

User Research Analysis

"An analysis of the user feedback for the eight different advertising experience experiments."

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Pre-processing the data

There were a total of 23 unique respondents. The data needed to be re-ordered before it could be analysed because every participant experienced the advertising in a randomised unique order in order to mitigate for various biases, like 'learnt behaviour', tiredness or boredom over time. The responses have also been anonymised for the sake of the respondents privacy; to that end, their email addresses were the most personal data variable recorded and when analysing the data, the dataset has email addresses replaced with an id.

Getting participant consent

This questionnaire incorporated a consent form at the beginning so that participants had to consent first before answering any questions relating to the topics being investigated.

```
#going to import the Excel spreadsheet of our questionnaire
# results dataset
feedback.raw <- read_excel("../data/iot-advertising-user-
feedback-01-responses_processed.xlsx")
uk_census.age_sex_raw <- read_csv("../uk-
data/Data_AGE_SEX_UNIT_18_69.csv")

uk_census.age_sex_data <- select(uk_census.age_sex_raw,
  starts_with("F"))
uk_census.age_sex_sizes <-
  as.numeric(as.vector(unlist(slice(uk_census.age_sex_data,
  2))))
uk_census.age_sex_trimmed <-
  t(as.data.frame(as.numeric(as.vector(unlist(uk_census.age_sex_s
  as.character(unlist(uk_census.age_sex_data[1,])))))

#uk_census.age_sex_subs <- subset(uk_census.age_sex_trimmed,
#  select=colnames(uk_census.age_sex_trimmed)[-grep("Total",
#  colnames(uk_census.age_sex_trimmed))])
uk_census.age_sex_with_pc <-
  bind_rows(as.data.frame(uk_census.age_sex_trimmed),
  as.data.frame(uk_census.age_sex_trimmed /
  rowSums(uk_census.age_sex_trimmed, na.rm = TRUE)))
uk_census.age_sex_with_pc_collapsed <-
  uk_census.age_sex_with_pc

#rm(uk_census.age_sex_sizes, uk_census.age_sex_trimmed,
#  uk_census.age_sex_subs, uk_census.age_sex_with_pc)
```

```

rm(uk_census.age_sex_sizes, uk_census.age_sex_trimmed,
  uk_census.age_sex_with_pc)

#Replacing NA value with 0
uk_census.age_sex_with_pc_collapsed[is.na(uk_census.age_sex_with_-
  <- 0

#Merging columns to match age group of the feedback
uk_census.age_sex_with_pc_collapsed <-
  within(uk_census.age_sex_with_pc_collapsed,
`Age : Age 18 to 24 - Sex : Males - Unit : Persons` <-
`Age : Age 18 to 19 - Sex : Males - Unit : Persons` +
`Age : Age 20 to 24 - Sex : Males - Unit : Persons`)
uk_census.age_sex_with_pc_collapsed <-
  within(uk_census.age_sex_with_pc_collapsed,
`Age : Age 18 to 24 - Sex : Females - Unit : Persons` <-
`Age : Age 18 to 19 - Sex : Females - Unit : Persons` +
`Age : Age 20 to 24 - Sex : Females - Unit : Persons`)
uk_census.age_sex_with_pc_collapsed <-
  within(uk_census.age_sex_with_pc_collapsed,
`Age : Age 50 and over - Sex : Males - Unit : Persons` <-
`Age : Age 50 to 54 - Sex : Males - Unit : Persons` +
`Age : Age 55 to 59 - Sex : Males - Unit : Persons` +
`Age : Age 60 to 64 - Sex : Males - Unit : Persons` +
`Age : Age 65 to 69 - Sex : Males - Unit : Persons`)
uk_census.age_sex_with_pc_collapsed <-
  within(uk_census.age_sex_with_pc_collapsed,
`Age : Age 50 and over - Sex : Females - Unit : Persons` <-
`Age : Age 50 to 54 - Sex : Females - Unit : Persons` +
`Age : Age 55 to 59 - Sex : Females - Unit : Persons` +
`Age : Age 60 to 64 - Sex : Females - Unit : Persons` +
`Age : Age 65 to 69 - Sex : Females - Unit : Persons`)
#removing columns that have been merge
uk_census.age_sex_with_pc_collapsed <-
  subset(uk_census.age_sex_with_pc_collapsed, select = -c(
`Age : Age 18 to 19 - Sex : Males - Unit : Persons`,
`Age : Age 18 to 19 - Sex : Females - Unit : Persons`,
`Age : Age 20 to 24 - Sex : Males - Unit : Persons`,
`Age : Age 20 to 24 - Sex : Females - Unit : Persons`,
`Age : Age 50 to 54 - Sex : Males - Unit : Persons`,
`Age : Age 50 to 54 - Sex : Females - Unit : Persons`,
`Age : Age 55 to 59 - Sex : Males - Unit : Persons`,
`Age : Age 55 to 59 - Sex : Females - Unit : Persons`,
`Age : Age 60 to 64 - Sex : Males - Unit : Persons`,
`Age : Age 60 to 64 - Sex : Females - Unit : Persons`,
`Age : Age 60 to 64 - Sex : Females - Unit : Persons`,
`Age : Age 60 to 64 - Sex : Females - Unit : Persons`

```

```

`Age : Age 65 to 69 - Sex : Males - Unit : Persons`,
`Age : Age 65 to 69 - Sex : Females - Unit : Persons`))

# re-ordering columns
uk_census.age_sex_with_pc_collapsed <-
  uk_census.age_sex_with_pc_collapsed[,  

    str_sort(names(uk_census.age_sex_with_pc_collapsed))]

factors.yes_no <- c('Yes', 'No')

exp_key.enjoyable = "I found the experience enjoyable";
exp_key.annoying = "I found the experience annoying";
exp_key.engaging = "I found the experience engaging";
exp_key.interesting = "I found the experience interesting";
exp_key.persuasive = "I found the experience to be persuasive";
exp_key.connected = "The experience connected me with the  

  brand?";
exp_key.easy = "I found the experience easy to use";

exp_keys = c(exp_key.enjoyable, exp_key.annoying,  

  exp_key.engaging, exp_key.interesting, exp_key.persuasive,  

  exp_key.connected, exp_key.easy);

#Takes the column and iterates over the values comparing each  

  row to the fullData example and filling in blanks where the  

  entry is absent; all vectors will have the same length as  

  fullData once complete.
fill_vector_with_sparse <- function(vec, fullData) {
  if (is.vector(vec) && is.vector(fullData)) {
    for (i in seq_along(vec)) {
      for (ii in seq_along(fullData)) {
        if ((length(vec[[i]]) < ii) || (vec[[i]][ii] != fullData[ii]))
          {
            vec[[i]] <- insert(vec[[i]], ii, NA)
          }
        }
      }
    }
  }
  return(vec)
}

#Takes the column and iterates over the values comparing  

  converting vectors into strings.
convert_vector_to_string <- function(vec, delim = ", ") {

```

```

if (is.vector(vec)) {
  for (i in seq_along(vec)) {
    vec[[i]] <- paste(vec[[i]], collapse = delim)
  }
}
return(vec)
}

#Takes a numeric column and scales the values according to the
# range for numeric values in the questionnaire
scale_numeric_by_range <- function(vec) {
  if (is.vector(vec) && is.numeric(vec)) {
    vec <- rescale(vec, to=c(-1, 1), from=c(0, 5))
  }
}
return(vec)
}

#Takes a numeric column and scales the values according to the
# range for numeric values in the questionnaire
scale_numeric_by_range <- function(vec) {
  if (is.vector(vec) && is.numeric(vec)) {
    vec <- rescale(vec, to=c(-1, 1), from=c(0, 5))
  }
}
return(vec)
}

# Geometric mean for a vector
geo_mean = function(x, na.rm=TRUE){
  exp(sum(log(x[x > 0])), na.rm=na.rm) / length(x))
}

#Radar coordinate function for ggplot polygon
coord_radar <- function (theta = "x", start = 0, direction = 1)
{
  theta <- match.arg(theta, c("x", "y"))
  r <- if (theta == "x")
  "y"
  else "x"
  ggproto("CordRadar", CoordPolar, theta = theta, r = r, start =
    start,
    direction = sign(direction),
    is_linear = function(coord) TRUE)
}

```

```

#Now to make the data the right format/type
feedback.formatted <- feedback.raw

#Factors
factors.gender <- c('Female', 'Male', 'Other', 'Prefer not to
say')
feedback.formatted$`Your gender` <-
  factor(feedback.formatted$`Your gender`, factors.gender)
factors.age_range <- c('18-24', '25-29', '30-34', '35-39', '40-
44', '45-49', '50+', 'Prefer not to say')
feedback.formatted$`Your age range` <-
  factor(feedback.formatted$`Your age range`, factors.age_range)
feedback.formatted$`Do you own have previous experience of
Augmented Reality` <- factor(feedback.formatted$`Do you own
have previous experience of Augmented Reality`,
factors.yes_no)
factors.exp_num <- paste("#", 1:8, sep = "")
feedback.formatted$`Overall, which was your most preferred
experiment?` <- factor(feedback.formatted$`Overall, which was
your most preferred experiment?`, factors.exp_num)
feedback.formatted$`Overall, which was your least preferred
experiment?` <- factor(feedback.formatted$`Overall, which was
your least preferred experiment?`, factors.exp_num)
factors.exp_rank <- paste("Rank #", 1:8, sep = "")
feedback_rank_cols <- select(feedback.formatted,
  starts_with("Could you please rate the experiments in order of
preference?"))

for (col in colnames(feedback_rank_cols)) {
  feedback.formatted[[col]] <- factor(feedback.formatted[[col]],
  factors.exp_rank)
}

#Numeric
for (idx in 0:7) {
  for (key in exp_keys) {
    if (idx != 0) {
      key = paste(key, "__", idx, sep = "")
    }

    feedback.formatted[[key]] <-
      as.numeric(feedback.formatted[[key]])
  }
}

```

```

rm(idx, key)
feedback.formatted$`I was comfortable with the interactions
being triggered by IoT wireless` <-
as.numeric(feedback.formatted$`I was comfortable with the
interactions being triggered by IoT wireless`)
feedback.formatted$`I was comfortable with the interactions
happening on a smartphone` <- as.numeric(feedback.formatted$`I
was comfortable with the interactions happening on a
smartphone`)

#multiple strings
factors.mobile_usage <- c('Emails', 'Games', 'Mobile Payment',
'Social Media')
factors.mobile_usage_t <- paste("Do you use for Mobile phone
for:", factors.mobile_usage)
feedback.formatted$`Do you use for Mobile phone for (select all
that apply)` <-
fill_vector_with_sparse(strsplit(feedback.formatted$`Do you
use for Mobile phone for (select all that apply)`, ", "),
factors.mobile_usage)
feedback.formatted$`Do you use for Mobile phone for (select all
that apply)` <-
convert_vector_to_string(feedback.formatted$`Do you use for
Mobile phone for (select all that apply)`)
feedback.formatted <- separate(feedback.formatted, "Do you use
for Mobile phone for (select all that apply)",
factors.mobile_usage_t, ", ", convert = TRUE)

for (idx in seq_along(factors.mobile_usage_t)) {
mobile_col_key = factors.mobile_usage_t[idx]
mobile_col = feedback.formatted[mobile_col_key]
feedback.formatted[mobile_col_key] <-
factor(ifelse(is.na(mobile_col), "No", "Yes"), factors.yes_no)
}
rm(mobile_col, mobile_col_key, idx)

```

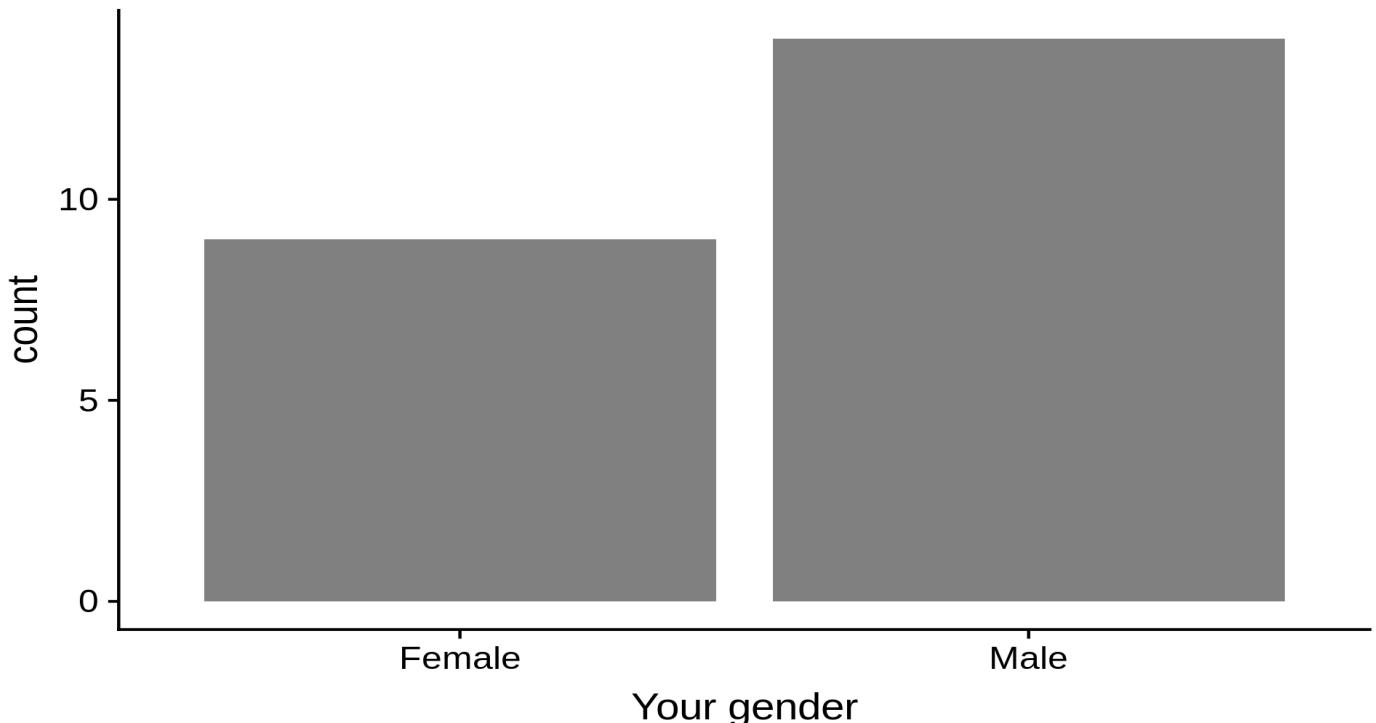
A little look at the demographics

There participants were mostly male be a ratio of about 3:2, the younger age groups were better represented, however the gender disparity was greater among those younger age groups with a stronger male representation for those under 35 (about 5:2). This was down to the participants that were able to take part.

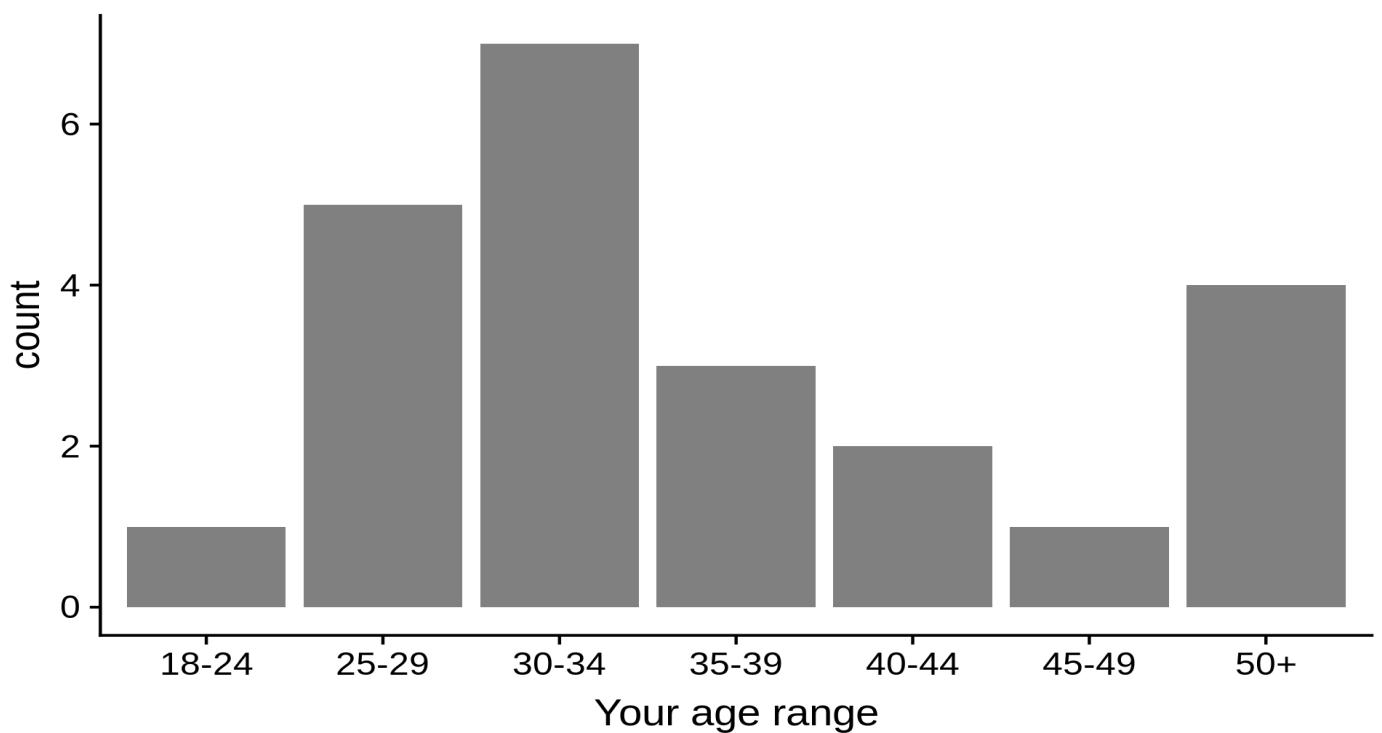
```
kable(table(feedback.formatted$`Your gender`), col.names =  
      c("Gender", "Count"))
```

Gender	Count
Female	9
Male	14
Other	0
Prefer not to say	0

```
ggplot(feedback.formatted, aes(x = `Your gender`)) +  
  geom_bar(stat="count", fill=styles.color_grey)
```



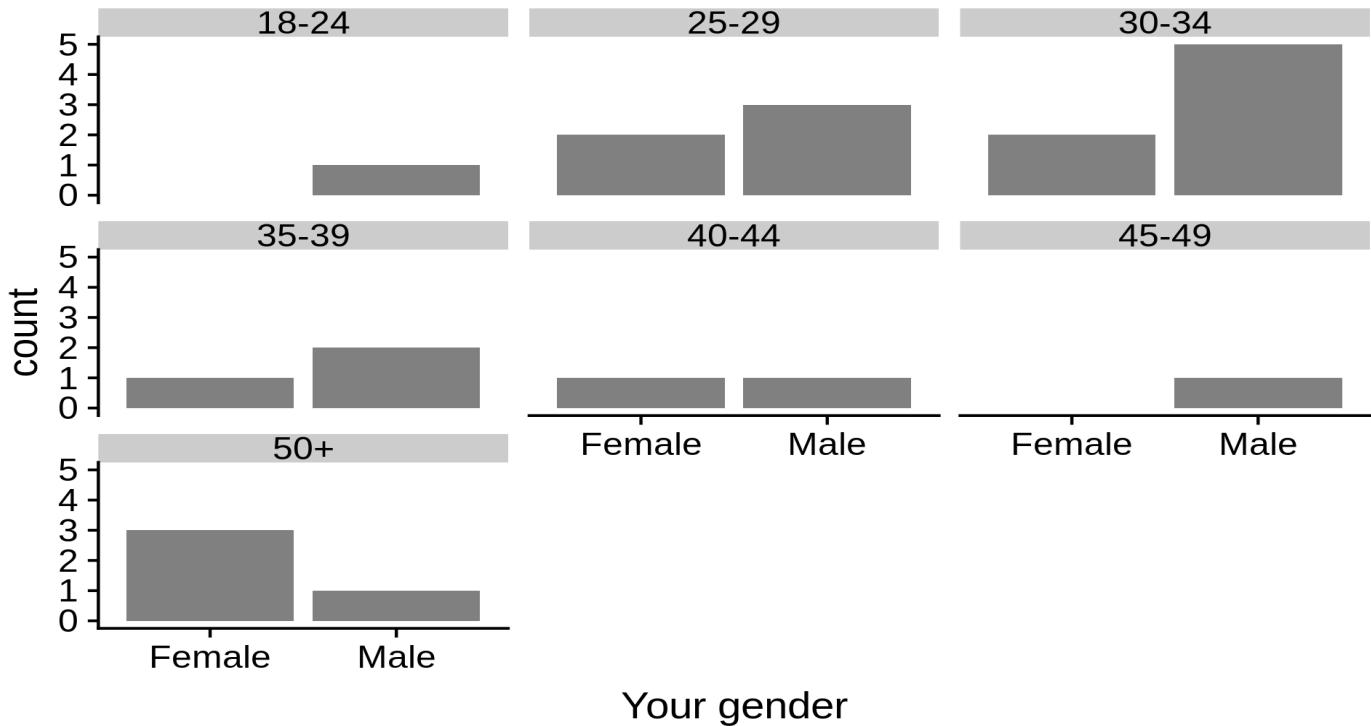
```
ggplot(feedback.formatted, aes(x = `Your age range`)) +  
  geom_bar(stat="count", fill=styles.color_grey)
```



```
kable(table(feedback.formatted$`Your age range`), col.names = c("Age group", "Count"))
```

Age group	Count
18-24	1
25-29	5
30-34	7
35-39	3
40-44	2
45-49	1
50+	4
Prefer not to say	0

```
ggplot(feedback.formatted, aes(x = `Your gender`)) +
  geom_bar(stat="count", fill=styles.color_grey) +
  facet_wrap(~`Your age range`)
```



Weakness in the sample set

The 18-24 and 45-49 age groups were populated by just one participant each, so the feedback for these demographics are the least reliable; the next least reliable age groups are the 40-44 and 35-39 age groups, in that order. One way for mitigating the disparity in sample size per age group, would be to analyse the results using some merged age groups allowing for a broader trend analysis but with greater sample sizes per extended age group; that is to say, using aggregated age groups like 18-29, 30-39 and 40+. Another technique that can be used is to apply proportionate weighting to the answers based on the demographics of the country (in this case the United Kingdom) where the study has taken place; this can help adjust the results to better reflect the total population if the body of participants doesn't reflect the make-up of the population.

```

feedback.with_weights <- feedback.formatted
#feedback.with_weights <- within(feedback.with_weights,
  'weighting', )
#feedback.formatted$`Your age range` 
feedback.age_and_gender <- table(feedback.formatted$`Your age
  range`, feedback.formatted$`Your gender`)
#removing row and columns that are empty
feedback.age_and_gender <- as.data.frame(feedback.age_and_gender[ 
  nrow(feedback.age_and_gender),1:2]) %>% `colnames<-`(`c("age", " 
  "count")) 

feedback_count <- sum(feedback.age_and_gender$count)
feedback.age_and_gender$pc <- feedback.age_and_gender$count / 
  feedback_count
  
```

```

feedback_weights = c()
uk_pcs = c()

for (idx in 1:nrow(feedback.age_and_gender)) {
  current_row = feedback.age_and_gender[idx,]
  current_age = substr(as.character(current_row$age), start = 1,
    stop = 2)
  current_gender = as.character(current_row$gender)

  uk_pc_col = select(uk_census.age_sex_with_pc_collapsed,
    contains(current_age)) %>% select(contains(current_gender,
      ignore.case = FALSE))
  uk_pc = uk_pc_col[2,]
  study_pc = feedback.age_and_gender[idx,]$pc

  feedback_weights[idx] = ifelse(study_pc != 0, uk_pc/study_pc,
    0)
  uk_pcs[idx] = uk_pc
}

rm(current_row, current_age, current_gender, uk_pc_col,
  study_pc, uk_pc)

feedback.age_and_gender$uk_pc <- uk_pcs
feedback.age_and_gender$weight <- feedback_weights

rm(uk_pcs)

feedback_weights = c()

for (idx in 1:nrow(feedback.with_weights)) {
  current_row = feedback.with_weights[idx,]
  current_weight = filter(feedback.age_and_gender, gender ==
    as.character(current_row`Your gender`), age ==
    as.character(current_row`Your age range`))$weight

  feedback_weights[idx] = current_weight
}

feedback.with_weights$weight <- as.numeric(feedback_weights)

rm(feedback_count, idx, feedback_weights)

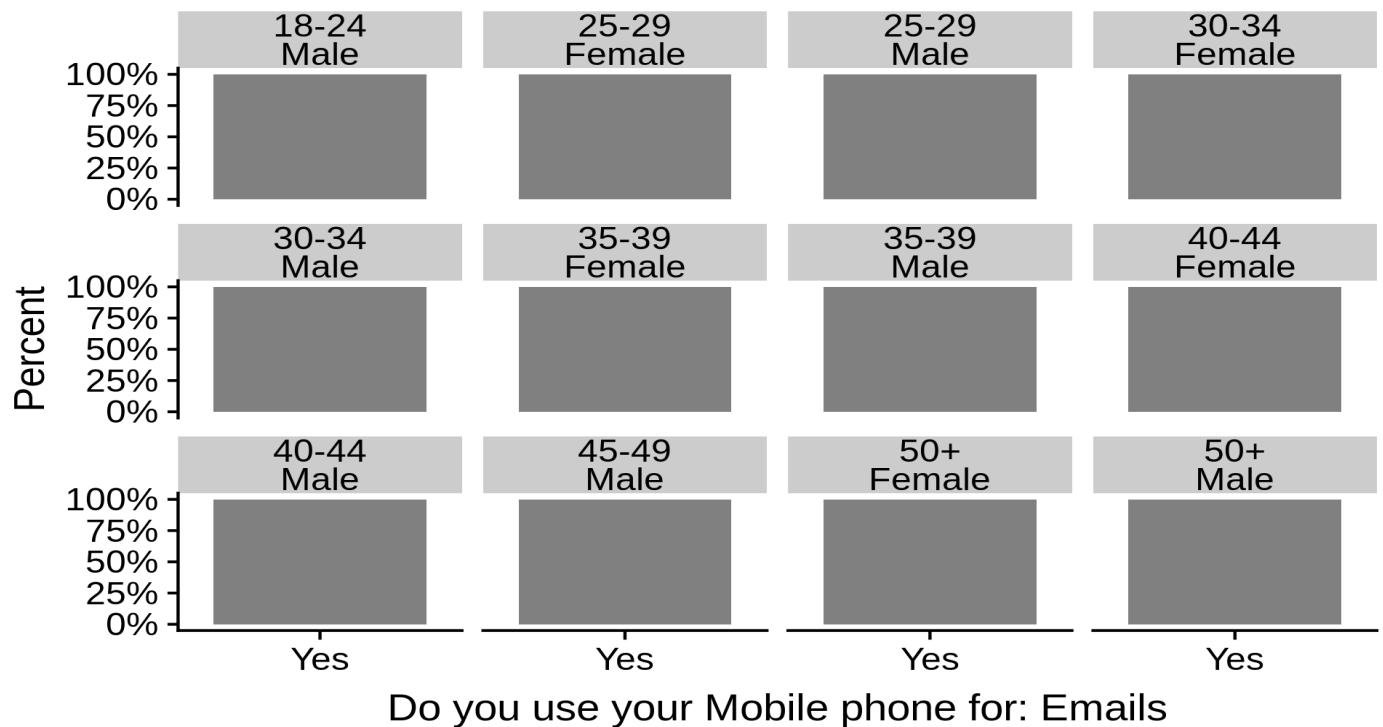
```

Familiarity with technology

Data was captured from each participant to assess their familiarity technology with regards to smartphone usage for various interaction. These results are helpful to provide context for the results of the experiments.

Mobile phone use for emails.

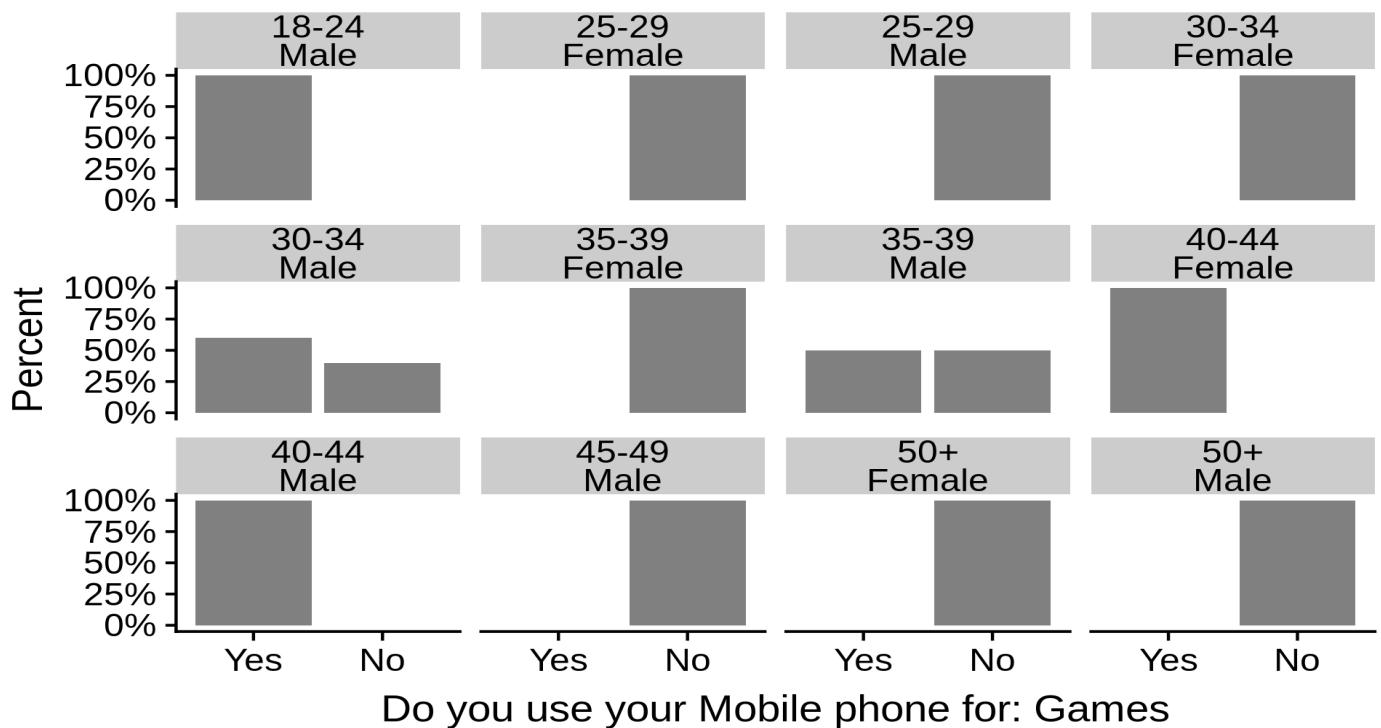
```
feedback.use_email <- melt(select(feedback.formatted, `Your gender`, `Your age range`, `Do you use for Mobile phone for: Emails`))  
ggplot(feedback.use_email, aes(x = `Do you use for Mobile phone for: Emails`, group = `Your gender`)) +  
  geom_bar(stat="count", fill=styles.color_grey, aes(y = ..prop.., fill = factor(..x..))) +  
  scale_y_continuous(labels = scales::percent) +  
  xlab('Do you use your Mobile phone for: Emails') +  
  ylab('Percent') +  
  facet_wrap(~`Your age range` + `Your gender`)
```



All participants accessed their emails on their mobile phones.

