



# TEAM 23

# TOY HORSE CONJOINT ANALYSIS

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# Early Riders

## TOY HORSE



## *Key Insights*

1. We can divide consumers into **three segments**. For all three segments, they choose **cheaper** toy horses.
2. About **60%** consumers prefer **rocking glamour** toy horses with **bigger size**.
3. **Gender** could be the essential segment line. Both boys and girls prefer **cheaper** toy horses with **bigger size**.
4. **Bouncing** toy horses with **racing** motion are favored by **boys**, whereas **girls**' choice are **opposite**.

# Recommendations

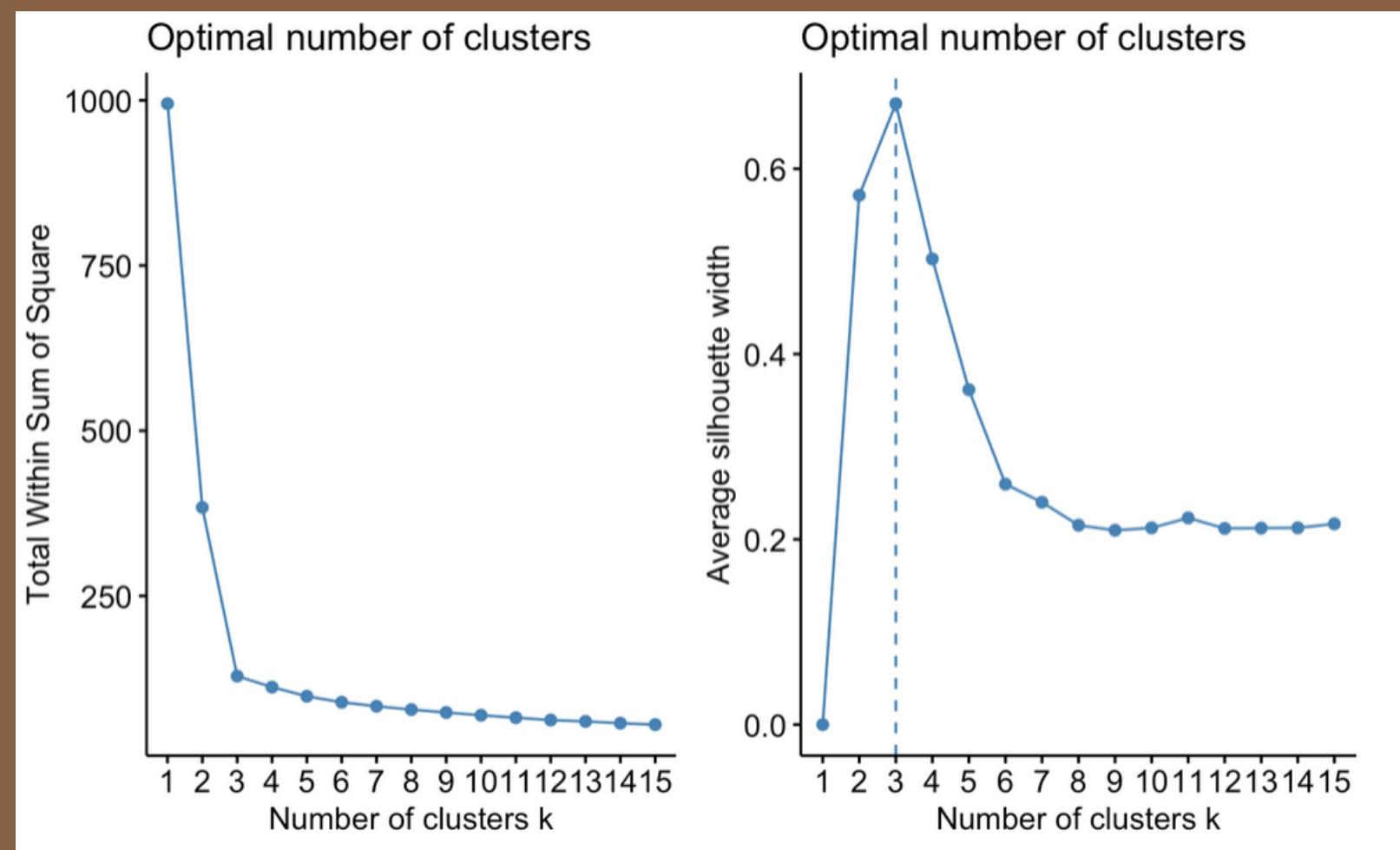


- Our selection is replacing existing scenario with new scenario:
  - 26 inches bouncing racing toy horse at \$119.99 (profile **4**)
  - 26 inches rocking glamour toy horse at \$119.99 (profile **16**)
- Under this scenario, the maximum profit the firm can get is **\$144073.87** and profitability is **83.1%**.

