WICKED WINES

Wine Buying Behaviour of US Consumers

23 Oct 2020 (updated on 2020-10-26)

Contents

1 Wine Consumer Feelings Data

1.1 An overview of data

```
## Rows: 15
## Columns: 69
## $ `Participant ID`                    <dbl> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 1...
## $ Age                                 <dbl> 38, 48, 35, 26, 45, 55, 51, 34, ...
## $ `1`                                 <dbl> 5, 3, 3, 1, 4, 5, 3, 5, 3, 3, 5,...
## $ `2`                                 <dbl> 4, 4, 2, 2, 4, 4, 3, 4, 3, 2, 4,...
## $ `3`                                 <dbl> 5, 5, 4, 4, 5, 5, 5, 5, 4, 4, 5,...
## $ `4`                                 <dbl> 5, 3, 3, 3, 5, 5, 5, 4, 3, 3, 5,...
## $ `5`                                 <dbl> 5, 3, 3, 2, 5, 5, 5, 5, 3, 4, 5,...
## $ `6`                                 <dbl> 5, 3, 5, 1, 4, 5, 4, 5, 3, 3, 5,...
## $ `7`                                 <dbl> 4, 3, 5, 2, 4, 5, 5, 5, 3, 4, 3,...
## $ `8`                                 <dbl> 5, 3, 2, 2, 5, 5, 5, 4, 3, 5, 5,...
## $ `9`                                 <dbl> 3, 2, 1, 4, 1, 3, 4, 1, 4, 2, 2,...
## $ `10`                                <dbl> 5, 1, 1, 1, 3, 4, 3, 5, 3, 1, 3,...
## $ `11`                                <dbl> 4, 3, 5, 2, 4, 5, 5, 5, 4, 5, 5,...
## $ `12`                                <dbl> 5, 3, 5, 3, 5, 5, 5, 5, 4, 1, 5,...
## $ `13`                                <dbl> 5, 2, 1, 3, 5, 5, 5, 5, 3, 3, 3,...
## $ `14`                                <dbl> 5, 3, 3, 5, 5, 5, 4, 5, 4, 4, 3,...
## $ `15`                                <dbl> 5, 3, 1, 3, 5, 4, 4, 5, 4, 4, 4,...
## $ `16`                                <dbl> 5, 5, 5, 5, 5, 5, 5, 5, 4, 5, 5,...
## $ `17`                                <dbl> 4, 3, 3, 4, 2, 3, 5, 4, 5, 1, 2,...
## $ `18`                                <dbl> 5, 3, 5, 5, 5, 4, 4, 4, 3, 3, 4,...
## $ `19`                                <dbl> 4, 2, 5, 4, 5, 3, 5, 5, 3, 4, 4,...
## $ `20`                                <dbl> 4, 1, 4, 1, 4, 2, 4, 4, 3, 2, 4,...
## $ `21`                                <dbl> 5, 4, 1, 5, 2, 2, 4, 4, 2, 3, 2,...
## $ `22`                                <dbl> 5, 3, 4, 2, 5, 5, 5, 5, 4, 3, 4,...
## $ `23-Wine Spectator`                 <dbl> 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, 1,...
## $ `23-Wine Enthusiast`                <dbl> 1, 0, 0, 0, 1, 1, 0, 1, 0, 0, 1,...
## $ `23-Robert Parker's Wine Advocate`  <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `23-Food & Wine`                    <dbl> 1, 1, 0, 0, 1, 1, 0, 0, 1, 0, 0,...
## $ `23-Bon Appetit`                    <dbl> 0, 0, 0, 0, 0, 0, 1, 0, 1, 1, 1,...
## $ `23-Decantur`                       <dbl> 1, 0, 0, 0, 1, 0, 1, 1, 0, 1, 0,...
## $ `24`                                <dbl> 0, 0, 0, 0, 0, 1, 0, 1, 0, 1, 0,...
## $ `25-a`                              <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `25-b`                              <dbl> 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `25-c`                              <dbl> 1, 0, 1, 0, 1, 1, 0, 0, 0, 1, 1,...