Mobile phone use for games

```
feedback.use_games <- melt(select(feedback.formatted, `Your gender`, `Your age range`, `Do you use for Mobile phone for: Games`))  
ggplot(feedback.use_games, aes(x = `Do you use for Mobile phone for: Games`, group = `Your gender`)) +  
  geom_bar(stat="count", fill=styles.color_grey, aes(y = ..prop.., fill = factor(..x..))) +  
  scale_y_continuous(labels = scales::percent) +  
  xlab('Do you use your Mobile phone for: Games') +  
  ylab('Percent') +  
  facet_wrap(~`Your age range` + `Your gender`)
```

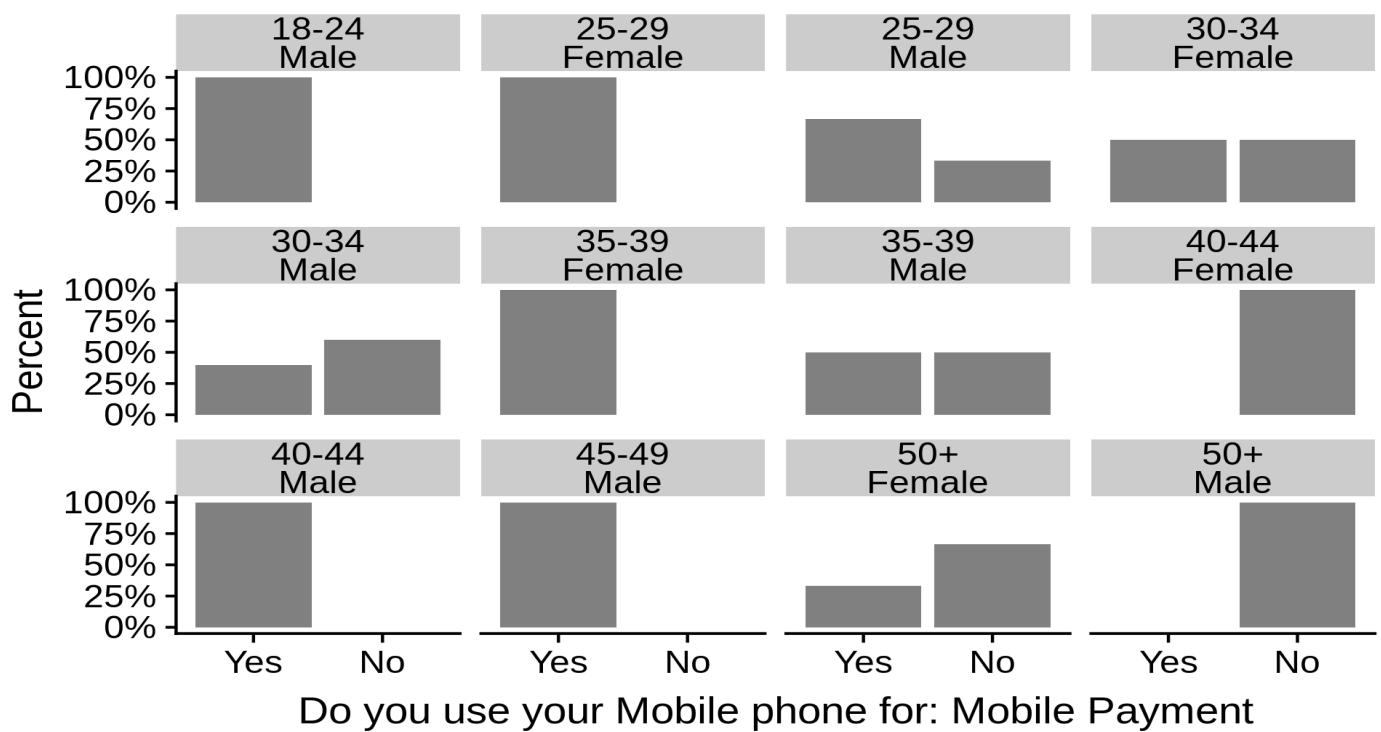


Participants at the older end of the spectrum appear not to play games on their mobile phones, nor do those in the young age groups of this sample of users. It is the middle age groups 30-34, 35-39, and 40-44 that seem to play games on their mobile phones.

Mobile phone use for mobile payments

```
feedback.use_mobile_payment <- melt(select(feedback.formatted,
  `Your gender`, `Your age range`, `Do you use for Mobile phone
  for: Mobile Payment`))

ggplot(feedback.use_mobile_payment, aes(x = `Do you use for
  Mobile phone for: Mobile Payment`, group = `Your gender`)) +
  geom_bar(stat="count", fill=styles.color_grey, aes(y =
  ..prop.., fill = factor(..x..))) +
  scale_y_continuous(labels = scales::percent) +
  xlab('Do you use your Mobile phone for: Mobile Payment') +
  ylab('Percent') +
  facet_wrap(~`Your age range` + `Your gender`)
```



Broadly speaking using a smartphone to make mobile payments is more popular among females but more significantly those of both genders in the younger age groups show a higher frequency of mobile payment, with the frequency declining with age.

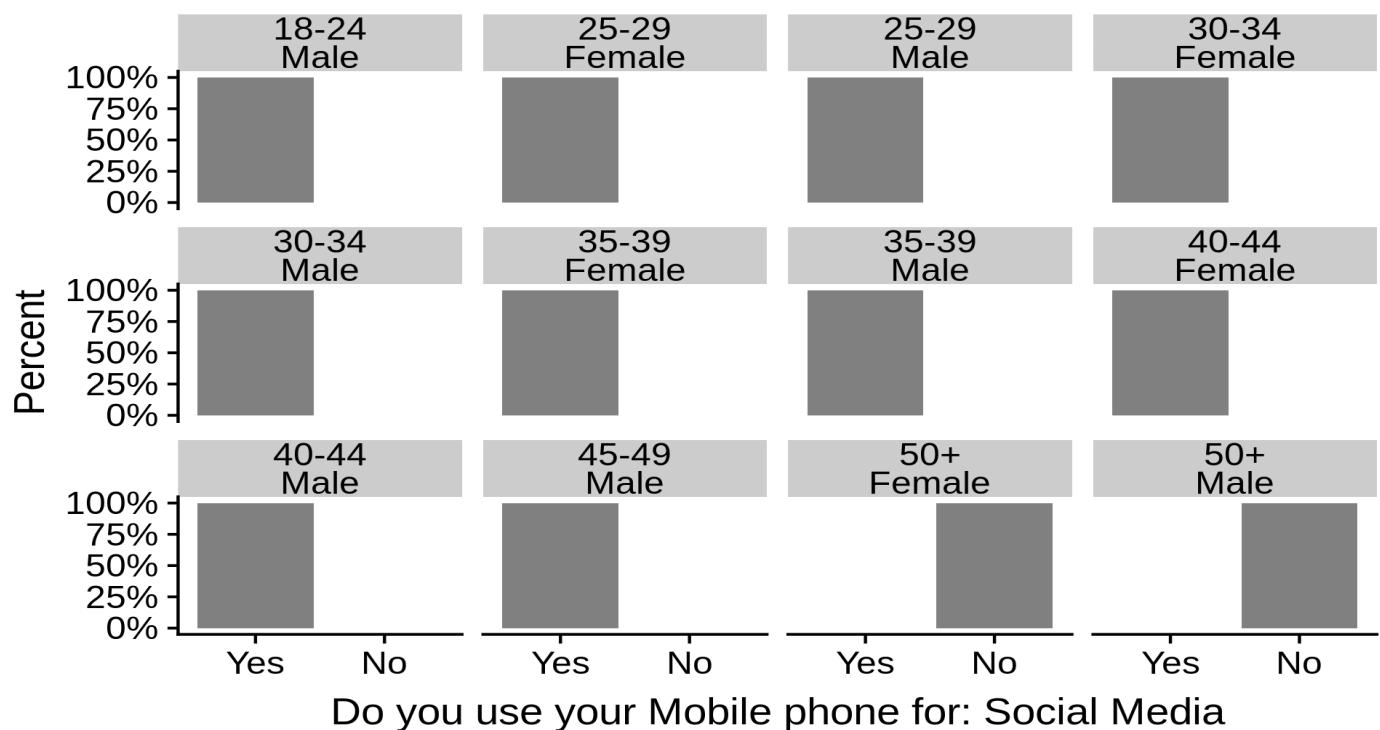
Mobile phone use for social media

```

feedback.use_social_media <- melt(select(feedback.formatted,
  `Your gender`, `Your age range`, `Do you use for Mobile phone
  for: Social Media`))

ggplot(feedback.use_social_media, aes(x = `Do you use for
  Mobile phone for: Social Media`, group = `Your gender`)) +
  geom_bar(stat="count", fill=styles.color_grey, aes(y =
  ..prop.., fill = factor(..x..))) +
  scale_y_continuous(labels = scales::percent) +
  xlab('Do you use your Mobile phone for: Social Media') +
  ylab('Percent') +
  facet_wrap(~`Your age range` + `Your gender`)

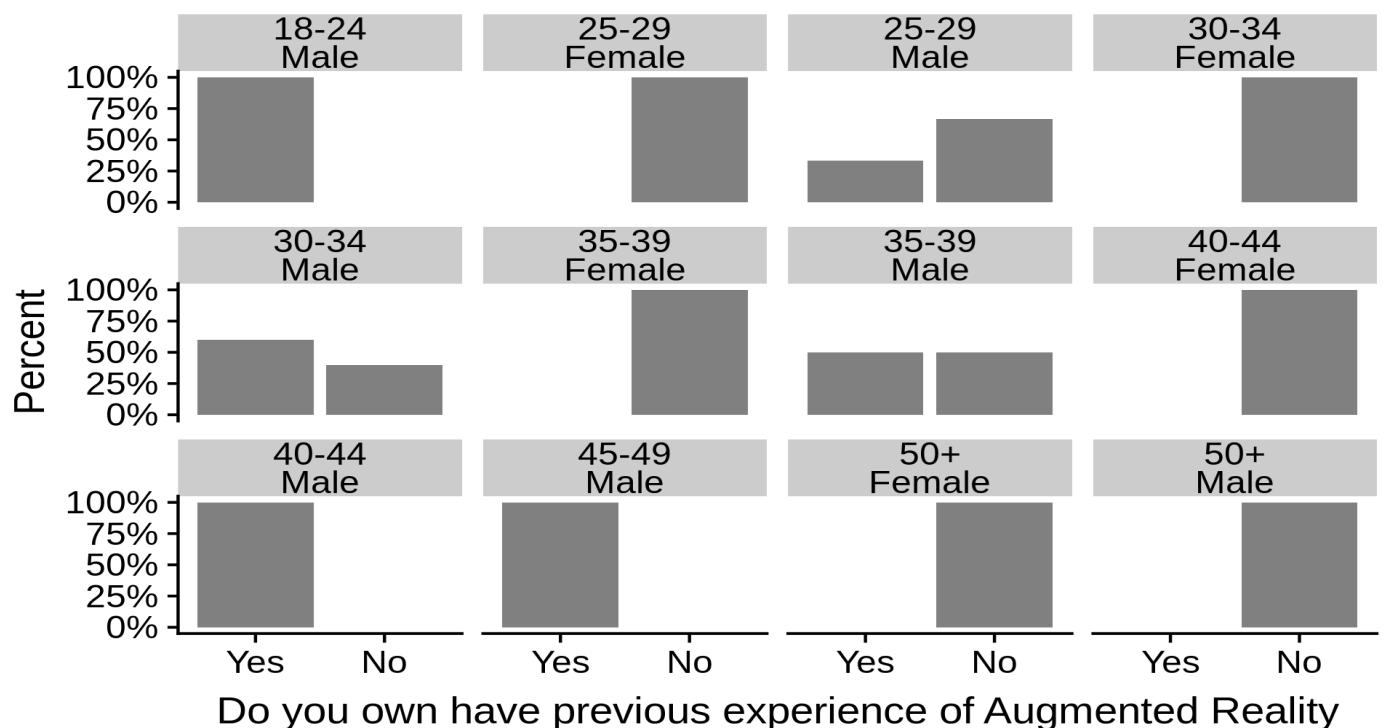
```



Every single demographic that was captured by the study, apart from those over fifty used social media on their mobile phones.

Familiarity with Augmented Reality

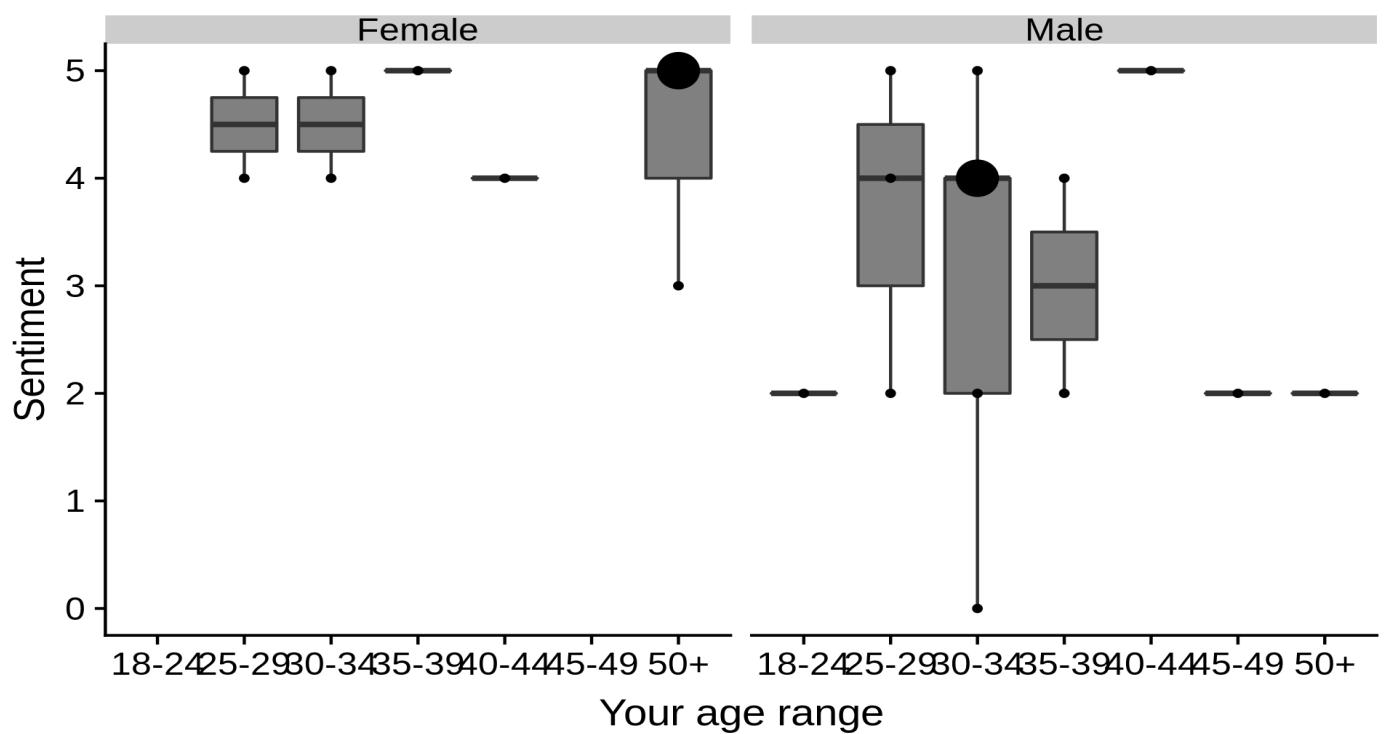
```
feedback.use_augmented_reality <-
  melt(select(feedback.formatted, `Your gender`, `Your age
range`, `Do you own have previous experience of Augmented
Reality`))
ggplot(feedback.use_augmented_reality, aes(x = `Do you own have
previous experience of Augmented Reality`, group = `Your
gender`)) +
  geom_bar(stat="count", fill=styles.color_grey, aes(y =
..prop.., fill = factor(..x..))) +
  scale_y_continuous(labels = scales::percent) +
  xlab('Do you own have previous experience of Augmented
Reality') +
  ylab('Percent') +
  facet_wrap(~`Your age range` + `Your gender`)
```



Familiarity with Augmented Reality appear to be more frequent among males with no prior experience for females of any age group. Any correlation between age and familiarity cannot be said to be linear, though the 50+ age group was the only male demographic to have no prior experience.

Perception of the IoT element of experiments

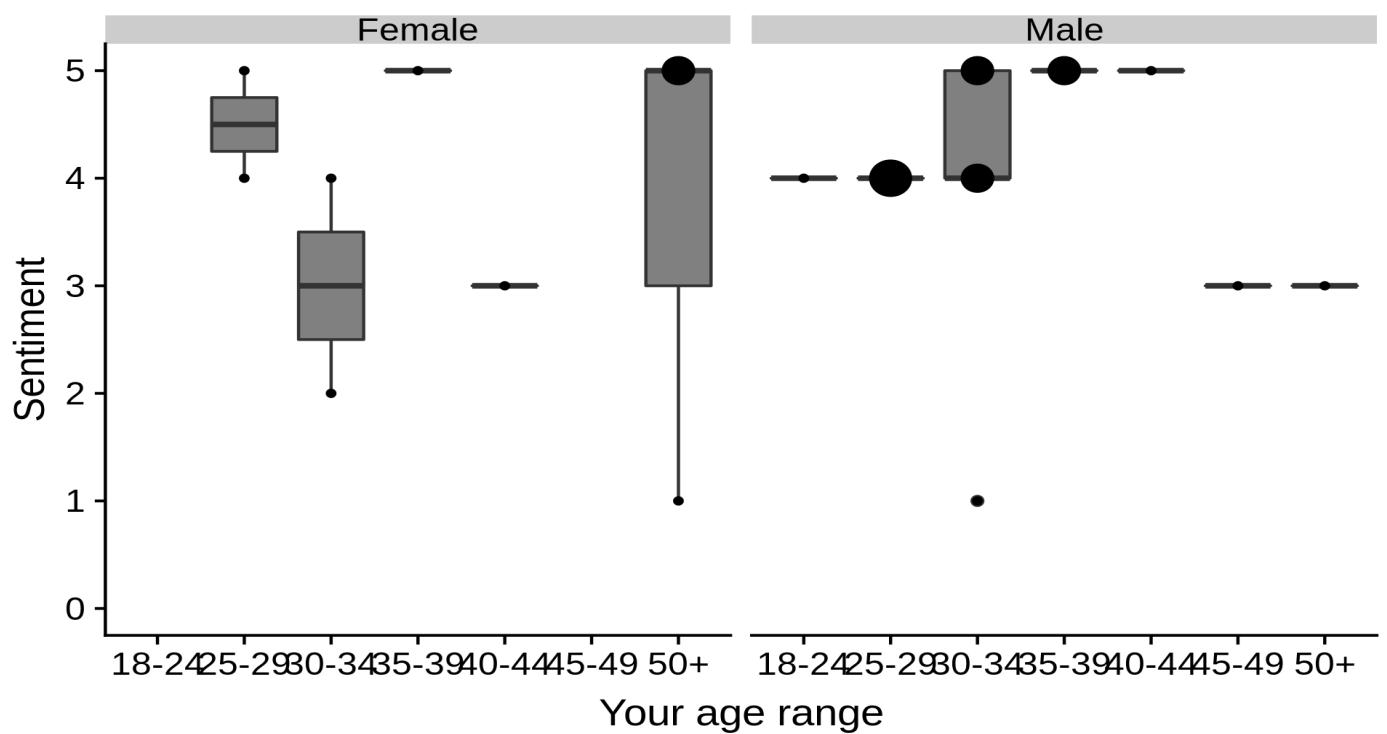
```
ggplot(feedback.formatted, aes(x = `Your age range`, y = `I was  
comfortable with the interactions being triggered by IoT  
wireless`)) +  
  geom_boxplot(fill=styles.color_grey) +  
  geom_count(show.legend=F) +  
  ylab("Sentiment") +  
  scale_y_continuous(limits = c(0, 5)) +  
  facet_wrap(~`Your gender`)
```



There appears to be more overall positivity from the entire subset of females when compared to males, which not only had greater variation but a significant number of scores below the top half of the sentiment scale.

Perception of the interactions using smartphone

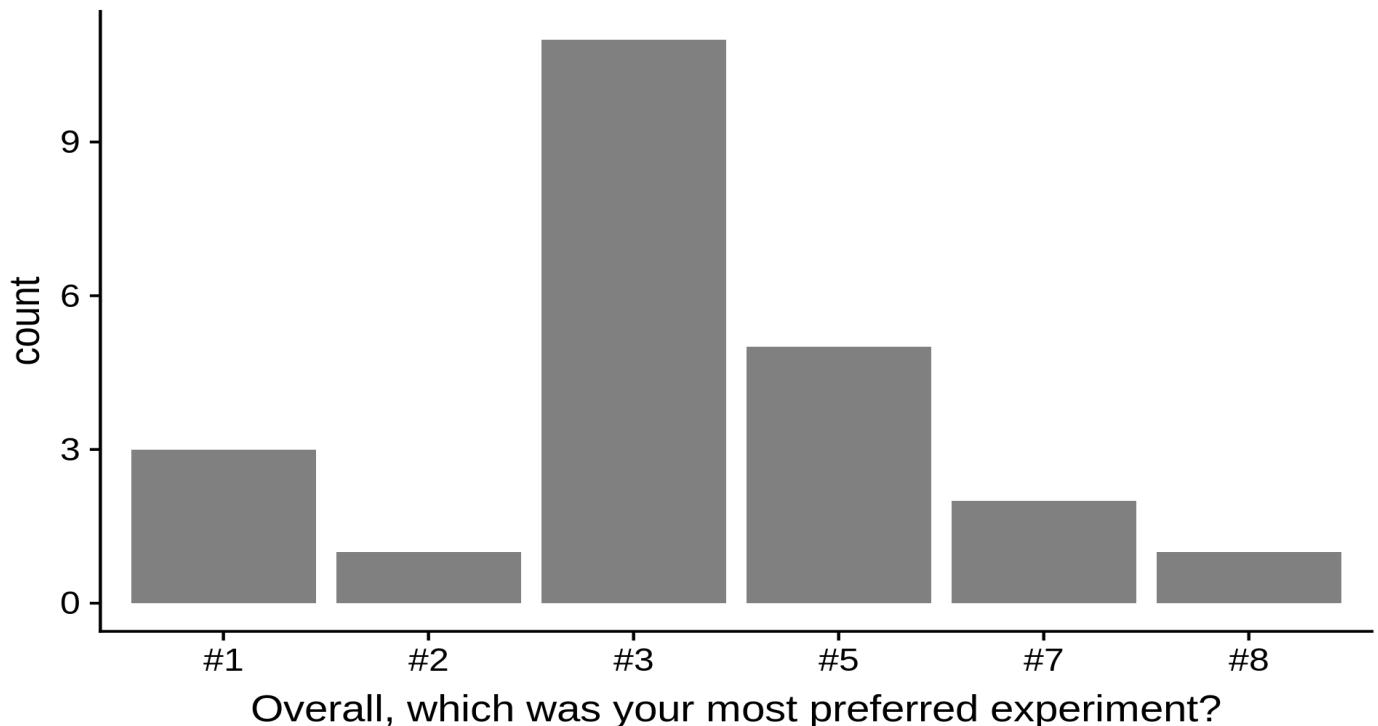
```
ggplot(feedback.formatted, aes(x = `Your age range`, y = `I was  
comfortable with the interactions happening on a smartphone`))  
+  
geom_boxplot(fill=styles.color_grey) +  
geom_count(show.legend=F) +  
ylab("Sentiment") +  
scale_y_continuous(limits = c(0, 5)) +  
facet_wrap(~`Your gender`)
```



Broadly speaking most participant across every demographic, with the exception of a few outliers, were comfortable with the idea of using a smartphone as part of these interactions.

Some basic popularity analysis

```
ggplot(feedback.formatted, aes(x = `Overall, which was your  
most preferred experiment?`)) + geom_bar(stat="count",  
fill=styles.color_grey)
```

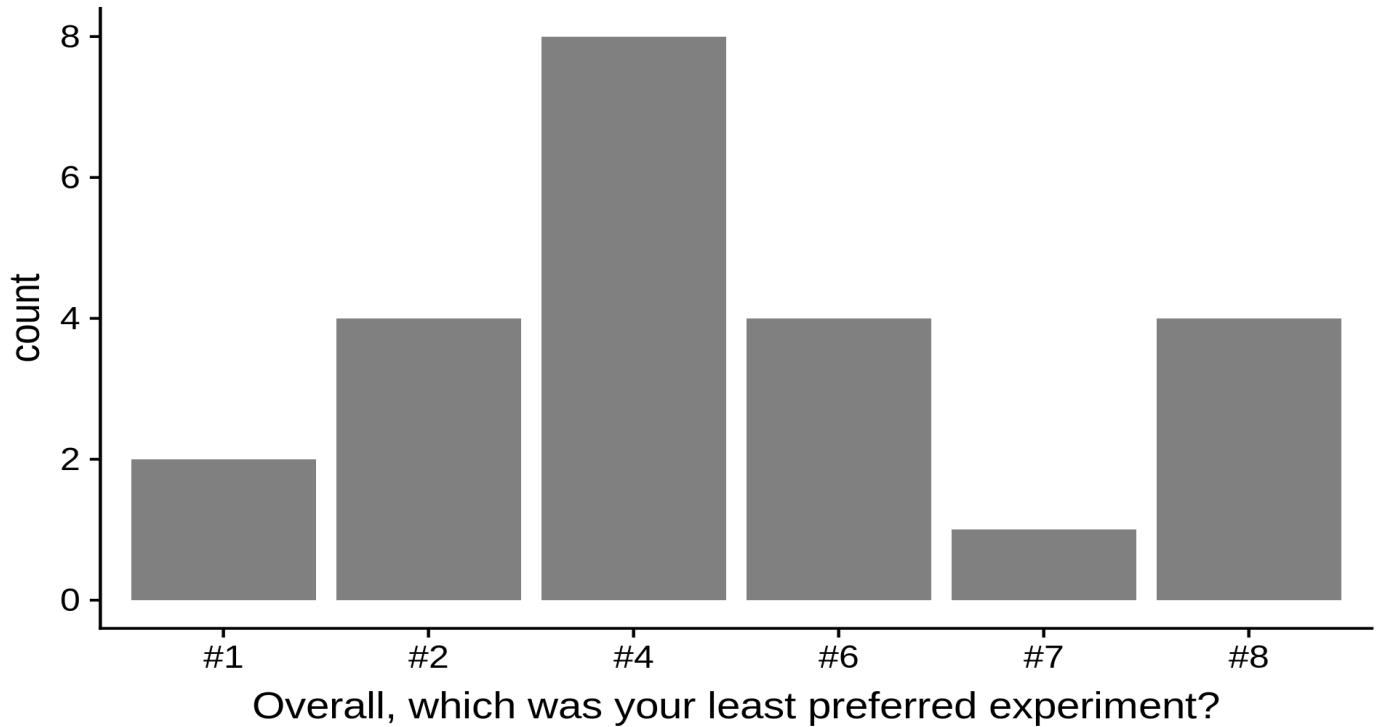


```
kable(table(feedback.formatted$`Overall, which was your most  
preferred experiment?`), col.names = c("Preferred Exp",  
"Count"))
```

Preferred Exp	Count
#1	3
#2	1
#3	11
#4	0
#5	5
#6	0
#7	2

Preferred Exp	Count
#8	1

```
ggplot(feedback.formatted, aes(x = `Overall, which was your least preferred experiment?`)) + geom_bar(stat="count", fill=styles.color_grey)
```



```
kable(table(feedback.formatted$`Overall, which was your least preferred experiment?`), col.names = c("Least preferred Exp", "Count"))
```

Least preferred Exp	Count
#1	2
#2	4
#3	0
#4	8
#5	0
#6	4
#7	1

Least preferred Exp	Count
#8	4

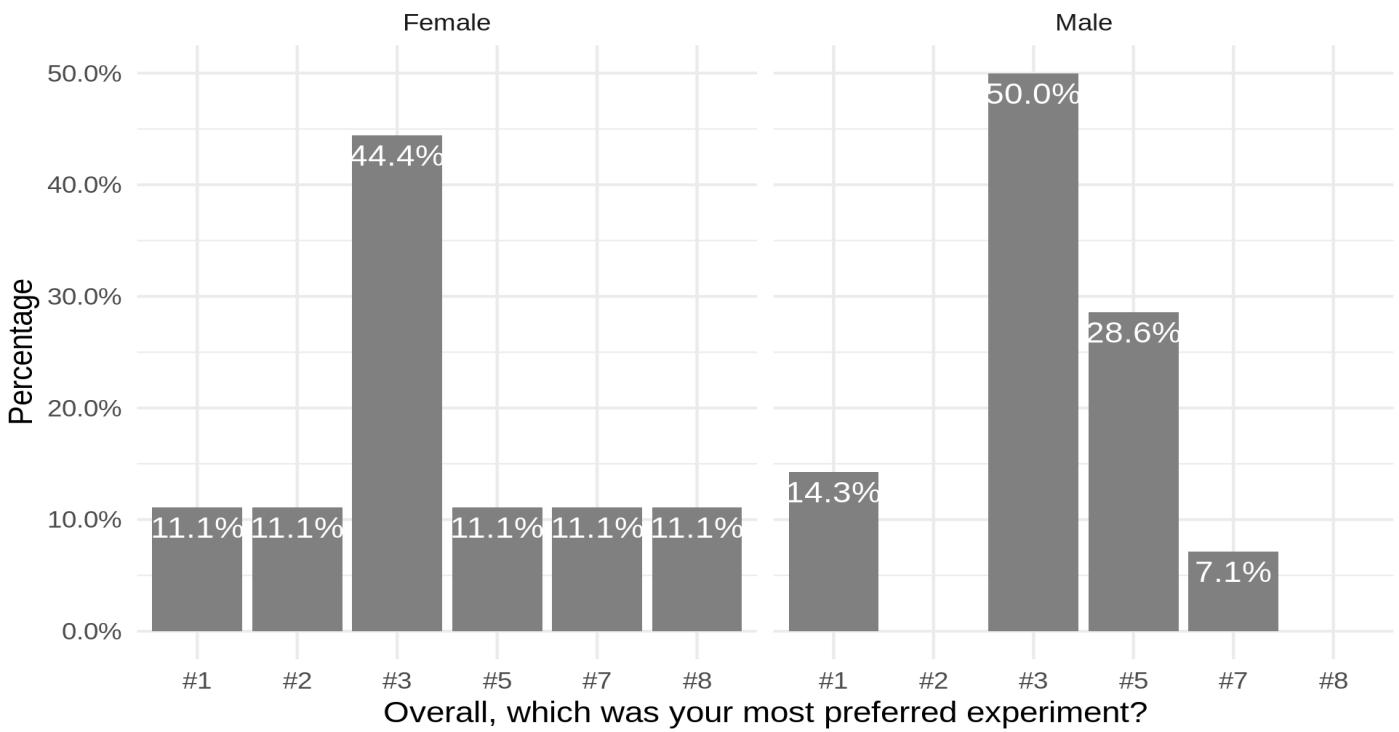
According to the summary questions that asked the participants which were their most and least favourite of the experiences, Experiment #3 was the most popular while the Experiment #4 was the least; Experiment #3 was the simplest interaction that involved an element of reward, while experiment #4 was the simplest interaction that involved a social media element. Even looking that the results of these relatively crude results, it's clear that of the preferred experiments, those that rewarded the user were looks upon more favourably and an interaction that provides nothing but an opportunity to promote the advert on Social Media is not well regarded.

Looking at the basic popularity through the cross section of gender and age.

More insight can be inferred when looking at the results at a more granular level. And the following graphs looks to explore how age and gender affect the perception of the experiments.

Preferred experiments by gender

```
ggplot(feedback.formatted, aes(x = `Overall, which was your
most preferred experiment?`, group = `Your gender`)) +
  geom_bar(stat="count", fill=styles.color_grey, aes(y =
..prop.., fill = factor(..x..))) + facet_grid(~`Your gender`)
+
  geom_text(aes( label = scales::percent(..prop..), y= ..prop..
), stat= "count", vjust = 1.5, color = "white") +
  scale_y_continuous(labels=percent) +
  ylab("Percentage") +
  theme_minimal()
```

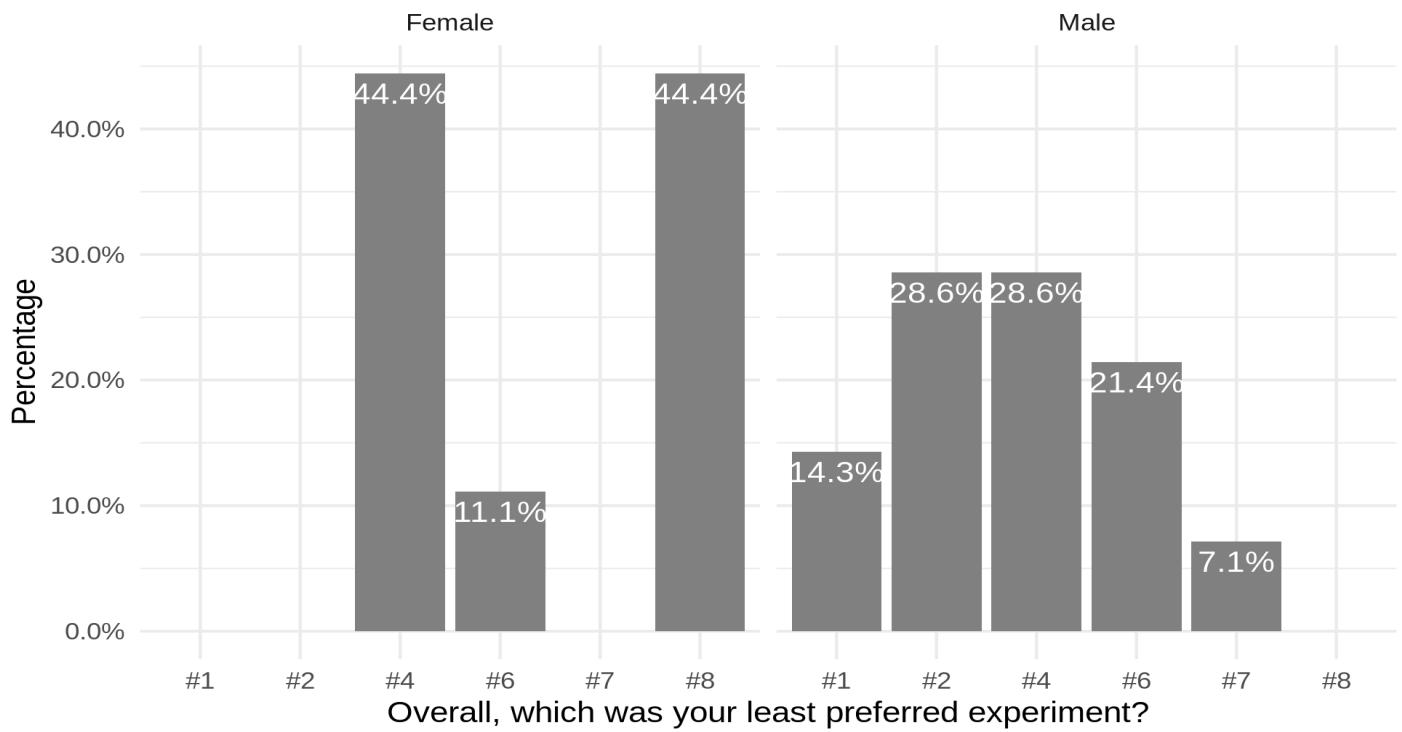


When comparing female and male opinions the same experiment, #3 comes out on top with less of the overall vote but more definitively for the female group; the female results for preference are more spread over the experiments with no clear second place so #3 has a clear margin ahead of the other experiments; the male preferences on the other hand, are for fewer experiments out of the total set of eight, with a stronger preference for #3 but also a clearer order of descending preference. For the males in the study, the second more preferred experiment is #5 which like #3 includes a loyalty coin element but it combines this with the Augmented Reality game; third and fourth place go to #1 - the simplest interaction (with the email capture baseline) - and #7 - comprised of loyalty coins and social media - respectively.

