Toy Horse Conjoint Analysis for EarlyRiders

GBA 424 11B

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Overview

- Introduction
  - Implement low price strategy
  - Replace current products by 2 new products
- Conjoint model
- Benefit Segmentation analysis
- Market simulations
- Summary & Recommendation

Individual Level Part-utilities

- 200 individual data

- predict individual performances

- predict for missing profile

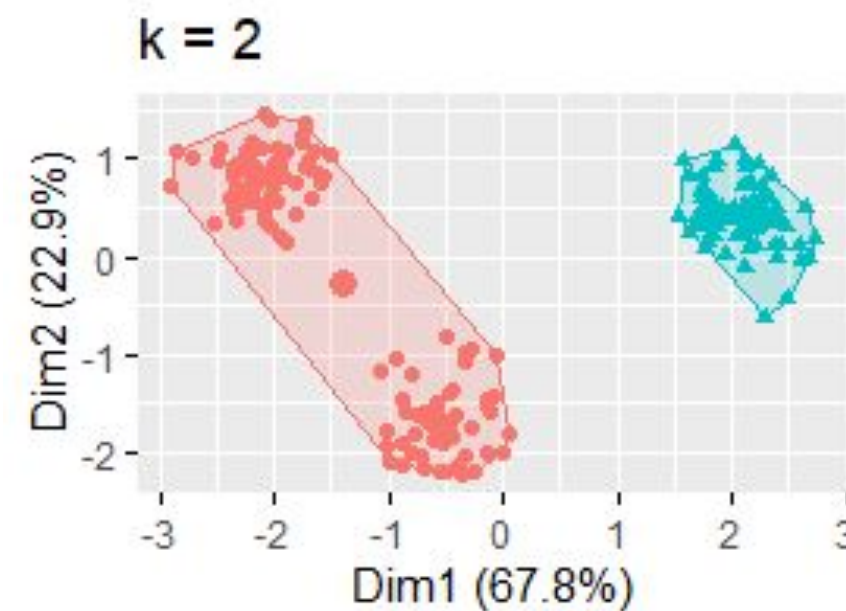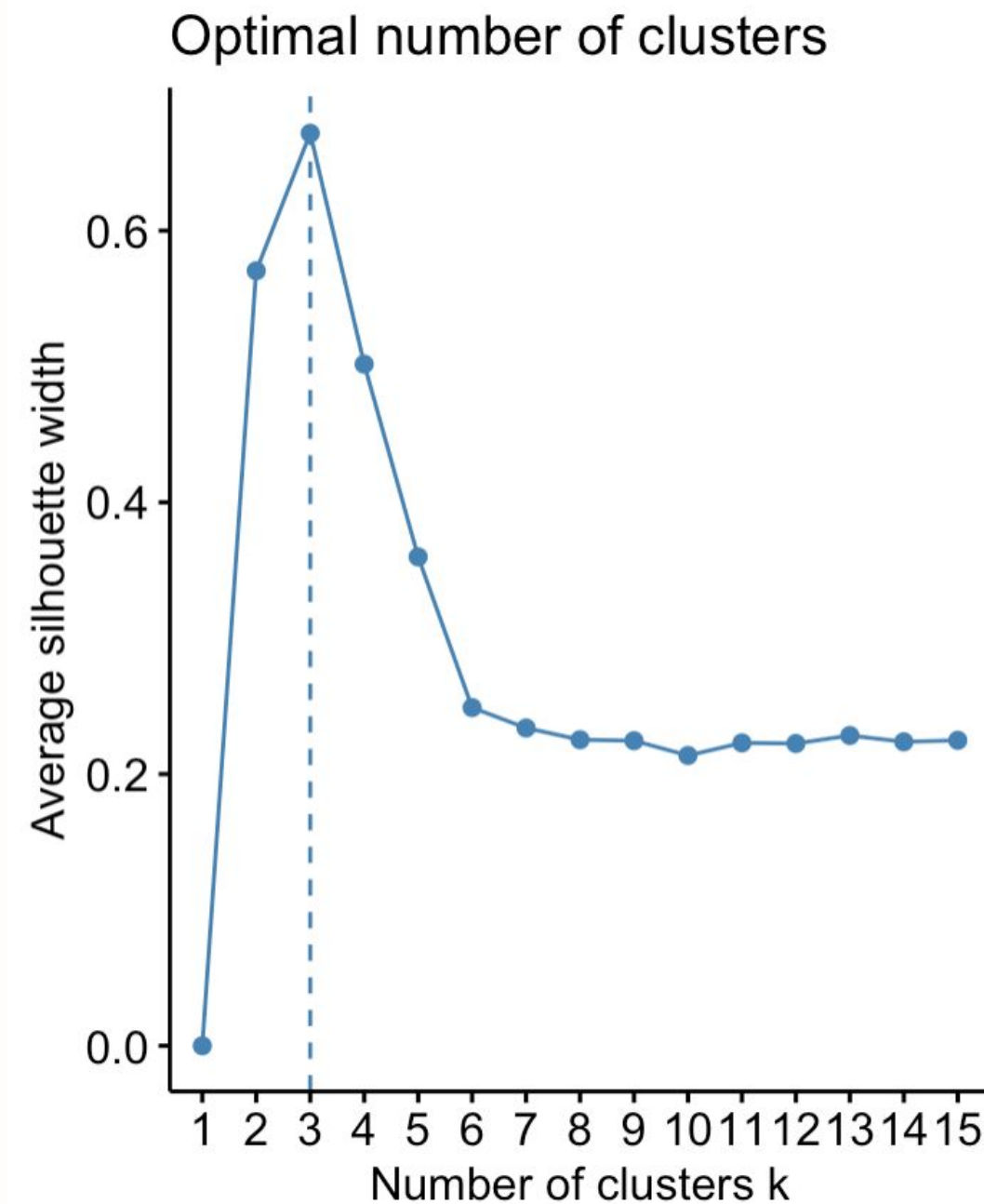|	Intercept	price	height	motion	style
1	7.750000	1.5000	4.25000000	1.0833333	2.41666667
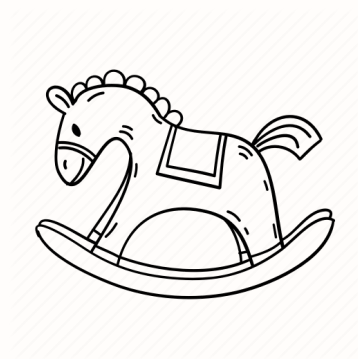
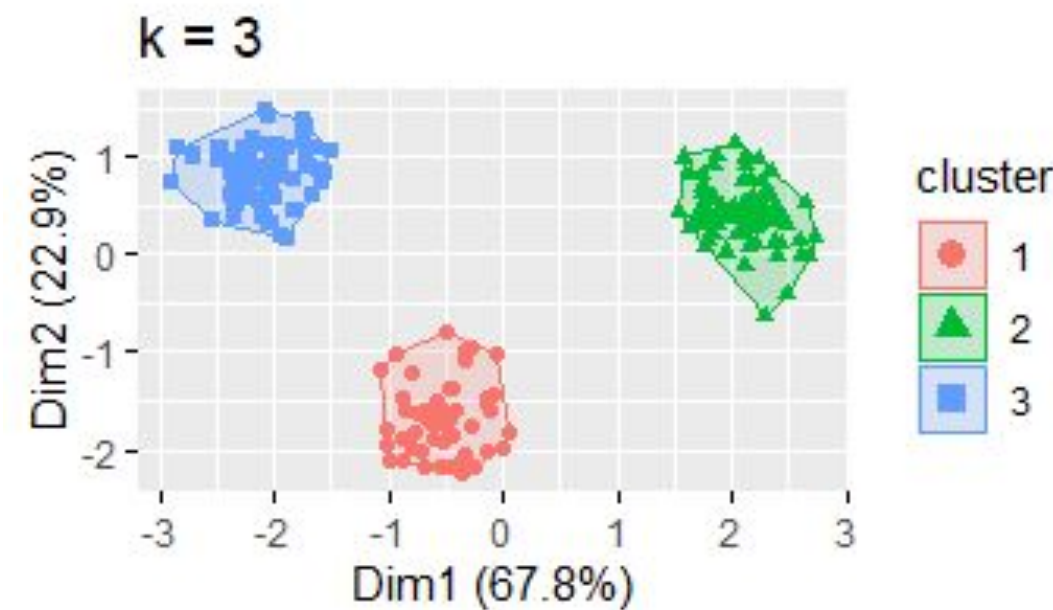- low price   high height   Rocking   Glamour

