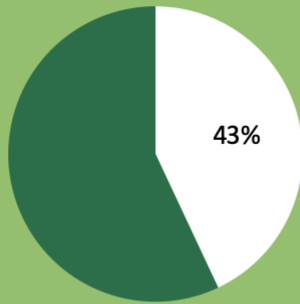# Recommendations to EarlyRider's Toy Horse Product Line

Lujie Chen | Shuyi Chen | Sahyun Kim | Fan Yang | Jinglin Zhu

Executive Summary

Current Market:

43%

■ EarlyRider ■ competitor

Which products?

- **Cluster Analysis**
- **Priori Segmentation**

How to price?

- **Market Share Simulation**
- **Competitor's Reaction**

Final Recommendation: high-price 26-inch bouncing racing horse and 26-inch rocking glamour horse first and low-price version if the competitor lower its price

Find proper consumer segmentations

Two & Three is the optimal number of cluster

Optimal number of clusters

Optimal number of clusters
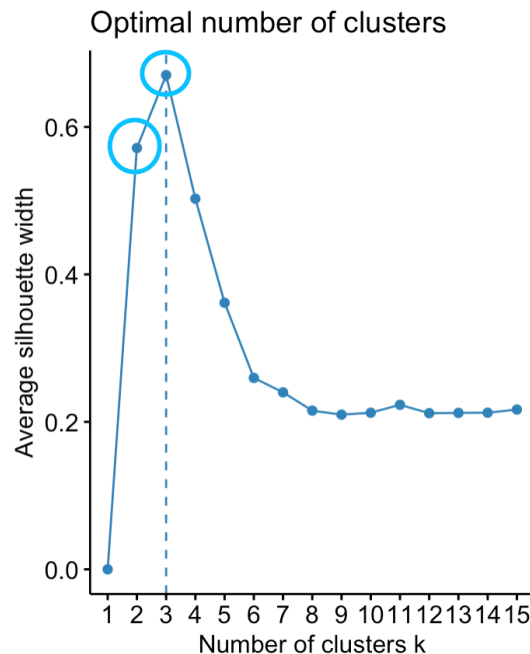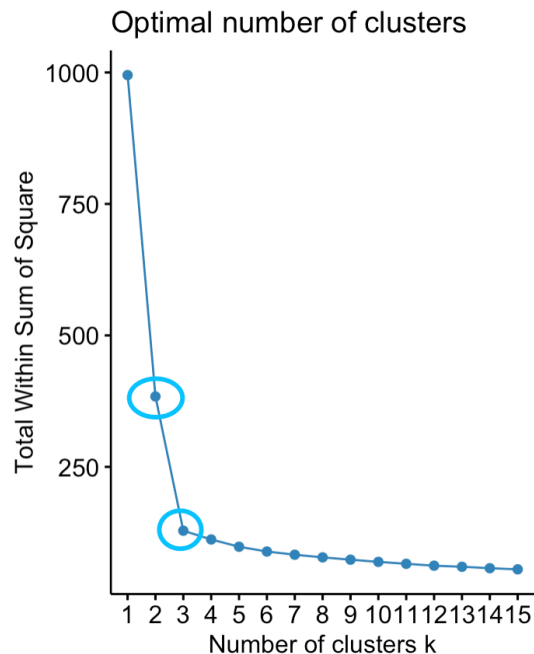
1