What is clear from these responses is that most appealing element in this form or advertising would be the offer of some form of reward. It can also be inferred that when a reward is combined with another element it elevates to popularity of the other element, though it appears most successful on its own.

Least preferred experiments by gender

```
ggplot(feedback.formatted, aes(x = `Overall, which was your least preferred experiment?`, group = `Your gender`)) +
  geom_bar(stat="count", fill=styles.color_grey, aes(y = ..prop.., fill = factor(..x..))) + facet_grid(~`Your gender`)
  + geom_text(aes(label = scales::percent(..prop..), y= ..prop.. ), stat= "count", vjust = 1.5, color = "white") +
  scale_y_continuous(labels=percent) +
  ylab("Percentage") +
  theme_minimal()
```



When it comes to the most disliked experiments, for the female subset the results are very polarised with most votes being shared equally between #4 and #8. Both of these experiments involve the Social Media element, which for #4 is the only addition to the baseline, while #8 is the combination of all the experiment elements into one extended experience. The only other experiment to be voted for as the least preferred experiment by female participants was #6 which is the combination of Augmented Reality and Social Media.

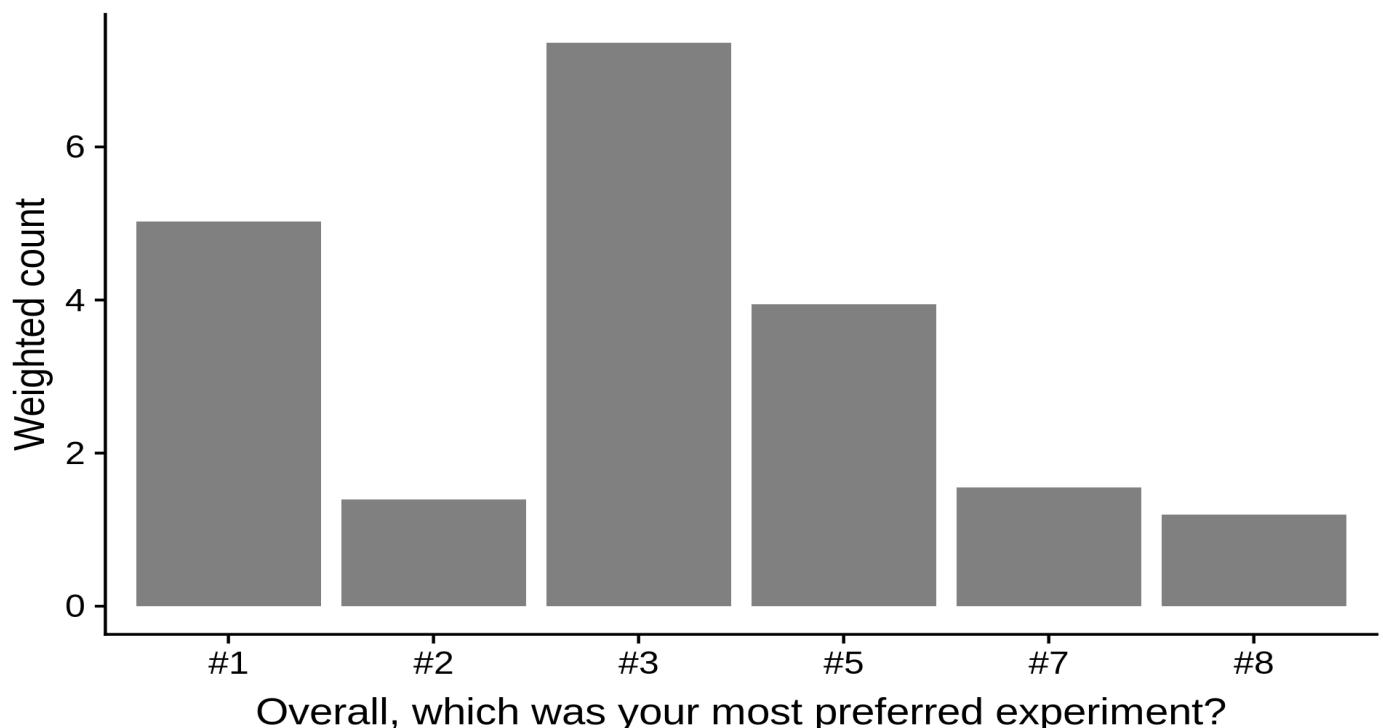
With regards to the male participants results for the least preferred experiments, there is more variation with the top spot being shared between #2 and #4; this suggest some overlap with the female participants with regard to the dislike of Social Media as exclusively presented in #4 but also some dislike of the use of Augmented Reality on its own as demonstrated by #2. The next least popular experiment for males was also #6 while the remaining votes cast went to #1 (the baseline) and #7 (Loyalty Reward, Social Media) in that order.

What can be strongly inferred here is that regardless of gender the presence of a Social Media sharing element is least appealing, possibly having a negative impact on experiences that involved other elements. There is some evidence to suggest that the Augmented Reality element is not always well received.

Adjusting for population

Using UK census data it's possible to compare the percentage of demographics with the percentage for those demographics within the group of participants. The following graphs are an example of what the results might be like for a larger sample size.

```
ggplot(feedback.with_weights, aes(x = `Overall, which was your most preferred experiment?`, y= `weight`)) +  
  geom_bar(stat="identity", fill=styles.color_grey) +  
  ylab("Weighted count")
```

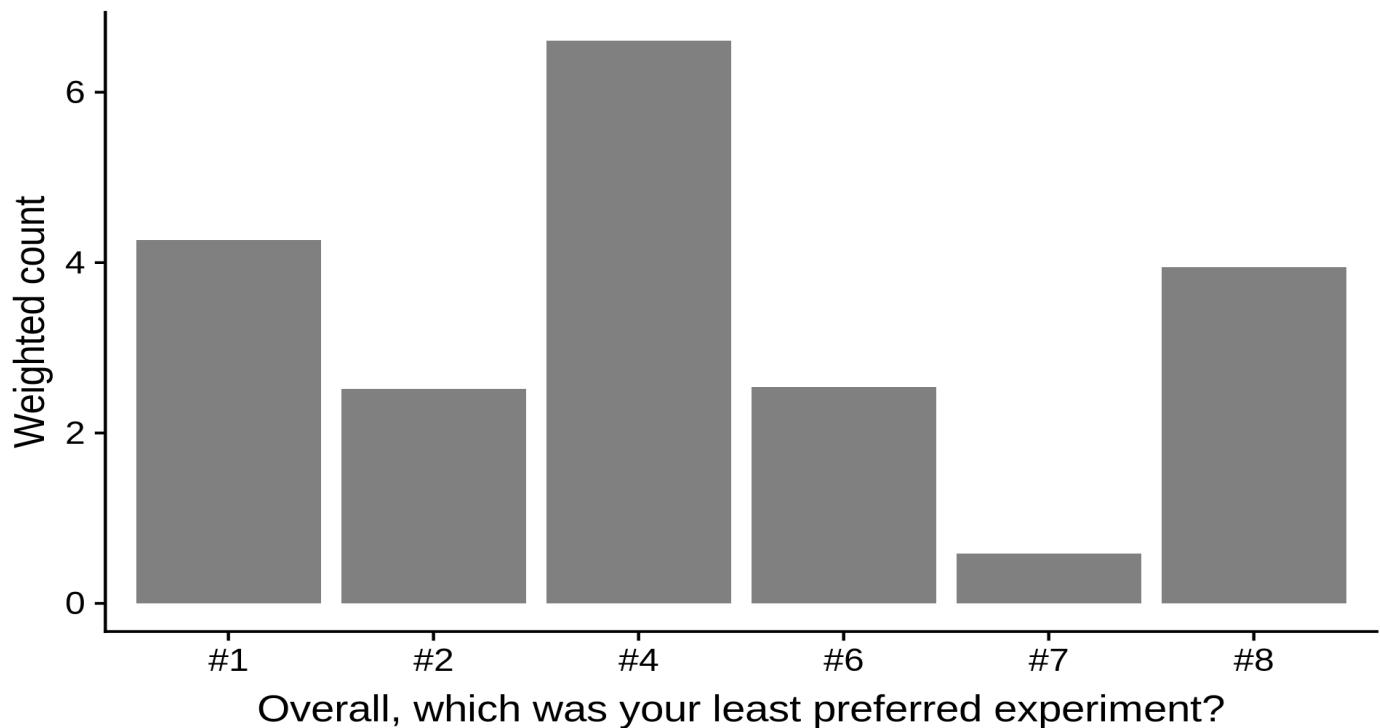


```
kable(xtabs(`weight` ~ `Overall, which was your most preferred experiment?`, data=feedback.with_weights), col.names = c("Most preferred Exp", "Count"))
```

Most preferred Exp	Count
#1	5.023257
#2	1.390666
#3	7.363726
#4	0.000000

Most preferred Exp	Count
#5	3.942898
#6	0.000000
#7	1.555085
#8	1.192840

```
#kable(aggregate(weight ~ `Overall, which was your most
preferred experiment?`, feedback.with_weights, sum))
ggplot(feedback.with_weights, aes(x = `Overall, which was your
least preferred experiment?`, y= `weight`)) +
  geom_bar(stat="identity", fill=styles.color_grey) +
  ylab("Weighted count")
```



```
kable(xtabs(weight ~ `Overall, which was your least preferred
experiment?`, data = feedback.with_weights), col.names =
c("Least preferred Exp", "Count"))
```

Least preferred Exp	Count
#1	4.2686280
#2	2.5142193
#3	0.0000000

Least preferred Exp	Count
#4	6.6074773
#5	0.0000000
#6	2.5419811
#7	0.5879894
#8	3.9481774

With weighting based on population demographics, experiment #1 happens to take the second place for both the most preferred and least preferred experiment. In addition to this, experiment #8 becomes less popular by ranking 3rd amongst the least preferred results.

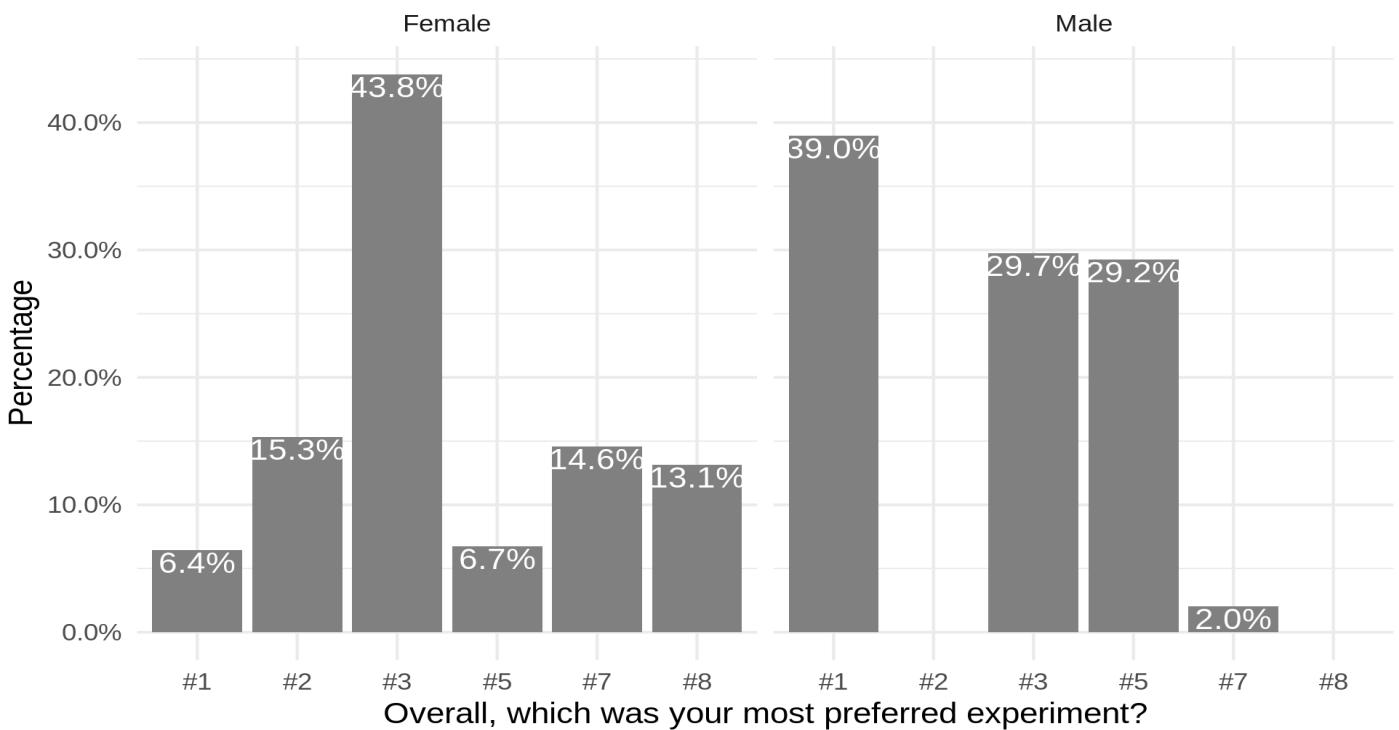
```
feedback.m_preferred_exp <- aggregate(weight ~ `Overall, which
was your most preferred experiment?` + `Your gender`,
feedback.with_weights, sum)
feedback.m_preferred_exp <- feedback.m_preferred_exp %>%
  group_by(`Your gender`) %>% mutate(weight_pc =
  weight/sum(weight))
kable(feedback.m_preferred_exp)
```

Overall, which was your most preferred experiment?	Your gender	weight	weight_pc
#1	Female	0.5834226	0.0642907
#2	Female	1.3906661	0.1532456
#3	Female	3.9750450	0.4380335
#5	Female	0.6102901	0.0672514
#7	Female	1.3224872	0.1457326
#8	Female	1.1928405	0.1314461
#1	Male	4.4398343	0.3896738
#3	Male	3.3886811	0.2974165
#5	Male	3.3326075	0.2924951
#7	Male	0.2325981	0.0204146

```

ggplot(feedback.m_preferred_exp, aes(x = `Overall, which was
your most preferred experiment?`, y = weight_pc, group = `Your
gender`)) + geom_bar(stat="identity", fill=styles.color_grey,
aes(y = weight_pc, fill = factor(..x..))) + facet_grid(~`Your
gender`) +
geom_text(aes( label = scales::percent(weight_pc), y= weight_pc
), stat= "identity", vjust = 1.125, color = "white") +
scale_y_continuous(labels=percent) +
ylab("Percentage") +
theme_minimal()

```



With population weighting the lack of a clear second place spot for preferred experiment amongst the female participants has been replaced by a definite cascade of preference with experiment #2 taking second position. For the male participants, weighting has led to experiment #1 being the most popular.

```

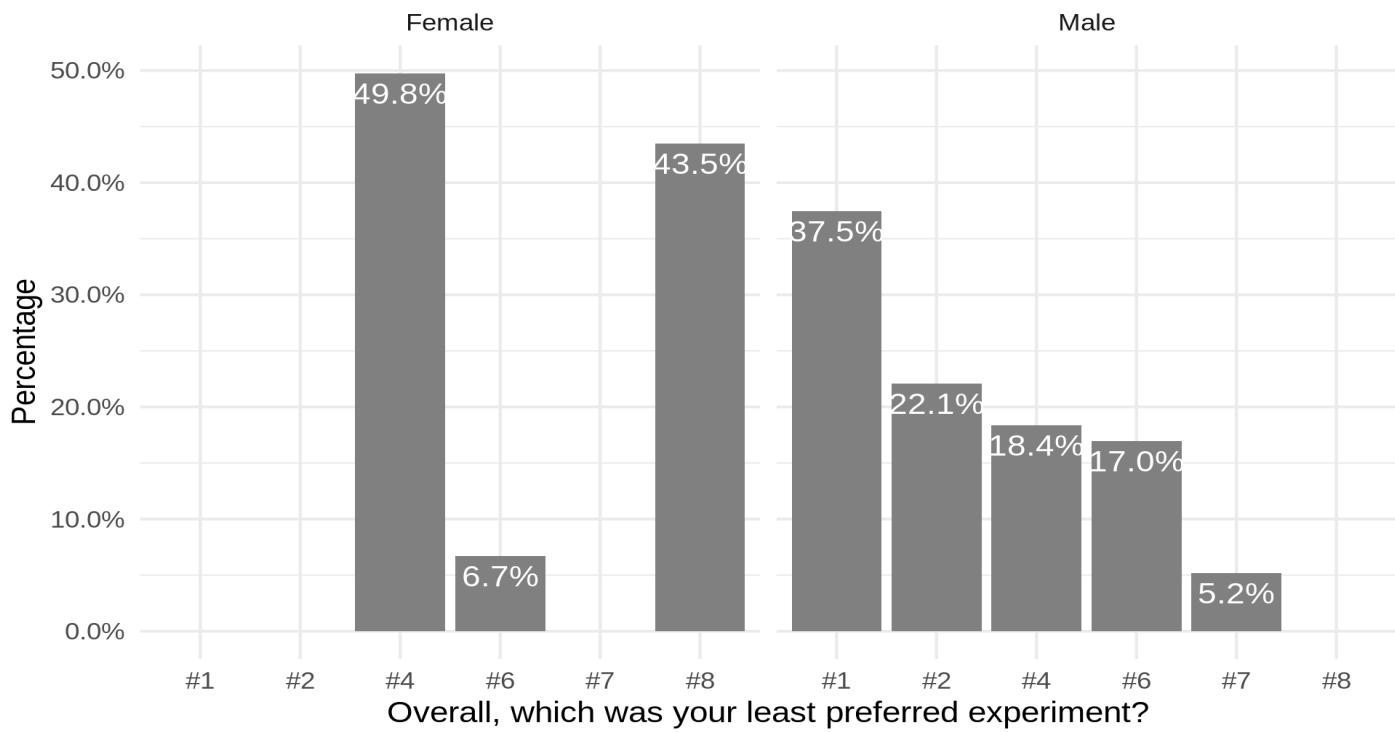
feedback.l_preferred_exp <- aggregate(weight ~ `Overall, which
was your least preferred experiment?` + `Your gender`,
feedback.with_weights, sum)
feedback.l_preferred_exp <- feedback.l_preferred_exp %>%
  group_by(`Your gender`) %>% mutate(weight_pc =
  weight/sum(weight))
kable(feedback.l_preferred_exp)

```

Overall, which was**your least preferred****Your gender****experiment?**

		weight	weight_pc
#4	Female	4.5162839	0.4976758
#6	Female	0.6102901	0.0672514
#8	Female	3.9481774	0.4350728
#1	Male	4.2686280	0.3746474
#2	Male	2.5142193	0.2206671
#4	Male	2.0911934	0.1835391
#6	Male	1.9316910	0.1695400
#7	Male	0.5879894	0.0516064

```
ggplot(feedback.l_preferred_exp, aes(x = `Overall, which was
  your least preferred experiment?`, y = weight_pc, group =
  `Your gender`)) + geom_bar(stat="identity",
  fill=styles.color_grey, aes(y = weight_pc, fill =
  factor(..x..))) + facet_grid(~`Your gender`) + geom_text(aes(
  label = scales::percent(weight_pc), y = weight_pc ), stat=
  "identity", vjust = 1.5, color = "white") +
  scale_y_continuous(labels=percent) +
  ylab("Percentage") +
  theme_minimal()
```



Population weighting has only had the slightest effect on the results for the female participants' least preferred experiment but it does adjust the results enough such that experiments #4 and #8 are no longer at an equal level; now, #4 (Social Media only) is least preferred just ahead of #8, the most complex experiment. For male participants the weighting causes experiment #1 to become least preferred.

The fact that for the males' responses, experiment #1 is both most preferred and least preferred experiment seems like an anomalous result; however if it's not, it negates the possibility of experiment #1 being a meaningful result either way. What this highlights is that using these two basic metrics is not enough to determine a clear picture of not just which experiments are at the top or bottom of the scale but also how to determine the popularity of the experiments in between.

Adjusting age group subset for sample size disparity

Because the population weighting has such a dramatic effect given the use of large weightings in conjunction with small sample sizes, it's worth looking at creating larger groups with more equal sample subset sizes. Given the total sample size is twenty-three, having four sample subsets, consisting of six, seven, five, and five participants respectively should provide more balanced results; these new age groupings will be 18-29, 30-34, 35-44, and 45+.

```
feedback.adjusted_age_groups <- feedback.with_weights
feedback_age_group_18_29 <-
  filter(feedback.adjusted_age_groups, `Your age range` == "18-24" | `Your age range` == "25-29")
```

```

feedback_age_group_18_29$`Your age range` <- "18-29"
feedback_age_group_30_34 <-
  filter(feedback.adjusted_age_groups, `Your age range` == "30-
  34")
feedback_age_group_30_34$`Your age range` <- "30-34"
feedback_age_group_35_44 <-
  filter(feedback.adjusted_age_groups, `Your age range` == "35-
  39" | `Your age range` == "40-44")
feedback_age_group_35_44$`Your age range` <- "35-44"
feedback_age_group_45_plus <-
  filter(feedback.adjusted_age_groups, `Your age range` == "45-
  49" | `Your age range` == "50+")
feedback_age_group_45_plus$`Your age range` <- "45+"
feedback.adjusted_age_groups <- rbind(feedback_age_group_18_29,
  feedback_age_group_30_34, feedback_age_group_35_44,
  feedback_age_group_45_plus)
feedback.adjusted_age_groups$`Your age range` <-
  factor(feedback.adjusted_age_groups$`Your age range`, c("18-
  29", "30-34", "35-44", "45+"))

rm(feedback_age_group_18_29, feedback_age_group_30_34,
  feedback_age_group_35_44, feedback_age_group_45_plus)

```

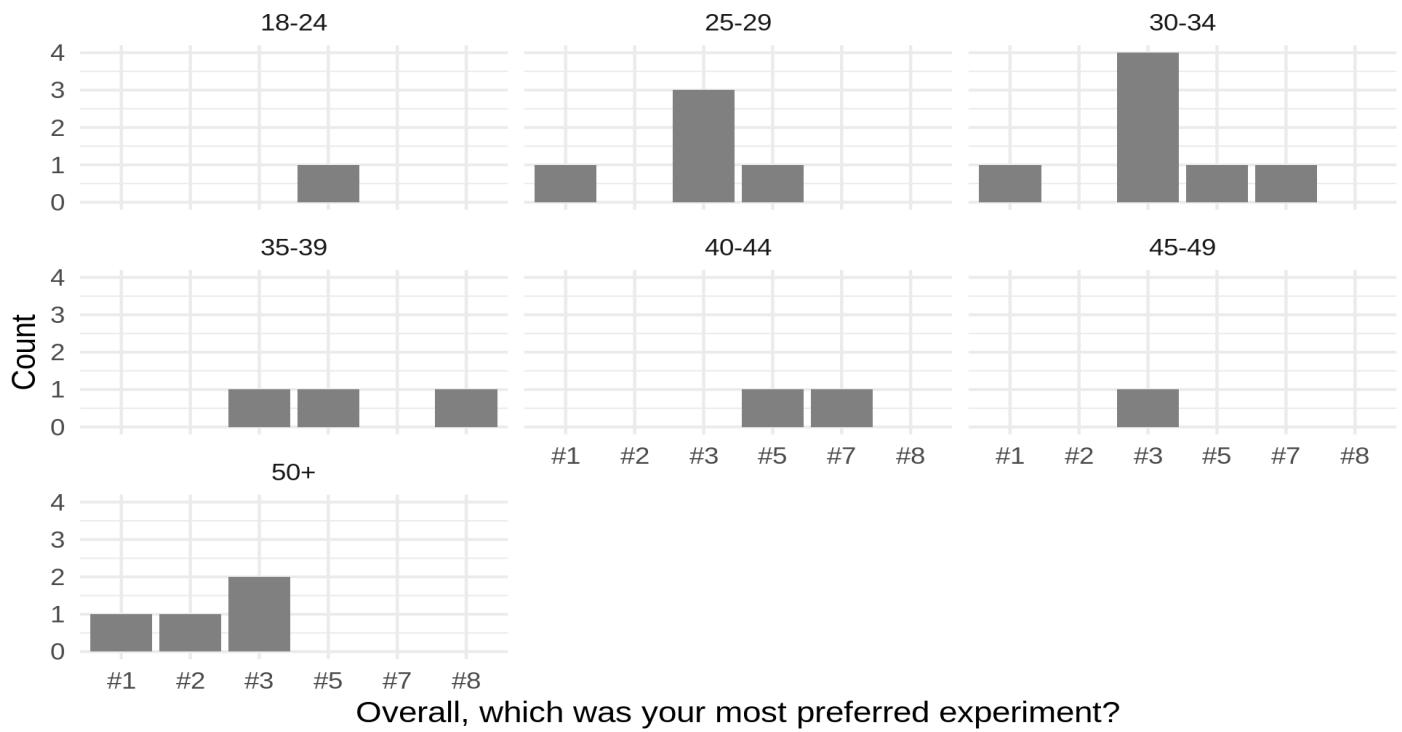
To see if there's any benefit for creating larger subsets for age groups we first need to use the original groupings in order to compare and contrast.

Preferred experiments by age group

```

ggplot(feedback.formatted, aes(x = `Overall, which was your
most preferred experiment?`)) + geom_bar(stat="count",
fill=styles.color_grey) + facet_wrap(~`Your age range`) +
ylab("Count") + theme_minimal()

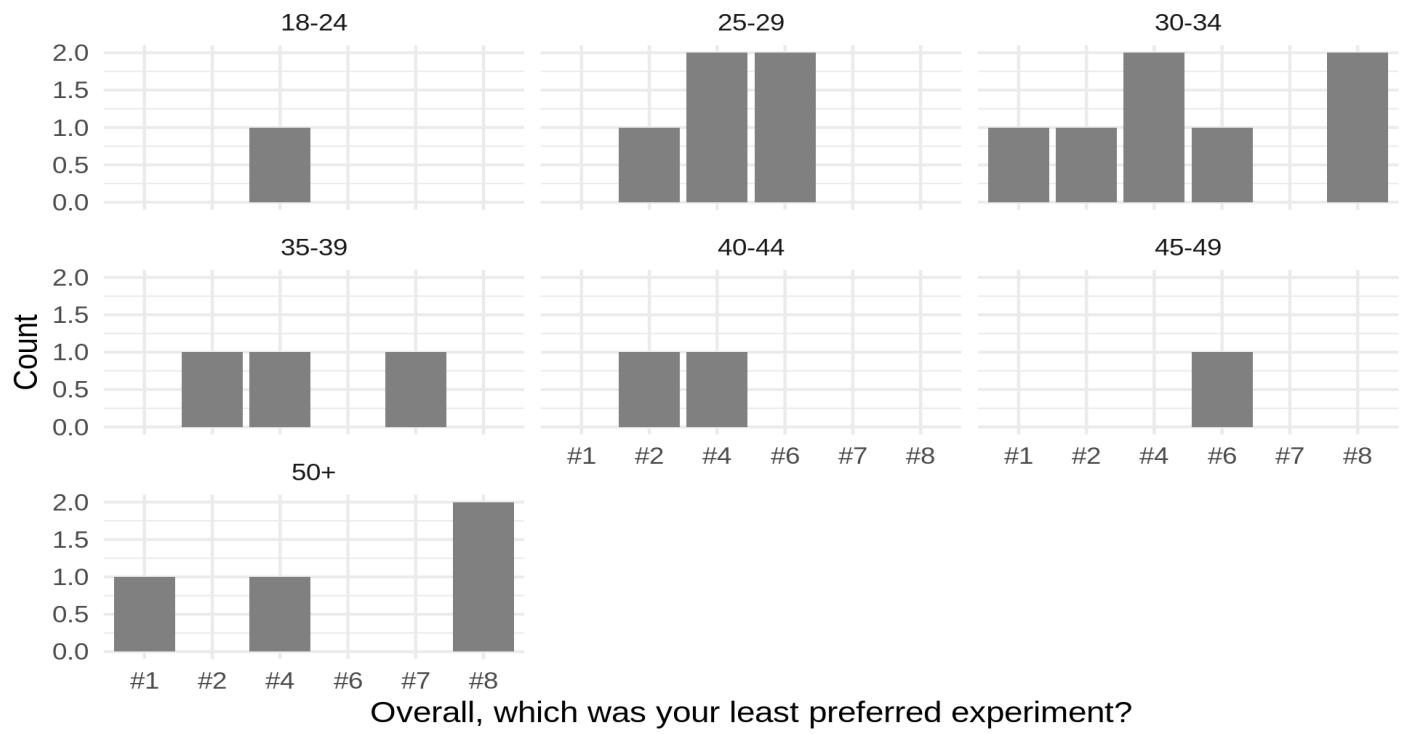
```



While experiment #3 is the most popular experiment, when the results are broken down into age group some extra detail emerges; it would appear that the shorter interaction experiences, like #1 (baseline), #2 (Augmented Reality), and #3 (Loyalty Reward) are preferred more by the older age groups, while longer experiences which include Augmented Reality, like #5 (Augmented Reality, Loyalty Reward) and #7 (Loyalty Reward, Social) are better received by younger demographics. It is worth noting however that the baseline experiment received votes from the 25-29 and 30-34 age groups as well as the 50+ age group and all three groups showed a distinct preference for the Loyalty Reward only experiment (#3).