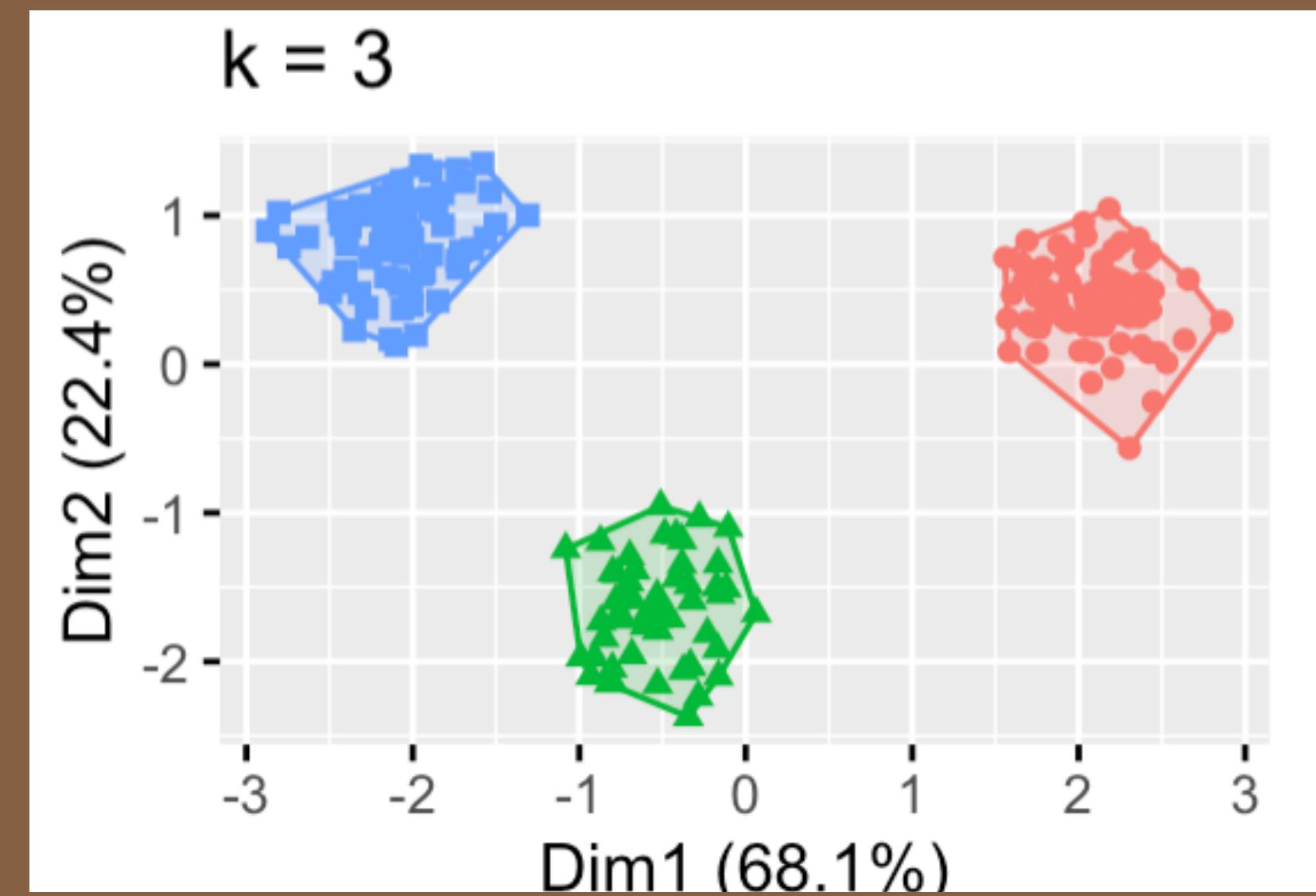


# Benefit Segmentation

# Cluster Analysis of Conjoint Part-Utilities



- Use elbow rule to choose clusters --- 3 Cluster
- Create visualizations of clustering segments