## $ `25-d`                              <dbl> 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0,...
## $ `25-e`                              <dbl> 0, 1, 0, 1, 0, 0, 0, 0, 1, 0, 0,...
## $ `26-a`                              <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `26-b`                              <dbl> 1, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0,...
## $ `26-c`                              <dbl> 0, 1, 0, 0, 0, 0, 1, 0, 0, 0, 0,...
## $ `26-d`                              <dbl> 0, 0, 0, 1, 1, 0, 0, 0, 1, 0, 0,...
## $ `26-e`                              <dbl> 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `26-f`                              <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `26-g`                              <dbl> 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0,...
## $ `26-h`                              <dbl> 0, 0, 0, 0, 0, 1, 1, 0, 0, 1, 1,...
## $ `27`                                <dbl> 1, 2, 2, 2, 1, 1, 1, 1, 1, 1, 1,...
## $ `28-a`                              <dbl> 0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 1,...
## $ `28-b`                              <dbl> 1, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0,...
## $ `28-c`                              <dbl> 0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 1,...
```

```
## $ `28-d`                          <dbl> 1, 0, 0, 0, 0, 1, 1, 0, 1, 0, 0,...
## $ `28-e`                          <dbl> 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0,...
## $ `28-f`                          <dbl> 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1,...
## $ `29-a`                          <dbl> 7, 2, 6, 4, 4, 7, 4, 7, 6, 4, 4,...
## $ `29-b`                          <dbl> 3, 4, 5, 7, 5, 6, 7, 4, 5, 6, 5,...
## $ `29-c`                          <dbl> 6, 1, 7, 2, 7, 4, 2, 3, 1, 5, 7,...
## $ `29-d`                          <dbl> 4, 3, 1, 1, 2, 3, 1, 1, 3, 3, 2,...
## $ `29-e`                          <dbl> 5, 7, 3, 5, 6, 2, 5, 5, 4, 7, 6,...
## $ `29-f`                          <dbl> 2, 6, 4, 6, 3, 5, 6, 6, 7, 2, 3,...
## $ `29-g`                          <dbl> 1, 5, 2, 3, 1, 1, 3, 2, 2, 1, 1,...
## $ `29-h`                          <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `30`                            <dbl> 2, 2, 1, 2, 2, 2, 2, 2, 2, 3, 2,...
## $ `31`                            <dbl> 1, 5, 5, 4, 4, 4, 5, 2, 3, 1, 1,...
## $ `32`                            <dbl> 4, 1, 1, 1, 3, 4, 1, 2, 2, 4, 4,...
## $ `33`                            <dbl> 2, 2, 3, 1, 4, 4, 4, 1, 2, 1, 1,...
## $ `34`                            <dbl> 2, 2, 2, 1, 3, 2, 2, 2, 1, 2, 3,...
## $ `35`                            <dbl> 2, 1, 2, 1, 1, 1, 2, 1, 1, 1, 1,...
## $ `36`                            <dbl> 1, 2, 1, 1, 1, 2, 1, 1, 1, 6, 5,...
## $ `37`                            <dbl> 4, 5, 3, 4, 5, 4, 4, 4, 3, 4, 5,...
## $ `38`                            <dbl> 4, 4, 4, 1, 4, 4, 6, 4, 1, 5, 4,...
## $ `39`                            <dbl> 3, 6, 4, 2, 3, 6, 1, 3, 3, 6, 6,...
```