The optimal number of clusters

- **Strong elbow pattern around two or three**
- **Focal point is at three**
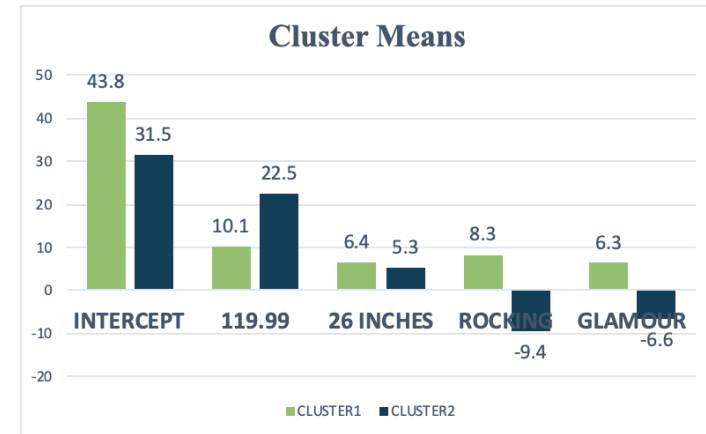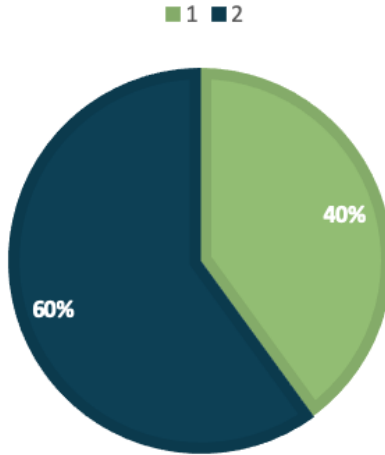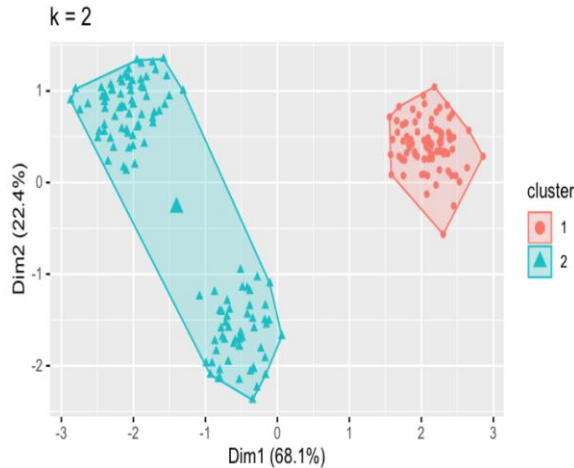
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Insight

Optimal number of clusters is three as it generates highest overall performance.

3

There are distinct differences between two clusters

Two cluster analysis

Cluster One
Relatively price sensitive, Prefers 26 inches, Rocking and Glamour - Profile 16

Cluster Two
Highly price sensitive, Prefers 26 inches, Bouncing and Racing - Profile 4