# 3 Segments

SegmentA: Price: 119; size: 26"; Motion: Rocking; Style: Glamour 34%

SegmentB: Price: 119; size: 26"; Motion: Bouncing; Style: Racing 40%

SegmentC: Price: 119; size: 18"; Motion: Rocking; Style: Glamour 26%



# A Priori Segmentation

- Conducted a segment level regression, each attribute interact with gender and age.
- Putting gender as segement interaction is significant for every attribute.
- Gender could be the essential segment line.



Segment	Intercept	Price	Size	Motion	Style
Male	36.57	16.86	3.85	-0.76	-1.89
Female	40.87	13.51	7.75	2.91	3.73

## ● Boy's Preference

- Like low price
- Size of 26 inches
- Favor bouncing motion
- Racing style

## ● Girl's Preference

- Like low price
- Size of 26 inches
- Rocking motion
- Glamour style



# Market Simulations

*Measuring Results*

# Different Scenarios

## *Assumption*

- We assume when we lower our price, our competitors will also lower their prices, switching from product 7 to 8.  
As retailers only sell 2-3 products, we assume competitors only provide 1 product, then we have **at most 2** products to have in the market.

## *Types*

- Existing products

- product 5,7,13

- TYPE 1: Replacing One

- product 4,8,13/product 4,5,8/product 5,8,16(etc)

- TYPE 2: Replacing Two

- product 4,8,14/product 4,8,16/product 8,14,16

# Current Market



*Existing firm products:*

*18 inches Rocking Racing at \$139.99*

*18 inches Rocking Glamour at \$139.99*

*Competitors:*

*26 inches Rocking Racing at \$139.99*

*Profits:*

No replacing fixed costs

Profit at **\$109622.80**

Profitability: **80.6%**

*Scenario 1: 4,5,8*

replacing 13 with 4  
competitors moving from 7 to 8

profit:\$78455.13

profitability:73.9%

*Scenario 3: 4,8,14*

replacing 5,13 with 4,14  
competitors moving from 7 to 8

profit:\$120620.07

profitability:79.1%

*Scenario 2: 4,8,13*

replacing 5 with 4  
competitors moving from 7 to 8

profit:\$87154.13

profitability:75.5%

*Scenario 4: 4,8,16*

replacing 5,13 with 4,16  
competitors moving from 7 to 8

**profit:\$144073.87**

**profitability:83.1%**

	4	5	7	8	13	14	16
S1	0.000	0.220	0.57	0.000	0.210	0.000	0.000
S2	0.415	0.000	0.00	0.520	0.065	0.000	0.000
S3	0.415	0.040	0.00	0.545	0.000	0.000	0.000
S4	0.000	0.000	0.00	0.700	0.005	0.295	0.000
S5	0.000	0.005	0.00	0.700	0.000	0.295	0.000
S6	0.000	0.000	0.00	0.495	0.035	0.000	0.470
S7	0.000	0.020	0.00	0.500	0.000	0.000	0.480
S8	0.400	0.000	0.00	0.335	0.000	0.265	0.000
S9	0.355	0.000	0.00	0.180	0.000	0.000	0.465
S10	0.000	0.000	0.00	0.405	0.000	0.230	0.365

	fc	revenue	margin	profitability
S1	40000.00	206382.8	109622.80	0.806
S2	46666.67	190540.8	87154.13	0.755
S3	46666.67	178541.8	78455.13	0.739
S4	46666.67	115668.0	29401.33	0.597
S5	46666.67	115668.0	29401.33	0.597
S6	46666.67	197259.8	68893.13	0.763
S7	46666.67	193900.0	65873.33	0.759
S8	53333.33	255333.4	120620.07	0.791
S9	53333.33	314847.2	144073.87	0.831
S10	53333.33	228456.2	84902.87	0.767

## MARKET SHARE

**2 Types and 9 Scenarios total included**

**Our own products:**

- 26 inches Bouncing Racing at \$119.99
- 26 inches Rocking Glamour at \$119.99

**Competitors:**

- 26 inches Rocking Racing at \$119.99

## CONCLUSION

We have the maximum profit at around \$144074, and profitability of 83.1%.

