Conjoint Analysis

Code ▾

Question 1:Create the factor design for 5 attribute and two level Question 2:Create the orthogonal design and count the profile

Here considering the car as a product which is having five attribute size ,color,price,weight,milage all the attribute having the two level 1-low and 2-high since it is having 5 attribute ,2 level total number of product profile will be Level*attribute which 2^5=32

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```
library(conjoint)
level=c(1,2)
product_profile<-expand.grid(size=level,color=level,price=level,weight=level,mi
lage=level)
product_profile
```

size	color	price	weight	milage
<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1	1	1	1	1
2	1	1	1	1
1	2	1	1	1
2	2	1	1	1
1	1	2	1	1
2	1	2	1	1
1	2	2	1	1
2	2	2	1	1
1	1	1	2	1
2	1	1	2	1

1-10 of 32 rows Previous **1** 2 3 4 Next

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```
View(product_profile)
```

Create the orthogonal profile

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```
#change the type of column as factors
product_profile$size=as.factor(product_profile$size)
product_profile$color=as.factor(product_profile$color)
product_profile$price=as.factor(product_profile$price)
product_profile$weight=as.factor(product_profile$weight)
product_profile$milage=as.factor(product_profile$milage)
full_fact_design<-caFactorialDesign(product_profile )
full_fact_design
```

	size <fctr>	color <fctr>	price <fctr>	weight <fctr>	milage <fctr>
1	1	1	1	1	1
7	1	2	2	1	1
8	2	2	2	1	1
10	2	1	1	2	1
12	2	2	1	2	1
13	1	1	2	2	1
18	2	1	1	1	2
22	2	1	2	1	2
27	1	2	1	2	2
29	1	1	2	2	2

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```
orthogonal_design<-caFactorialDesign(product_profile ,type="orthogonal")
orthogonal_design
```

	size <fctr>	color <fctr>	price <fctr>	weight <fctr>	milage <fctr>
3	1	2	1	1	1
6	2	1	2	1	1
9	1	1	1	2	1
16	2	2	2	2	1
18	2	1	1	1	2

	size	color	price	weight	milage
	<fctr>	<fctr>	<fctr>	<fctr>	<fctr>
23	1	2	2	1	2
28	2	2	1	2	2
29	1	1	2	2	2

8 rows

not doing encoded design as it is already encoded

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```
cor(orthogonal_design)
```

```
       size color price weight milage
size      1     0     0      0      0
color     0     1     0      0      0
price     0     0     1      0      0
weight    0     0     0      1      0
milage    0     0     0      0      1
```

From above we can see that orthogonal design have 8 profiles

Question 3:

What is the consumers’ willingness to pay for color given the following output of a conjoint analysis. Price has three levels and color has two levels. Price levels are 50, 100, and 150. Color levels are Black and White.

The coefficients estimated by caModel function are given below.

Price 50 7.8

Price 100 0.8

Colour Black 1.4

Here caModel calculates the model for individual respondent

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```
 #price rage calculated from given price
# max -min price50+price100+price+150=0 hence 7.8+0.8+price150=0
#hence price150=-8.6
#similarly colr white also -1.4
black_coeff<-1.4
white_coeff<--1.4
#price range=min-max
price_range <- 150-50
price_range
```

```
[1] 100
```

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```
coeff_range<-7.8-(-8.6)
coeff_range
```

```
[1] 16.4
```

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```
unit_range<-price_range/coeff_range
unit_range
```

```
[1] 6.097561
```

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```
color_coeff_range<-black_coeff-(white_coeff)
color_coeff_range
```

```
[1] 2.8
```

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```
will_to_pay<-unit_range*color_coeff_range
will_to_pay
```

```
[1] 17.07317
```

Constumer has to pay 17.07