1.2 Variables renamed

```
##  [1] "id"         "age"        "adequate"   "irrelevant" "interest"
##  [6] "decision"   "care"       "choose"     "discount"   "think"
## [11] "status"     "read"       "color"      "aroma"      "course"
## [16] "positive"   "fairs"      "enjoy"      "image"      "indulge"
## [21] "benefit"    "type"       "easy"       "learn"      "pubspec"
## [26] "pubenth"    "pubadv"     "pubfoo"     "pubapp"     "pubdec"
## [31] "sublist"    "ptrcd"      "pt90"       "ptabs"      "ptatt"
## [36] "ptunf"      "chopt"      "chont"      "chofrds"    "chostrs"
## [41] "chorvw"     "chopub"     "choweb"     "chopro"     "wedu"
## [46] "crstas"     "crsuni"     "crsdin"     "crsweb"     "crssem"
## [51] "crsself"    "chonot"     "chopri"     "chopnt"     "choadv"
## [56] "chofrd"     "choind"     "chostr"     "chooth"     "consout"
## [61] "spendout"   "conshm"     "spendhm"    "gender"     "marital"
## [66] "edu"        "ethnic"     "income"     "39"
```

1.3 Missing values

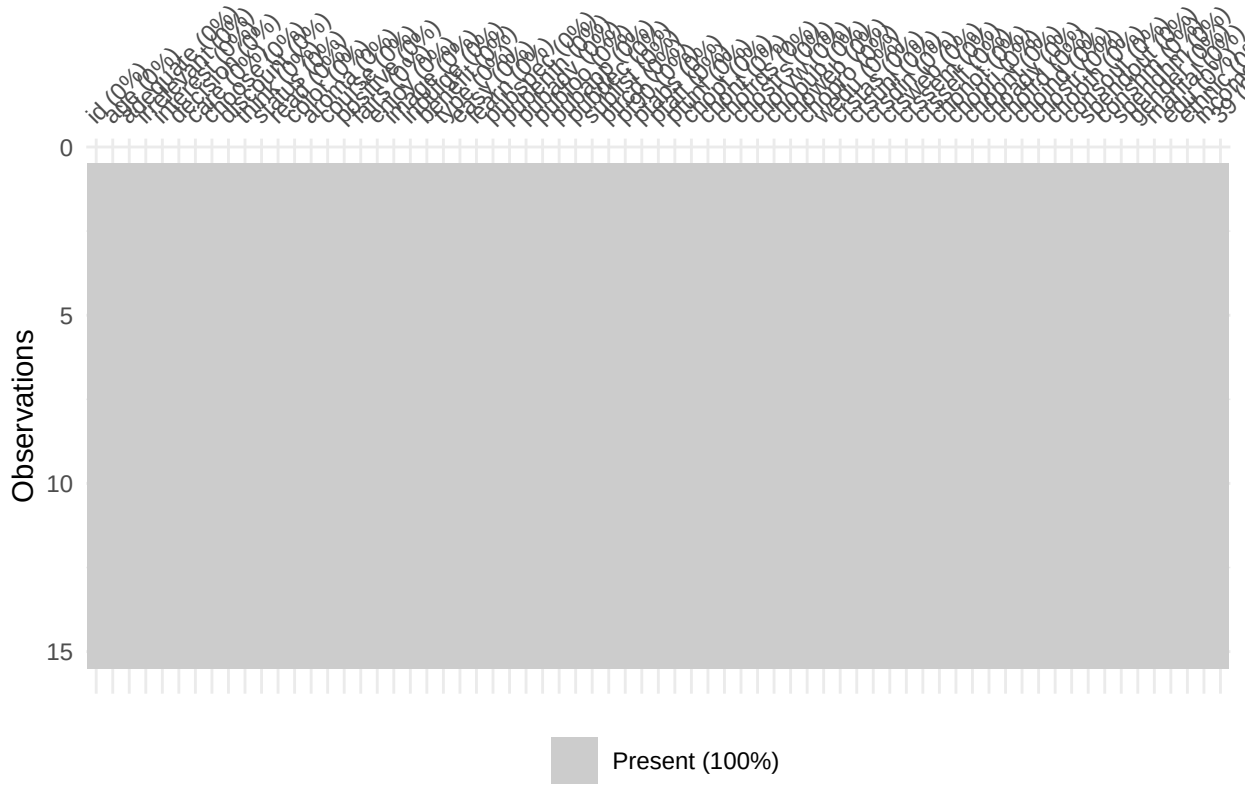


Figure 1: Pattern of missing values

1.4 Consumer feeling toward wine tasting

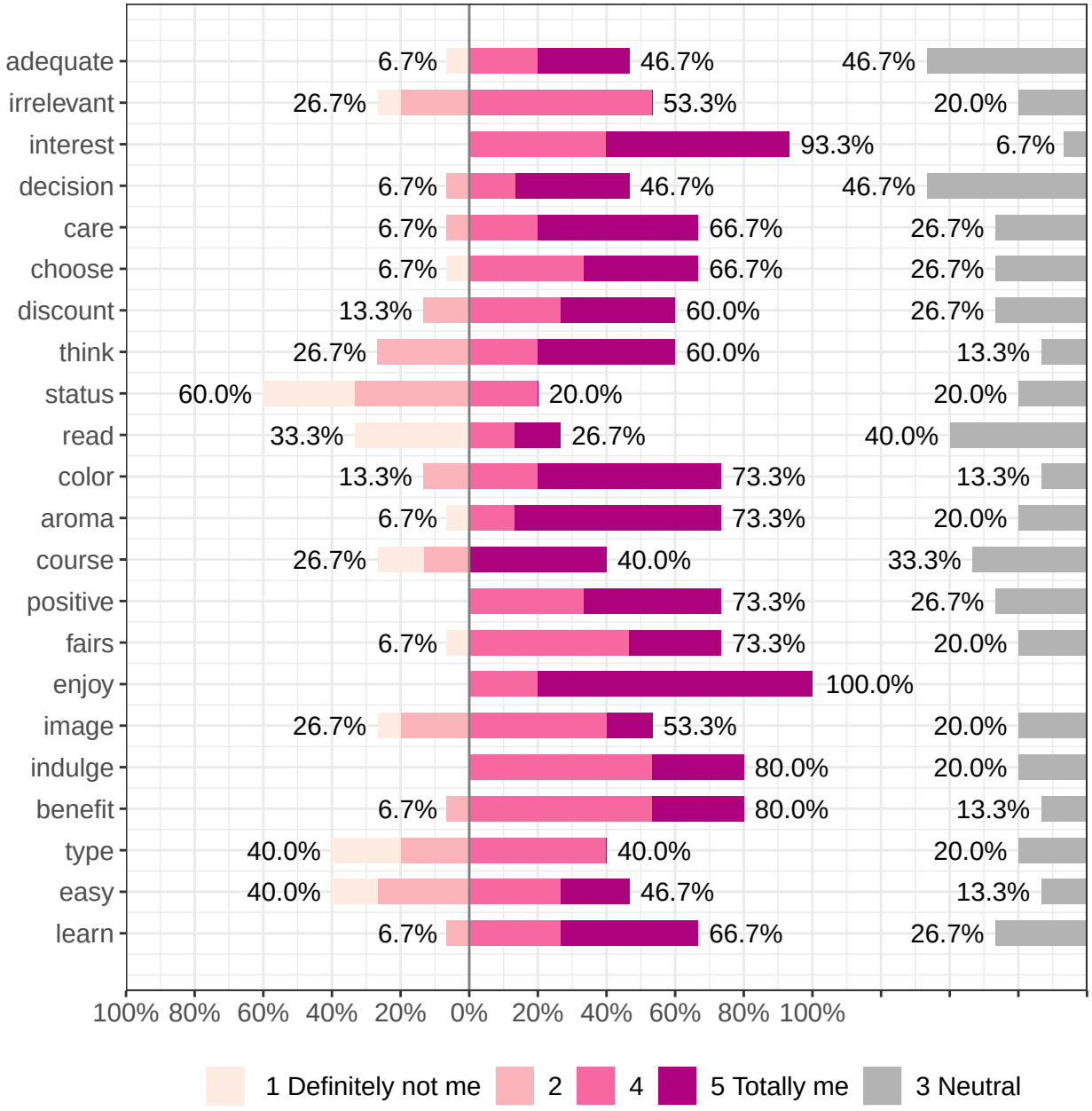
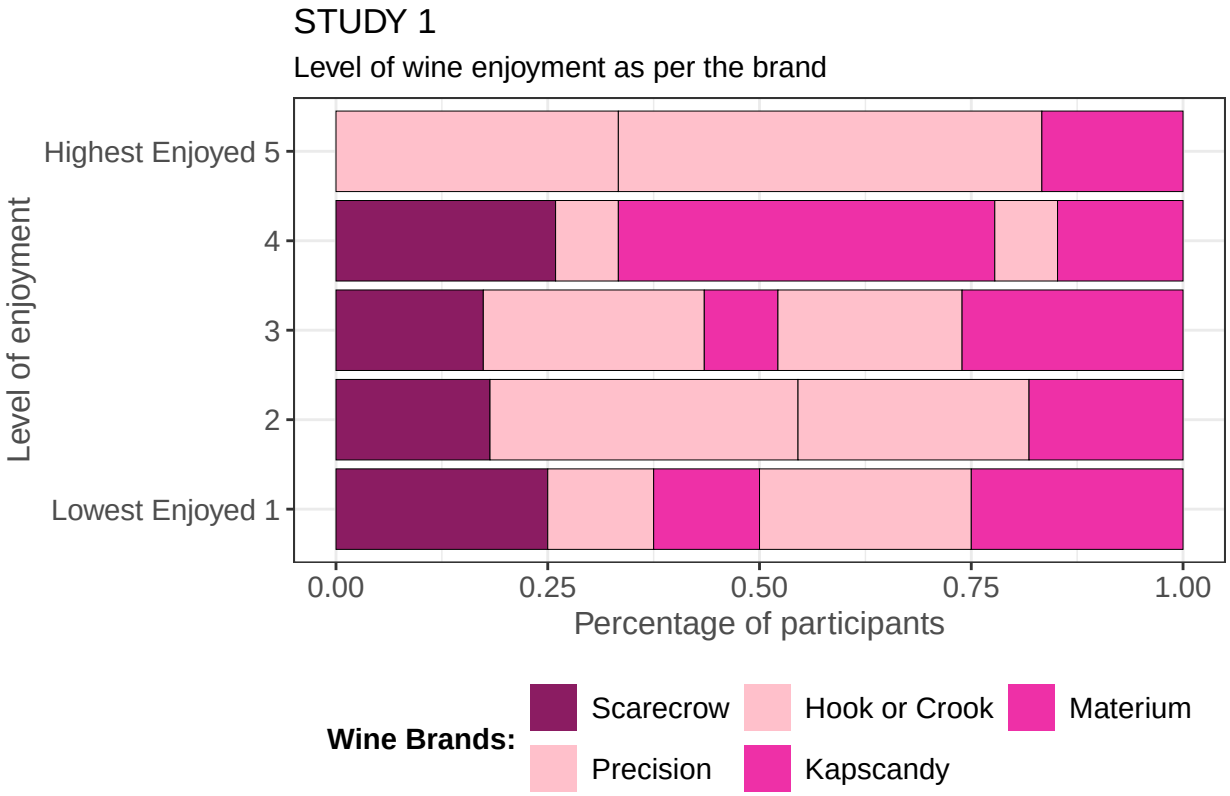


