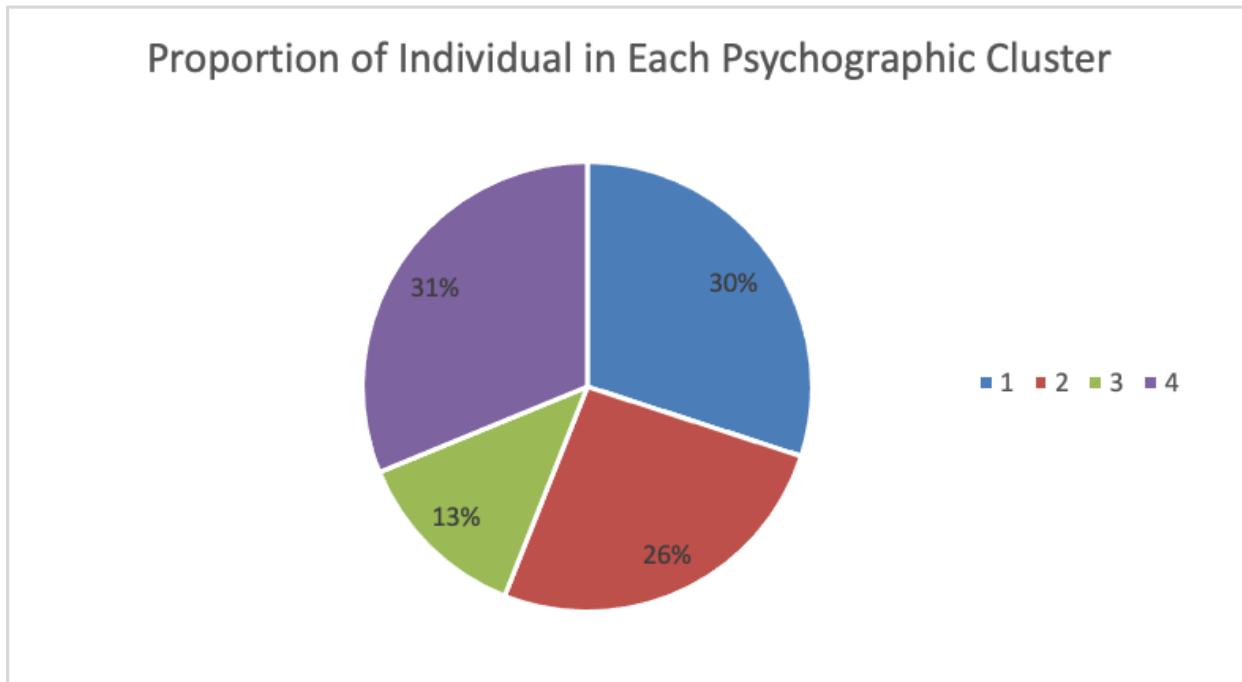
Cluster 3 (Feature Enthusiast): Emily

Emily is a sociable young woman with a keen interest in fashion. She Appreciates technology and modern conveniences in everyday life. Also, she prefers an easy-to-handle car for convenient driving experiences in New York.

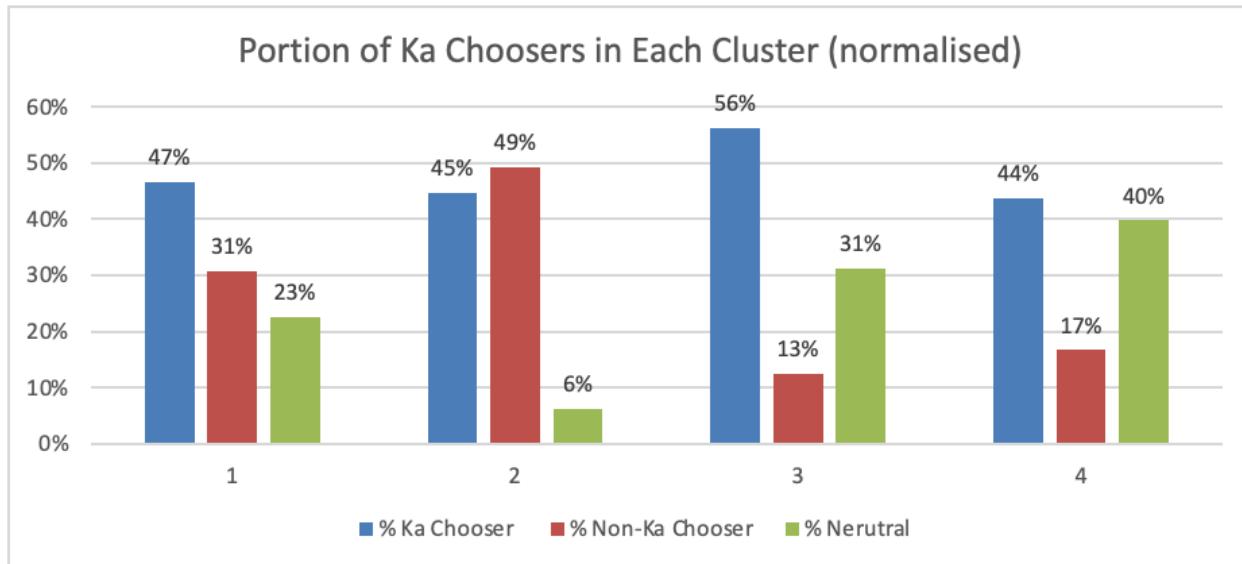
Cluster 4 (Urbanite): Alex

Alex entered the workforce recently. He is interested in video games and enjoys spending weekends at home. Alex prefers a practical car for commuting to work, fitting well into his simple lifestyle and accommodating the limited space of his garage.