Divide Into Three Distinct Segments

- Using K-means clustering analysis to find out the customer groups share the same characteristics.
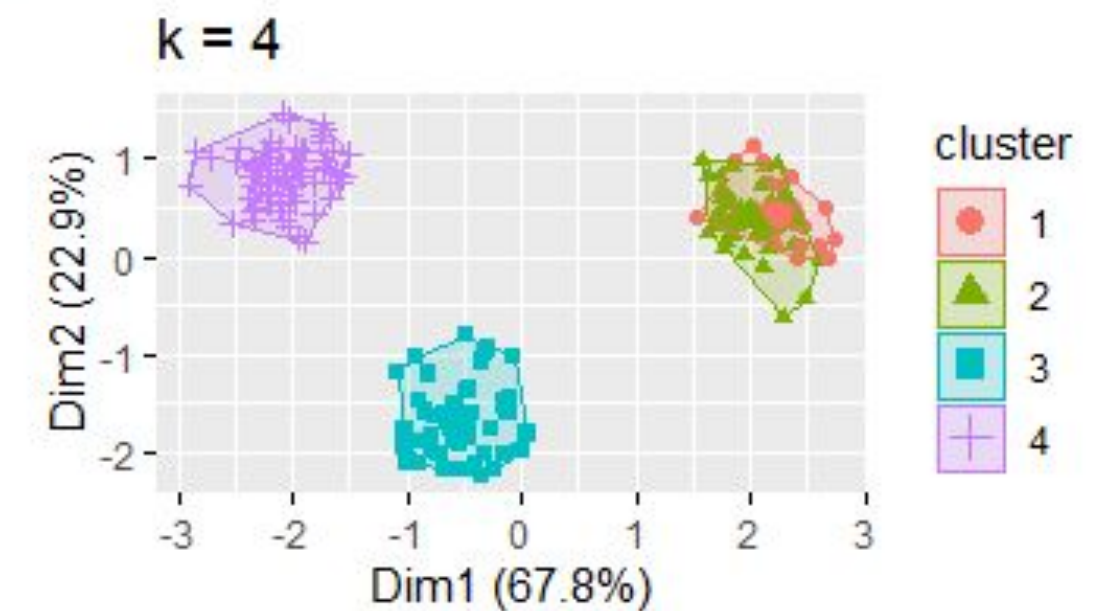