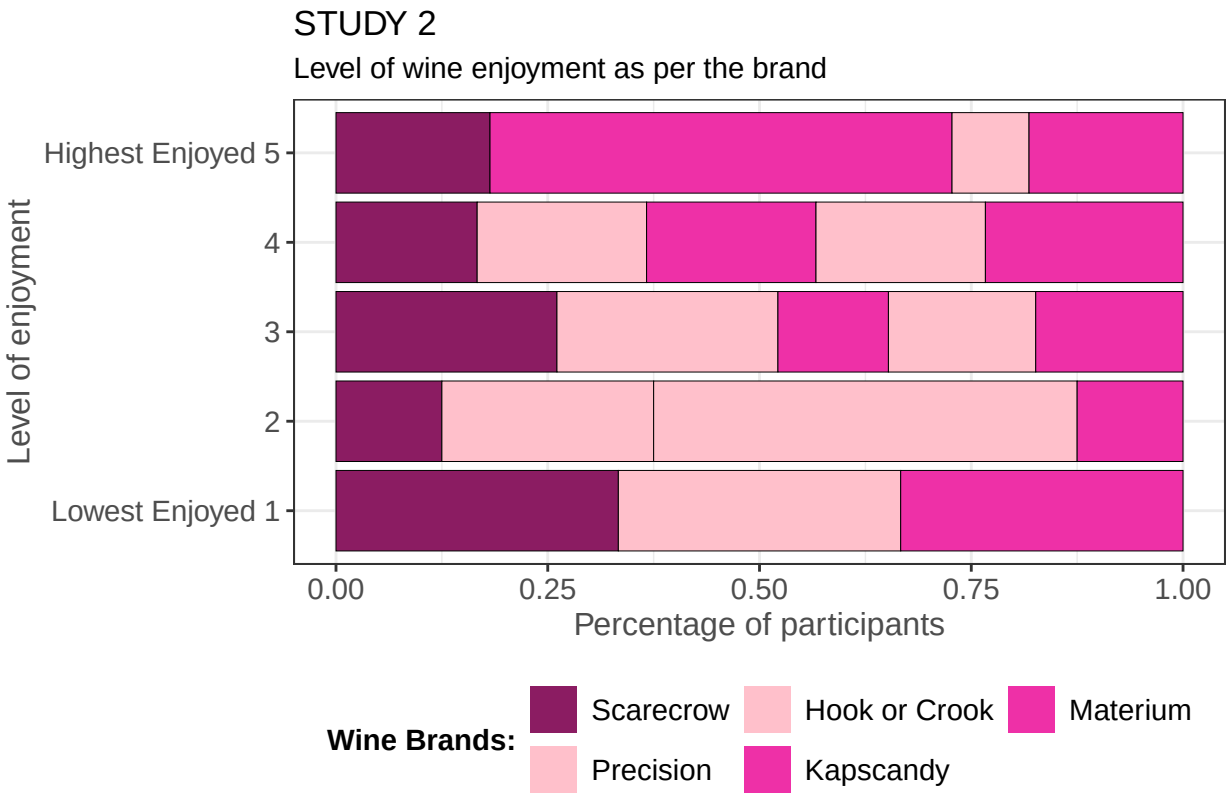
Figure 2: Consumer feelings toward wine and wine consumption