Three cluster analysis better explains customer segment

Three cluster analysis

Cluster One
Relatively price sensitive, Prefers 26 inches, Rocking and Glamour - Profile 16
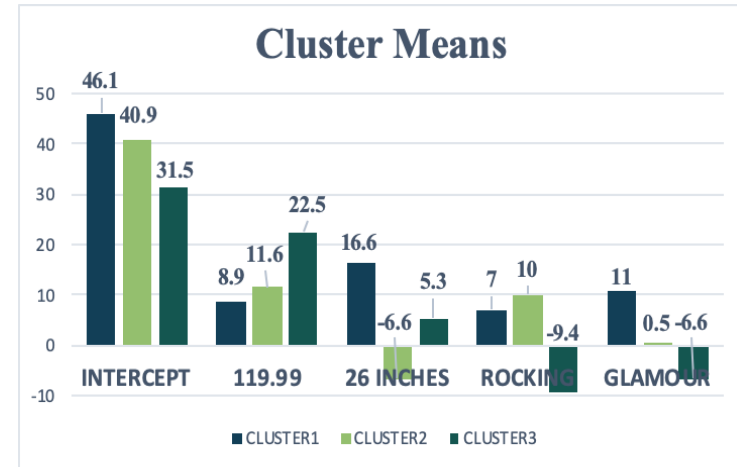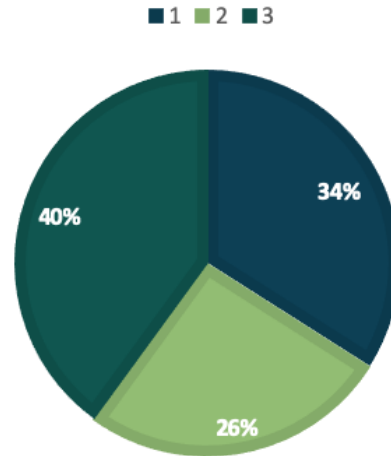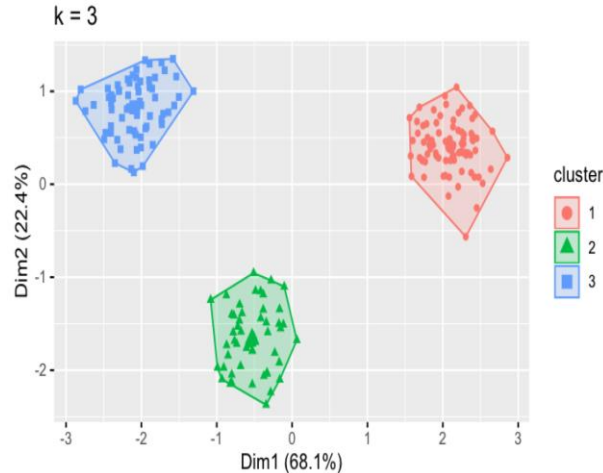
Cluster Two
Relatively price sensitive, Prefers 18 inches, Rocking and Glamour - Profile 14

Cluster Three
Highly price sensitive, Prefers 26 inches, Bouncing and Racing - Profile 4

Age and gender affect part-utilities based on segmentataion

Kids at different age and gender have their own preferences on product features

Interaction	Estimate (coefficient)	Pr(>|t|)
26 Inches : 3-4 year old boys	3.4235	*
26 Inches : 2 year old girls	3.1400	*
26 Inches : 3-4 year old girls	7.1290	***
Rocking : 3-4 year old boys	-5.6426	***
Glamour : 2 year old girls	4.5688	**
Glamour : 3-4 year old girls	4.8176	***

Compared to 2 year old boys

- 3-4 year old boys, 2 year old girls and 3-4 year old girls prefer **26 inches** more.

- 3-4 year old boys prefer **bouncing**.

- Girls prefer **glamour**.

Ideal produts for priori segments

Benefit segmentation: priori

Segments	Size	Motion	Style	Price	Profile
2 year old boys	26 Inches	Rocking	Racing	$119.99	8
3-4 year old boys	26 Inches	Bouncing	Racing	$119.99	4
2 year old girls	26 Inches	Rocking	Glamourous	$119.99	16
3-4 year old girls	26 Inches	Rocking	Glamourous	$119.99	16

Scenario 1: P3 & P15

- **Our Strategy**: Launch most popular products according to clustering and segmentation at a high price (P3&P15)

- **Competitor's Strategy:** Keep high price (P7)

- **Long Term Estimation**
  The same as scenario 2

	139.99 26 inches Bouncing Racing	139.99 26 inches Rocking Glamour	139.99 26 inches Rocking Racing
	P3	**P15**	**P7**
Market Share	38.5%	44.5%	17%
Market Size	1,540	1,780	680
Wholesale Price	111.99	111.99	
Variable Cost	29	41	
Fixed Cost	26,667	26,667	
Profit	101,138	99,696	
Total Profit	200,833		

Scenario 2: P4 & P16

- **Our Strategy**: Launch most popular products according to clustering and segmentation (P4 & P16)

- **Competitor's Strategy:** Lower price (P8)

	119.99 26 inches Bouncing Racing	119.99 26 inches Rocking Glamour	119.99 26 inches Rocking Racing
	P4	P16	P8
Market Share	35.5%	46.5%	18%
Market Size	1,420	1,860	720
Wholesale Price	95.99	95.99	
Variable Cost	29	41	
Fixed Cost	26,667	26,667	
Profit	68,459	75,615	
Total Profit	144,074		