The Largest Cluster Prefers Low Price
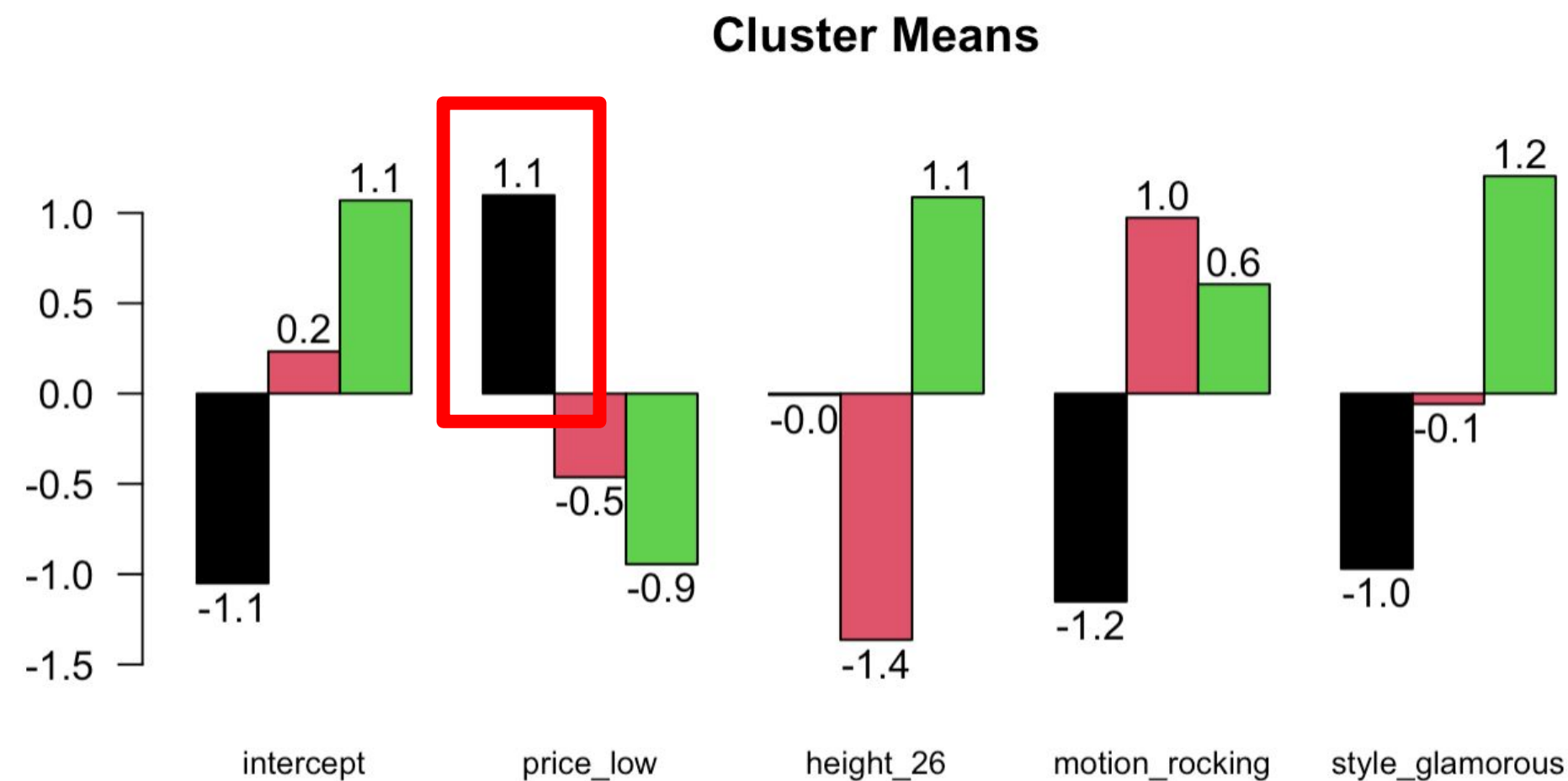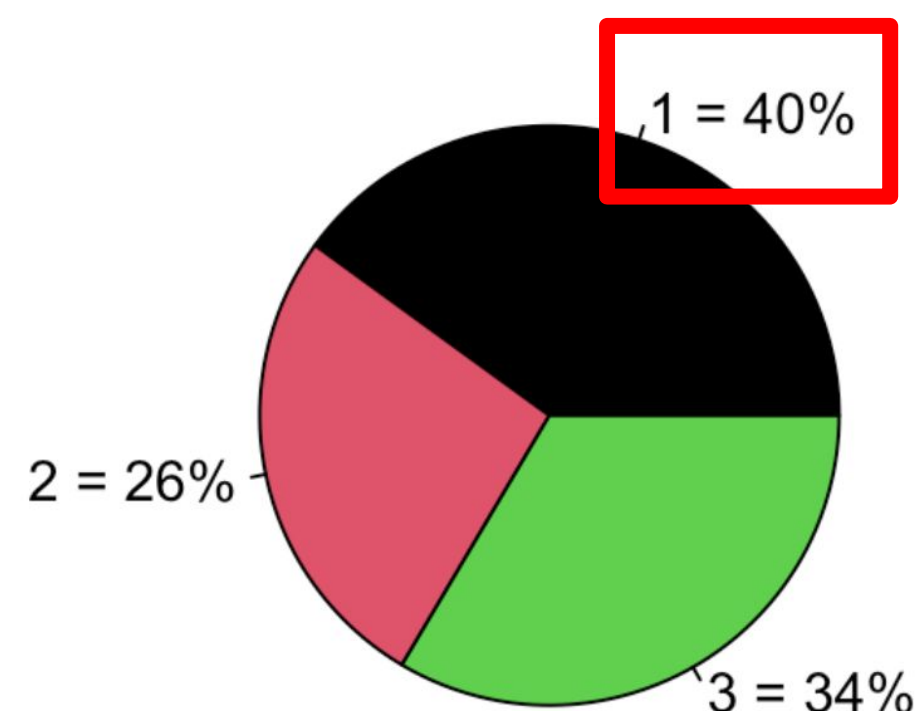
The Ideal Product for Each Cluster

