MP2 Technical Report:

Katy Cummings, Tulip Daaboul, Michel Ruiz-Fuentes

2023-04-29

Introduction

Methodology

Results

Load Data:

Descriptive Statistics:

```
# A tibble: 6 x 6
  treatment     group_mean group_n group_sd group_min group_max
  <chr>              <dbl>   <int>    <dbl>     <int>     <int>
1 DairyCon            2.5        6     1.05         1         4
2 DairyPro            1.71       7     1.11         1         4
3 Dairy_control       3.29       7     1.38         2         5
4 PlantCon            2.71       7     1.25         1         4
5 PlantPro            2.5        6     1.22         1         4
6 Plant_control       2.5        6     1.38         1         4
```

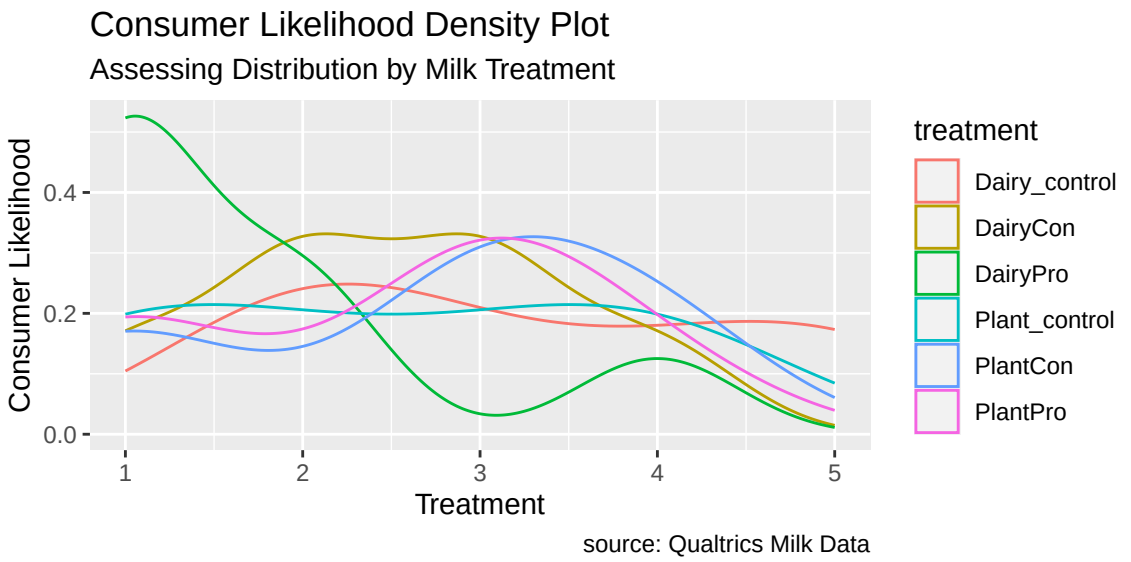
Condition Check 1 Variability & Standard Deviation:

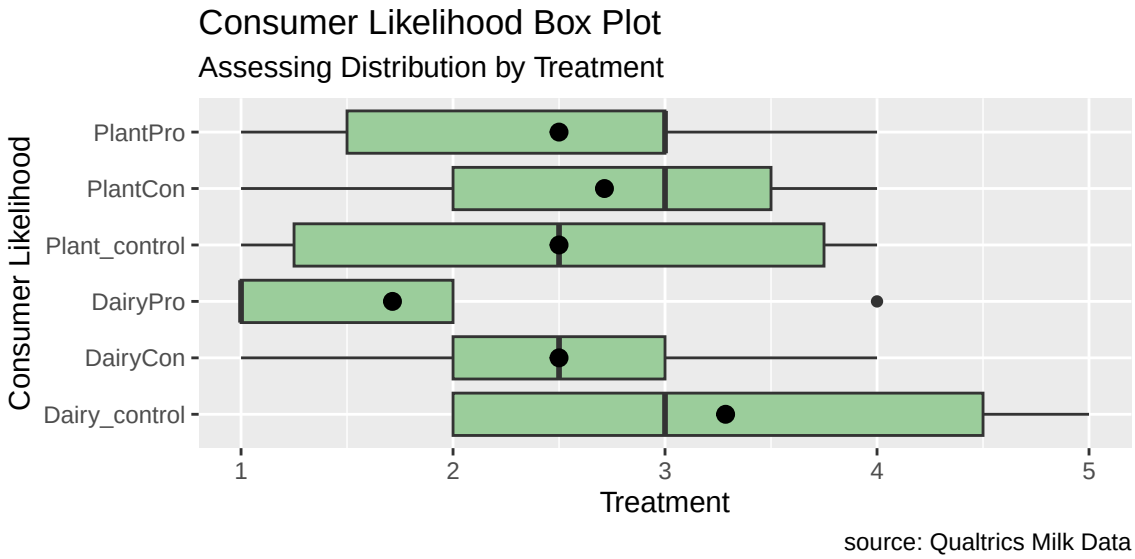
Our largest standard deviation [`Plant Control & Dairy Control`] 1.38 divided by the smallest standard deviation [`DairyCon(-)`] 1.05 equals 1.31. Their quotient is smaller than 2, so we do not violate the condition about constant variance for our ANOVA model.

```
[1] 1.314286
```

Condition Check 2 Constant Variance:

In our density plot, we view the distribution of the `Consumer Likelihood` at the different levels of the `Milk (ad type and sentiment)` treatment. The data is not normally distributed nor unimodal among all levels. While the data distributions for the `Plant_control` and `PlantPro(+)` are normal, the other distributions vary. For example, `DairyCon` and `Plant_control` is bimodal, `Dairy control` and `DairyPro` is right-skewed. Therefore, we have violated the condition about constant variance for our ANOVA model.


Consumer Likelihood Density Plot
Assessing Distribution by Milk Treatment
Consumer Likelihood
0.0
0.2
0.4
1
2
3
4
5
Treatment
treatment
Dairy_control
DairyCon
DairyPro
Plant_control
PlantCon
PlantPro
source: Qualtrics Milk Data


Consumer Likelihood Box Plot
Assessing Distribution by Treatment
Consumer Likelihood
PlantPro
PlantCon
Plant_control
DairyPro
DairyCon
Dairy_control
1
2
3
4
5
Treatment
source: Qualtrics Milk Data

Condition Check 3 Symmetrical Distribution around Group Means:
Conditions Interpretation & Transformation:
Two-Way ANOVA Model:
Interaction Model:
Independent residuals:
Normally Distributed Residuals:
Confidence Intervals & Effect Size:
R-Squared:

Conclusion