Compared to the existing scenario, our profit has increased 1.3 times, and the profitability also increases 2.5 percent.

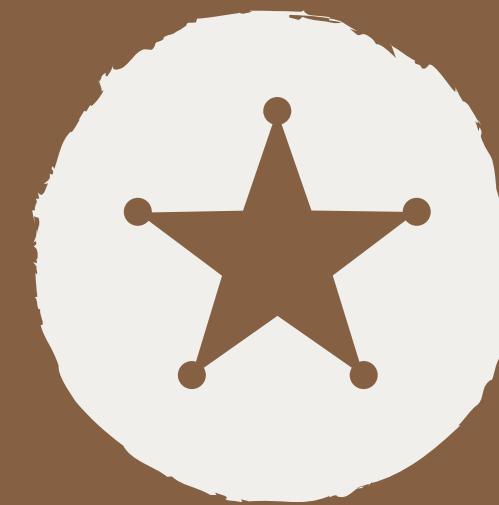
# APPENDIX

## How We Analyze



### BUSINESS GOAL

Product Management  
Product Line



### ANALYTICAL GOAL

Predictive Analysis  
Descriptive Analysis

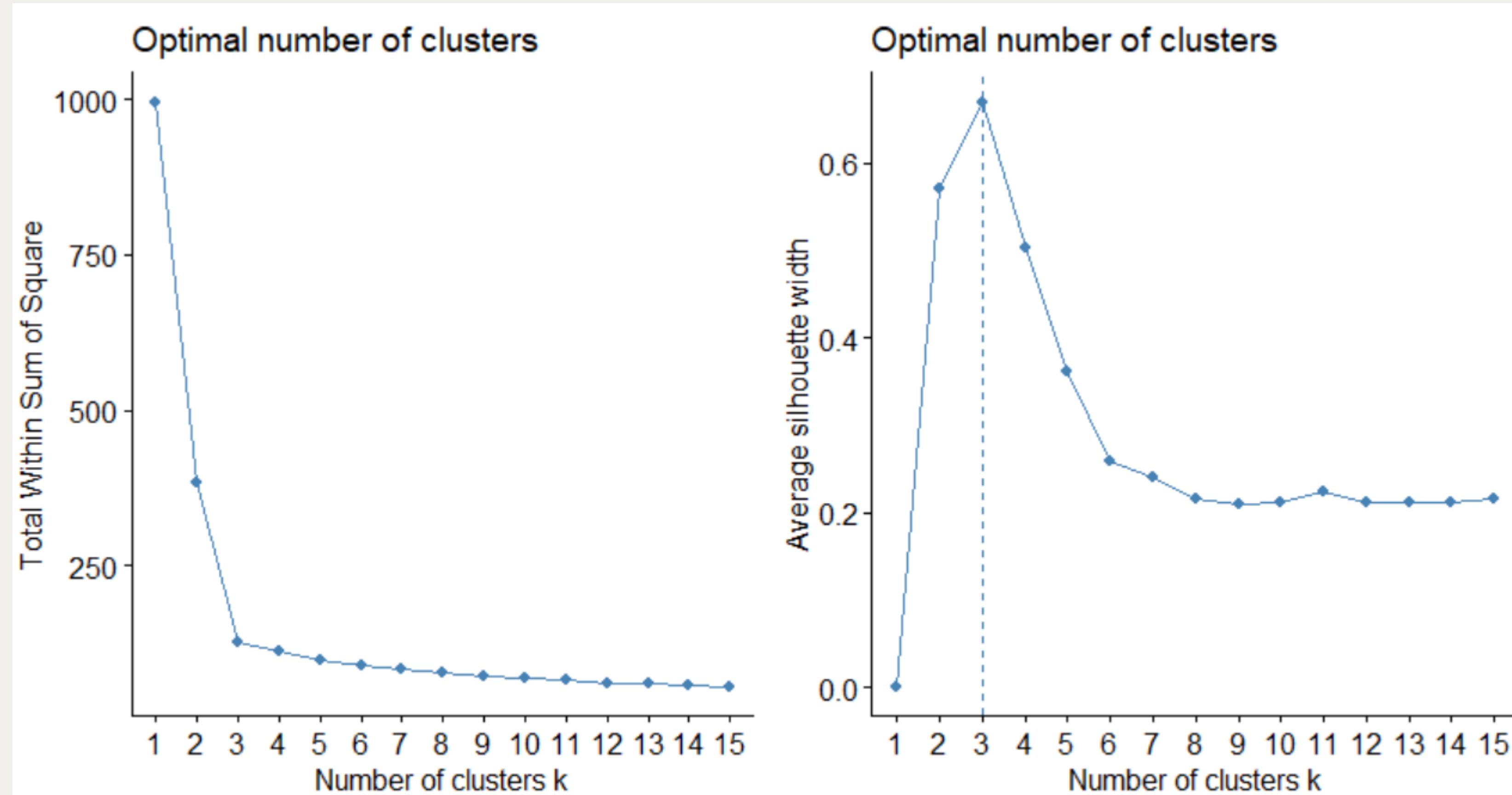


### ANALYTICAL METHOD

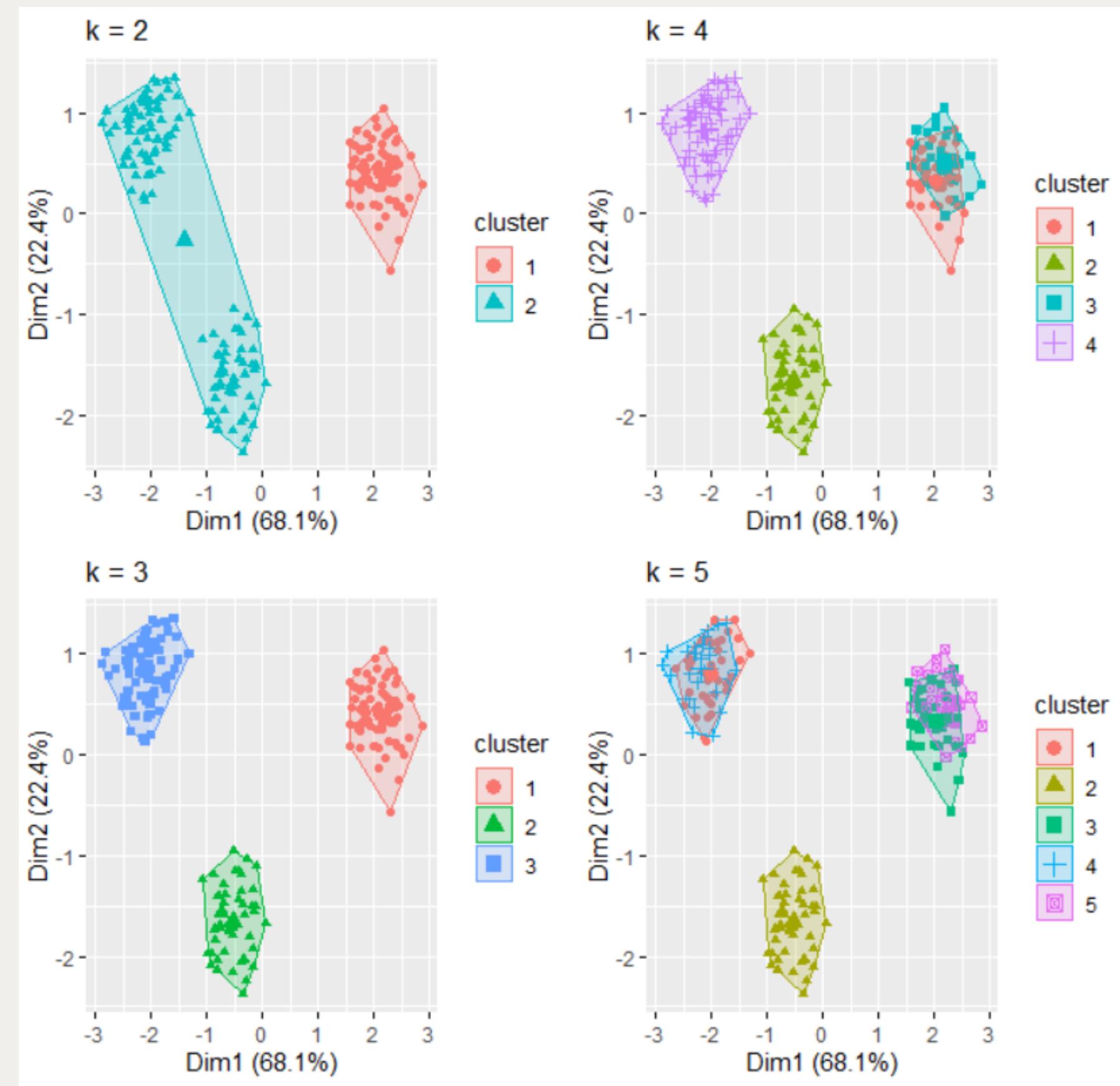