Cluster	Price	Height	Motion	Style	Ideal Product
1 (40%) ⚫	Low price	26 inches	Bouncing	Racing	4
3 (34%) 🟢	Low price	26 inches	Rocking	Glamorous	16
2 (26%) 🟣	Low price	18 inches	Rocking	Glamorous	14

Benefit Segmentation (Priori Segmentation)

```
Call:
lm(formula = ratings ~ (price + height + motion + style) * age,
    data = NewData)

Residuals:
   Min      1Q Median     3Q     Max
-8.375  -2.457 -0.375  2.438   8.310

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)   6.96149    0.18115  38.430  < 2e-16 ***
price         2.95581    0.16202  18.243  < 2e-16 ***
height        0.70770    0.16202   4.368 1.29e-05 ***
motion        0.52125    0.16202   3.217 0.001307 **
style         0.18455    0.16202   1.139 0.254759
age          -0.33381    0.25491  -1.310 0.190449
price:age     0.33008    0.22800   1.448 0.147782
height:age    0.84036    0.22800   3.686 0.000232 ***
motion:age   -0.58747    0.22800  -2.577 0.010021 *
style:age    -0.05605    0.22800  -0.246 0.805833
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.224 on 3190 degrees of freedom
Multiple R-squared:  0.2157,    Adjusted R-squared:  0.2135
F-statistic:  97.5 on 9 and 3190 DF,  p-value: < 2.2e-16
```
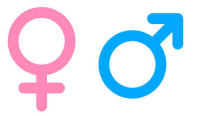
```
Call:
lm(formula = ratings ~ (price + height + motion + style) * gender,
    data = NewData)

Residuals:
   Min      1Q  Median     3Q     Max
-8.8897 -2.1970 -0.0482  2.2153  8.5534

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)     6.2695     0.1791  35.001  < 2e-16 ***
price           3.4973     0.1602  21.829  < 2e-16 ***
height          0.7468     0.1602   4.661 3.27e-06 ***
motion         -0.1526     0.1602  -0.953  0.34084
style          -0.4171     0.1602  -2.604  0.00927 **
gender          0.9693     0.2438   3.977 7.14e-05 ***
price:gender   -0.6940     0.2180  -3.183  0.00147 **
height:gender   0.7134     0.2180   3.272  0.00108 **
motion:gender   0.6985     0.2180   3.204  0.00137 **
style:gender    1.0618     0.2180   4.870 1.17e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.073 on 3190 degrees of freedom
Multiple R-squared:  0.2874,    Adjusted R-squared:  0.2854
F-statistic: 142.9 on 9 and 3190 DF,  p-value: < 2.2e-16
```
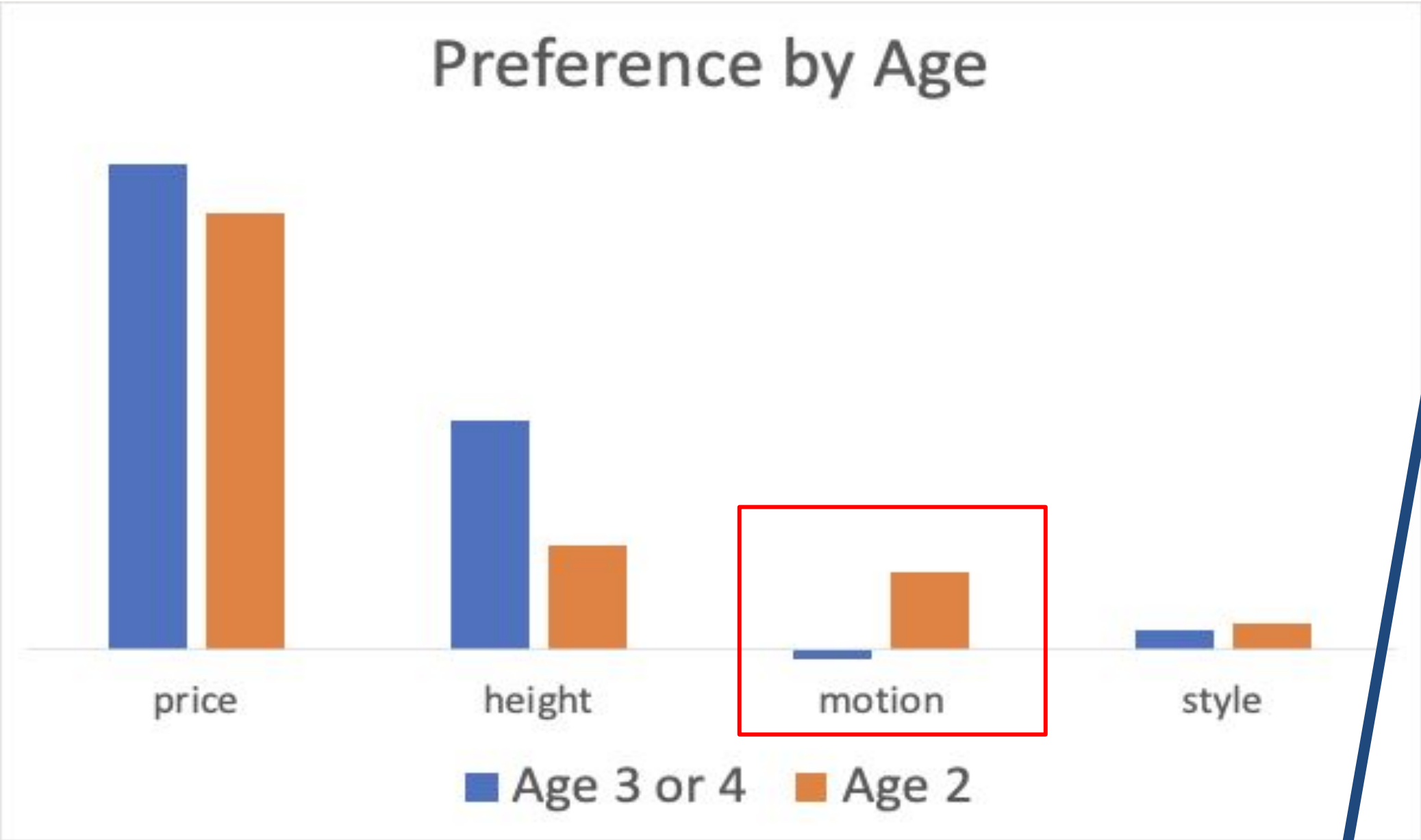
Priori Segmentation -- Age

Preference by Age

- Parents with older kid prefer **rocking toys** while parents with younger kid prefer **bouncing toys**

- They all prefer **low-price & larger size** toy, especially parents with older kids

- Parents with older kids are more **price sensitive**

Age	Price	Height	Motion	Style	Ideal Product
Age 3 or 4	Low Price	26 inches	Bouncing	Glamorous	12
Age 2	Low Price	26 inches	Rocking	Glamorous	16