Least preferred experiments by age group

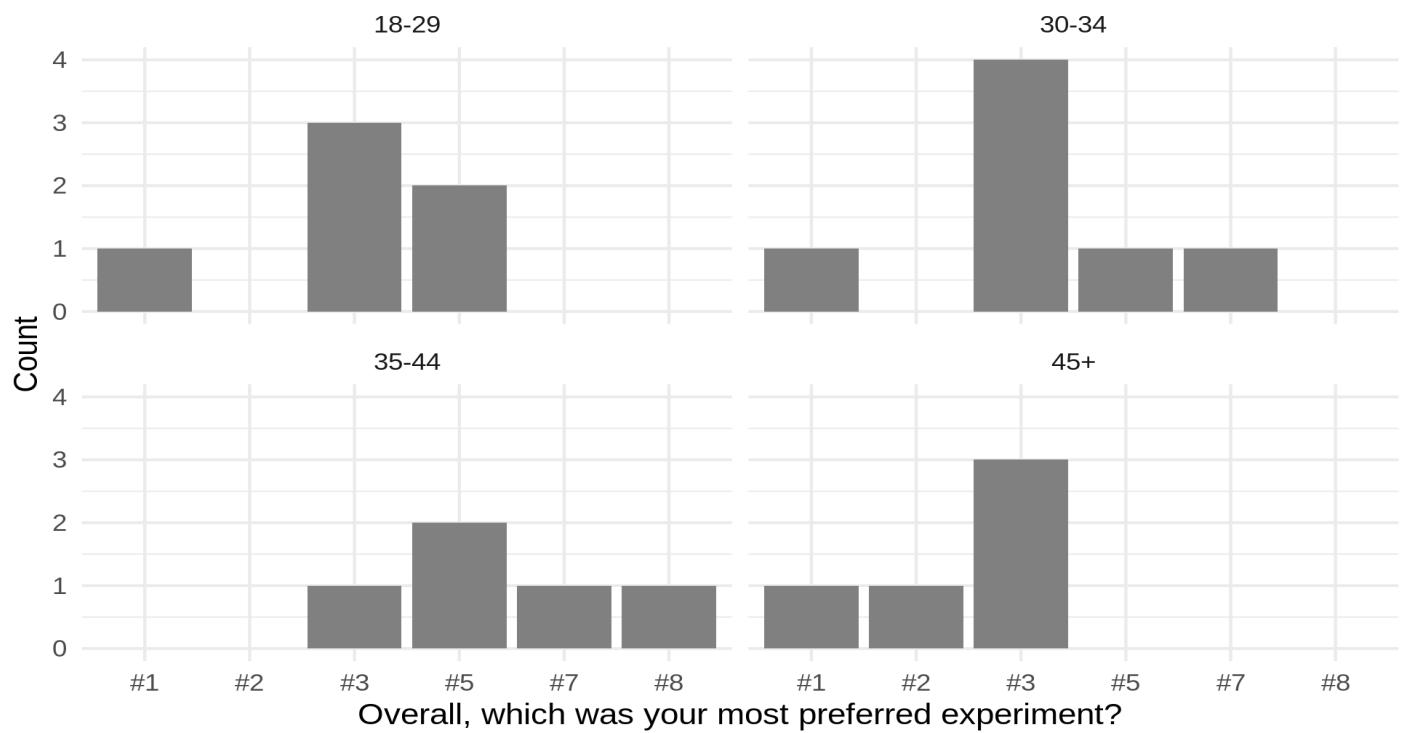
```
ggplot(feedback.formatted, aes(x = `Overall, which was your least preferred experiment?`)) + geom_bar(stat="count", fill=styles.color_grey) + facet_wrap(~`Your age range`) + ylab("Count") + theme_minimal()
```



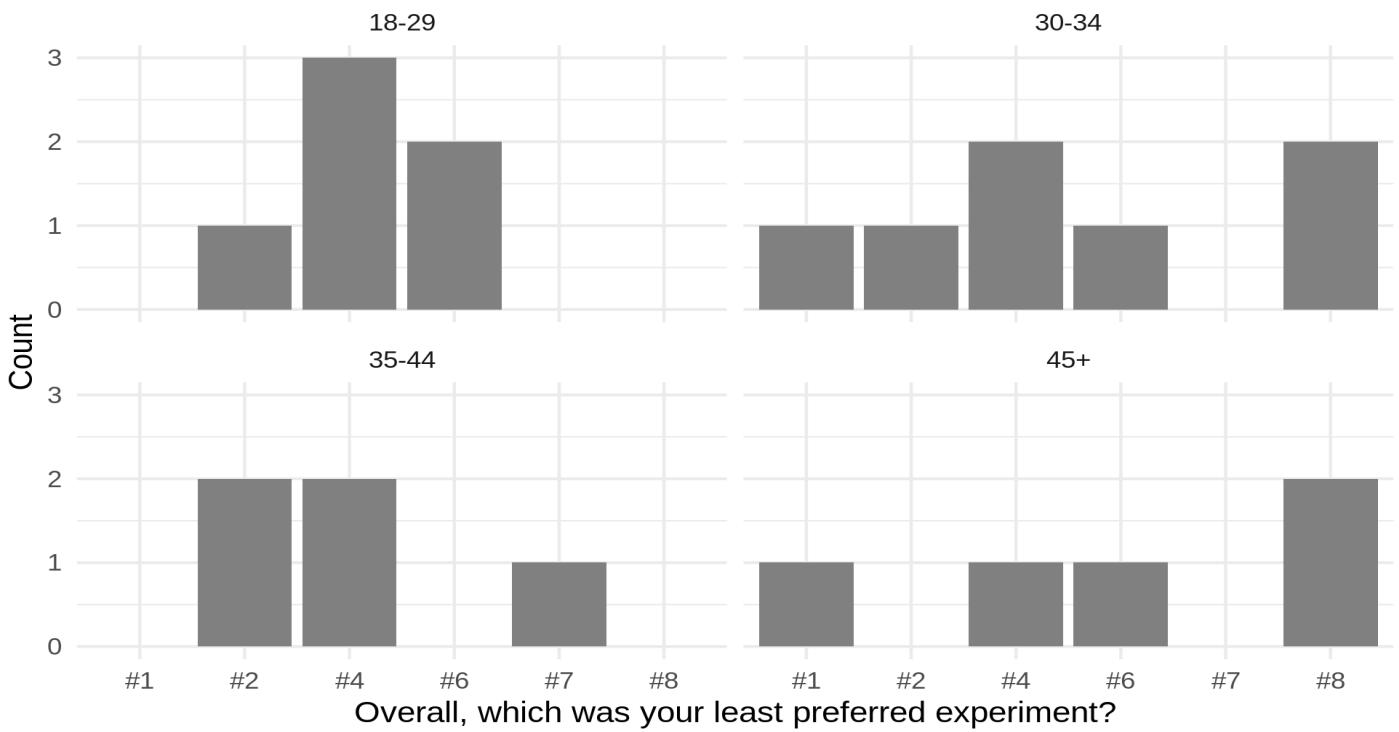
The results for the least preferred experiment experiences is more divergent within age groups than the preferred, with only one age group with more than one participant having a definitive answer for least preferred; in the 50+ demographic, experiment #8 had the highest number of votes for most disliked experiment. It's worth reiterating at this point that experiment #8 is the longest, most involving experience, incorporating all possible elements into the simulated advertising interaction (Loyalty Reward, Augmented Reality, Social Media). Experiment #8 was also joint top for least preferred experiment amongst the 30-34 age group, further suggesting the possibility of some underlying commonality between these two demographics; within the 30-34 age group, the other experiment voted to be least preferred was #4 (Social Media only) which is represented in all age groups bar the 45-49 age group, coming joint top in the remaining age groups.

Most and Least preferred experiments by age group, adjust for age group sample sizes.

```
ggplot(feedback.adjusted_age_groups, aes(x = `Overall, which was your most preferred experiment?`)) +  
  geom_bar(stat="count", fill=styles.color_grey) +  
  facet_wrap(~`Your age range`) + ylab("Count") +  
  theme_minimal()
```



```
ggplot(feedback.adjusted_age_groups, aes(x = `Overall, which was your least preferred experiment?`)) +  
  geom_bar(stat="count", fill=styles.color_grey) +  
  facet_wrap(~`Your age range`) + ylab("Count") +  
  theme_minimal()
```



With the use of amalgamated age groups with more even sample sizes, the data doesn't present any different results as such, it's just that the findings are easier to read.

Most and least preferred experiments adjusted for population weighting and aggregated age groups

```
feedback.m_preferred_exp_age <- aggregate(weight ~ `Overall` + `Your age range`, feedback.adjusted_age_groups, sum)
feedback.m_preferred_exp_age <- feedback.m_preferred_exp_age %>% group_by(`Your age range`) %>% mutate(weight_pc = weight/sum(weight))
kable(feedback.m_preferred_exp_age)
```

Overall, which was your most preferred experiment?	Your age range	weight	weight_pc
#1	18-29	0.4038044	0.1105046
#3	18-29	1.4178990	0.3880205
#5	18-29	1.8324828	0.5014749
#1	30-34	0.5834226	0.2504136

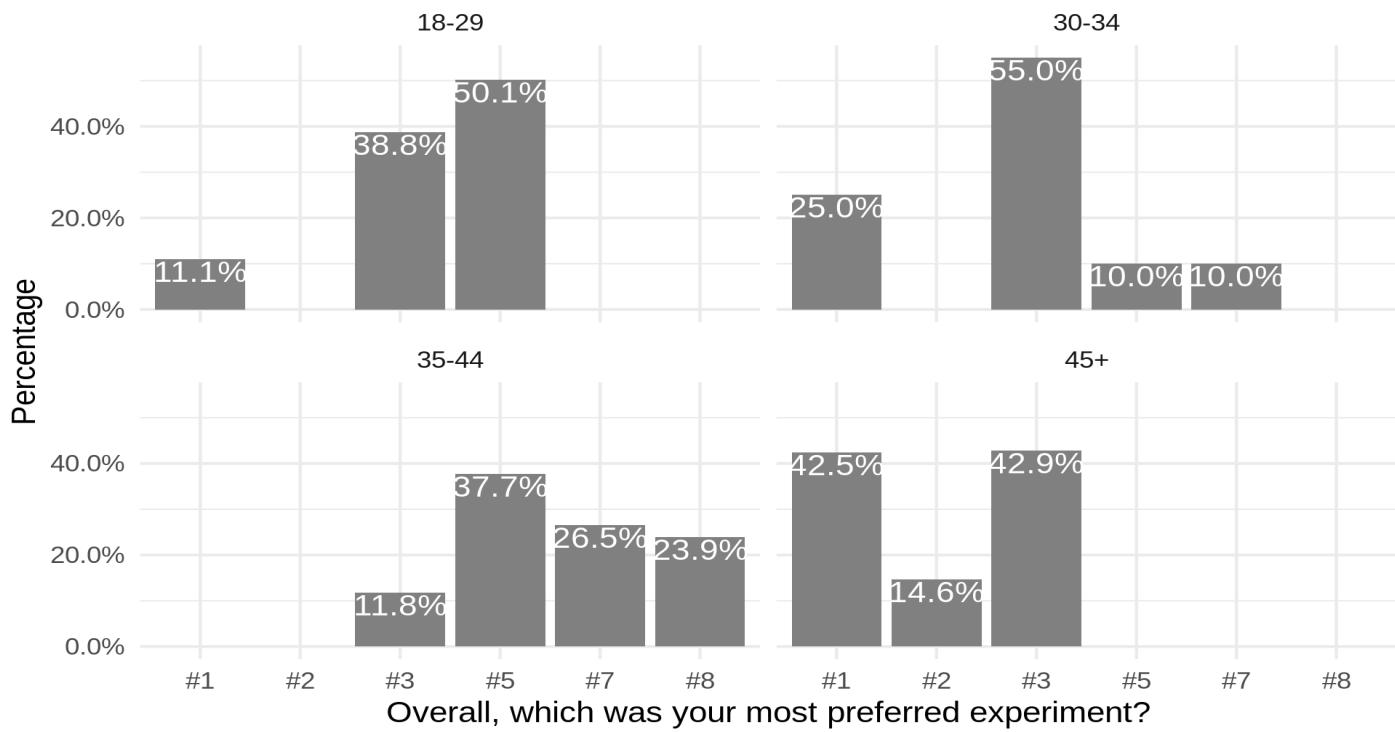
Overall, which was your most preferred experiment?

	Your age range	weight	weight_pc
#3	30-34	1.2812170	0.5499173
#5	30-34	0.2325981	0.0998346
#7	30-34	0.2325981	0.0998346
#3	35-44	0.5879894	0.1180433
#5	35-44	1.8778167	0.3769858
#7	35-44	1.3224872	0.2654992
#8	35-44	1.1928405	0.2394717
#1	45+	4.0360299	0.4246970
#2	45+	1.3906661	0.1463348
#3	45+	4.0766207	0.4289682

```

ggplot(feedback.m_preferred_exp_age, aes(x = `Overall, which
was your most preferred experiment?`, y = weight_pc, group =
`Your age range`)) +
geom_histogram(stat="identity", fill=styles.color_grey, aes(y =
weight_pc, fill = factor(..x..))) + facet_wrap(~`Your age
range`) +
geom_text(aes( label = scales::percent(weight_pc), y= weight_pc
), stat= "identity", vjust = 1.125, color = "white") +
scale_y_continuous(labels=percent) +
ylab("Percentage") +
theme_minimal()

```



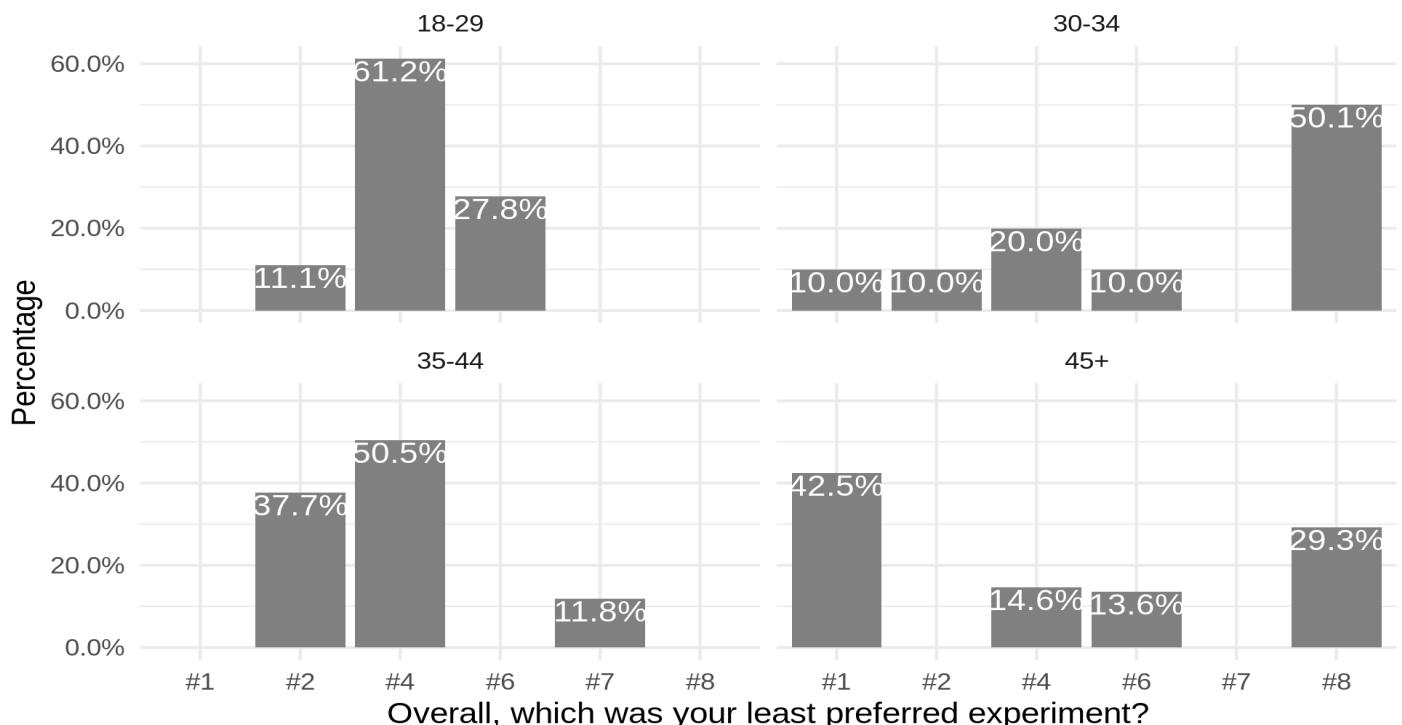
```
feedback.l_preferred_exp_age <- aggregate(weight ~ `Overall,
  which was your least preferred experiment?` + `Your age
  range`, feedback.adjusted_age_groups, sum)
feedback.l_preferred_exp_age <- feedback.l_preferred_exp_age
  %>% group_by(`Your age range`) %>% mutate(weight_pc =
  weight/sum(weight))
kable(feedback.l_preferred_exp_age)
```

Overall, which was your least preferred experiment?	Your age range	weight	weight_pc
#2	18-29	0.4038044	0.1105046
#4	18-29	2.2362872	0.6119795
#6	18-29	1.0140946	0.2775158
#1	30-34	0.2325981	0.0998346
#2	30-34	0.2325981	0.0998346
#4	30-34	0.4651963	0.1996691
#6	30-34	0.2325981	0.0998346
#8	30-34	1.1668451	0.5008272
#2	35-44	1.8778167	0.3769858

Overall, which was your least preferred experiment?

	Your age range	weight	weight_pc
#4	35-44	2.5153277	0.5049709
#7	35-44	0.5879894	0.1180433
#1	45+	4.0360299	0.4246970
#4	45+	1.3906661	0.1463348
#6	45+	1.2952884	0.1362986
#8	45+	2.7813323	0.2926696

```
ggplot(feedback.l_preferred_exp_age, aes(x = `Overall, which was your least preferred experiment?`, y = weight_pc, group = `Your age range`)) +
  geom_histogram(stat="identity", fill=styles.color_grey, aes(y = weight_pc, fill = factor(..x..))) + facet_wrap(~`Your age range`) +
  geom_text(aes( label = scales::percent(weight_pc), y= weight_pc ), stat= "identity", vjust = 1.125, color = "white") +
  scale_y_continuous(labels=percent) +
  ylab("Percentage") +
  theme_minimal()
```



Once weighting is applied across age groups, with different weightings applied to genders within age groups, some interesting results surface: within the 18-29 and 35-44 age groups that preference for experiment #5 and the dislike for #4 prevail; in juxtaposition to this, the 30-34 and 45+ age groups seem to share traits in as much that experiment #8 is especially unpopular within these age groups and experiment #3 is a leader within the preferred experiments for both groups.

Most preferred results for age and gender demographics

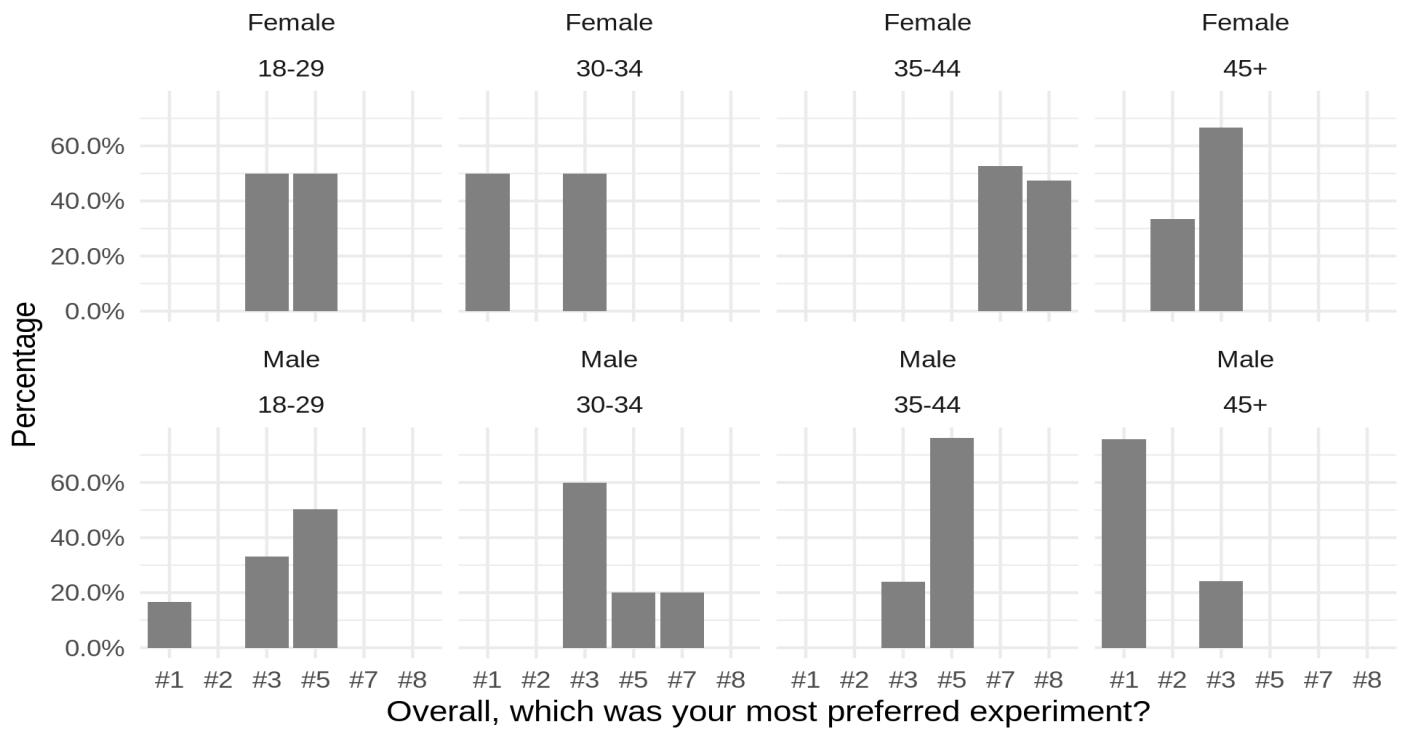
After the previous interrogation into the findings culminating from the feedback, it's worth looking at which experiment experiences are received most positively by the particular demographics recorded in the study. In other words, the following analysis will examine the efficacy of the experiments within the targeted subsets that are the cross sections between age groups and gender.

```
feedback.m_preferred_exp_age_gender <- aggregate(weight ~  
`Overall, which was your most preferred experiment?` + `Your  
age range` + `Your gender`, feedback.adjusted_age_groups, sum)  
feedback.m_preferred_exp_age_gender <-  
feedback.m_preferred_exp_age_gender %>% group_by(`Your  
gender`, `Your age range`) %>% mutate(weight_pc =  
weight/sum(weight))  
kable(feedback.m_preferred_exp_age_gender, format = 'markdown')
```

Overall, which was your most preferred experiment?	Your age range	Your gender	weight	weight_pc
#3	18-29	Female	0.61029 01	0.50000 00
#5	18-29	Female	0.61029 01	0.50000 00
#1	30-34	Female	0.58342 26	0.50000 00
#3	30-34	Female	0.58342 26	0.50000 00
#7	35-44	Female	1.32248 72	0.52577 13
#8	35-44	Female	1.19284 05	0.47422 87
#2	45+	Female	1.39066 61	0.33333 33

Overall, which was your most preferred experiment?	Your age range	Your gender	weight	weight_pc
#3	45+	Female	2.78133	0.66666
			23	67
#1	18-29	Male	0.40380	0.16592
			44	84
#3	18-29	Male	0.80760	0.33185
			89	69
#5	18-29	Male	1.22219	0.50221
			26	47
#3	30-34	Male	0.69779	0.60000
			44	00
#5	30-34	Male	0.23259	0.20000
			81	00
#7	30-34	Male	0.23259	0.20000
			81	00
#3	35-44	Male	0.58798	0.23845
			94	73
#5	35-44	Male	1.87781	0.76154
			67	27
#1	45+	Male	4.03602	0.75704
			99	16
#3	45+	Male	1.29528	0.24295
			84	84

```
ggplot(feedback.m_preferred_exp_age_gender, aes(x = `Overall,
  which was your most preferred experiment?`, y = weight_pc,
  group = `Your age range` + `Your gender`)) +
  geom_histogram(stat="identity", fill=styles.color_grey, aes(y =
  weight_pc, fill = factor(..x..))) +
  facet_wrap(~`Your gender` + ~`Your age range`, ncol = 4) +
  scale_y_continuous(labels=percent) +
  ylab("Percentage") +
  theme_minimal()
```



What these results appear to indicate is that in the 18-29 age group, experiment #5 is most popular followed by #3 which is equally popular for females within this age group; #3 is the clear winner among those in the 30-34 year olds with the baseline #1 in joint place for females; in the 35-44 year group there are distinct differences between male and female groups with #5 being a clear winner with males but #7 just beating #8 for females; lastly, in the 45+ group males generally prefer #1 but #3 is the overall winner for both genders in this demographic.

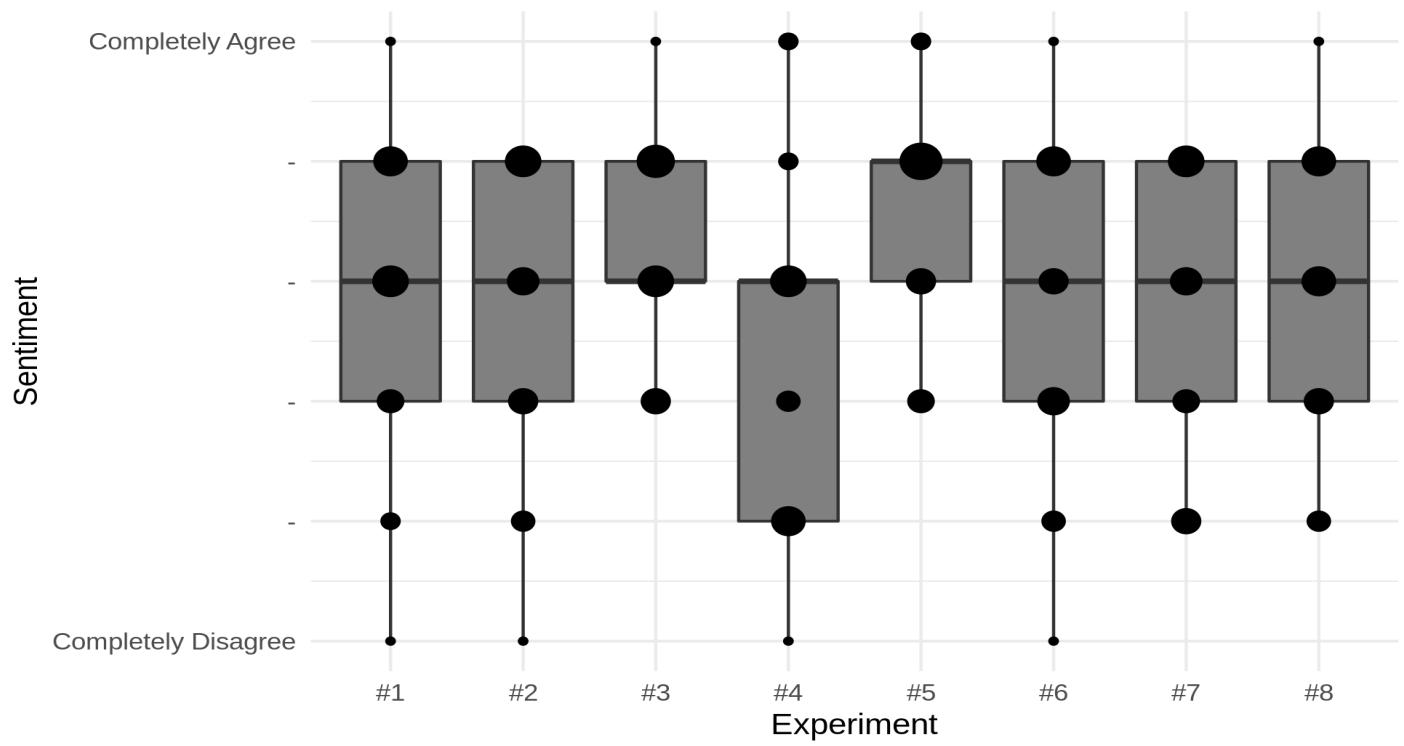
Comparing facets of the experiments

Another way that is possible to look at the feedback data from the participants is to assess their answers to individual questions about the qualities of the experiment experiences. Each experiment was subject to the same questions as consequently the experiments can be compared against these questions. This is helpful to get some more granular insight into the characteristics manifested by each experiment composition.

The following data representation uses box plots coupled with point counts to plot the sentiments of the participants. The points indicate individual scoring while the box plot candlesticks help identify the range and median of those scores which is helpful when comparing scores between experiments.

Facet: I found the experience enjoyable

```
feedback.facet_enjoyable <-  
  select(feedback.adjusted_age_groups, starts_with("I found the  
experience enjoyable"))  
  
ggplot(melt(feedback.facet_enjoyable), aes(x = variable, y =  
  value)) +  
  geom_boxplot(fill=styles.color_grey) +  
  geom_count(show.legend=F) +  
  xlab("Experiment") +  
  ylab("Sentiment") +  
  scale_x_discrete(labels = c(paste('#', 1:8, sep = ''))) +  
  scale_y_continuous(labels = c('0' = "Completely Disagree", '1'  
    = "-", '2' = "-", '3' = "-", '4' = "-", '5' = "Completely  
    Agree")) +  
  theme_minimal()
```

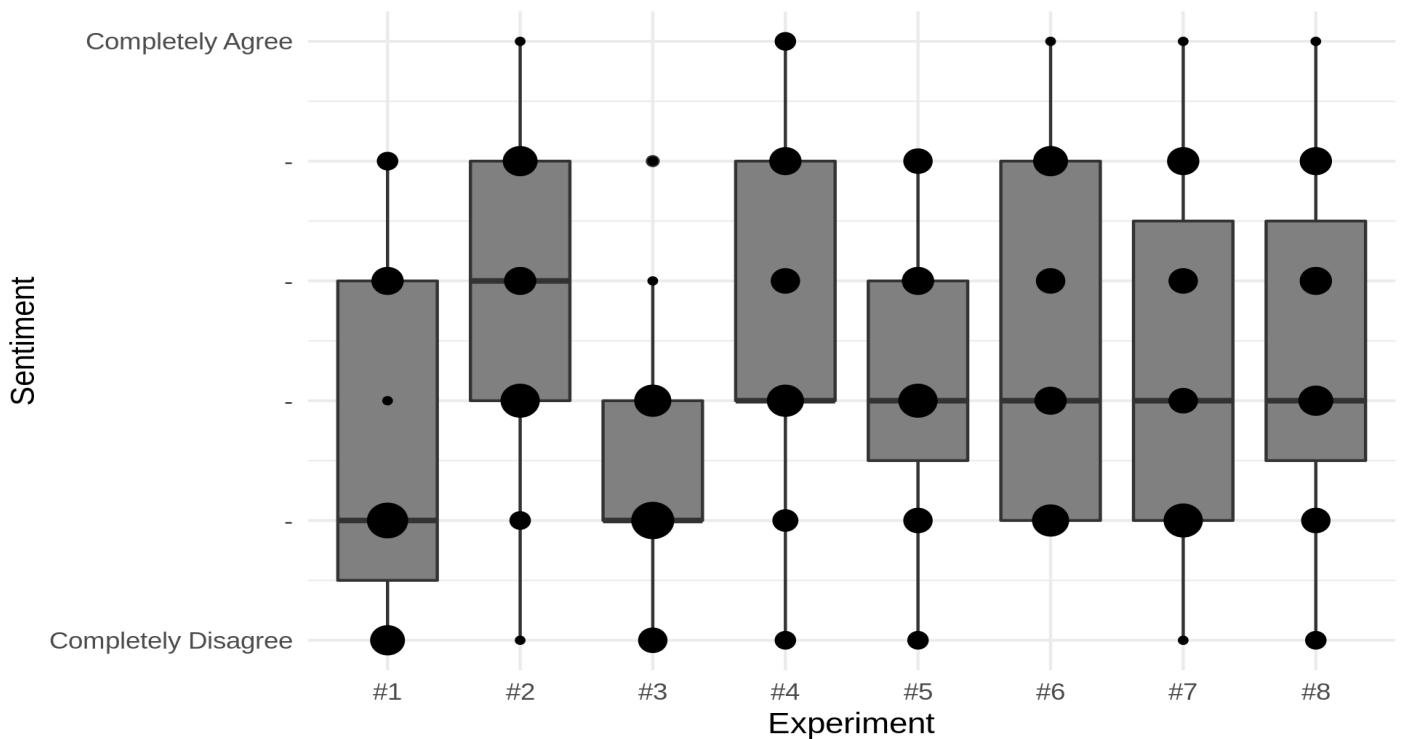


Experiments #1, #2, #6, #7, and #8 all score similarly with regards to the idea of enjoyability. Experiment #4 (Social Media) has a large variation but whilst its median is middling on the scale, the trend is negative. Experiments #3 (Loyalty Reward) and #5 (Loyalty Reward, Augmented Reality) have the most positive results with ranges that are mostly positive and very much skewed to the top end. With greater inspection it appears that #5 is considered most enjoyable because the candlestick median line is the highest of all experiments, just one below the maximum value on the scale.