Priori Statement  
Market Simulation

<b>intercept</b> <dbl>	<b>price</b> <dbl>	<b>size</b> <dbl>	<b>motion</b> <dbl>	<b>style</b> <dbl>
42.16541	8.600463	21.33443196	6.289641	1.181536e+01
40.17178	13.059091	-10.75051993	15.780864	-3.018138e+00
51.99862	7.226711	14.05147057	6.034665	7.448577e+00
49.05301	9.573213	19.27094748	4.736483	5.486421e+00
27.91527	24.186384	5.22247553	-6.705663	-6.788886e+00
40.24820	17.932998	-8.15160787	9.765526	1.537888e-01
44.26003	10.239404	16.89381882	4.479289	1.631098e+01
36.96537	20.817452	4.68799262	-12.169797	-9.406489e+00
32.63474	23.824031	8.36673011	-13.439713	-8.300307e+00
33.73801	19.486133	4.29827953	-11.592532	-7.739851e+00

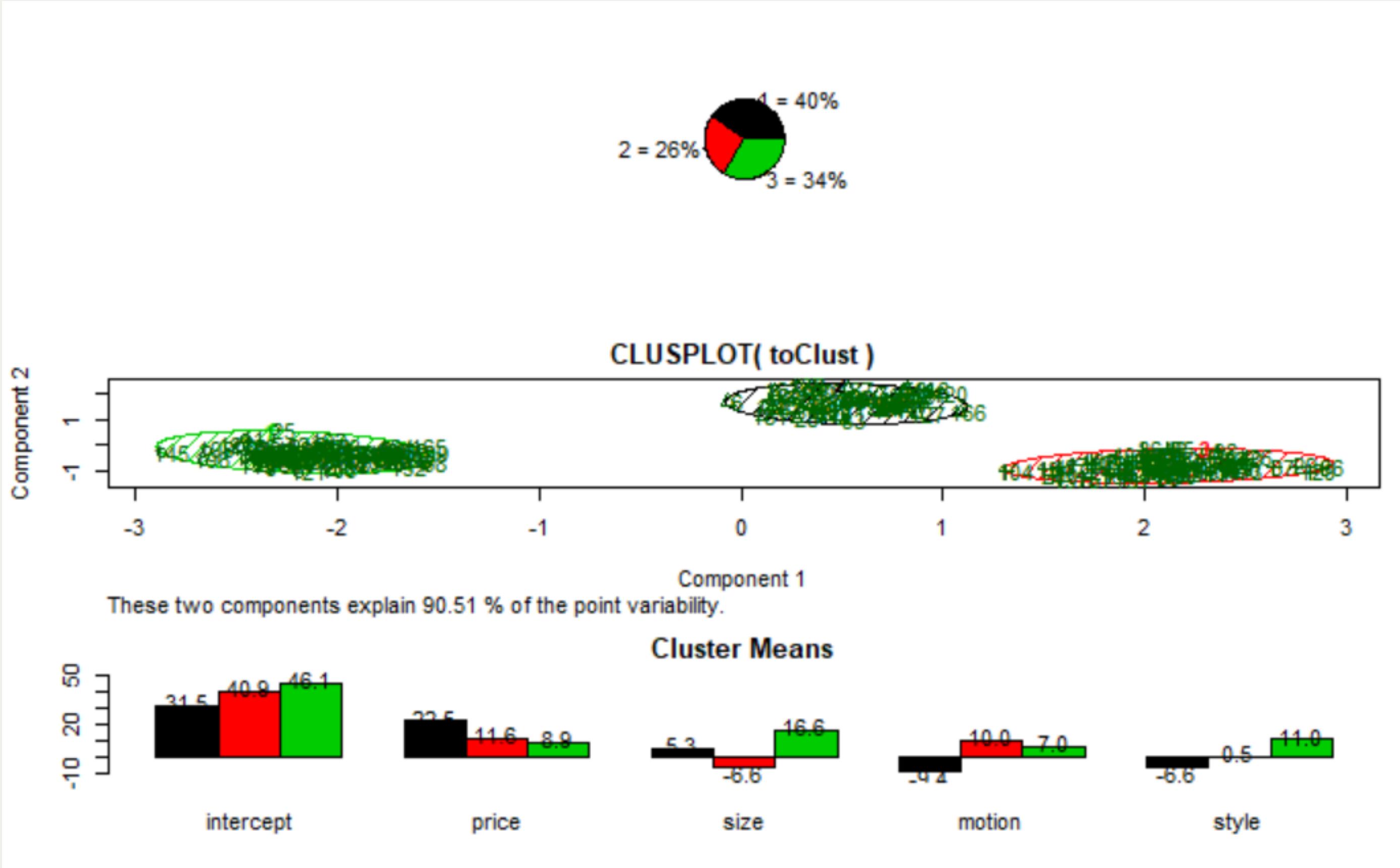
Use regression to estimate the conjoint model at the individual level