2 Level of enjoyment as per the wine brand

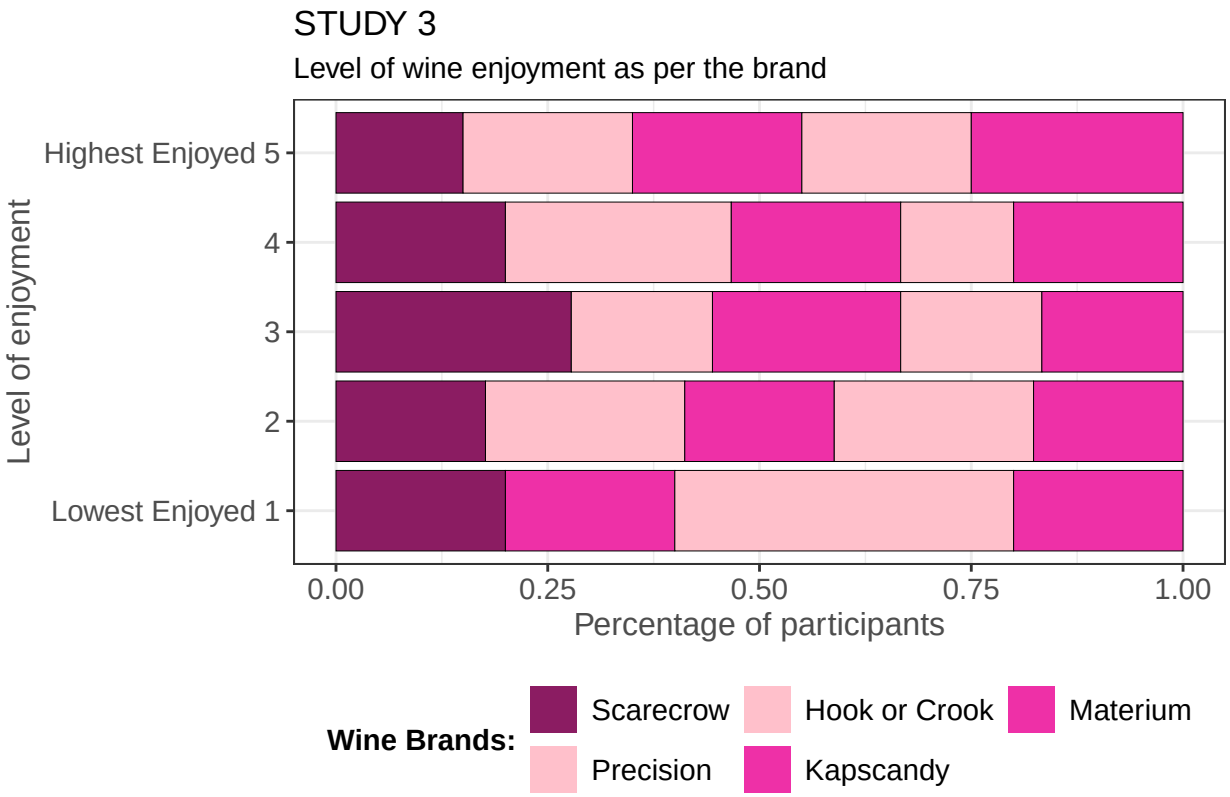
2.1 Round 1



2.2 Round 2


STUDY 2
Level of wine enjoyment as per the brand
Highest Enjoyed 5
4
3
2
Lowest Enjoyed 1
Level of enjoyment
0.00
0.25
0.50
0.75
1.00
Percentage of participants
Wine Brands:
Scarecrow
Hook or Crook
Materium
Precision
Kapscandy