Exhibit 4E: Data Visualization of Psychographics Clusters

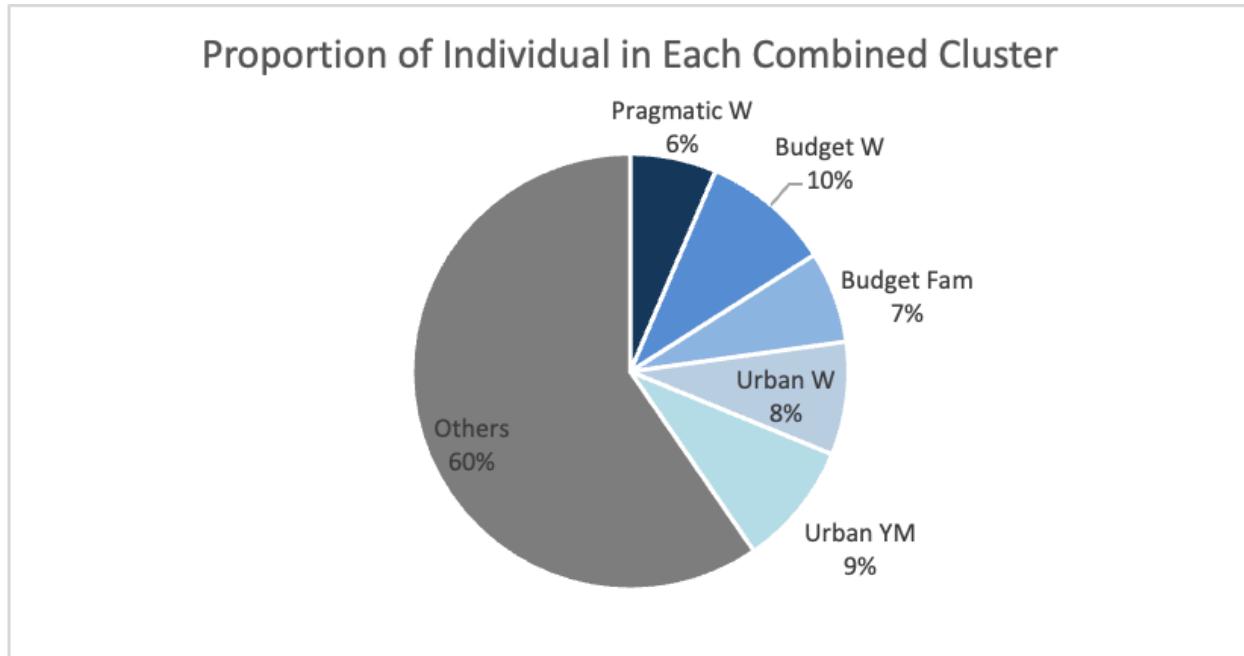


Cluster 4 (Urbanite) is the largest cluster, comprising 31% of total respondents. Targeted marketing to this demographic cluster will be beneficial as it will mean targeting the most individuals.