Facet: I found the experience annoying

```
feedback.facet_annothing <- select(feedback.adjusted_age_groups,  
  starts_with("I found the experience annoying"))
```

```
ggplot(melt(feedback.facet_annothing), aes(x = variable, y =  
  value)) +  
  geom_boxplot(fill=styles.color_grey) +  
  geom_count(show.legend=F) +  
  xlab("Experiment") +  
  ylab("Sentiment") +  
  scale_x_discrete(labels = c(paste('#', 1:8, sep = ' '))) +  
  scale_y_continuous(labels = c("Completely Disagree", "-",  
    "-", "-", "Completely Agree")) +  
  theme_minimal()
```



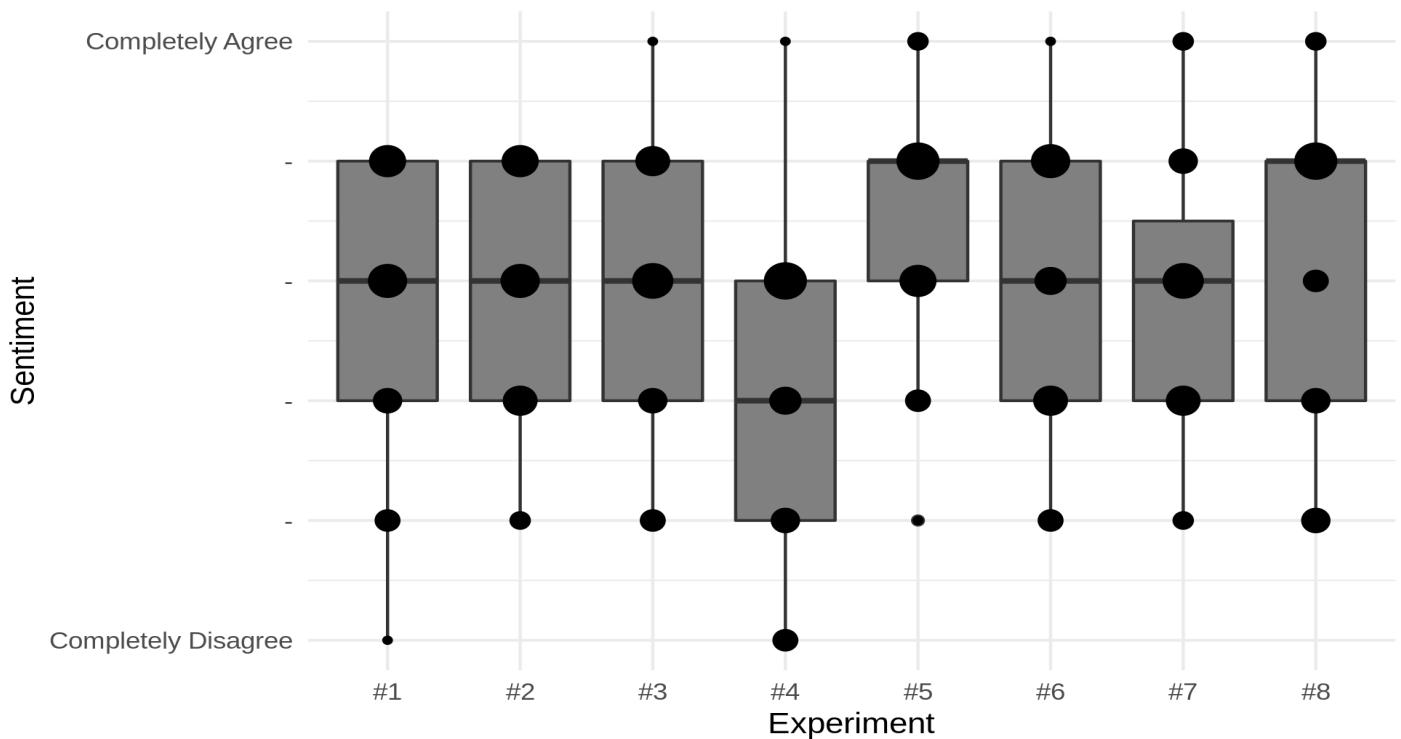
With regards to the characteristic of being annoying, there is quite a lot of variation between experiment as well as a large degree of range displayed by the candlesticks. Looking at the lowest median lines, experiments #1 (baseline) and #3 (Loyalty Reward) were considered least annoying, with median lines drawn at the second lowest position on the scale; experiment #1 has a longer candlestick, indicating more variation in participant scoring for this quality when compared to experiment #3 which is more skewed to the bottom. Occupying the middle ground in this characteristic analysis are experiments #5 (Loyalty Reward, Augmented Reality), #6 (Augmented Reality, Social Media), #7 (Loyalty Reward, Social Media), and #8 (Loyalty Reward, Augmented Reality, Social Media); of these middling results, #5 appears most

concentrated around the centre ground while #8 has quite a normal distribution. Experiment #7 has a similarly broad distribution to #8 while #6 is slightly skewed to the top end, suggesting it is the most annoying of this middle set. The most annoying experiments by participants scores are #4 (Social Media) and #2 (Augmented Reality) which are both skewed to the top end of the scale despite having ranges that reach maximum and minimum values on the spectrum. Experiment #2 has the top most median line, indicating a distribution that is a bit more skewed to the top end than #4 and as such, #2 could be considered the more annoying experiment overall.

Facet: I found the experience engaging

```
feedback.facet_engaging <- select(feedback.adjusted_age_groups,  
  starts_with("I found the experience engaging"))
```

```
ggplot(melt(feedback.facet_engaging), aes(x = variable, y =  
  value)) +  
  geom_boxplot(fill=styles.color_grey) +  
  geom_count(show.legend=F) +  
  xlab("Experiment") +  
  ylab("Sentiment") +  
  scale_x_discrete(labels = c(paste('#', 1:8, sep = ' '))) +  
  scale_y_continuous(labels = c("Completely Disagree", "-",  
    "-", "-", "Completely Agree")) +  
  theme_minimal()
```

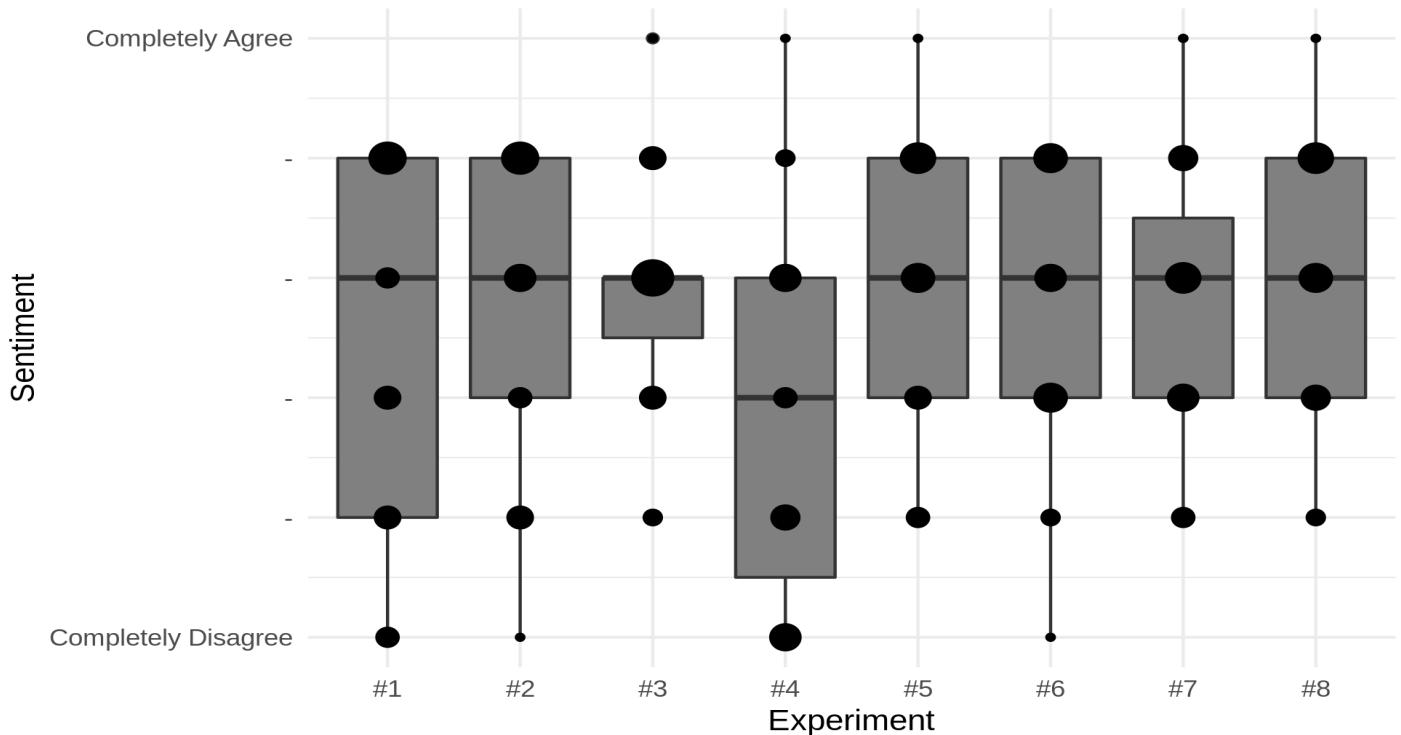


Engagement across experiments are broadly similar and skewed to higher levels of engagement. Only the Social Media only (#4) experiment has a median line in the lower half of the scale, suggesting it was the least engaging. The baseline experiment (#1) is the only experiment aside from #4 to have any participant score it at the very bottom of the scale, suggesting this is the next least engaging experiment experience. The remaining the experiments that have median lines at the lowest position of the top half of the scale are #2 (Augmented Reality), #3 (Loyalty Reward), #6 (Augmented Reality, Social Media), and #7 (Loyalty Reward, Social Media) can be grouped as the average scoring experiments; of these experiments, #2 is the only one to not have any participant give it a maximum top score, so it can be considered the

bottom of the middle set. Experiment #7 seems to be most concentrated around its median so could be seen as the most average while #3 and #6 have a very similar distributions of votes, sitting at the top of the middle set. The most engaging experiments by participant scores both have median lines that at the second highest position on the scale, though they have quite different patterns of distributions; according to the scores, experiment #8 is the second most engaging experiment experience, having more scores towards the lower half than #5, which is almost entirely scored in the top half of the scale, and thus the most engaging.

Facet: I found the experience interesting

```
feedback.facet_interesting <-  
  select(feedback.adjusted_age_groups, starts_with("I found the  
experience interesting"))  
  
ggplot(melt(feedback.facet_interesting), aes(x = variable, y =  
  value)) +  
  geom_boxplot(fill=styles.color_grey) +  
  geom_count(show.legend=F) +  
  xlab("Experiment") +  
  ylab("Sentiment") +  
  scale_x_discrete(labels = c(paste('#', 1:8, sep = ' '))) +  
  scale_y_continuous(labels = c("Completely Disagree", "-",  
  "-", "-", "Completely Agree")) +  
  theme_minimal()
```



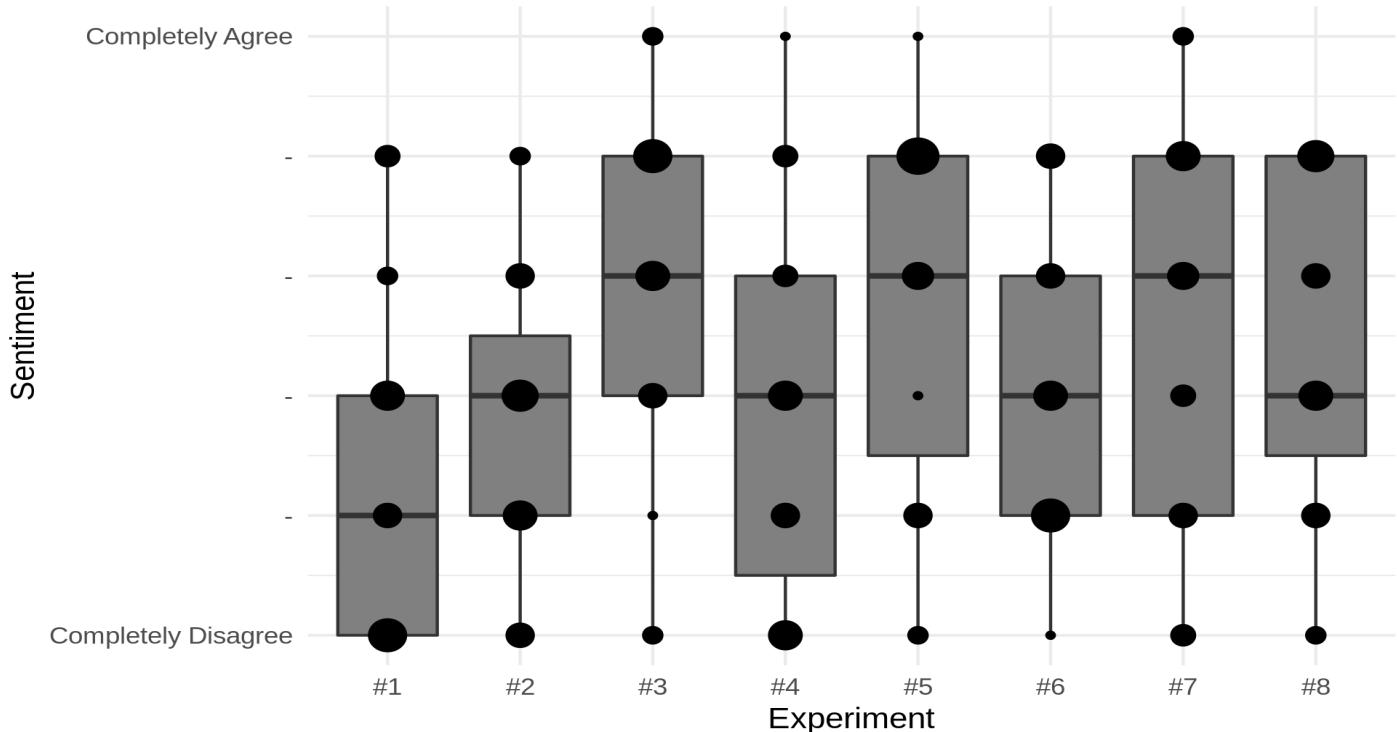
The variation of scoring between experiments for the quality of interestingness is a little more nuanced than other experiment characteristics. At first glance, because all experiments except #4 (Social Media) share the same median line position, it's not clear how most of the experiments compare with one another. Experiment #4 is the exception as it can be considered the worst performer in this category as it is the only experiment with a median line in the lower half of the sentiment axis. The baseline experiment (#1) can be considered the next least interesting thanks to having an overall candlestick skew to the bottom end of the scale. In the lower part of the average performing experiments are #2

(Augmented Reality) and #6 (Augmented Reality, Social Media), which have a similar distribution pattern for scores including the absence of a score at the top most value on the scale. Reading the box plots and points to determine the most interesting experiences is more challenging as the distribution patterns of the remaining experiments are more similar; however when looking at the quartile positions of #3 (Loyalty Reward) and #7 (Loyalty Reward, Social Media) then we can see that these candlesticks skew more to the middle of the scale when compare to #5 (Loyalty Reward, Augmented Reality) and #8 (Loyalty Reward, Augmented Reality, Social Media). Between #5 and #8 the difference is marginal but on this occasion, the experiment composed of every element has perhaps just slightly more votes towards the top end of the scale but they could ostensibly be considered more or less equally interesting.

Facet: I found the experience to be persuasive

```
feedback.facet_persuasive <-
  select(feedback.adjusted_age_groups, starts_with("I found the
experience to be persuasive"))

ggplot(melt(feedback.facet_persuasive), aes(x = variable, y =
  value)) +
  geom_boxplot(fill=styles.color_grey) +
  geom_count(show.legend=F) +
  xlab("Experiment") +
  ylab("Sentiment") +
  scale_x_discrete(labels = c(paste('#', 1:8, sep = ' '))) +
  scale_y_continuous(labels = c("Completely Disagree", "-",
  "-", "-",
  "-", "Completely Agree")) +
  theme_minimal()
```

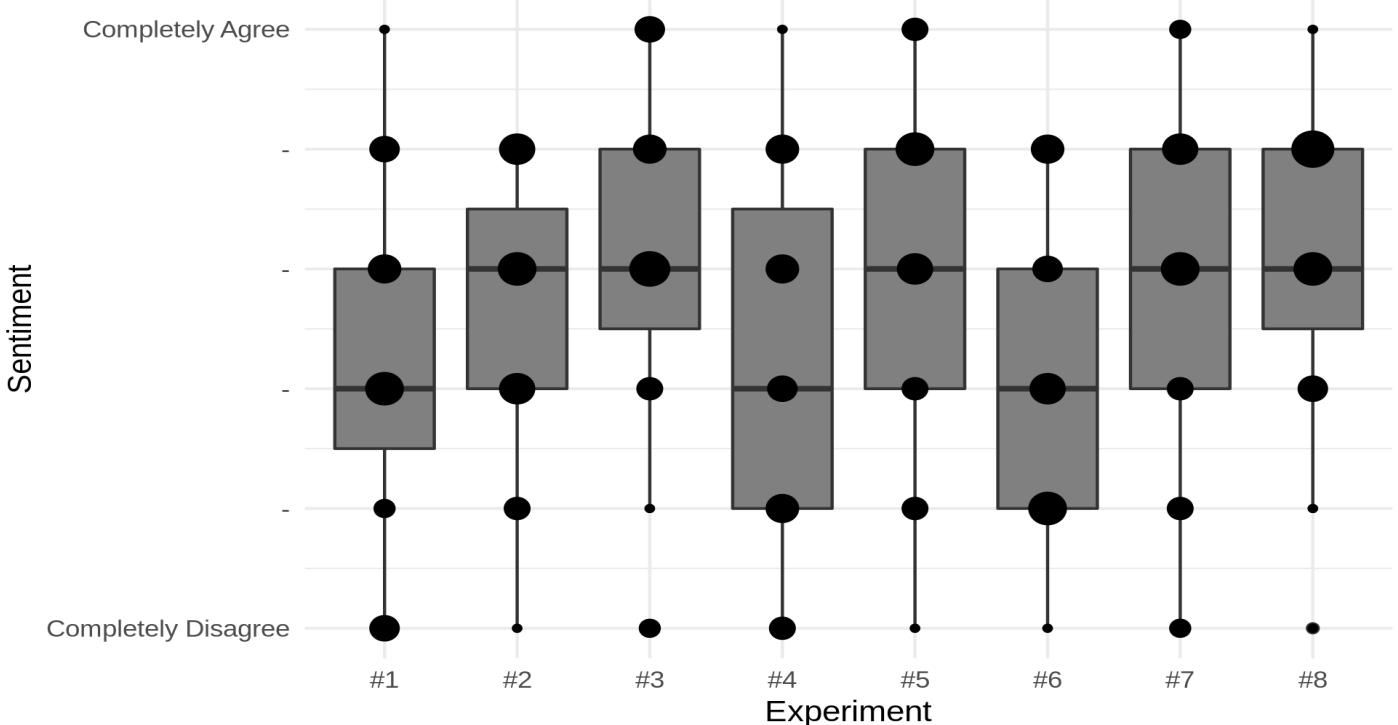


The level of variation of the median line between results for the facet of persuasiveness for each experiment is across three degrees on the sentiment axis; the #1, baseline experiment is the experiment with the lowest median line so classifying this experiment as the least persuasive is straightforward. Experiments #2 (Augmented Reality), #4 (Social Media), and #8 (Loyalty Reward, Augmented Reality, Social Media) all have distribution patterns that include a median

line that is at the top of the lower half of the scale; when taking into account the upper bounds of scores for each of these experiments, coupled with the quartile skew of the boxes, it can be ascertained that their ascending order of persuasiveness is #2, #4, #8. Experiments #3 (Loyalty Reward), #5 (Loyalty Reward, Augmented Reality), and #7 (Loyalty Reward, Social Media) share the same median line position on the scale but with visibly different first and third quartile positions that can aid ranking of these experiments. Of the three top experiments in this category, #7 has the longest candlestick box, and a distribution that comparatively leans towards the lower end of this facet, making it the third most persuasive experience. Between experiments #3 and #5, the candlestick weighting of #5 is lower than #3, making the Loyalty Reward only experiment (#3) supposedly more persuasive than the combined experience of Loyalty Reward and Augmented Reality (#5).

Facet: The experience connected me with the brand

```
feedback.facet_brand <- select(feedback.adjusted_age_groups,  
  starts_with("The experience connected me with the brand?"))  
  
ggplot(melt(feedback.facet_brand), aes(x = variable, y =  
  value)) +  
geom_boxplot(fill=styles.color_grey) +  
geom_count(show.legend=F) +  
#scale_size_area() +  
xlab("Experiment") +  
ylab("Sentiment") +  
scale_x_discrete(labels = c(paste('#', 1:8, sep = ' '))) +  
scale_y_continuous(labels = c("Completely Disagree", "-",  
  "-", "-", "Completely Agree")) +  
theme_minimal()
```

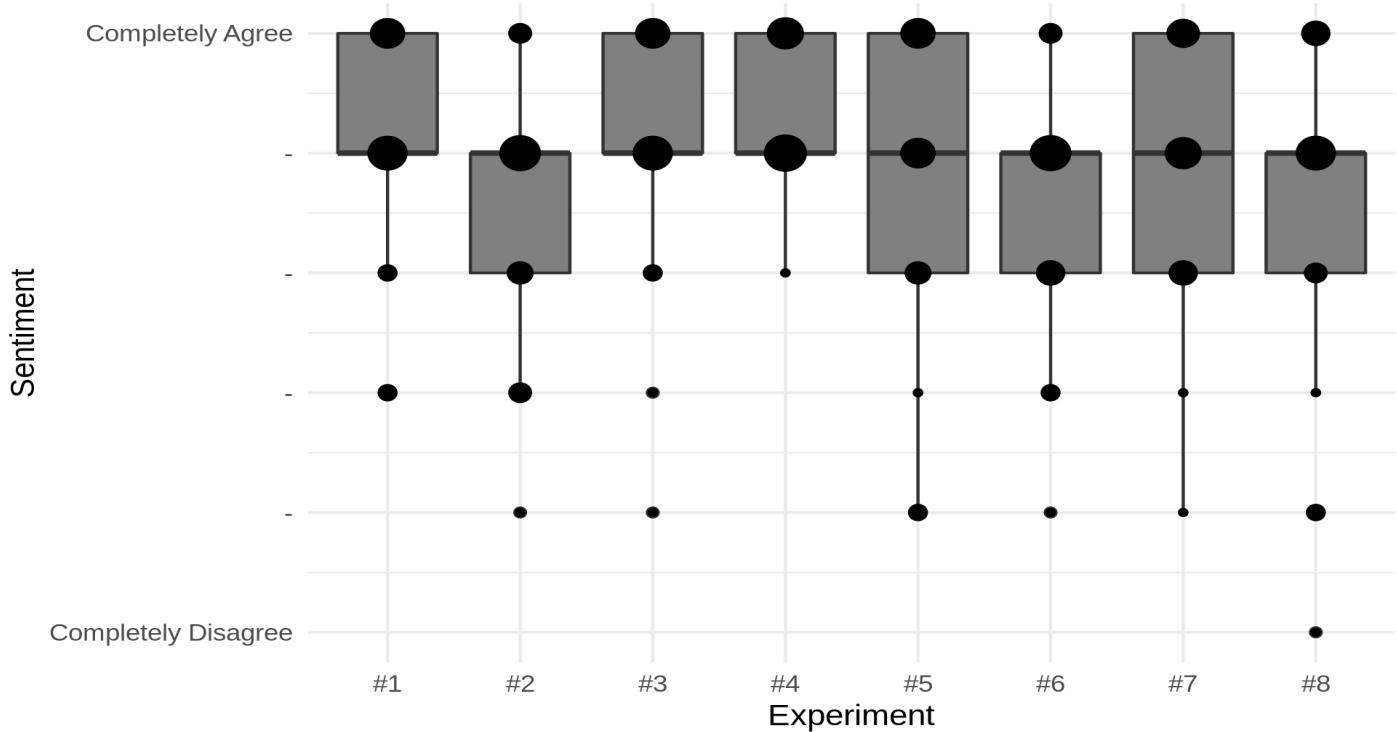


There are only two degrees on the scale of 'brand connectedness' the median line is drawn for any of the experiments; this fact at the least divides the experiments into two, whereby three experiments have a median value at the top end of the lower section of the scale and the other five have median positions at the bottom level of the top end of the scale. The bottom end experiments are arranged in ascending order with the baseline (#1) followed by #4 (Social Media), and

finally #6 (Augmented Reality, Social Media). At the upper end of the spectrum, the experiments can be ordered to ascend accordingly: #2 (Augmented Reality) with no participant providing a maximal score and a skew to the lower end; experiment #7 is next followed #5 which according to the point plots is just slightly more skewed to the upper end of the scale; the top two experiments are #3 and #8 which both have lower quartiles at the halfway mark with most scores in the positive half of the scale. Determining which experiment - #3 or #8 - achieves most brand connection by looking at the candlesticks is not straightforward because #8 is less evenly distributed, with a stronger concentration around the second and third positions on the y axis and far fewer at the extremes; this means that #8 is more consistent but #3 had the potential to deliver stronger sentiment among the participants.

Facet: I found the experience easy to use

```
feedback.facet_easy <- select(feedback.adjusted_age_groups,  
  starts_with("I found the experience easy to use"))  
  
ggplot(melt(feedback.facet_easy), aes(x = variable, y = value))  
+  
geom_boxplot(fill=styles.color_grey) +  
geom_count(show.legend=F) +  
#scale_size_area() +  
xlab("Experiment") +  
ylab("Sentiment") +  
scale_x_discrete(labels = c(paste(' #' , 1:8, sep = ' '))) +  
scale_y_continuous(labels = c("Completely Disagree", "-", "-",  
  "-", "-", "Completely Agree")) +  
theme_minimal()
```



Ease of use was a characteristic for which all experiments scored fairly highly, with every single experiment sharing the same median line position, one below the maximum score on the scale. Based on the candlestick boxes and the lowest point scores, the worst performing experiment was #8 (Loyalty Reward, Augmented Reality, Social Media) as it has the lowest scores including a few at the very bottom the scale, followed by experiments #2 (Augmented Reality) and #6 (Augmented Reality, Social Media) which have near identical distribution of participant scores and the majority of votes between the bottom and middle quartiles. Experiments #5 (Loyalty Reward, Augmented Reality) and #7 (Loyalty Reward,

Social Media) are the next best performing subset, having similar score distribution patterns with #7 being skewed just slightly more to the positive extreme of the scale. The top three experiment for ease of use in ascending order are #3 (Loyalty Reward), the baseline #1, and #4 (Social Media); all three of these experiment have the majority of participant scores in the top two points on the scale but while #3 and #1 have a distribution that includes scores in the lower half of the y scale, #4 was considered easy to use to greater or lesser degrees by every participant.

Looking at facets of the experiments as a whole.

To get a clearer picture of the perception of the experiments as a whole it's beneficial to look at the facets of each experiment collectively. Using a radar or spider plot it is possible to create a shape the describes the qualities of the experiment. One of the questions asked was on a negative scale of annoyance, so this has been inverted, converting high values to low and vice-versa; the inversion allows for all facets to be considered positive and as such the visual area of the radar plots can be considered indicators of overall performances. That is to say, the larger the area of the plot the better the experiment was perceived.

```
feedback.facets_mean <- data.frame(matrix(nrow = 0, ncol = 3))  
  %>% `colnames<-`(c("variable", "value", "exp"))  
#Creating mean results for the facets  
for (idx in 0:7) {  
  if (idx != 0) {  
    keys = paste(exp_keys, "__", idx, sep = "")  
  } else {  
    keys = exp_keys  
  }  
  
feedback.facets_exp <- select(feedback.adjusted_age_groups,  
  keys)  
  
feedback.facets_mean_exp <-  
  as.data.frame(t(colMeans(feedback.facets_exp)))  
feedback.facets_mean_melt_exp <- melt(feedback.facets_mean_exp)  
feedback.facets_mean_melt_exp$value <-  
  as.numeric(feedback.facets_mean_melt_exp$value)  
feedback.facets_mean_melt_exp$variable <- as.factor(exp_keys)  
feedback.facets_mean_melt_exp[2,2] <- 5 -  
  feedback.facets_mean_melt_exp[2,2]  
feedback.facets_mean_melt_exp$exp <- paste(' #' , idx + 1, sep =  
  '')  
  
feedback.facets_mean <- rbind(feedback.facets_mean,  
  feedback.facets_mean_melt_exp)  
}  
rm(idx, feedback.facets_mean_exp, feedback.facets_exp, keys)
```

```

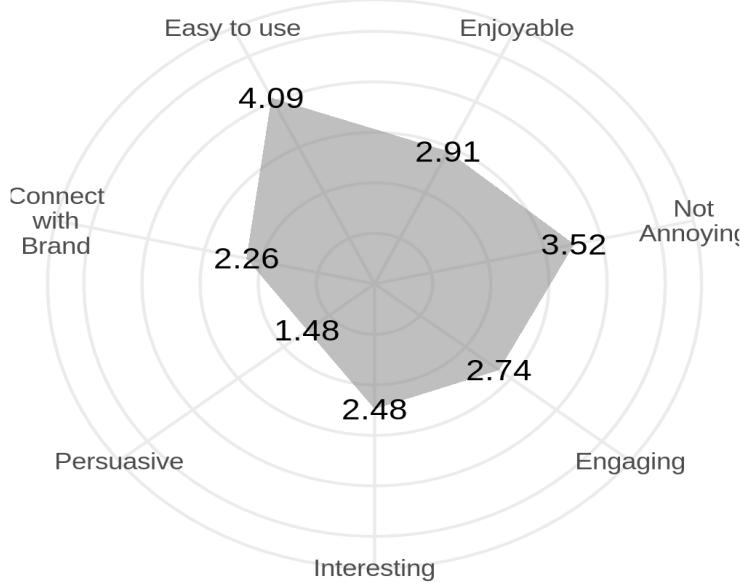
feedback.facets_mean$variable <-
  factor(feedback.facets_mean$variable, exp_keys)
feedback.facets_mean$exp <- factor(feedback.facets_mean$exp,
  factors.exp_num)

do_radar_graph <- function(expVal) {
  return(ggplot(feedback.facets_mean[feedback.facets_mean$exp ==
    expVal, ], aes(variable, value, group = exp)) +
    geom_polygon(aes(group = exp), fill = styles.color_grey_alpha,
    size = 2) +
    ylim(0, 5) +
    scale_x_discrete(labels = c("Enjoyable", "Not\nAnnoying",
      "Engaging", "Interesting", "Persuasive",
      "Connect\nwith\nBrand", "Easy to use")) +
    xlab("") + ylab("") +
    theme_minimal() +
    ggtitle(expVal) +
    theme(axis.text.y=element_blank(),
    axis.ticks.y=element_blank()) +
    geom_text(aes(label = round(value, digits=2), y = value),
      show.legend=F) +
    coord_radar())
}

do_radar_graph('#1')

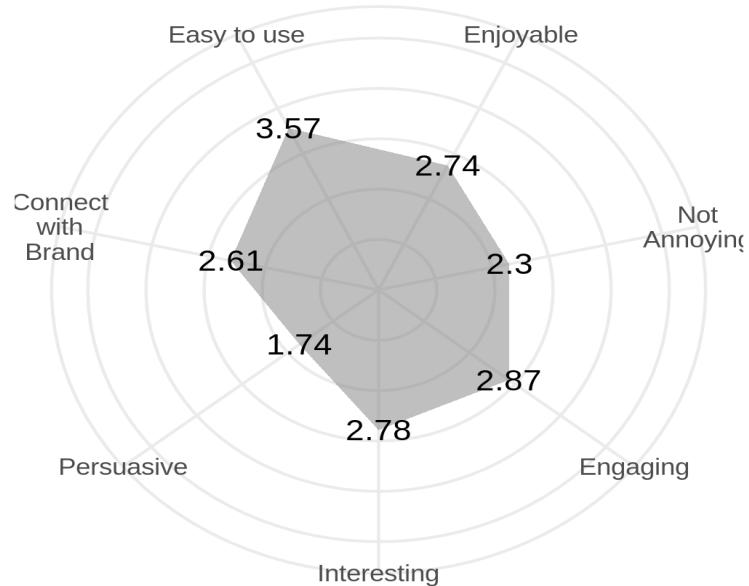
```

#1



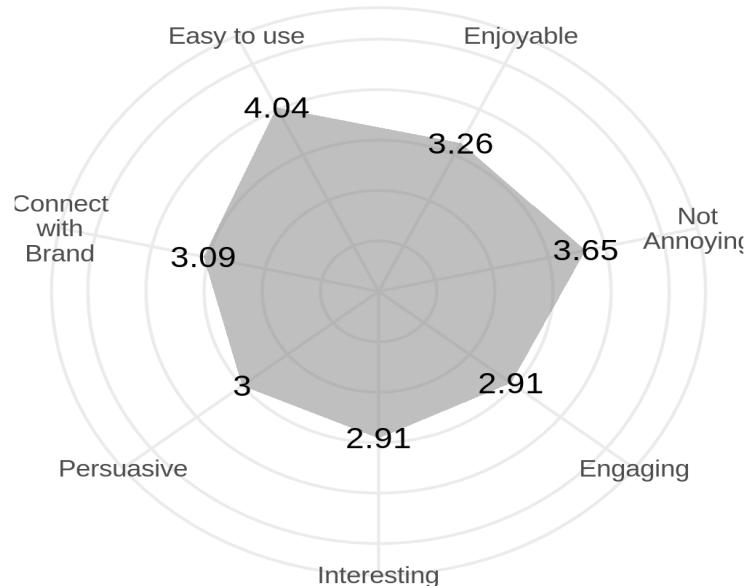
do_radar_graph('#2')