2.3 Round 3


STUDY 3
Level of wine enjoyment as per the brand
Highest Enjoyed 5
4
3
2
Lowest Enjoyed 1
Level of enjoyment
0.00
0.25
0.50
0.75
1.00
Percentage of participants
Wine Brands:
Scarecrow
Hook or Crook
Materium
Precision
Kapscandy

3 In three different studies how consumer's level of wine enjoyment related with their intention to re-drink the same wine?

Pearson's **chi-square test** is used to find the correlation between the level of wine enjoyment and consumer's intention to re-drink the same wine.

3.1 Study 1

```
## [1] "participant1" "brand1"       "enjoy1"       "drink1"

##
##  1  2  3  4  5
##  8 11 23 27  6

##
##  0  1
## 31 44

##
##      0  1
##   1  8  0
##   2  8  3
##   3 13 10
##   4  2 25
##   5  0  6

##
##  Pearson's Chi-squared test
##
## data:  table(round1a$enjoy1, round1a$drink1)
## X-squared = 35.057, df = 4, p-value = 4.523e-07
```

3.2 Study 2

```
## [1] "participant2" "brand2"       "enjoy2"       "drink2"

##
##  1  2  3  4  5
##  3  8 23 30 11

##
##  0  1
## 20 55

##
##      0  1
##   1  3  0
##   2  8  0
##   3  9 14
##   4  0 30
##   5  0 11
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(round2a$enjoy2, round2a$drink2)
## X-squared = 46.986, df = 4, p-value = 1.535e-09
```

3.3 Study 3

```
## [1] "participant3" "brand3"       "enjoy3"       "drink3"
```

```
##
##  1  2  3  4  5
##  5 17 18 15 20
```

```
## < table of extent 0 >
```

```
##
##      0  1
##   1  5  0
##   2 15  2
##   3 10  8
##   4  0 15
##   5  0 20
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(round3a$enjoy3, round3a$drink3)
## X-squared = 49.129, df = 4, p-value = 5.489e-10
```

