

Step 6: Profiling Segments

6.1 Identifying Key Characteristics of Market Segments

The aim of the profiling step is to get to know the market segments resulting from the extraction step. Profiling is only required when data-driven market segmentation is used. Step 6 is not necessary when commonsense segmentation is conducted. For data driven segmentation the segmentation solution may have decided to extract segments on the basis of benefits sought by consumers. Profiling refers to the process of characterizing the market segments resulting from the extraction step and identifying their defining characteristics based on segmentation variables.

This step emphasizes that profiling is only required when data-driven market segmentation is used, as the profiles of the segments are predefined for commonsense segmentation. For example, if age is used as the segmentation variable for commonsense segmentation, the resulting segments will be age groups, and step 6 (profiling) is not necessary. However, in the case of data-driven segmentation, the defining characteristics of the resulting market segments are unknown until after the data has been analyzed. Therefore, profiling is critical for identifying these characteristics and characterizing the market segments individually, as well as in comparison to other market segments. The article notes that good profiling is the basis for correct interpretation of the resulting segments, which is critical for making good strategic marketing decisions.

With advantages there also comes many challenges associated with interpreting data-driven market segmentation solutions. According to a study by Dolnicar and Lazarevski (2009), 65% of marketing managers surveyed reported difficulties understanding data-driven market segmentation solutions, and 71% felt that segmentation analysis was like a black box. There are many quotes from the study, which suggest that market segmentation results are often presented in a rushed, slapdash fashion, with insufficiently conclusive information or meaningless information, arranged in numbers and percentages across a few variables. To address these challenges, suggestions using graphical statistics approaches to segment profiling. Graphical statistics make profiling less tedious and less prone to misinterpretation, as they provide a visual representation of the segmentation variables and the differences between segments. The article notes that graphical statistics approaches can also help managers understand the interrelationships between variables and identify opportunities for further analysis.

6.2 Traditional Approaches to Profiling Market Segments

Data-driven segmentation solutions are usually presented to users (clients, managers) in one of two ways: (1) as high level summaries simplifying segment characteristics to a point where they are misleadingly trivial, or (2) as large tables that provide, for each segment, exact percentages for each segmentation variable.

	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Total
Rest and relax	83	96	89	82	98	96	90
Change of surroundings	27	82	73	82	87	77	67
Fun and entertainment	7	71	81	60	95	37	53
Free-and-easy-going	12	65	58	45	87	75	52
Not exceed planned budget	23	100	2	49	84	73	51
Life style of the local people	9	29	30	90	75	80	46
Good company	14	59	40	58	77	55	46
Excitement, a challenge	9	17	39	57	76	36	33
Maintain unspoilt surroundings	9	10	16	7	67	95	30
Cultural offers	4	2	5	96	62	38	28
Luxury / be spoilt	19	24	39	13	89	6	28
Unspoilt nature/natural landscape	10	10	13	15	69	64	26
Intense experience of nature	6	8	9	21	50	58	22
Cosiness/familiar atmosphere	11	24	12	7	49	25	19
Entertainment facilities	5	25	30	14	53	6	19
Not care about prices	8	7	43	19	29	10	18
Everything organised	7	21	15	12	46	9	16
Do sports	8	12	13	10	46	7	14
Health and beauty	5	8	10	8	49	16	12
Realise creativity	2	2	3	8	29	14	8

Here using the example of Table, which outlines the defining characteristics of segment 2, including being motivated by rest and relaxation and not wanting to exceed the planned travel budget. However, profiling all six market segments based on this table requires comparing a large number of numbers, which can be tedious and prone to misinterpretation. The excerpt also notes that statistical significance tests cannot be used to assess the differences between segments as segment membership is directly derived from segmentation variables. The use of graphical statistics approaches is recommended to make profiling less tedious and less prone to misinterpretation.

6.3 Segment Profiling with Visualisations

While traditional tabular representations are commonly used to present market segmentation solutions, data visualisation using graphics can offer a simpler and more insightful way to interpret complex relationships between variables. The use of visualisation techniques to interpret the results of market segmentation analysis is recommended by various authors. Examples of prior use of visualisations of segmentation solutions are provided in various studies.