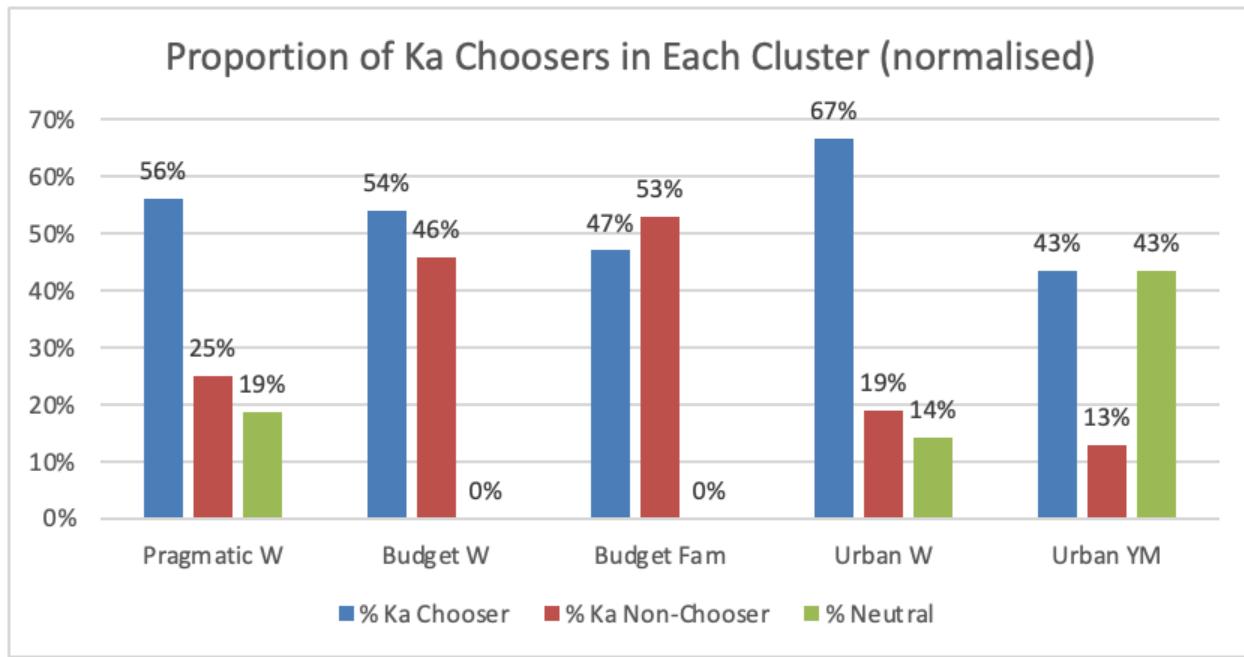


Furthermore, cluster 4 (Urbanite) also has the highest group of people at 84% who are interested and have the potential to be interested in the Ka model. Hence, targeted marketing to them will be more effective.

Exhibit 5A: Data Visualization of Demographic & Psychographic Clusters



The top 5 clusters are pragmatic women, budget-minded women, budget minded family, urban women, and urban young men, which comprises 40% of the total population (out of 20 clusters).



Urbanite Women has the highest proportion of Ka Choosers, at 67% of the total proportion. This is followed by Pragmatic Women at 56%.

Exhibit 5B: Customer Profile for Target Audience: Urbanite Woman

Name: Karen

Age: 40 years old

Occupation: Working professional who has been in the workforce for several years.

Marital Status: Married with no children.

Income: Karen earns between \$200,000 to \$250,000 annually.

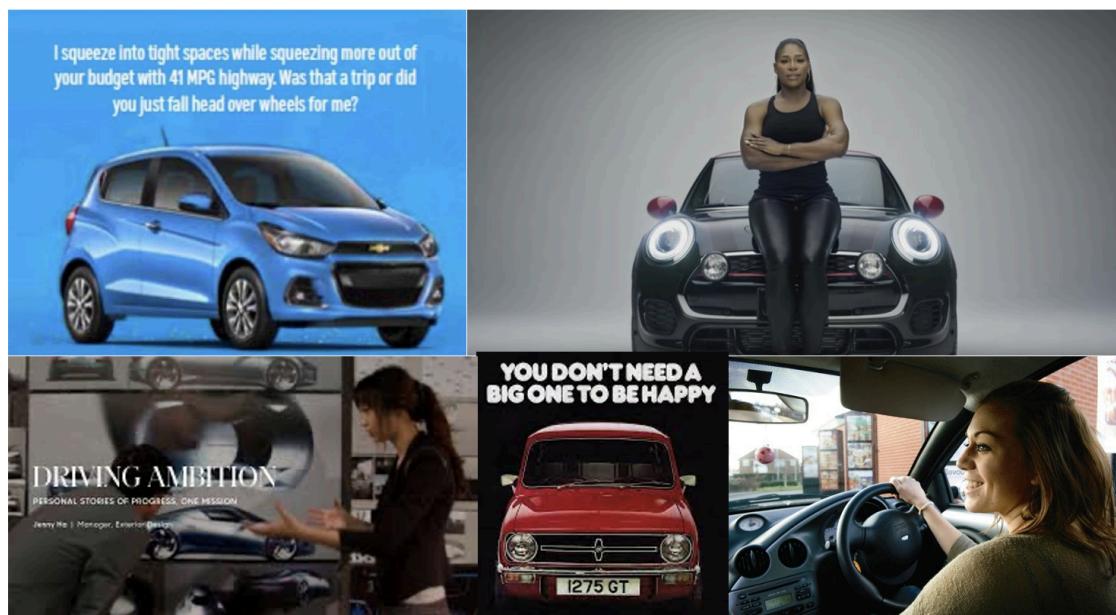
Interests and Lifestyle:

- Karen identifies with the Urbanite cluster, indicating that she resides in an urban environment.
- Despite being a woman, Karen shares similarities with Alex from the Urbanite cluster, who is a recent workforce entrant interested in practicality and simplicity.
- Karen's lifestyle revolves around her career and urban living, and she values simplicity and practicality in her daily routines.

Marketing Focus:

- Given her urban lifestyle, Karen may prefer a practical car that is well-suited for commuting within the city.
- The car should be compact and able to fit into limited parking spaces, considering the constraints of urban living and potentially a smaller garage space.

Exhibit 5C: Image Cues for Target Audience: Urbanite Woman



- **Image Cues:** small cars, confidence, ambition, independence, and trendiness.



- An example of a poster which encompasses the above image cues.