4 Relationship between the levels of wine attributes and consumer's wine enjoyment score.

This will help us to understand for which brand which particular attribute is playing a major role in the higher or lower wine enjoyment score.

```
##  [1] "participant1"               "brand1"
##  [3] "Tannin:Low"                 "Tannin:Medium-minus"
##  [5] "Tannin:Medium"              "Tannin:Medium-plus"
##  [7] "Tannin:High"                "Acidity:Low"
##  [9] "Acidity:Medium-minus"       "Acidity:Medium"
## [11] "Acidity:Medium-plus"        "Acidity:High"
## [13] "Body:Low"                   "Body:Medium-minus"
## [15] "Body:Medium"                "Body:Medium-plus"
## [17] "Body:High"                  "Sweetness:Low"
## [19] "Sweetness:Medium-minus"     "Sweetness:Medium"
## [21] "Sweetness:Medium-plus"      "Sweetness:High"
## [23] "Alcohol Level:Low"          "Alcohol Level:Medium-minus"
## [25] "Alcohol Level:Medium"       "Alcohol Level:Medium-plus"
## [27] "Alcohol Level:High"         "enjoy1"
## [29] "drink1"
```

```
## Rows: 75
## Columns: 29
## $ participant1                <dbl> 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 3, 3, 3,...
## $ brand1                      <dbl> 1, 2, 3, 4, 5, 1, 2, 3, 4, 5, 1, 2, 3,...
## $ `Tannin:Low`                <dbl> 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0,...
## $ `Tannin:Medium-minus`       <dbl> 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 1, 0,...
## $ `Tannin:Medium`             <dbl> 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Tannin:Medium-plus`        <dbl> 1, 0, 1, 0, 0, 1, 1, 0, 0, 0, 1, 0, 1,...
## $ `Tannin:High`               <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0,...
## $ `Acidity:Low`               <dbl> 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0,...
## $ `Acidity:Medium-minus`      <dbl> 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0,...
## $ `Acidity:Medium`            <dbl> 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1,...
## $ `Acidity:Medium-plus`       <dbl> 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0,...
## $ `Acidity:High`              <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Body:Low`                  <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Body:Medium-minus`         <dbl> 0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 0, 1, 0,...
## $ `Body:Medium`               <dbl> 0, 0, 1, 1, 1, 0, 0, 0, 0, 0, 1, 0, 1,...
## $ `Body:Medium-plus`          <dbl> 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Body:High`                 <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Sweetness:Low`             <dbl> 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 0, 1, 0,...
## $ `Sweetness:Medium-minus`    <dbl> 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 0,...
## $ `Sweetness:Medium`          <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1,...
## $ `Sweetness:Medium-plus`     <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Sweetness:High`            <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Alcohol Level:Low`         <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0,...
## $ `Alcohol Level:Medium-minus` <dbl> 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0,...
## $ `Alcohol Level:Medium`      <dbl> 0, 1, 1, 0, 1, 0, 1, 1, 1, 1, 0, 0, 1,...
## $ `Alcohol Level:Medium-plus` <dbl> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0,...
## $ `Alcohol Level:High`        <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ enjoy1                      <dbl> 3, 4, 3, 4, 5, 1, 1, 1, 1, 1, 4, 3, 4,...
## $ drink1                      <dbl> 1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 1, 1, 1,...
```

```
## Rows: 75
## Columns: 29
## $ participant1                 <fct> 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 3, 3, 3,...
## $ brand1                       <fct> 1, 2, 3, 4, 5, 1, 2, 3, 4, 5, 1, 2, 3,...
## $ `Tannin:Low`                 <dbl> 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0,...
## $ `Tannin:Medium-minus`        <dbl> 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 1, 0,...
## $ `Tannin:Medium`              <dbl> 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Tannin:Medium-plus`         <dbl> 1, 0, 1, 0, 0, 1, 1, 0, 0, 0, 1, 0, 1,...
## $ `Tannin:High`                <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0,...
## $ `Acidity:Low`                <dbl> 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0,...
## $ `Acidity:Medium-minus`       <dbl> 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0,...
## $ `Acidity:Medium`             <dbl> 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1,...
## $ `Acidity:Medium-plus`        <dbl> 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0,...
## $ `Acidity:High`               <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Body:Low`                   <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Body:Medium-minus`          <dbl> 0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 0, 1, 0,...
## $ `Body:Medium`                <dbl> 0, 0, 1, 1, 1, 0, 0, 0, 0, 0, 1, 0, 1,...
## $ `Body:Medium-plus`           <dbl> 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Body:High`                  <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Sweetness:Low`              <dbl> 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 0, 1, 0,...
## $ `Sweetness:Medium-minus`     <dbl> 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 0,...
## $ `Sweetness:Medium`           <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1,...
## $ `Sweetness:Medium-plus`      <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Sweetness:High`             <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ `Alcohol Level:Low`          <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0,...
## $ `Alcohol Level:Medium-minus` <dbl> 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0,...
## $ `Alcohol Level:Medium`       <dbl> 0, 1, 1, 0, 1, 0, 1, 1, 1, 1, 0, 0, 1,...
## $ `Alcohol Level:Medium-plus`  <dbl> 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0,...
## $ `Alcohol Level:High`         <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ enjoy1                       <fct> 3, 4, 3, 4, 5, 1, 1, 1, 1, 1, 4, 3, 4,...
## $ drink1                       <fct> 1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 1, 1, 1,...

## # A tibble: 1,875 x 6
##    participant1 brand1 enjoy1 drink1 feature     cond
##    <fct>        <fct>  <fct>  <fct>  <fct>      <dbl>
##  1 1            1      3      1      Tannin:Low     0
##  2 1            2      4      1      Tannin:Low     0
##  3 1            3      3      1      Tannin:Low     0
##  4 1            4      4      1      Tannin:Low     0
##  5 1            5      5      1      Tannin:Low     0
##  6 2            1      1      0      Tannin:Low     0
##  7 2            2      1      0      Tannin:Low     0
##  8 2            3      1      0      Tannin:Low     1
##  9 2            4      1      0      Tannin:Low     0
## 10 2            5      1      0      Tannin:Low     0
## # ... with 1,865 more rows
```

4.1 The most desired wine feature