Evaluate number of clusters to use on data with visualizations



Test the cluster numbers by plotting cluster graph and choose three



plot a kmeans cluster as three plot report

### Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	37.7780	1.1634	32.473	< 2e-16 ***
price	15.3906	1.0405	14.791	< 2e-16 ***
age	-2.7857	1.7643	-1.579	0.114457
gender	3.7244	1.6884	2.206	0.027467 *
size	2.3625	1.0405	2.270	0.023250 *
motion	1.6932	1.0405	1.627	0.103789
style	-0.9823	1.0405	-0.944	0.345214
price:age	3.3735	1.5781	2.138	0.032616 *
price:gender	-2.0586	1.5102	-1.363	0.172928
age:gender	1.6661	2.4008	0.694	0.487749
age:size	3.4235	1.5781	2.169	0.030125 *
gender:size	3.1400	1.5102	2.079	0.037679 *
age:motion	-5.6426	1.5781	-3.576	0.000355 ***
gender:motion	2.3208	1.5102	1.537	0.124452
age:style	-2.0865	1.5781	-1.322	0.186193
gender:style	4.5688	1.5102	3.025	0.002504 **
price:age:gender	-3.0608	2.1474	-1.425	0.154144
age:gender:size	0.5655	2.1474	0.263	0.792301
age:gender:motion	3.6823	2.1474	1.715	0.086482 .
age:gender:style	2.3354	2.1474	1.088	0.276866

### Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	39.5462	0.8917	44.350	< 2e-16 ***
price	14.4133	0.7975	18.072	< 2e-16 ***
age	-1.2982	1.2548	-1.035	0.300928
size	3.8532	0.7975	4.831	1.42e-06 ***
motion	2.7950	0.7975	3.504	0.000464 ***
style	1.1867	0.7975	1.488	0.136877
price:age	1.2588	1.1223	1.122	0.262095
age:size	4.1708	1.1223	3.716	0.000206 ***
age:motion	-3.1188	1.1223	-2.779	0.005486 **
age:style	-0.0857	1.1223	-0.076	0.939140

### Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	36.5668	0.8801	41.547	< 2e-16 ***
price	16.8573	0.7872	21.414	< 2e-16 ***
gender	4.3032	1.1977	3.593	0.000332 ***
size	3.8509	0.7872	4.892	1.05e-06 ***
motion	-0.7601	0.7872	-0.966	0.334327
style	-1.8895	0.7872	-2.400	0.016440 *
price:gender	-3.3488	1.0713	-3.126	0.001788 **
gender:size	3.9046	1.0713	3.645	0.000272 ***
gender:motion	3.6669	1.0713	3.423	0.000627 ***
gender:style	5.6165	1.0713	5.243	1.68e-07 ***

As the segment-level regression that we tested, putting gender as segment interaction is significant for every attribute.