Priori Segmentation -- Gender

Preference by Gender
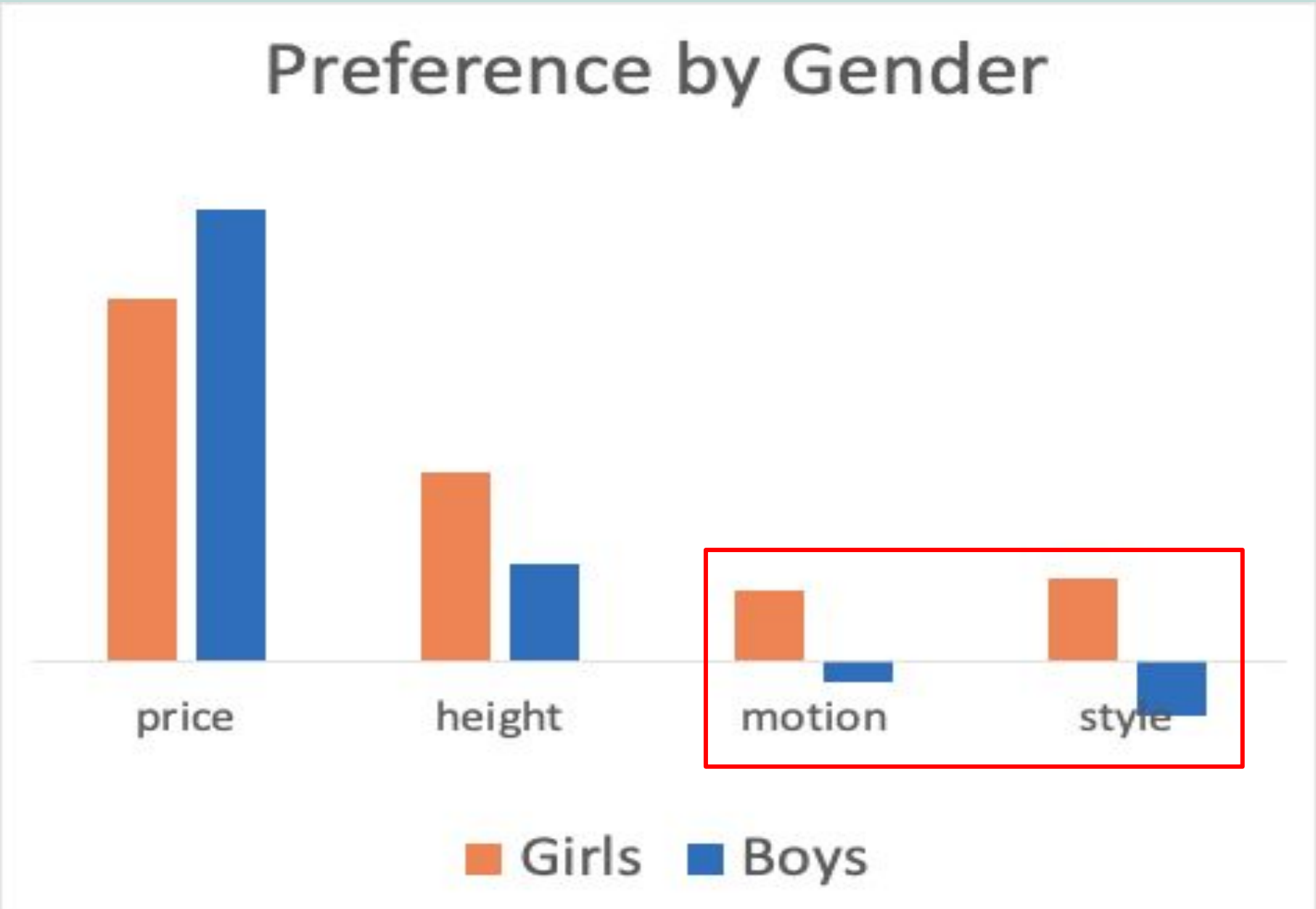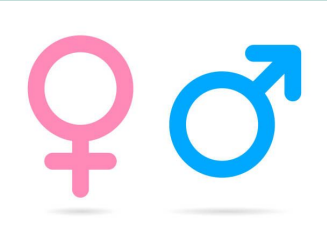
- **Boys**' parents more price sensitive; they prefer **bouncing & racing toys**

- **Girls**' parents prefer **rocking & glamorous toys**

Gender	Price	Height	Motion	Style	Ideal Product
Girl	Low Price	26 inches	Rocking	Glamorous	16
Boy	Low Price	26 inches	Bouncing	Racing	4