Scenario 3: P4 & P15

- **Our Strategy**: Launch most popular products according to clustering and segmentation, but one at high price, another at low price
  (P3 & P16 | P4 & P15)

- **Competitor's Strategy:** Lower price (P8)

	119.99 26 inches Bouncing Racing	139.99 26 inches Rocking Glamour	119.99 26 inches Rocking Racing
	P4	**P15**	**P8**
Market Share	37.5%	22.5%	40.5%
Market Size	1,500	900	1,620
Wholesale Price	95.99	111.99	
Variable Cost	29	41	
Fixed Cost	26,667	26,667	
Profit	73,818	37,224	
Total Profit	111,043		

Scenario 4: P4 & P8

- **Our Strategy**: Steal market share from competitor by launching the same product and one popular product (P4 & P8 | P8 & P16)
- **Competitor's Strategy:** Lower price (P8)

	119.99 26 inches Bouncing Racing	119.99 26 inches Rocking Racing	119.99 26 inches Rocking Racing
	P4	**P8**	**P8**
Market Share	41.5%	29%	29%
Market Size	1,660	1,170	1,170
Wholesale Price	95.99	95.99	
Variable Cost	29	41	
Fixed Cost	26,667	26,667	
Profit	84,537	37,672	
Total Profit	122,208		

Scenario %	P3	P4	P5	P7	P8	P13	P14	P15	P16	Profit
StausQuo			22	57		21				95,862
Scenario 1: 3,7,15	38.5			17				44.5		200,833
scenario 2: 4,8,16		35.5			18				46.5	144,074
scenario3: 4,8		41.5			58.5 (1/2)					122,208
scenario 3: 8,16					70 (1/2)		30			111,087
scenario4: 3,8,16		37.5			40.5			22		82,214
senario4 4,8,15	0				50.5				49.5	111,043

We are able to lift profit by **75%** in 3 years

| Scenario %	P3	P4	P5	P7	P8	P13	P14	P15	P16	Profit
StausQuo			22	57		21				95,862
1st Year	38.5			17				44.5		200,833
2nd Year		35.5			18				46.5	150,741
3rd Year		35.5			18				46.5	150,741
Total										502,315

By launching 26-inch bouncing racing horse and 26-inch rocking glamour horse, our 3-year profit will reach 500K

