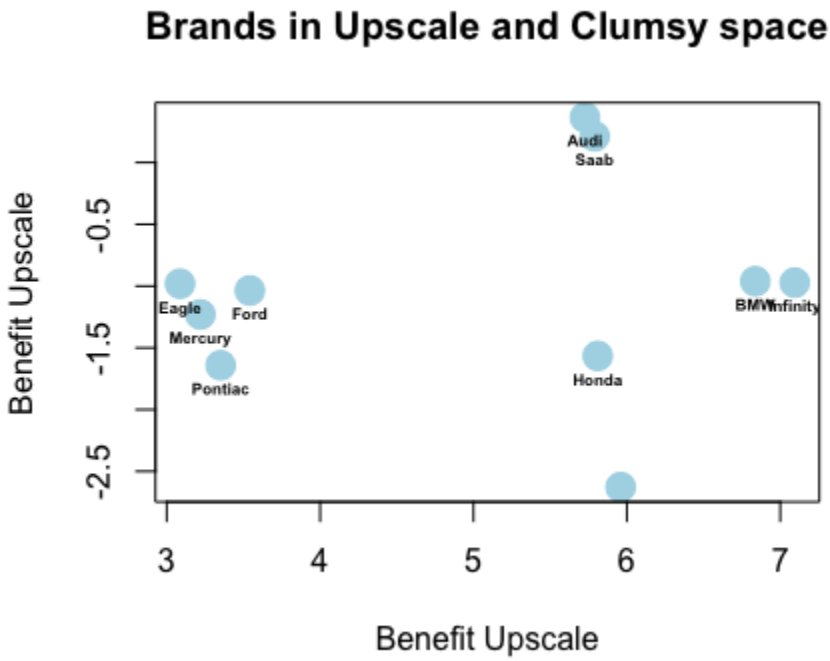
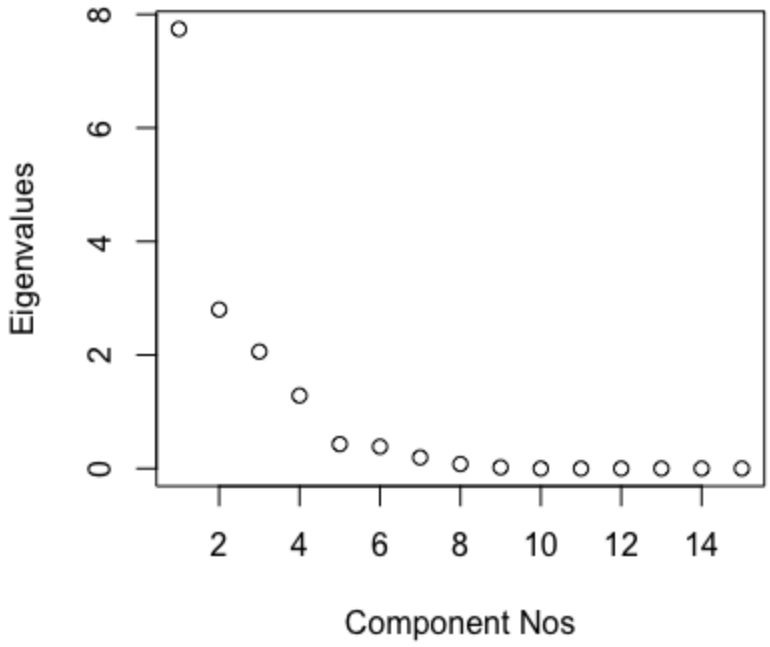
BAX 442 HW#3

Team F: Charles Wang, Qinyi Qiu, Richard Liu, Jie Zhu, Yuxin Yi

1. Build brand maps for car brands. The client's brand is Infinity.



2. How many factors to retain?



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Based on the scree plot we generated here, we think 4 factors could be retained. In addition, we also take into consideration of their eigenvalues. All of these factors are having a engenvalue greater than 1, thus, we conclude that it's better to retain 4 factors.

3. Assign names to the retained factors (you may need to flip the factors and then assign names)

	[,1]	[,2]	[,3]	[,4]
Attractive	0.3262814	0.0000000	0.0000000	0.0000000
Quiet	0.3173818	0.0000000	0.0000000	0.0000000
Unreliable	0.0000000	0.4011014	0.0000000	0.0000000
Poorly.Built	-0.3319244	0.0000000	0.0000000	0.0000000
Interesting	0.0000000	0.0000000	0.4290683	0.0000000
Sporty	0.0000000	-0.4288285	0.0000000	0.0000000
Uncomfortable	0.0000000	0.0000000	0.0000000	0.0000000
Roomy	0.0000000	0.3789204	0.0000000	0.0000000
Easy.Service	0.0000000	-0.4279673	0.0000000	0.0000000
Prestige	0.3322855	0.0000000	0.0000000	0.0000000
Common	0.0000000	0.0000000	0.0000000	0.4663407
Economical	0.0000000	0.0000000	-0.6642165	0.0000000
Successful	0.3155394	0.0000000	0.0000000	0.0000000
AvantGarde	0.0000000	0.0000000	0.0000000	-0.6685725
Poor.Value	0.0000000	0.0000000	0.4710589	0.0000000

The third and fourth eigenvectors are being flipped so the slopes become positive.
By observing the value and column name, we assigned factor 1 as upscale, factor 2 as clumsy, factor 3 as costly, and factor 4 as rarity.

4. Explain iso-preference line and its difference from the regression line
The iso-preference lines on the represent levels of equal preference for brands, with each line indicating brands that are equally favored for consumers; brands closer to the "Ideal Vector" are more preferred. In contrast, a regression line would statistically summarize the relationship between two variables, forecasting how different characteristic influences across different brands to their consumers.

5. Explain what is an ideal vector and why it indicates the direction of increasing preferences
In brand map, ideal vector represents the most preferred brands from the consumer. it indicates the direction of increasing preferences from the consumers. The direction and magnitude of this ideal vector shows how strong the consumer preferences are and how much each characteristic has impact on the brand preferences. Brands that are closer to the ideal vector are considered to be more matched with consumer preferences and are likely to be more favored by consumers.

6. Compute the angles of iso-preference line and ideal vector arrow
The angles of iso-preference line is -67.52971 based on our findings, and the ideal vector arrow is 22.47029.

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7. Find 95% confidence interval for the angle of the ideal vector. Use data bootstrap method to obtain CI

The 95% confidence interval for the angle of the ideal vector is -29.1(2.5% CI) to 27.945 (97.5% CI). We use data bootstrap method to calculate the confidence interval.

8. Recommend to Infinity's managers what they should do to improve their product design

For Infinity's managers recommendation, we recommend the Infinity's managers should scale up their product quality and be well made, also, this will reduce the design issues that make the product hard to use or clumsiness. The strategy will focus on improvements and minimizing bad design, this will make the product closer to the ideal vector direction on brand map and increase consumer preferences.