Conjoint Analysis for Icecream Preferences

># Load the library

> library(conjoint)

> # Define the attributes and levels

> experiment <- expand.grid(

+ flavor = c("chocolate", "vanilla", "strawberry"),

+ price = c(10, 20, 30),

+ container = c("cone", "cup"),

+ topping = c("Yes", "No")

+ )

> # Convert all columns to factors

> experiment[] <- lapply(experiment, factor)

> # Now create the factorial design

> factorial\_design <- caFactorialDesign(data = experiment)

> print(factorial\_design)

flavor price container topping

1 chocolate 10 cone Yes

2 vanilla 10 cone Yes

6 strawberry 20 cone Yes

14 vanilla 20 cup Yes

16 chocolate 30 cup Yes

18 strawberry 30 cup Yes

22 chocolate 20 cone No

26 vanilla 30 cone No

27 strawberry 30 cone No

29 vanilla 10 cup No

30 strawberry 10 cup No

31 chocolate 20 cup No

> # Simulate preferences for 10 respondents (random data for demonstration)

> set.seed(123) # For reproducibility

> pref <- as.data.frame(matrix(sample(1:7, size = nrow(experiment) \* 10, replace = TRUE),

+ nrow = 10,

+ ncol = nrow(experiment)))

> # Name columns as "Profile1", "Profile2", etc.

> colnames(pref) <- paste0("Profile", 1:nrow(experiment))

> # Define attribute names (must match column names in 'experiment')

> z <- c("flavor", "price", "container", "topping")

> # Conjoint analysis

> Conjoint(y = pref, x = experiment, z = z)

------------------------Result-Summary--------------------------

Call:

lm(formula = frml)

Residuals:

Min 1Q Median 3Q Max

-3,9000 -1,8694 0,2097 1,7167 3,4583

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 4,0417 0,1084 37,276 <2e-16 \*\*\*

factor(x$flavor)1 -0,0500 0,1533 -0,326 0,7446

factor(x$flavor)2 0,2333 0,1533 1,522 0,1290

factor(x$price)1 -0,1750 0,1533 -1,141 0,2545

factor(x$price)2 0,2250 0,1533 1,467 0,1432

factor(x$container)1 -0,1694 0,1084 -1,563 0,1190

factor(x$topping)1 0,2306 0,1084 2,126 0,0342 \*

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Signif. codes: 0 ‘\*\*\*’ 0,001 ‘\*\*’ 0,01 ‘\*’ 0,05 ‘.’ 0,1 ‘ ’ 1

Residual standard error: 2,057 on 353 degrees of freedom

Multiple R-squared: 0,03263, Adjusted R-squared: 0,01618

F-statistic: 1,984 on 6 and 353 DF, p-value: 0,06717

[1] "Part worths (utilities) of levels (model parameters for whole sample):"

levnms utls

1 intercept 4,0417

2 flavor -0,05

3 price 0,2333

4 container -0,1833

5 topping -0,175

6 intercept 0,225

7 flavor -0,05

8 price -0,1694

9 container 0,1694

10 topping 0,2306

11 intercept -0,2306

[1] "Average importance of factors (attributes):"

[1] 33,39 31,37 18,96 16,28

[1] Sum of average importance: 100

[1] "Chart of average factors importance"

Warning message:

In cbind(levnms, utls) :

number of rows of result is not a multiple of vector length (arg 1)

------------------------Visualizations--------------------------