#2



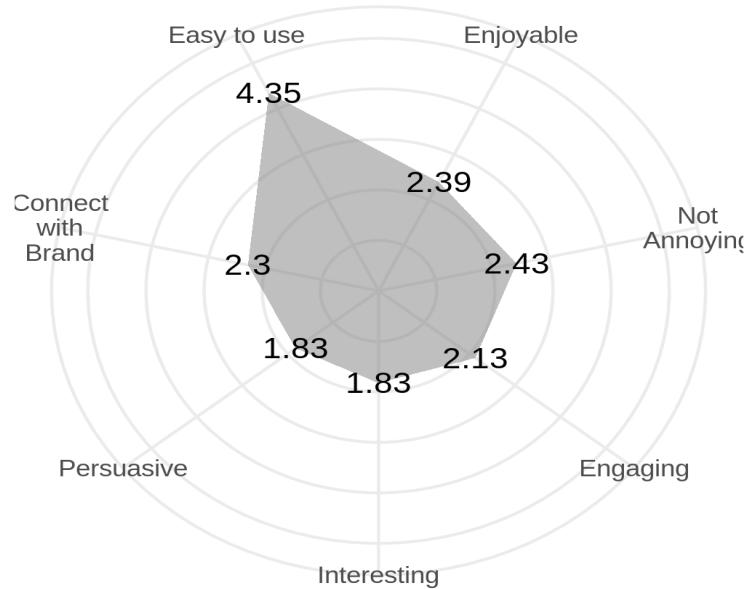
do_radar_graph('#3')

#3



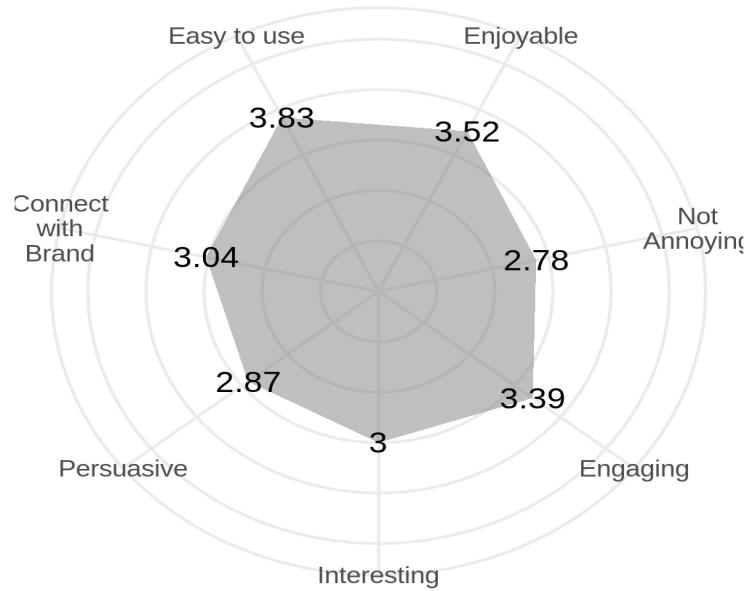
do_radar_graph('#4')

#4



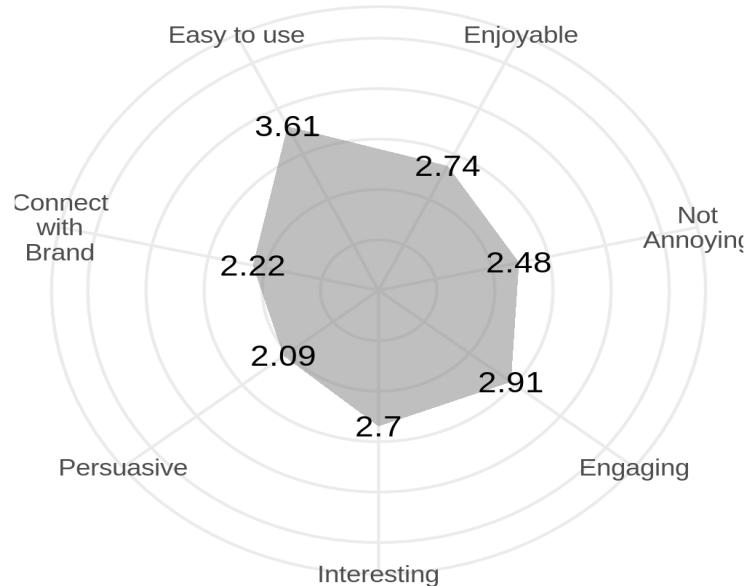
do_radar_graph('#5')

#5



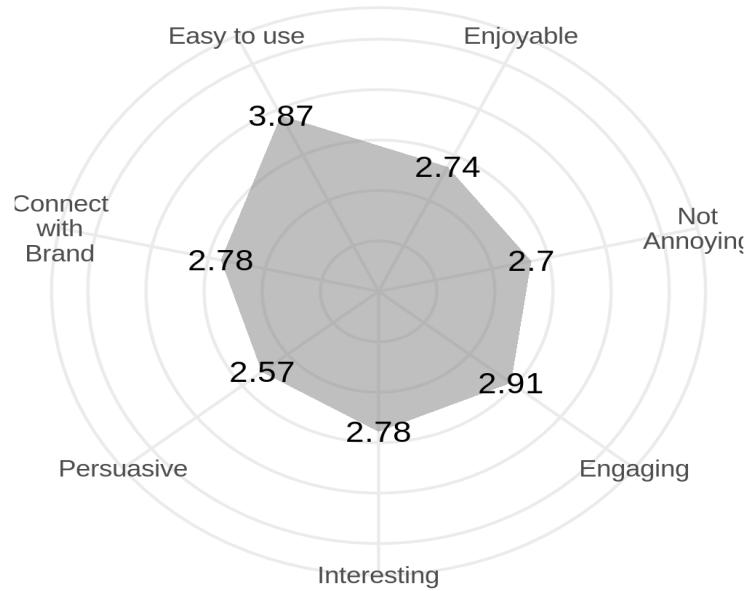
do_radar_graph('#6')

#6

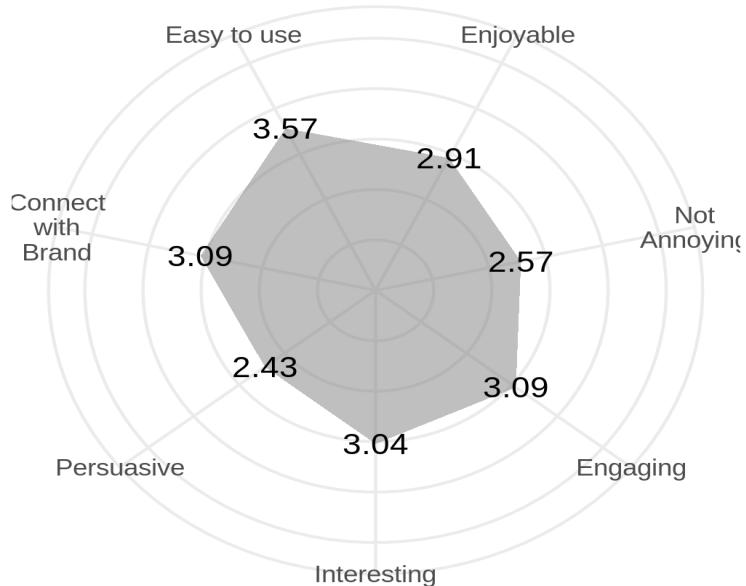


do_radar_graph('#7')

#7



do_radar_graph('#8')



Scaled geometric mean of experiment facets

The mean values of each facet can be converted from a two-dimensional representation to a single number with the use of the geometric mean. Using this form of average helps normalise the values so that no outlying values skew the results disproportionately. In doing so, all facets are folded into one value that can be used to more clearly indicate the overall perception of each experiment.

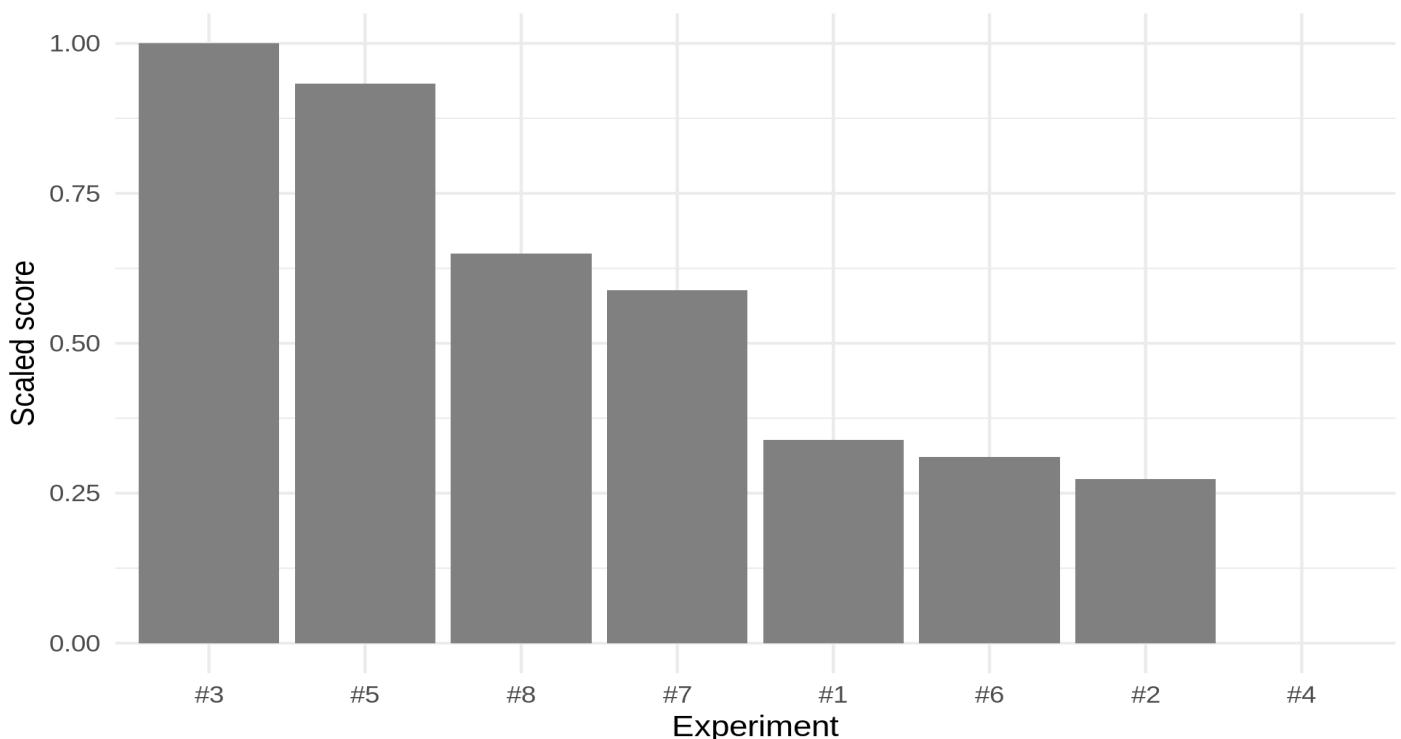
Because the difference between the mean values is relatively subtle, the values have been rescaled between 0 and 1 such that the lowest result is now 0 and the greatest value is now 1; doing this helps with observing the deltas more easily.

```
feedback.facets_mean_mean <- group_by(feedback.facets_mean,
exp) %>% summarise("Facet mean"= geo_mean(value)) %>%
arrange(desc(`Facet mean`))
means <- feedback.facets_mean_mean$`Facet mean`
feedback.facets_mean_mean$`Scaled facet mean` <- rescale(means,
to = c(0, 1), from = c(min(means), max(means)))
rm(means)
colnames(feedback.facets_mean_mean)
[colnames(feedback.facets_mean_mean) == 'exp'] <- 'Exp'
feedback.facets_mean_mean$Exp <-
(factor(feedback.facets_mean_mean$Exp, levels =
feedback.facets_mean_mean$Exp[order(feedback.facets_mean_mean$`mean`,
decreasing = TRUE)]))
```

```
kable(feedback.facets_mean_mean, format = 'markdown')
```

Exp	Facet mean	Scaled facet mean
#3	3.244448	1.0000000
#5	3.185914	0.9334067
#8	2.936151	0.6492537
#7	2.882433	0.5881390
#1	2.663607	0.3391829
#6	2.638480	0.3105967
#2	2.605528	0.2731080
#4	2.365473	0.0000000

```
ggplot(feedback.facets_mean_mean, aes(x = Exp, y = `Scaled facet mean`)) + geom_bar(stat="identity", fill=styles.color_grey) + xlab("Experiment") + ylab("Scaled score") + theme_minimal()
```



As has been previously suggested by the other analyses, experiment #3 (Loyalty Reward only) is the outright leader in terms of people's preferences and perceptions. Having reordered the experiments based on the scaled scoring, it's easy to see that experiment #5 (Loyalty Reward, Augmented Reality) actually comes a close second. It's no surprise that experiment #4 (Social Media only) is in last position but experiment #8 (Loyalty Reward, Augmented Reality, Social Media) stands out in third place because based on earlier angles of analysis, #8 came out less popular than other simpler and quicker interactions. It is also worth noting that the top four experiments on this scale are the only ones to incorporate the Loyalty Reward element into their respective experiences, position 5 is taken by the baseline.

Looking at the experiments based on cumulative ranking values

Using the feedback from each user when they were asked to contemplate the experiments relative to one another provides another way to judge the experiments and in turn validate the participants other feedback. These results are also scaled to make it easier to compare with the previous rankings based on the facets.

```
feedback.rankings <- select(feedback.adjusted_age_groups,  
  starts_with('Could you please rate the experiments in order of  
  preference? [Experiment '] )  
  
row_count = nrow(feedback.rankings)  
col_count = ncol(feedback.rankings)  
  
feedback.rankings_inverted_numeric <- data.frame(matrix(nrow =  
  row_count, ncol = col_count)) %>% `colnames<-  
  `(colnames(feedback.rankings))  
  
for (ri in 1:row_count) {  
  for (ci in 1:col_count) {  
    cell_val = as.character(feedback.rankings[ri, ci])  
    feedback.rankings_inverted_numeric[ri, ci] = 8 -  
      as.numeric(cell_val)  
  }  
}  
  
feedback.rankings_inverted_numeric_mean <-  
  colMeans(feedback.rankings_inverted_numeric, na.rm = TRUE) %>%  
  t() %>% as.data.frame()  
feedback.rankings_inverted_numeric_mean[2, ] <- paste( '#', 1:8,  
  sep = '') # %>% t() %>% as.data.frame()  
feedback.rankings_inverted_numeric_mean <-  
  t(feedback.rankings_inverted_numeric_mean)  
colnames(feedback.rankings_inverted_numeric_mean) <- c('Mean  
  score', 'Exp')  
rownames(feedback.rankings_inverted_numeric_mean) <- NULL
```

```

feedback.rankings_inverted_numeric_mean <-
  as.data.frame(feedback.rankings_inverted_numeric_mean) %>%
  arrange(desc(`Mean score`))
feedback.rankings_inverted_numeric_mean$Exp <-
  (factor(feedback.rankings_inverted_numeric_mean$Exp, levels =
  feedback.rankings_inverted_numeric_mean$Exp[order(feedback.rank
score`, decreasing = TRUE)]))

means <-
  as.numeric(feedback.rankings_inverted_numeric_mean`Mean
  score`)
feedback.rankings_inverted_numeric_mean`Scaled mean score` <-
  rescale(means, to = c(0, 1), from = c(min(means), max(means)))
rm(means)

kable(feedback.rankings_inverted_numeric_mean, format =
  'markdown')

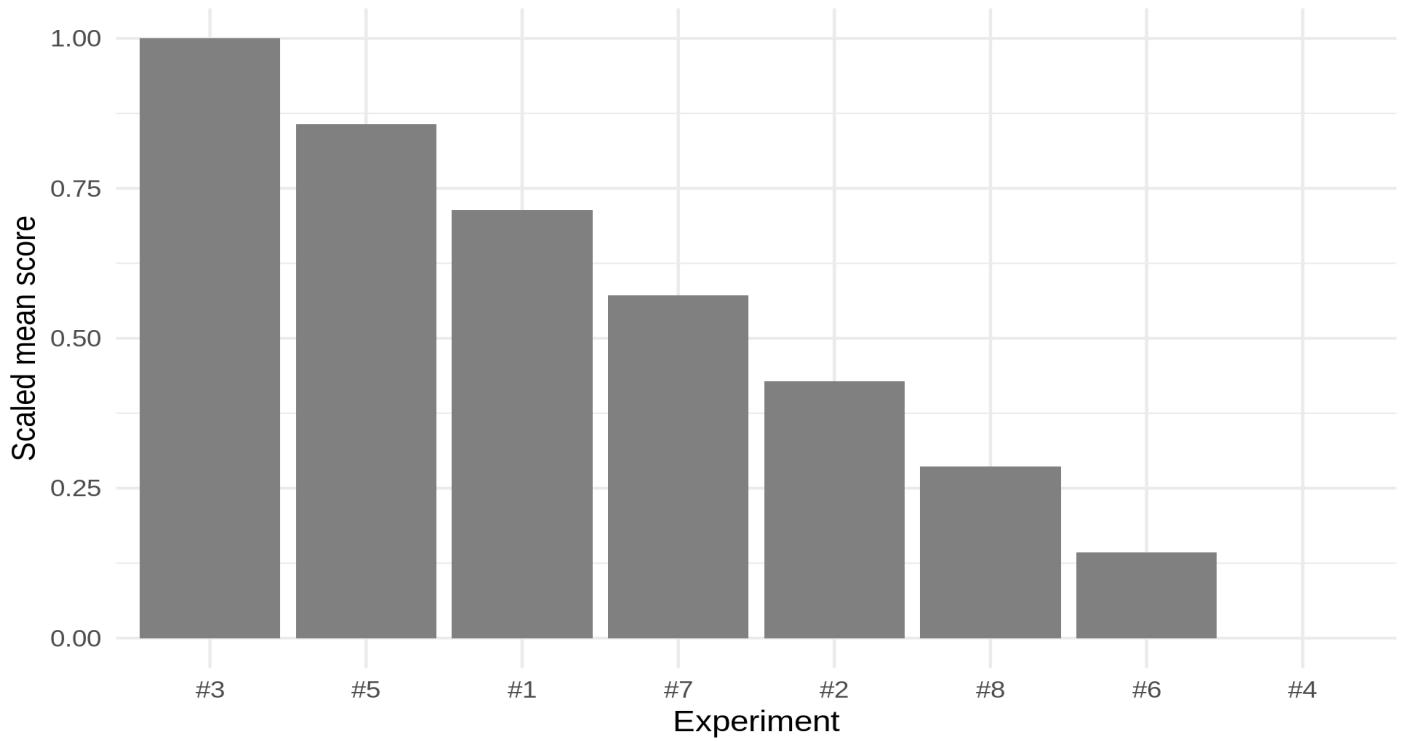
```

Mean score	Exp	Scaled mean score
5.39130434782609	#3	1.0000000
4.78260869565217	#5	0.8571429
4.56521739130435	#1	0.7142857
3.43478260869565	#7	0.5714286
2.82608695652174	#2	0.4285714
2.52173913043478	#8	0.2857143
2.34782608695652	#6	0.1428571
2.1304347826087	#4	0.0000000

```

ggplot(feedback.rankings_inverted_numeric_mean, aes(x = Exp,
  y = `Scaled mean score`)) + geom_bar(stat="identity",
  fill=styles.color_grey) +
  xlab("Experiment") +
  ylab("Scaled mean score") +
  theme_minimal()

```



With the results re-ordered to more easily observe the scale of preference, descending from most popular to least, it is by now, unsurprising to see that experiment #4 (Social Media only) is least popular; it's also predictable by now that #3 (Loyalty Reward only) holds the top spot. The combination of Augmented Reality with a digital Loyalty Reward (#5) comes takes the position of second most popular, while the baseline takes third position. Fourth place is the #7, the combination of Social Media with the Loyalty Reward, the highest position for any experiment that contains the Social Media experiment. All other Social Media experiments occupy the bottom three positions. Augmented Reality on its own (#2) manages to out perform all those Social Media based experiments. This does suggest a definite pattern of preference.

Multiplying the results of cumulative ranings and facet means

Having previously scaled the values so they are between 0 and 1 for both sets of data they can be easily compared and thus can interact with each other in a way that can be considered fair; in this case, by multiplying the values, it is possible to get a result for each experiment that is the product of all of the data from the evaluation of experiment facets as well as the user rankings. By doing this particular operation the result of a new set of rankings will take into account the users different ways of considering the experiments.

```
feedback.facets_and_ranking_scaled_means <-
  merge(feedback.facets_mean_mean,
        feedback.rankings_inverted_numeric_mean) %>%
  select(Exp, `Scaled facet mean`, `Scaled mean score`)
feedback.facets_and_ranking_scaled_means$`Mean product` <-
  with(feedback.facets_and_ranking_scaled_means, `Scaled facet
  mean` * `Scaled mean score`)

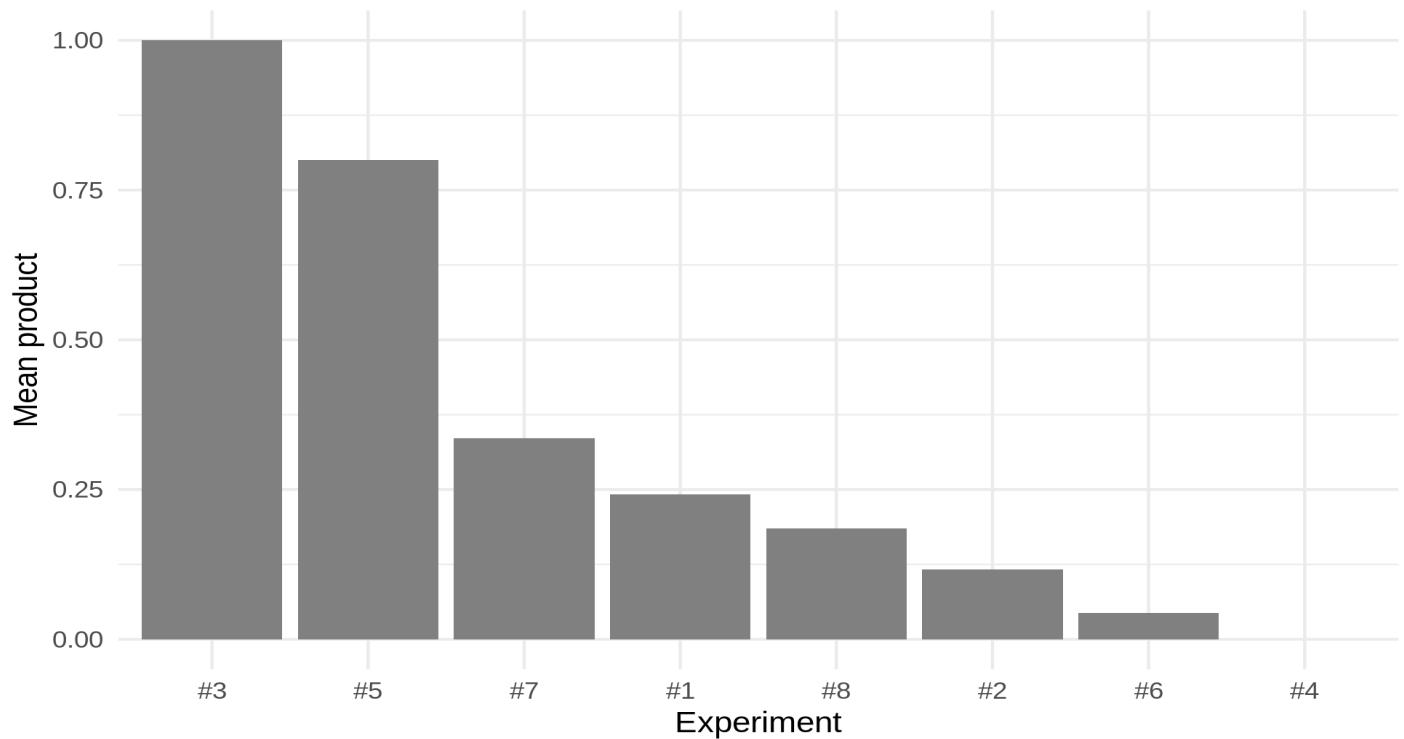
feedback.facets_and_ranking_scaled_means <-
  feedback.facets_and_ranking_scaled_means %>%
  arrange(desc(`Mean product`))
feedback.facets_and_ranking_scaled_means$Exp <-
  (factor(feedback.facets_and_ranking_scaled_means$Exp, levels =
  feedback.facets_and_ranking_scaled_means$Exp[order(feedback.fac
product`, decreasing = TRUE)]))

kable(feedback.facets_and_ranking_scaled_means, format =
  'markdown')
```

Exp	Scaled facet mean	Scaled mean score	Mean product
#3	1.0000000	1.0000000	1.0000000
#5	0.9334067	0.8571429	0.8000629
#7	0.5881390	0.5714286	0.3360795
#1	0.3391829	0.7142857	0.2422735

Exp	Scaled facet mean	Scaled mean score	Mean product
#8	0.6492537	0.2857143	0.1855011
#2	0.2731080	0.4285714	0.1170463
#6	0.3105967	0.1428571	0.0443710
#4	0.0000000	0.0000000	0.0000000

```
ggplot(feedback.facets_and_ranking_scaled_means, aes(x = Exp, y = `Mean product`)) +
  geom_bar(stat="identity", fill=styles.color_grey) +
  xlab("Experiment") +
  #ylab("Scaled mean score") +
  theme_minimal()
```



When the two sets of mean values are combined the order of popularity is different from either of the previous results, as expected the least and most popular remain the same, as does the case with experiment #5 being the second most popular. The rest of the experiments have undergone a reordering of popularity. In this new order of popularity, the bottom two experiments include a Social Media element with experiment #6 also including Augmented Reality and being slightly more popular; the two experiments next in popularity are Augmented Reality experiments opposite levels of experiment complexity, with Augmented Reality on its own (#2) less popular than experiment #8 which is comprised of all the experiment elements. The fourth position is #1, the baseline, separating the least popular from the top three. Each of the three most popular experiments include the digital Loyalty Reward, with this being the only element atop of the

baseline for #3 in the top spot; again, #5 is second most popular, combining Loyalty Reward with the Augmented Reality game, while the third most popular experiment (#7) is composed of Social Media and the digital reward. It's worth noting that the top two, #3 and #5 are markedly more popular than the rest.

Examining the demographics of the participants for the three most popular experiments

Having looked at the quantitative data for the feedback to the extent such that there can be some confidence as to which experiments are the most popular. More insight can be gained as to which type of experiment is most suitable for a given context by comparing popularity against age and gender.

There are two ways to interpret the data to look at the demographics with regards to the most popular experiment experiences. The first method is to simply count the results the the data subsets that explicitly answered that their most preferred experiments were #3, #5, and #7 respectively; these results are also weighted according to normal distribution of age and gender in the UK. The second method is more involved, making use of the scores per facet of each experiment and plotting the individual geometric mean values per participant in order to create a more nuanced and detailed interpretation of preference and demographic.

```
feedback.favourite_exp3 <- filter(feedback.adjusted_age_groups,
  `Overall, which was your most preferred experiment?` == '#3')
feedback.favourite_exp5 <- filter(feedback.adjusted_age_groups,
  `Overall, which was your most preferred experiment?` == '#5')
feedback.favourite_exp7 <- filter(feedback.adjusted_age_groups,
  `Overall, which was your most preferred experiment?` == '#7')

feedback.adjusted_age_groups_with_facet_means <-
  feedback.adjusted_age_groups

for (idx in c(3,5,7,1,8) -1) {
  facets = exp_keys
  facet_mean_col = paste("Facet mean exp", idx + 1)
  facet_annoying_col = exp_key.annoying

  if (idx != 0) {
    facets = paste(exp_keys, idx, sep = '__')
    facet_annoying_col = paste(facet_annoying_col, idx, sep = '__')
  }

#Create collection of facet means
facet_means = c()
```

```

facet_vals =
  select(feedback.adjusted_age_groups_with_facet_means, facets)

facet_vals[facet_annothing_col] <- 5 -
  facet_vals[facet_annothing_col]

for (r in 1:row_count) {
  facet_means[r] = geo_mean(unlist(facet_vals[r,]))
}

feedback.adjusted_age_groups_with_facet_means[facet_mean_col]
<- facet_means

}

```

Demographics for participants preferring Experiment #3

Experiment #3 is the experiment that only involves the Loyalty Reward element atop of the baseline of email capture.

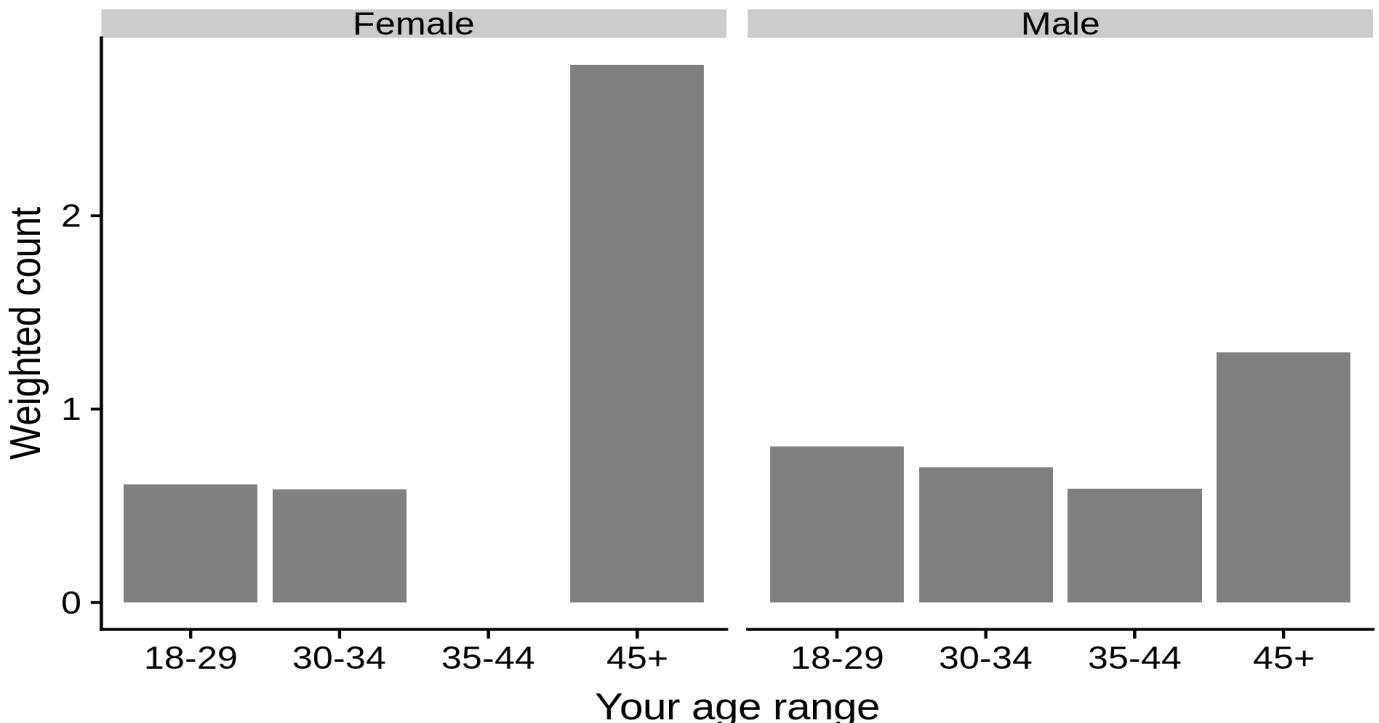
```

feedback.favourite_exp3_demo <- count(feedback.favourite_exp3,
  `Your age range`, `Your gender`, wt = weight, sort = TRUE);
kable(feedback.favourite_exp3_demo, col.names = c("Your age
range", "Your gender", "Count"), format = 'markdown')

```

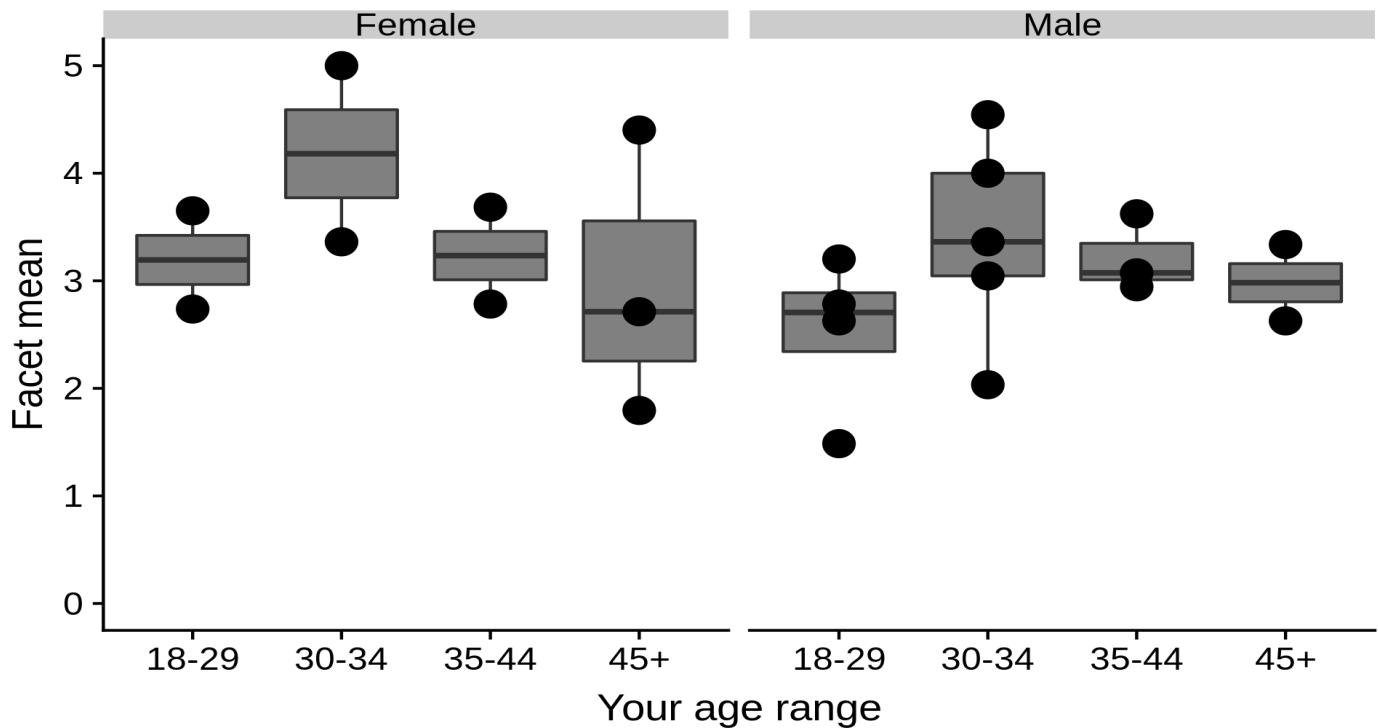
Your age range	Your gender	Count
45+	Female	2.7813323
45+	Male	1.2952884
18-29	Male	0.8076089
30-34	Male	0.6977944
18-29	Female	0.6102901
35-44	Male	0.5879894
30-34	Female	0.5834226

```
ggplot(feedback.favourite_exp3_demo, aes(x = `Your age range`,
y = n)) +
geom_bar(stat="identity", fill=styles.color_grey) +
facet_wrap(~`Your gender`) +
ylab("Weighted count")
```



When looking at the answer to which was the most preferred experiment, the results suggest that there is a clear target demographic for experiment #3, that is the same age group of over 45s for both genders. In addition, this experiment appears to also be somewhat popular with both genders of the youngest demographic (18-25).

```
ggplot(feedback.adjusted_age_groups_with_facet_means, aes(x =
`Your age range`, y = `Facet mean exp 3`)) +
geom_boxplot(fill=styles.color_grey) +
geom_count(show.legend=F) +
ylab("Facet mean") +
scale_y_continuous(limits = c(0, 5)) +
facet_wrap(~`Your gender`)
```



When the mean values for all the facets are used to determine the reception of this experiment across demographic groups, the 30-34 age group is most positive about experiment #3. The 45+ female demographic actually scores the experiment least favourably among the female subset and second least positive among the males. Within the male age-groups, the 18-29 demographic scored this experiment the least.