Market Simulations

- Product Portfolio

- Scenarios Justification

- Costs & Profit Calculations

Product Portfolio

Profile	Price	Height	Motion	Style	Status
4	Low Price	26 inches	Bouncing	Racing	Ideal
12	Low Price	26 inches	Bouncing	Glamour	Ideal
14	Low Price	18 inches	Rocking	Glamour	Ideal
16	Low Price	26 inches	Rocking	Glamour	Ideal
13	High Price	18 inches	Rocking	Glamour	Existed
5	High Price	18 inches	Rocking	Racing	Existed
7	High Price	26 inches	Rocking	Racing	Existed Comp
8	Low Price	26 inches	Rocking	Racing	Potential Comp

* Once we launch new low-price products, the competitors will respond by lowering price (from profile 7 to 8).

- **Current**

  s1: 5,13,7

- **One Existing Product & One Ideal Product**

  s2: 13,4,8 ;   s3: 13,12,8 ; s4: 13,14,8 ; s5: 13,16,8 ;

  s6: 5,4,8 ;   s7: 5,12,8 ;   s8: 5,14,8 ; s9: 5,16,8 ;

- **Two Ideal Products**

  s10: 4,12,8;   s11: 4,14,8;   s12: 4,16,8;

  s13: 12,14,8;   s14: 12,16,8;   s15: 14,16,8;

Scenarios Justification

Costs & Profit

	P5	P4	P12	P14	P16	P13	P7	P8	mkt Share	First Year Profit	Second Year Profit	
13	NA	NA	**0.62**	**0.25**	NA	NA	NA	**0.13**	0.87	**230805.2**	**244805.2**	Best
12	NA	0.40	NA	NA	0.45	NA	NA	0.16	0.85	204906.2	218906.2	
11	NA	0.46	NA	0.30	NA	NA	NA	0.25	0.76	191829.8	205829.8	
10	NA	0.43	0.31	NA	NA	NA	NA	0.27	0.74	189990.6	203990.6	
14	NA	NA	0.32	NA	0.45	NA	NA	0.23	0.77	180009.2	194009.2	
3	NA	NA	0.63	NA	NA	0.09	NA	0.29	0.71	181891.6	188891.6	
7	0.06	NA	0.63	NA	NA	NA	NA	0.31	0.69	177252.4	184252.4	
15	NA	NA	NA	0.25	0.38	NA	NA	0.38	0.63	131315	145315	
2	NA	0.47	NA	NA	NA	0.09	NA	0.45	0.56	130037.8	137037.8	
6	0.07	0.48	NA	NA	NA	NA	NA	0.46	0.54	127058.4	134058.4	
5	NA	NA	NA	NA	0.47	0.05	NA	0.49	0.52	97799.4	104799.4	
9	0.04	NA	NA	NA	0.48	NA	NA	0.49	0.51	96699.6	103699.6	
1	**0.30**	NA	NA	NA	NA	**0.23**	**0.47**	NA	0.53	**93538.8**	**93538.8**	Current
4	NA	NA	NA	0.37	NA	0.01	NA	0.63	0.38	70845	77845	
8	0.02	NA	NA	0.36	NA	NA	NA	0.63	0.38	70205	77205	

Assumptions

- The total annual market size is 4,000 units

- Once we launch new low-price products, the competitors will respond by lowering price

- We can only have two products in the market at most.

Market Simulations

Based on the Simulations we have a few key takeaways:

- At our current position (P5, P13, C7) we have 53% of the market share and the profitability remains the same over the period of 2 years.

- To get to the best most of optimal scenario our selling strategy should look like (P12, P14, C8), when we own 87% of market share.

- Scenario 4 and 8 are classic examples of cannibalization where we saw our market share for P13 go down when P14 was in the market.

Summary & Recommendations

- Release 2 new products to replace current two products

    - 26 inches Bouncing Glamour with a $95.99 wholesale price

    - 18 inches Rocking Glamour with a $95.99 wholesale price

- Packing: Design customizer packages for different Gender Groups

- Messaging: Emphasize the company is implementing Low Price strategy