A review of visualisation techniques available for cluster analysis and mixture models is provided by Leisch. Examples of prior use of visualisations of segmentation solutions are given in Reinartz and Kuma, Horneman et al., Andriotis and Vaughan, Becken et al. , Dolnicar and Leisch, Bodapati and Gupta and Castro et al.

Statistical graphs facilitate the interpretation of segment profiles and make it easier to assess the usefulness of a market segmentation solution. Visualisations of solutions can assist the data analyst and user with the task of selecting the most appropriate solution from a large number of alternative solutions.

6.3.1 Identifying Defining Characteristics of Market Segments

To create a clear understanding of the unique characteristics of each market segment, a segment profile plot can be used. This plot visually illustrates how each segment differs from the overall sample across all segmentation variables, similar to a table. The order of segmentation variables in figures and tables can be rearranged for improved visualization, but should be retained if it has a meaningful order in the data set.

To order segmentation variables by similarity of answer patterns, one can cluster the columns of the data matrix using Ward's method. This can be achieved by transposing the data matrix and conducting hierarchical clustering. The resulting figure shows that tourists who are motivated by cultural offers are also interested in the lifestyle of local people, and those who care about an unspoilt natural landscape also seek an intense experience of nature. A segment profile plot can be created using the `barchart` function with the `vacmot.k6` data and the reverse order of `vacmot.vclust`.

```
R> vacmot.vdist <- dist(t(vacmot))
R> vacmot.vclust <- hclust(vacmot.vdist, "ward.D2")
R> barchart(vacmot.k6, shade = TRUE,
+ which = rev(vacmot.vclust$order))
```