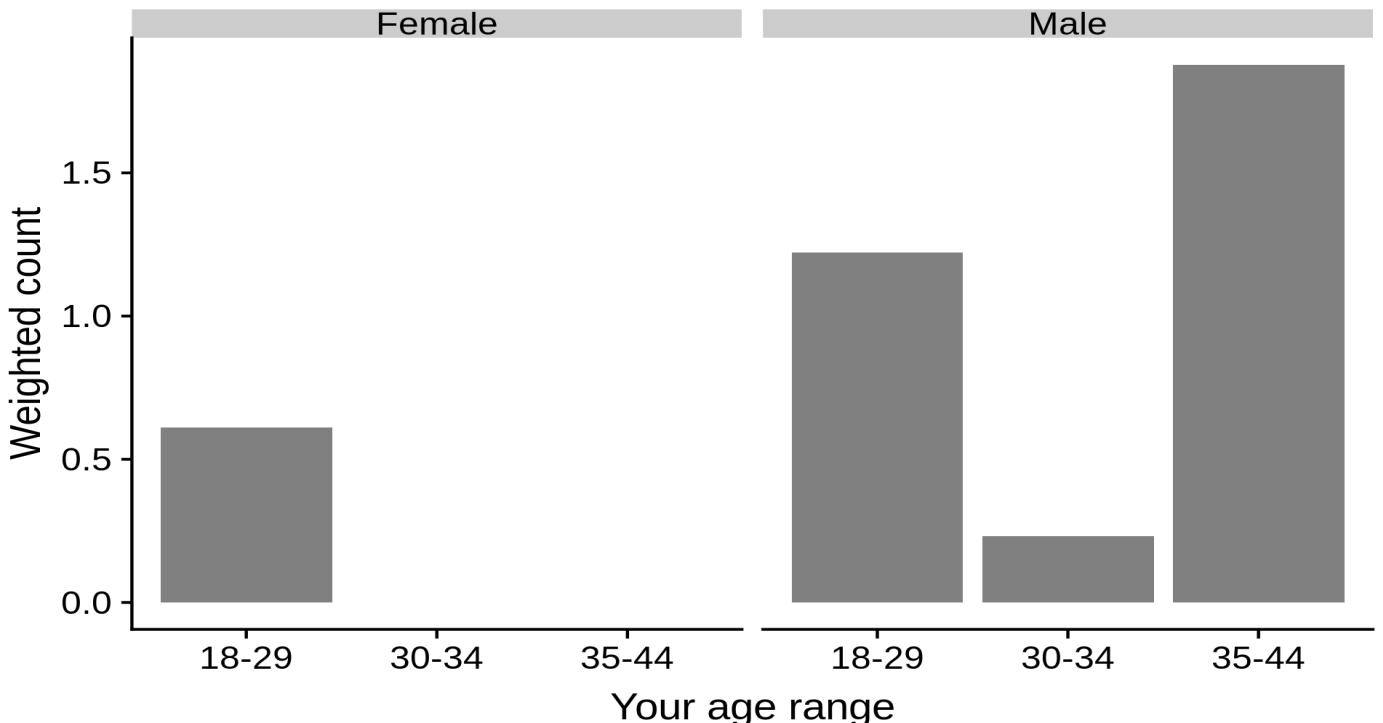
Demographics for participants preferring Experiment #5

Experiment #5 is the experiment that combines the Loyalty Reward and Augmented Reality elements over the baseline email capture.

```
feedback.favourite_exp5_demo <- count(feedback.favourite_exp5,
  `Your age range`, `Your gender`, wt = weight, sort = TRUE);
kable(feedback.favourite_exp5_demo, col.names = c("Your age
range", "Your gender", "Count"), format = 'markdown')
```

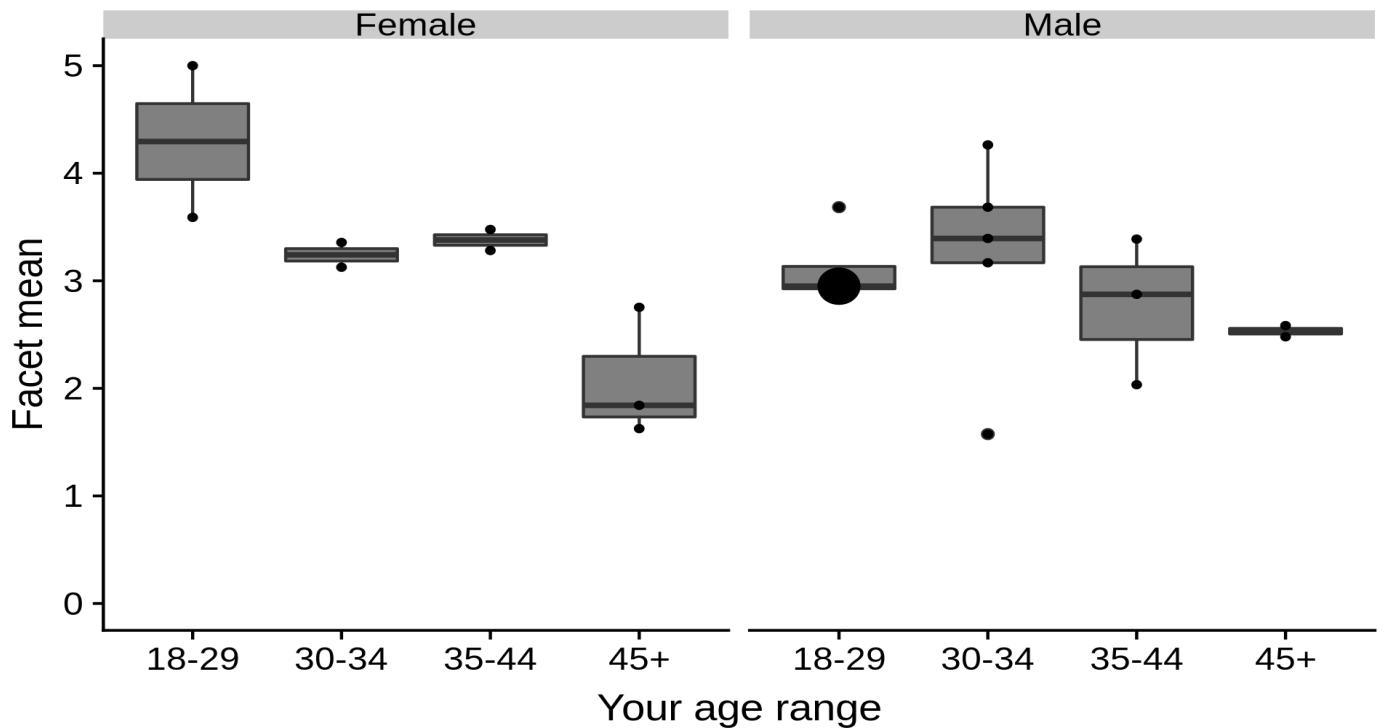
Your age range	Your gender	Count
35-44	Male	1.8778167
18-29	Male	1.2221926
18-29	Female	0.6102901
30-34	Male	0.2325981

```
ggplot(feedback.favourite_exp5_demo, aes(x = `Your age range`,
y = n)) +
geom_bar(stat="identity", fill=styles.color_grey) +
facet_wrap(~`Your gender`) +
ylab("Weighted count")
```



When the question of most preferred experiment is looked at with regard to experiment #5, there is some division in the results; it would appear that among males, the Augmented Reality and Loyalty Reward combination fares best amongst the 35-44 male group and the 18-29 demographic across both genders.

```
ggplot(feedback.adjusted_age_groups_with_facet_means, aes(x =
`Your age range`, y = `Facet mean exp 5`)) +
geom_boxplot(fill=styles.color_grey) +
geom_count(show.legend=F) +
ylab("Facet mean") +
scale_y_continuous(limits = c(0, 5)) +
facet_wrap(~`Your gender`) #+
```



After facet data has been assessed, the participant perception of experiment #5 is not so polarised among the males but remains so for females. Among females the variation in scores between age groups is high, with the 18-29 age group scoring towards the top end of the scale and the 45+ group scoring close to the bottom. In fact, the 18-29 females were most positive across all groups and the 45+ females least positive across the groups. The middle age groups among the females scored similarly, around the middle of the scale. For males, the age group most receptive to the experience of #5 were there 30-34 group followed by the 18-29 group. Based on median lines the 45+ males were least receptive among the males, though they did score the experiment more highly than females of same age.

Demographics for participants preferring Experiment #7

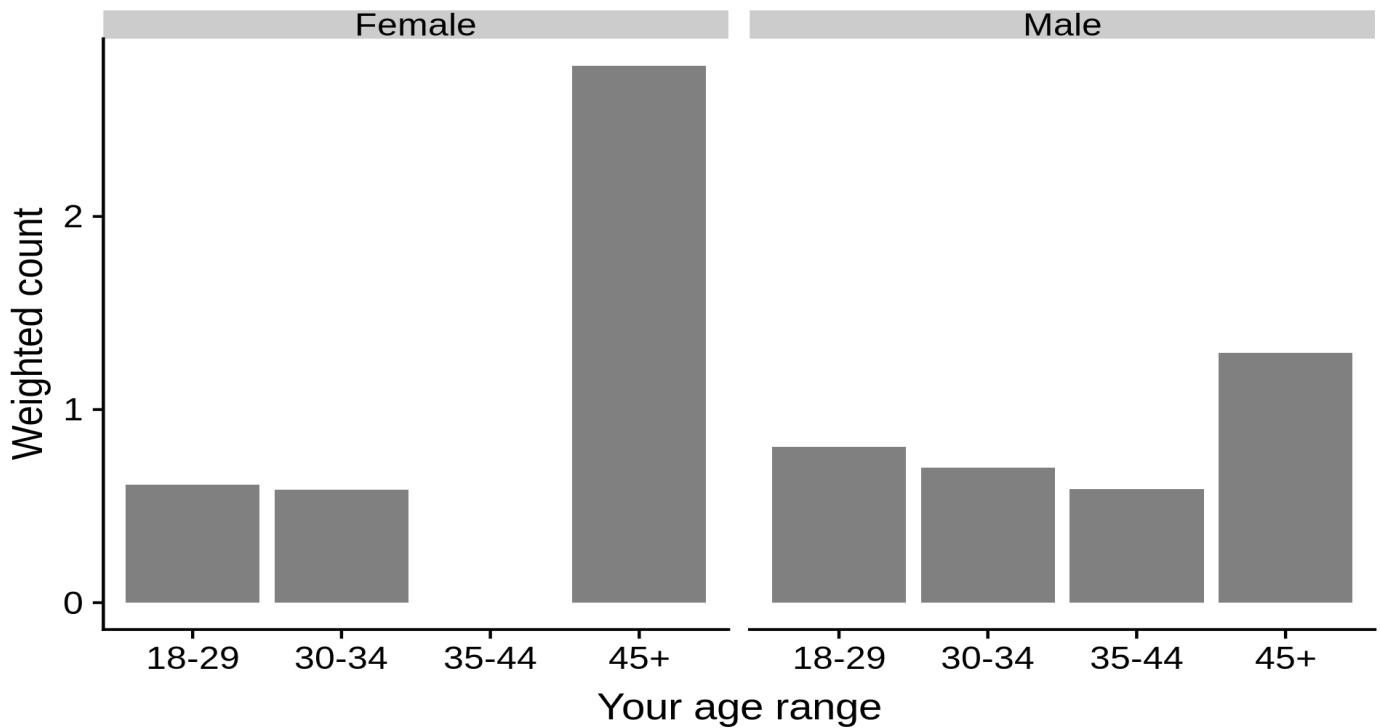
Experiment #7 is the experiment combining the Loyalty Reward Social Media elements over the baseline email capture.

```
feedback.favourite_exp7_demo <- count(feedback.favourite_exp3,
  `Your age range`, `Your gender`, wt = weight, sort = TRUE);
kable(feedback.favourite_exp7_demo, col.names = c("Your age
range", "Your gender", "Count"), format = 'markdown')
```

Your age range	Your gender	Count
45+	Female	2.7813323
45+	Male	1.2952884

Your age range	Your gender	Count
18-29	Male	0.8076089
30-34	Male	0.6977944
18-29	Female	0.6102901
35-44	Male	0.5879894
30-34	Female	0.5834226

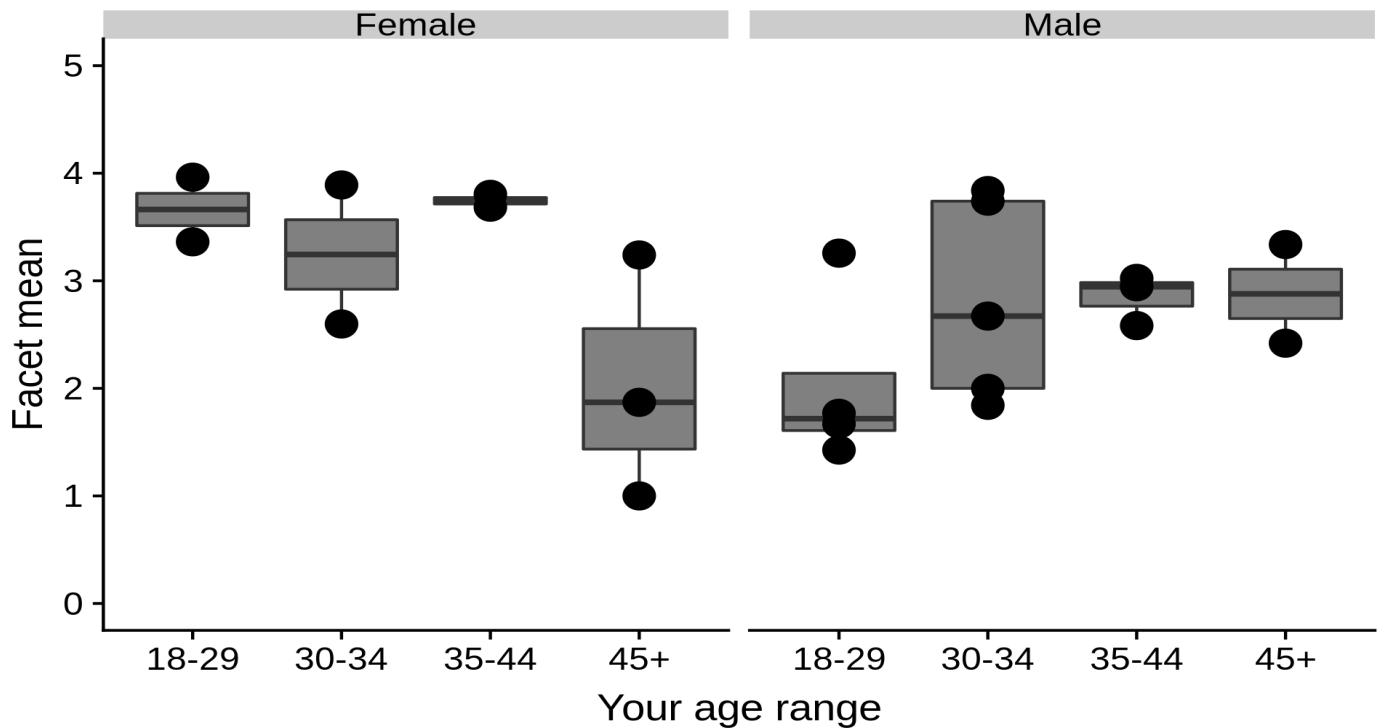
```
ggplot(feedback.favourite_exp7_demo, aes(x = `Your age range`,
y = n)) +
geom_bar(stat="identity", fill=styles.color_grey) +
facet_wrap(~`Your gender`) +
ylab("Weighted count")
```



Based on the question of the most preferred experiment, this experiment was most popular with the over 45s and least popular with those in the 35-44 age group. The 18-29 age group appears to be slightly more receptive to this experiment than those in the 30-34 age group.

```
ggplot(feedback.adjusted_age_groups_with_facet_means, aes(x =
`Your age range`, y = `Facet mean exp 7`)) +
geom_boxplot(fill=styles.color_grey) +
geom_count(show.legend=F) +
ylab("Facet mean") +
```

```
scale_y_continuous(limits = c(0, 5)) +
facet_wrap(~`Your gender`) #+
```



When the facet means are analysed, the 35-44 age group is more positive about the experiment than the previous graph would suggest, scoring the experiment the highest among both female and male demographics by median line position. Among males this experiment scores mostly around the middle of the scale while apart from the 45+ females, most females score this experience most positively than their male counterparts.

Examining the demographics of the participants with preferences for the most extreme experiments

Having looked at the results for the highest scoring experiment, it's worth comparing these results with the baseline as every other experiment is derived from this one. Looking at the results for this experiment may reveal more insight into the participant scoring behaviour. It's also worth looking at experiment #8 as this is the only experiment to incorporate all possible elements into one experience.

```
feedback.favourite_exp1 <- filter(feedback.adjusted_age_groups,  
  `Overall, which was your most preferred experiment?` == '#1')  
feedback.favourite_exp8 <- filter(feedback.adjusted_age_groups,  
  `Overall, which was your most preferred experiment?` == '#8')
```

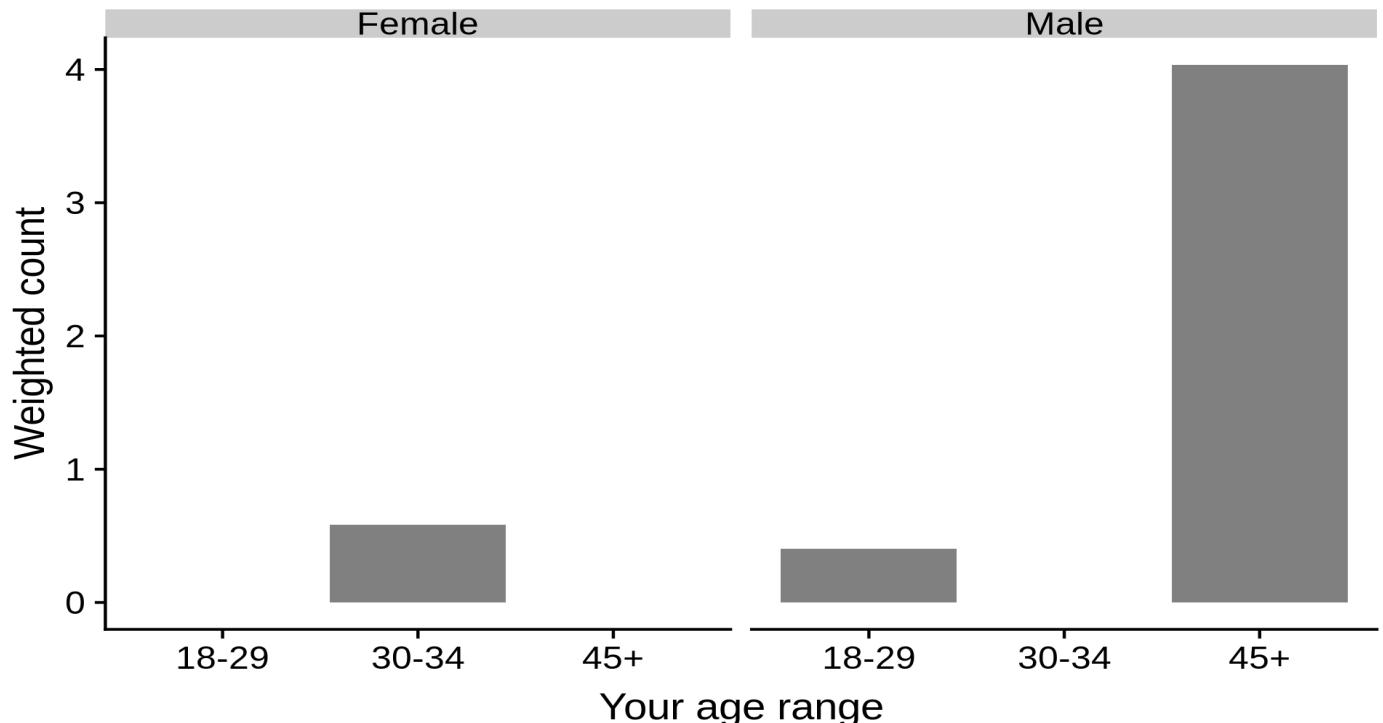
Demographics for participants preferring Experiment #1

Experiment #1 was the baseline, which involved a simple form to capture the participants email.

```
feedback.favourite_exp1_demo <- count(feedback.favourite_exp1,  
  `Your age range`, `Your gender`, wt = weight, sort = TRUE);  
kable(feedback.favourite_exp1_demo, col.names = c("Your age  
range", "Your gender", "Count"), format = 'markdown')
```

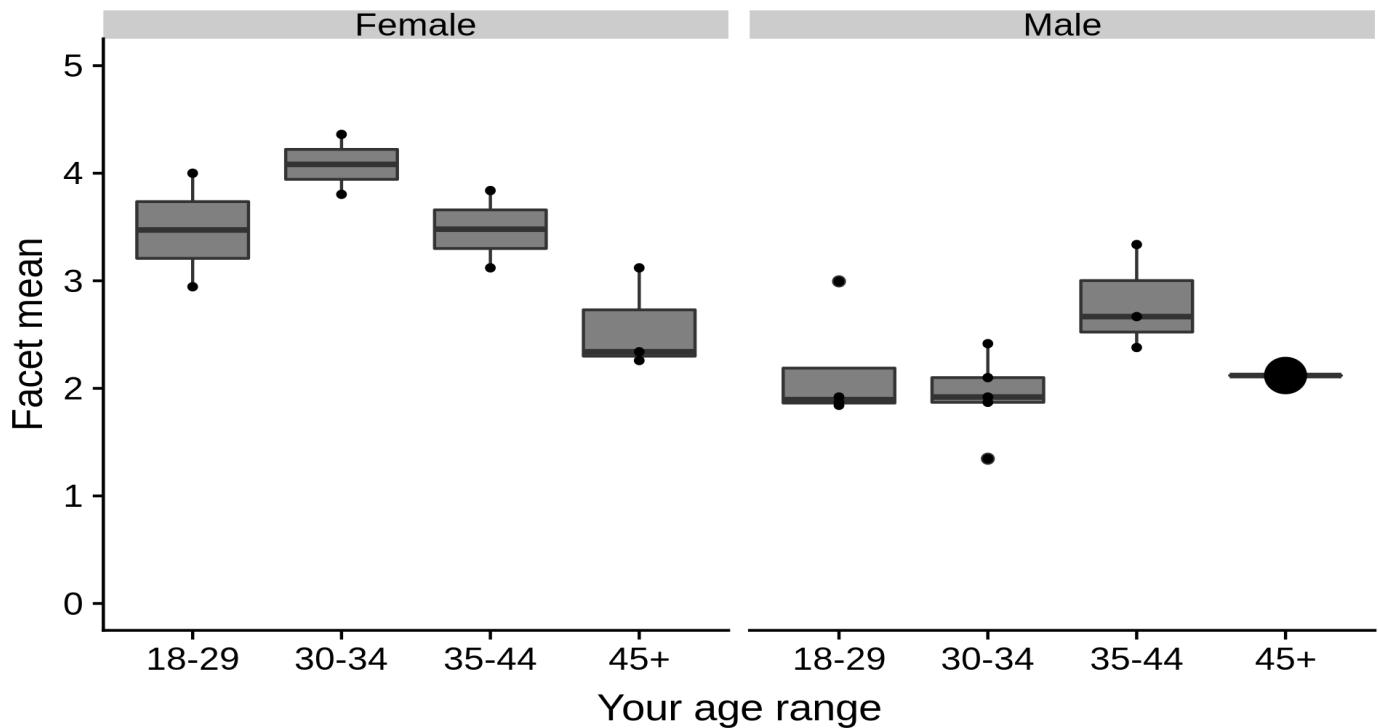
Your age range	Your gender	Count
45+	Male	4.0360299
30-34	Female	0.5834226
18-29	Male	0.4038044

```
ggplot(feedback.favourite_exp1_demo, aes(x = `Your age range`,
y = n)) +
geom_bar(stat="identity", fill=styles.color_grey) +
facet_wrap(~`Your gender`) +
ylab("Weighted count")
```



According to the question regarding preference, the baseline experiment was most popular among the 30-34 female and 45+ male groups.

```
ggplot(feedback.adjusted_age_groups_with_facet_means, aes(x =
`Your age range`, y = `Facet mean exp 1`)) +
geom_boxplot(fill=styles.color_grey) +
geom_count(show.legend=F) +
ylab("Facet mean") +
scale_y_continuous(limits = c(0, 5)) +
facet_wrap(~`Your gender`) #+
```



When looking at the mean scores for the baseline facets, there is a similar pattern of scoring variation among the gender groups; less variation is found among the male age groups then compared to the females; the males tend to score this experience less positively with most score clustering around 2 whereas for female age groups, only the 45+ group frequently scores below 3. The most positive scoring group among males.