Recommendations to EarlyRider's Toy Horse Product Line

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Appendix

Clustering
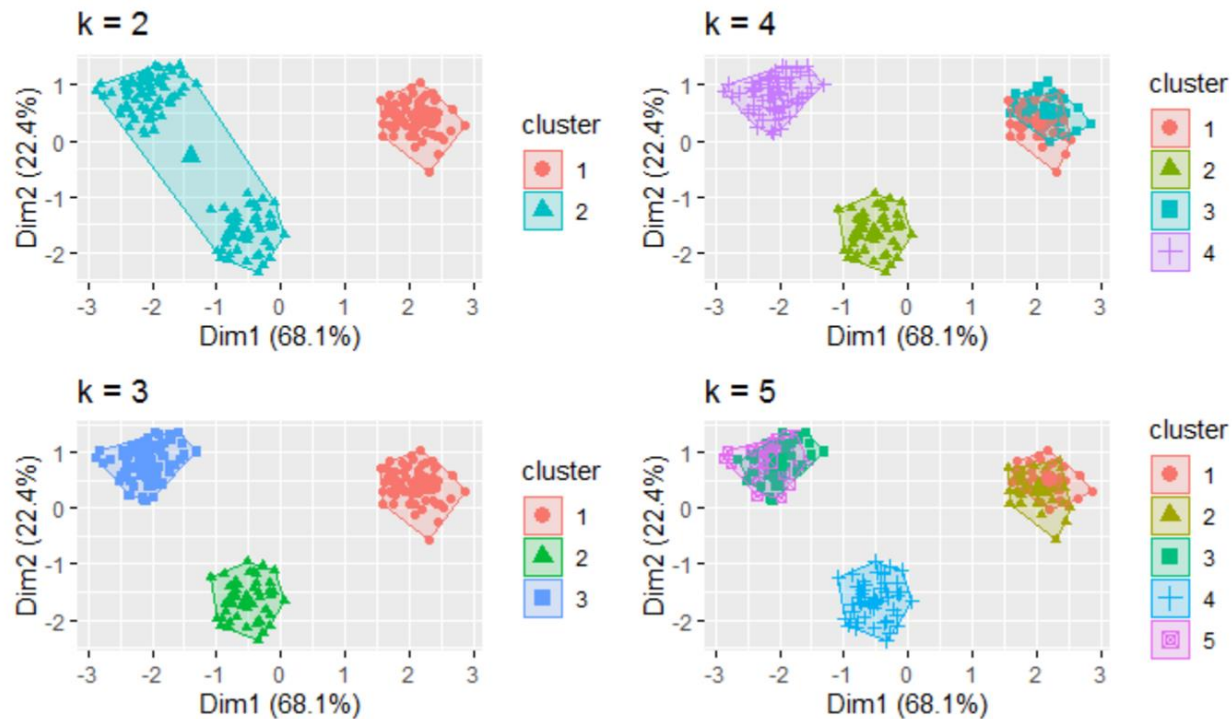
Appendix

Priori Segmentation - the attribute preferences based on age and gender

```
Coefficients:

                                      Estimate Std. Error t value Pr(>|t|)
(Intercept)                            37.7780     1.1634  32.473  < 2e-16 ***
factor(price)1                         15.3906     1.0405  14.791  < 2e-16 ***
factor(size)1                           2.3625     1.0405   2.270 0.023250 *
factor(motion)1                         1.6932     1.0405   1.627 0.103789
factor(style)1                         -0.9823     1.0405  -0.944 0.345214
factor(price)0:factor(segment)1        -2.7857     1.7643  -1.579 0.114457
factor(price)1:factor(segment)1         0.5877     1.7643   0.333 0.739062
factor(price)0:factor(segment)2         3.7244     1.6884   2.206 0.027467 *
factor(price)1:factor(segment)2         1.6658     1.6884   0.987 0.323924
factor(price)0:factor(segment)3         2.6048     1.5834   1.645 0.100054
factor(price)1:factor(segment)3         0.8588     1.5834   0.542 0.587595
factor(size)1:factor(segment)1          3.4235     1.5781   2.169 0.030125 *
factor(size)1:factor(segment)2          3.1400     1.5102   2.079 0.037679 *
factor(size)1:factor(segment)3          7.1290     1.4162   5.034 5.08e-07 ***
factor(motion)1:factor(segment)1       -5.6426     1.5781  -3.576 0.000355 ***
factor(motion)1:factor(segment)2        2.3208     1.5102   1.537 0.124452
factor(motion)1:factor(segment)3        0.3604     1.4162   0.255 0.799118
factor(style)1:factor(segment)1        -2.0865     1.5781  -1.322 0.186193
factor(style)1:factor(segment)2         4.5688     1.5102   3.025 0.002504 **
factor(style)1:factor(segment)3         4.8176     1.4162   3.402 0.000678 ***
```

Appendix

Priori Segmentation - segment-level attribute preferences and ideal products for the priori segments

	(Intercept)	119.99	26 inches	Rocking	Glamour
Male_2	37.77803	15.39062	2.362458	1.693206	−0.9823353
Male_34	34.99230	18.76409	5.785949	−3.949442	−3.0688800
Female_2	41.50244	13.33199	5.502446	4.014004	3.5864224
Female_34	40.38284	13.64461	9.491441	2.053654	3.8353065