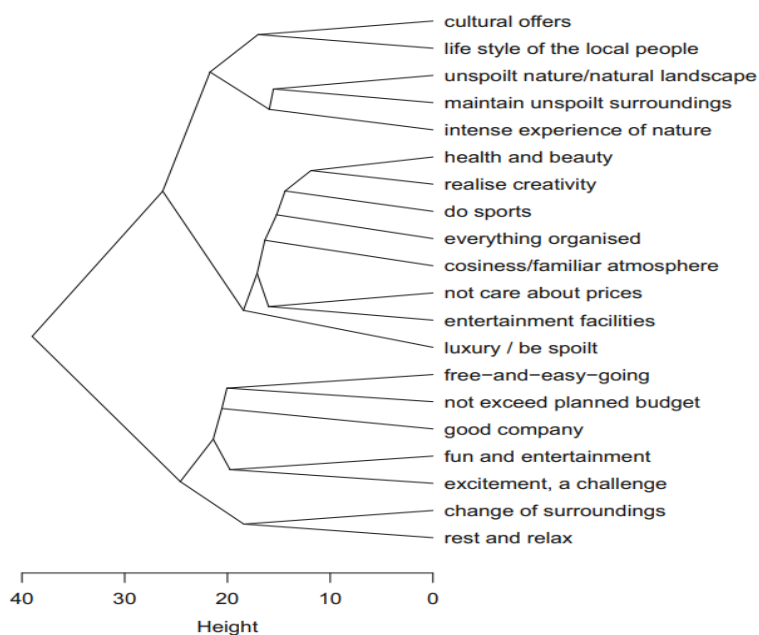
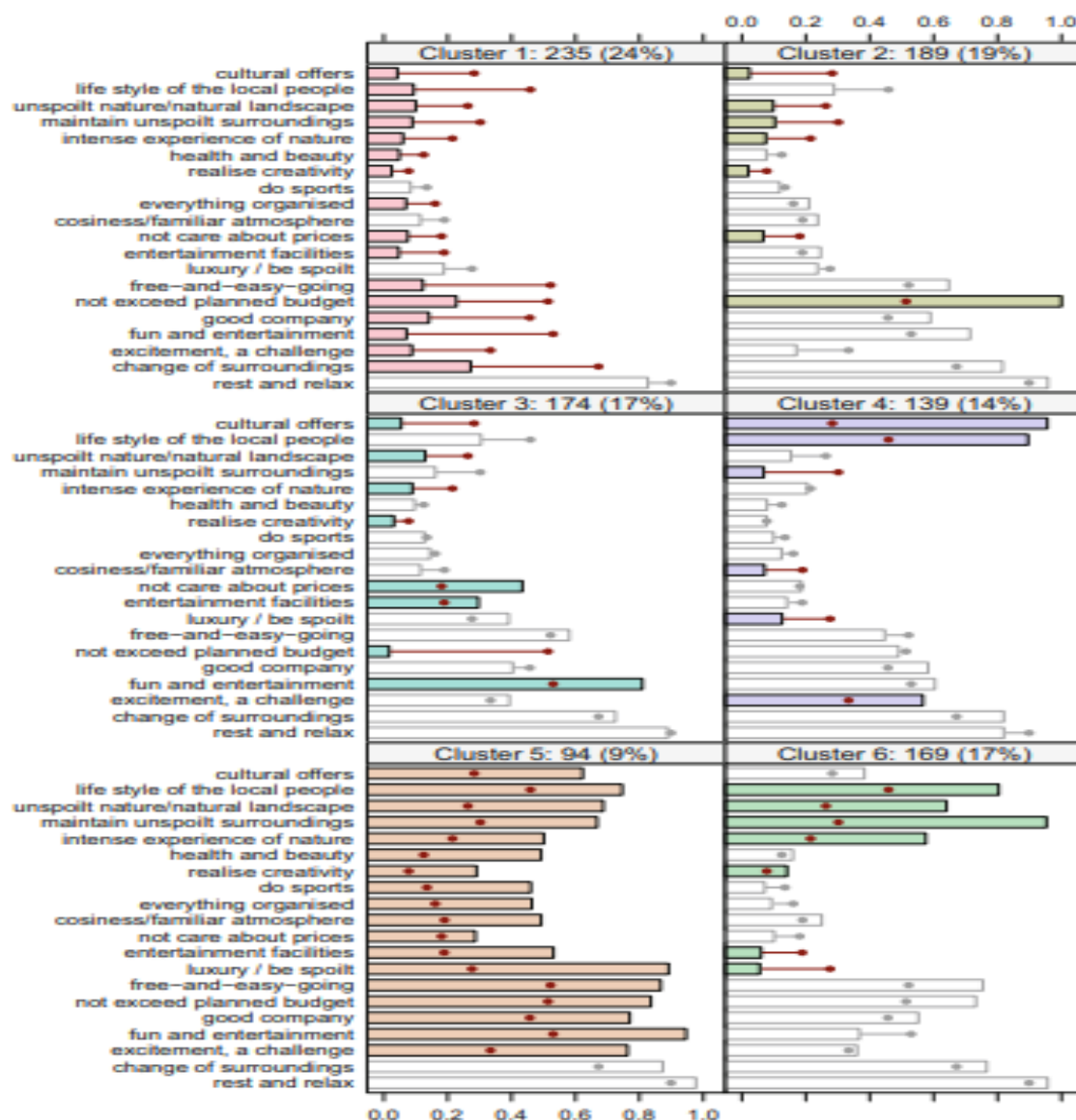


Fig. 8.1 Hierarchical clustering of the segmentation variables of the Australian travel motives data set using Ward's method

The segment profile plot is a graphical representation of the characteristics of each market segment, and it can be customized by specifying the variables to be included and their order of presentation. One way to order the variables is through hierarchical clustering, which groups variables that have similar answer patterns. The plot is a panel plot that shows the cluster centers for each segment, represented by dots, and the total mean values for each variable across all observations in the dataset, also represented by dots. The plot can be further enhanced by identifying marker variables, which are particularly characteristic for a segment and are depicted in color. The default definition of marker variables in the segment profile plot is suitable for binary variables, and takes into account the absolute and relative difference of the segment mean to the total mean.

Looking at the travel motive of HEALTH AND BEAUTY in Fig. 8.2 makes it obvious that this is not a mainstream travel motive for tourists. This segmentation variable has a sample mean of 0.12; this means that only 12% of all the people who participated in the survey indicated that HEALTH AND BEAUTY was a travel motive for them. For segments with HEALTH AND BEAUTY outside of the interval 0.12 ± 0.06 this vacation activity will be considered a marker variable, because 0.06 is 50% of 0.12



Marker variables are highlighted in colour. As can be seen, a segmentation solution presented using a segment profile plot is much easier and faster to interpret than when it is presented as a table, no matter how well the table is structured.

6.3.2 Assessing Segment Separation

A segment separation plot is used to visualize the separation between segments by displaying the overlap between them for all relevant dimensions of the data space. This type of plot is straightforward when the number of segmentation variables is small, but can become more intricate as the number of variables increases. Nevertheless, even in complex situations, segment separation plots provide a rapid way for analysts and users to gain an understanding of the data situation and the segmentation solution.

Taking an example

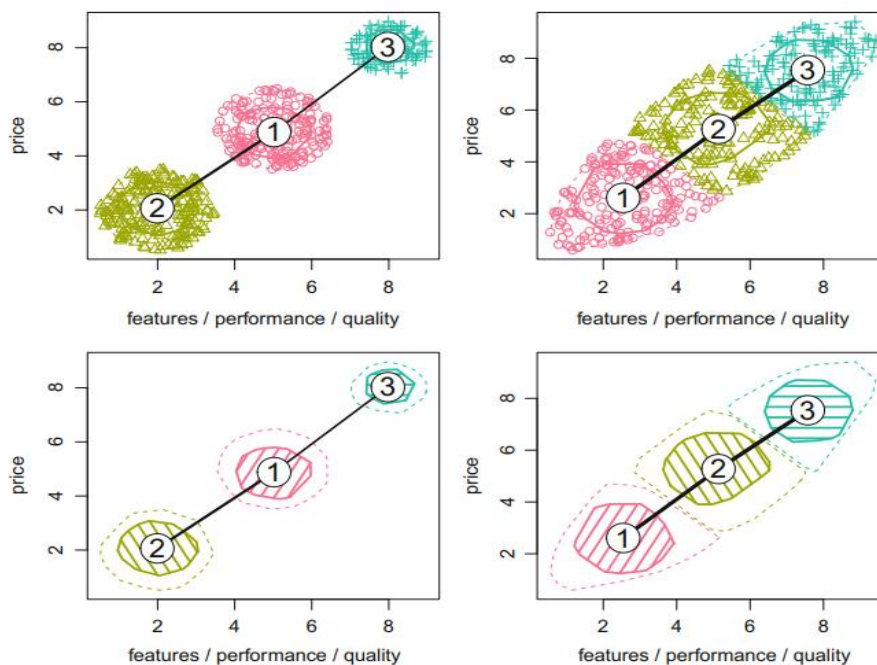


Figure provides examples of segment separation plots for two different data sets, one with three well-separated segments and the other with an elliptic data structure. These plots include a scatter plot of observations coloured by segment membership and cluster hulls, and a neighbourhood graph indicating segment similarity. The neighbourhood graphs display three numbered nodes representing the segment centres, with black lines connecting them to indicate similarity between segments. The width of the lines varies based on the number of observations with the two segment centres as their closest. The plots require projection onto a smaller number of dimensions for high-dimensional data. Various projection techniques, including those that maximize separation and principal component analysis, can be used to create such plots.

6.4 Step 6 Checklist

Task	Who is responsible?	Completed?
Use the selected segments from Step 5.		<input type="checkbox"/>
Visualise segment profiles to learn about what makes each segment distinct.		<input type="checkbox"/>
Use knock-out criteria to check if any of the segments currently under consideration should already be eliminated because they do not comply with the knock-out criteria.		<input type="checkbox"/>
Pass on the remaining segments to Step 7 for describing.		<input type="checkbox"/>