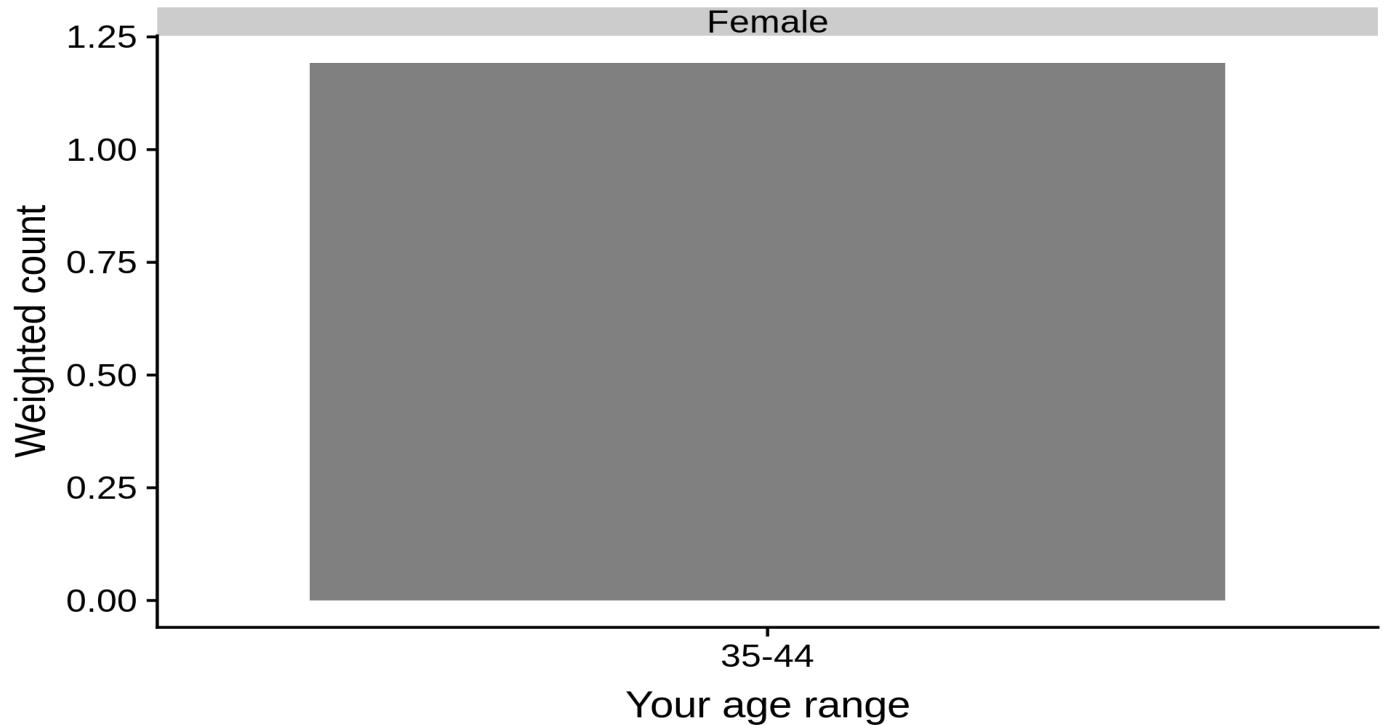
Demographics for participants regarding Experiment #8

Experiment #8 only experiment to use the Loyalty Reward, Augmented Reality, and Social Media element together.

```
feedback.favourite_exp8_demo <- count(feedback.favourite_exp8,
  `Your age range`, `Your gender`, wt = weight, sort = TRUE);
kable(feedback.favourite_exp8_demo, col.names = c("Your age
range", "Your gender", "Count"), format = 'markdown')
```

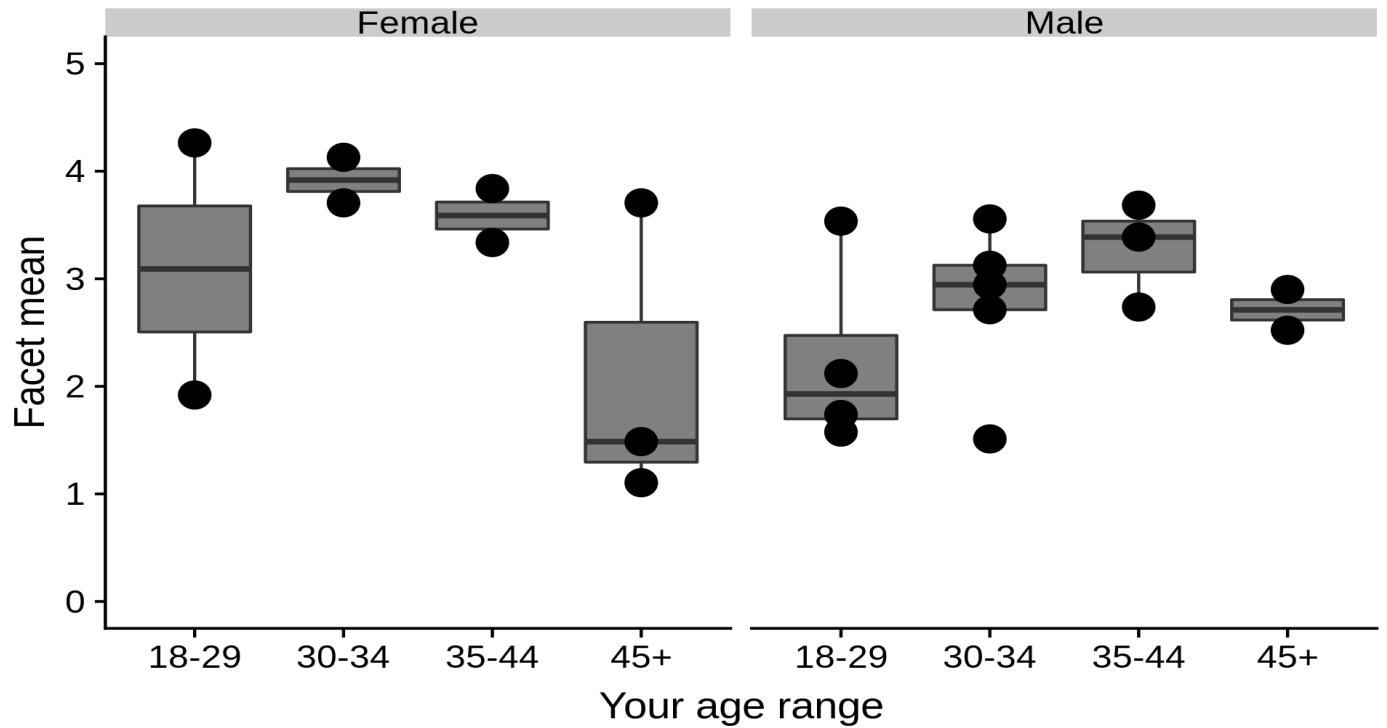
Your age range	Your gender	Count
35-44	Female	1.19284

```
ggplot(feedback.favourite_exp8_demo, aes(x = `Your age range`,
  y = n)) +
  geom_bar(stat="identity", fill=styles.color_grey) +
  facet_wrap(~`Your gender`) +
  ylab("Weighted count")
```



The graph indicates that only one person in the entire study preferred this experiment and they were female and within the 35-44 age group.

```
ggplot(feedback.adjusted_age_groups_with_facet_means, aes(x = `Your age range`, y = `Facet mean exp 8`)) +  
  geom_boxplot(fill=styles.color_grey) +  
  geom_count(show.legend=F) +  
  ylab("Facet mean") +  
  scale_y_continuous(limits = c(0, 5)) +  
  facet_wrap(~`Your gender`)
```



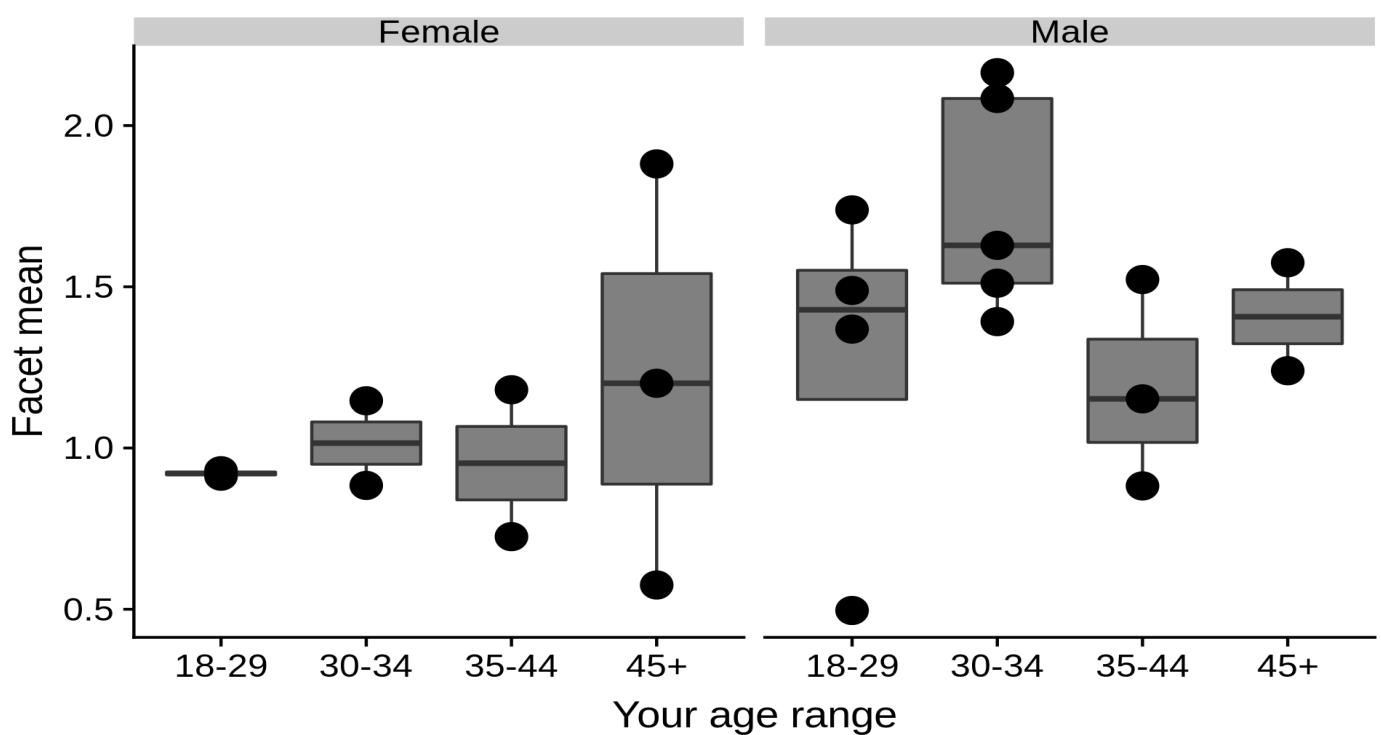
When facet mean scores are taken into account, the 35-44 age group rank the most positive towards this experiment amongst males and second amongst female; the 30-34 age group scores this experiment highest for females, and second highest for males. Overall female participants scored this experiment higher than males. The demographic groups that scored this experiment the lowest are the 45+ females and 18-29 males.

Dividing experiment scores over the baseline

Given that the baseline was designed as control, using the participant scores for this experiment as the unit for which their other scores can be compared it is possible to mitigate the individual differences in scoring with more positive or negative biases. In other words, if a participant has a tendency to score highly or lower than others, using the baseline allows participants to be more fairly compared with relative scores. A score of 1 suggests an experience no better or worse than the baseline, scores below 1 suggest the experiment was less well received than the baseline and those over 1 are seen as better by a factor based on the individual baseline score.

Experiment #3 scores over the baseline

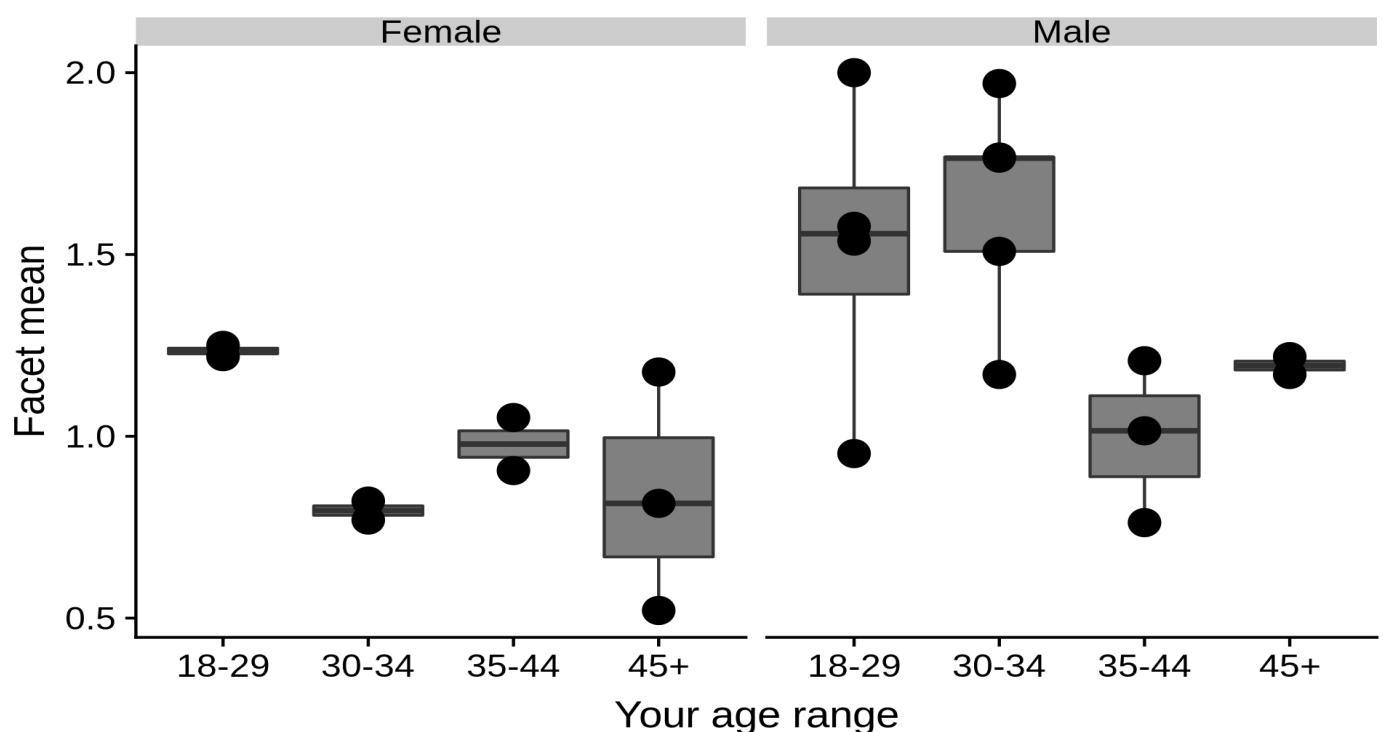
```
ggplot(feedback.adjusted_age_groups_with_facet_means, aes(x = `Your age range`, y = `Facet mean exp 3` / `Facet mean exp 1`)) +  
  geom_boxplot(fill=styles.color_grey) +  
  geom_count(show.legend=F) +  
  ylab("Facet mean") +  
  #scale_y_continuous(limits = c(0, 5)) +  
  facet_wrap(~`Your gender`)
```



For experiment #3 when compared against the baseline, almost all the males actually rated this more positively, whereas for females the experience was not significantly better or worse, with the exception of the 45+ group that had a median line around 1.25. Males in the 30-34 age group were most positive overall with nearly all participants in this demographic scoring this experiment fifty percent higher than the baseline.

Experiment #5 scores over the baseline

```
ggplot(feedback.adjusted_age_groups_with_facet_means, aes(x = `Your age range`, y = `Facet mean exp 5` / `Facet mean exp 1`)) +  
  geom_boxplot(fill=styles.color_grey) +  
  geom_count(show.legend=F) +  
  ylab("Facet mean") +  
  #scale_y_continuous(limits = c(0, 5)) +  
  facet_wrap(~`Your gender`)
```

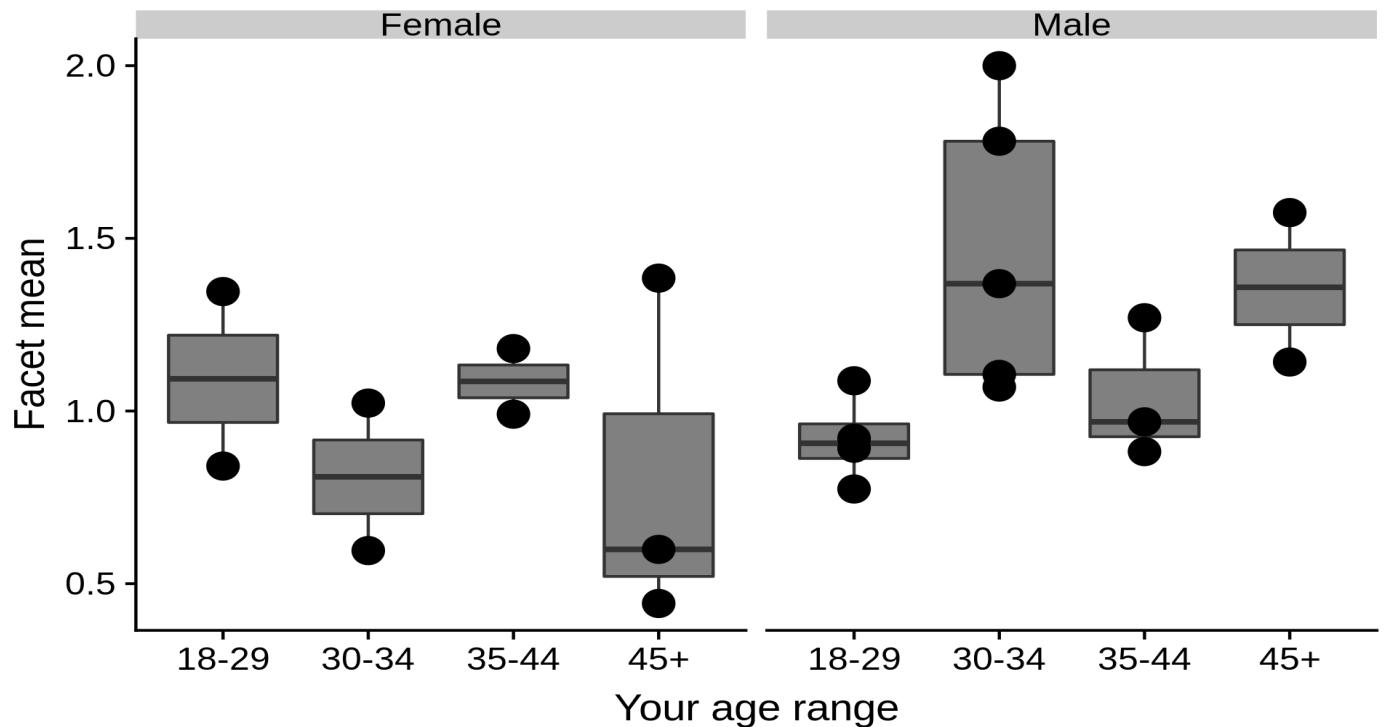


Experiment #5 was most successful relative to the baseline for the males in the 30-34 and 18-29 groups having median lines over 1.5. The only female demographic to receive this experiment positively over the baseline is the 18-29 age group.

Experiment #7 scores over the baseline

```
ggplot(feedback.adjusted_age_groups_with_facet_means, aes(x = `Your age range`, y = `Facet mean exp 7` / `Facet mean exp 1`)) +  
  geom_boxplot(fill=styles.color_grey) +  
  geom_count(show.legend=F) +  
  ylab("Facet mean") +
```

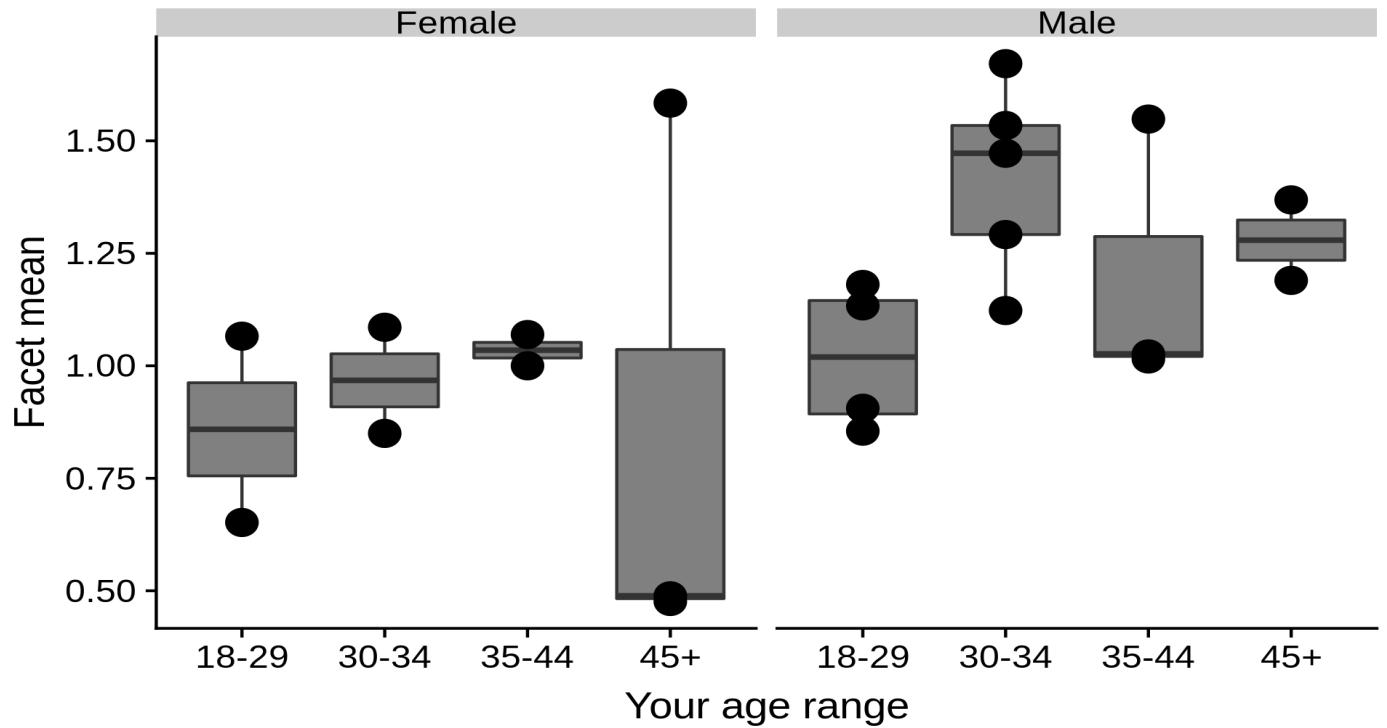
```
#scale_y_continuous(limits = c(0, 5)) +
facet_wrap(~`Your gender`)
```



Experiment #7 scored most positively against the baseline for the males in the 30-34 and 45+ age groups, followed by females in the 18-29 and 35-44 demographics. The 35-44 males had a neutral experience relative to the baseline, while all other age groups had less positive experiences.

Experiment #8 scores over the baseline

```
ggplot(feedback.adjusted_age_groups_with_facet_means, aes(x =
`Your age range`, y = `Facet mean exp 8` / `Facet mean exp
1`)) +
geom_boxplot(fill=styles.color_grey) +
geom_count(show.legend=F) +
ylab("Facet mean") +
facet_wrap(~`Your gender`)
```



Experiment #8 appears to be overwhelmingly less positive for females across all age groups. For the males, the 18-29 age group had a neutral experience compared to the baseline, while the 35-44 subset has a marginally more positive experience. The highest scores for this experiment came from the 30-34 and 45+ males.

Qualitative feedback

```
feedback.qualitative_cols = c("If you enjoyed any part(s) in particular, please describe what you enjoyed:", "If you were annoyed by any part(s) in particular, please describe what annoyed you:", "If you found any particular part(s) engaging, please describe what:", "If you found any particular part(s) interesting, please describe what:", "If you found any particular part(s) persuasive, please describe what:", "If you found any part(s) in particular, connected you with the brand, please describe what:", "If you found any part(s) in particular, difficult to use, please describe what:", "What was the best part of the experience?", "What was the worst part of the experience?", "Do you have any suggestions for improvement?")
```

Experiment #1

```
feedback.qualitatives = c()
idx = 1

for (q in feedback.qualitative_cols) {
  feedback.qualitative <- as.data.frame(feedback.formatted[q]
  [!is.na(feedback.formatted[q])])
  feedback.qualitatives[idx] <- feedback.qualitative
  idx = idx + 1
}

#Removing odd http link
feedback.qualitatives[[1]] <- feedback.qualitatives[[1]][-4]

kable(feedback.qualitatives[1], col.names =
  feedback.qualitative_cols[1])
```

If you enjoyed any part(s) in particular, please describe what you enjoyed:

trying it out for the first time

the experience was simple.

it was simple

I enjoyed paying via Bluetooth

nice and easy. didn't need to get cash out

Was quite quick and simple and easy to follow the onscreen instructions.

It's a very normal process as I pay with my phone usually

Fun idea that as I pay I effectively get thanked in a personal-ish way

it was cute

feels unnecessary in this scenario to give email as left feeling as though I will be spammed by company

Easy and quick

```
kable(feedback.qualitatives[2], col.names =  
feedback.qualitative_cols[2])
```

If you were annoyed by any part(s) in particular, please describe what annoyed you:

Not knowing what I had to do beforehand

being asked for email address

i dont generally sign up for things unless i use the product/website a lot

Starting with Thank you made me think that the session had just ended rather than just starting

Intrusive

I guess it could have been even fewer clicks and swipes than it was

It was quite quick but would felt like a bit of an invasion of privacy giving email

Having to provide an email address - too personal.

It's a very normal process as I pay with my phone usually

Generally do not like giving out my email address (fear of spam)

without autofill would find it more annoying

```
kable(feedback.qualitatives[3], col.names =  
feedback.qualitative_cols[3])
```

If you found any particular part(s) engaging, please describe what:

The idea of a new experience

the technology was responsive

I am not sure as yet what this experience is

visuals - bright colours, positive feedback

It was neither engaging nor unengaging

It was pretty quick so at no point was i distracted

Again - it's a very normal experience

The simplicity

Colourful advert

```
kable(feedback.qualitatives[4], col.names =  
feedback.qualitative_cols[4])
```

If you found any particular part(s) interesting, please describe what:

il found it interesting in context of participating in a research project

I enjoyed using the bluetooth to pay for my drink

It was novel simply because I hadn't done it before. But I wouldn't find it particularly interesting after doing it a few time.

It was not interesting

interesting that my email was already filled in. Even on my own phone, this is rare.

regular for companies to ask for email for receipts and promotions

```
kable(feedback.qualitatives[5], col.names =  
feedback.qualitative_cols[5])
```

If you found any particular part(s) persuasive, please describe what:

What would happen afterwards

I didn't feel persuaded in any way

it was simple, i think there persuasion in ease and simplicity

I enjoyed the animated thank you after payment was received

It didn't persuade me about anything

Persuasive simple language

```
kable(feedback.qualitatives[6], col.names =  
       feedback.qualitative_cols[6])
```

If you found any part(s) in particular, connected you with the brand, please describe what:

there was an attempt to connect by capturing email

without looking i cant remember the brand name

powerful imagery and I liked being thanked by the company - made it more personal

big bold wording

A tiny bit. The colours on the 'Amazing' screen etc echoed the label and branding

Giving email address made it a bit more brand orientated

if there was a link to the website with promotional offers available would feel more connected

The image was bold

```
kable(feedback.qualitatives[7], col.names =  
       feedback.qualitative_cols[7])
```

If you found any part(s) in particular, difficult to use, please describe what:

Having to input my email address

I am not really sure why I would be using this in real life. Reward points are not that beguiling
very simple and effective

was very clear

easy with autofill for details on phone

Guided through experience by onscreen prompts ok

```
kable(feedback.qualitatives[8], col.names =  
feedback.qualitative_cols[8])
```

What was the best part of the experience?

The idea of something new

simple payment and getting the desired drink

the fact that it was easy to use

simplicity

bluetooth payment

short and easy to use

Reasonably quick/limited engagement and input required (particularly if autofill were set)

Haven't experienced anything similar before

logo at the end and the thankyou

automatic association with personal details. Email was already known.

ease of payment using phone

Simple and colourful

```
kable(feedback.qualitatives[9], col.names =  
feedback.qualitative_cols[9])
```

What was the worst part of the experience?

Not knowing exactly what I had to do

Asking for email

Getting it to work

Bluetooth is not always available so could lead to difficulties when paying in future

perhaps it could involve something a bit more engaging to make it memorable

The request to provide personal info such as an email address.

Having to give email address

fear of future spam from company/third parties

```
kable(feedback.qualitatives[10], col.names =  
       feedback.qualitative_cols[10])
```

Do you have any suggestions for improvement?

A fuller explanation of the process

no

Don't start with thank you but something more intuitive such as - Welcome - or whatever

perhaps wifi connection might work better?

More explanation of why email is being captured.

Clear Skip option or obvious clarification that you can continue without inputting one (if possible)

immediate option to not participate or to prevent use of email for promotional offers

More text explaining the whys?

Experiment #2

```
feedback.qualitative_cols_2 <- paste(feedback.qualitative_cols,  
1, sep = '___')  
  
feedback.qualitatives = c()  
idx = 1  
  
for (q in feedback.qualitative_cols_2) {  
  feedback.qualitative <- as.data.frame(feedback.formatted[q]  
  [!is.na(feedback.formatted[q]),])  
  feedback.qualitatives[idx] <- feedback.qualitative  
  idx = idx + 1  
}  
  
kable(feedback.qualitatives[1], col.names =  
  feedback.qualitative_cols[1])
```

If you enjoyed any part(s) in particular, please describe what you enjoyed:

Knowing what I was doing

feeling more confident that I understand the technology now

the game was easy to use

More fun than a standard signup link

playing music game

the augmented reality bottles were good

if the game was better i.e. had more playable content would be more enjoyable. similarly if it had a reward at the end of it would be more inclined to participate

kable(feedback.qualitatives[2], col.names =
 feedback.qualitative_cols[2])

If you were annoyed by any part(s) in particular, please describe what annoyed you:

Having to input my email again

a bit annoying that the bottles took a while to appear

it was a bit slow

this was the same game as before as far as i could see except no coin reward

I didnt understand why I needed to play a game after paying

Having to type in the notes of the tune

Novelty wearing off.

Playing a game with sound

AR is difficult to read/understand - without reward just seems like unnecessary promo gag

It didn't tell me why I was playing the game? Not sure I would bother if i was in a rush

kable(feedback.qualitatives[3], col.names = feedback.qualitative_cols[3])

If you found any particular part(s) engaging, please describe what:

slightly more engaging now I feel more confident re the technology

in order to get the rewards you have to engage

Interactive game

engaging but not through consumer choice

The augmented bit was cool

kable(feedback.qualitatives[4], col.names = feedback.qualitative_cols[4])

If you found any particular part(s) interesting, please describe what:

That I felt more used to the app already

AR relatively new introduction to point of sale but seen as more inconvenience and only for promotion if it does not result in customer reward

```
kable(feedback.qualitatives[5], col.names =  
feedback.qualitative_cols[5])
```

If you found any particular part(s) persuasive, please describe what:

Still not quite as catchy as it could be

rewards

I dont like when companys make me play games without my own choosing

interactivity can help persuasiveness but is limited to its novelty as a new addition to a normal activity

Instructions to turn phone made me curious to see what would happen

```
kable(feedback.qualitatives[6], col.names =  
feedback.qualitative_cols[6])
```

If you found any part(s) in particular, connected you with the brand, please describe what:

rewards

```
kable(feedback.qualitatives[7], col.names =  
feedback.qualitative_cols[7])
```

If you found any part(s) in particular, difficult to use, please describe what:

it was a bit slow

the phone - samsung - has a return button that i had forgotten about

I not very good when it come to using technolgy so I didn't quite understand what needed to do

It was okay - but you do need to know where the 'marker' is

The sizing and pace of this iteration seemed easier to grasp game, but familiarity also playing a part.

the directions to augmented reality need signposting more

The AR game

AR writing difficult to read, AR relies on distance created between object in the background and the phone to project image - purchasing from vending machine requires proximity to the machine making image and interaction blurry disorienting

```
kable(feedback.qualitatives[8], col.names =  
feedback.qualitative_cols[8])
```

What was the best part of the experience?

having help to hand in case i can't work the technology

the game

the graphics

doing the task

the graphics are nice

The game is fun but would rather just get the drink as no rewards offered

THe game and the coins

simple to use

The AR game

The notification.

game itself was fun and classic for its type but needs a reward after

```
kable(feedback.qualitatives[9], col.names =  
feedback.qualitative_cols[9])
```

What was the worst part of the experience?

inputting my email again

the speed

same old same old

I didnt understand what to do

it just takes up time

no worst part

Game controls not obvious

not engaging enough

That the minigame was the same. Tune plays loudly not sure I want the attention of any needless noise as I am going about whatever I am doing.

The game put me off wanting to sign up at the end

The AR game. I felt like it was for a purpose.

does not allow for speed and convenience - also no reward offered

The noise

```
kable(feedback.qualitatives[10], col.names =
feedback.qualitative_cols[10])
```

Do you have any suggestions for improvement?

I presume one would sign up and register to join the app

more than three notes on the tune? Use rhythm on the phone and get users to drum out that rythm with their bottle purchase

good idea for those that don;t mind playing games on phone - just not for me

not sure what rewards I can earn in terms of purchasing the drinks

different optional games

Explanation of coins

Skip option or obvious that the diversion of the game can be ignored.

More of a marketing improvement but a game that is related to the brand would be more immersive and relate-able

Perhaps a random lottery. Winner plays the AR game to win a token/loyalty prize?

game needs a reward/prize to attract custom otherwise will be seen as unnecessary interactive promotion

Experiment #3

```
feedback.qualitative_cols_2 <- paste(feedback.qualitative_cols,
  2, sep = '___')

feedback.qualitatives = c()
idx = 1

for (q in feedback.qualitative_cols_2) {
  feedback.qualitative <- as.data.frame(feedback.formatted[q]
    [!is.na(feedback.formatted[q])],)
  feedback.qualitatives[idx] <- feedback.qualitative
  idx = idx + 1
}

kable(feedback.qualitatives[1], col.names =
  feedback.qualitative_cols[1])
```

If you enjoyed any part(s) in particular, please describe what you enjoyed:

it's quite enjoyable to get a coin towards some free tea!

it was quick

I liked being rewarded with coins

quick to use/getting coins

This was nice and quick to get through

Getting coins for rewards

Curiosity temporarily piqued by novelty of coin reward (at least on the first presentation)

It was relatively quick and gave me a reason to keep buying

less disruption to purchasing experience - allows for speed

It was more clear what was going on

```
kable(feedback.qualitatives[2], col.names =  
       feedback.qualitative_cols[2])
```

If you were annoyed by any part(s) in particular, please describe what annoyed you:

Simply because I didn't have to enter my email address

Not annoying if you recognise that you are getting a coin for this

It was nice and short - didn't annoy me

Slightly attention drawing/consuming. Only an issue because I wouldn't engage or use with reward feature going forward.

not being able to see coin balance immediately is fairly annoying

I would be unlikely to click on my email to read more info if I'm trying to buy a drink

```
kable(feedback.qualitatives[3], col.names =  
       feedback.qualitative_cols[3])
```

If you found any particular part(s) engaging, please describe what:

difficult to engage in a process that you have to go through to get a coin.

it was simple and the rewards scheme were engaging

The promise of a reward

again liked being thanked - good graphics, fast paced, rewarding and i felt like i got something in return for my custom

Wouldn't make me rush out and buy more Fave than I would have done anyway

would be more engaging if it had an app for the collection and spending of coins

More explanation/better instructions - or maybe just noticed them more?

```
kable(feedback.qualitatives[4], col.names =  
feedback.qualitative_cols[4])
```

If you found any particular part(s) interesting, please describe what:

more interesting that the focus of this experience is completely on getting a coin

Yes I got coins but no social media button this time

I enjoyed the reward system

It was okay but not particularly interesting

Reward feedback direct from buying product

loyalty coins not new but delivery method through phone payment is and so to be automatically given coins for small purchases will likely intrigue.

```
kable(feedback.qualitatives[5], col.names =  
feedback.qualitative_cols[5])
```

If you found any particular part(s) persuasive, please describe what:

possibly persuasive because it's relatively easy to get a coin towards a free drink

simplicity and rewarding

I'm sorry but there is not anything persuasive about this. I don't care about the coins as they are worth 1000th of a penny or whatever and when I look in my email I will find emails telling me that I have earnt very little so this could be a source of annoyance each time I use a vending machine

More likely to repeat my purchase

It didn't really persuade me to buy Fave

Being able to get something back for my purchase is persuasive

having rewards instantly given which can be used for future purposes encourages customer to return in order to accrue coins. more persuasive if customer could see balance and spend either online instantly (through universal app) or spend at the same machine pre purchase.

kable(feedback.qualitatives[6], col.names = feedback.qualitative_cols[6])

If you found any part(s) in particular, connected you with the brand, please describe what:

I guess there is some connection to the brand by default if you are getting involved in collecting coins.

rewards

key colours and repeated - good theme

It gave me a reason to repeat purchases

coins specific to the brand which can only be used through their own promotions means spending more time using the brands interactive services and more opportunity to buy into promotions.

kable(feedback.qualitatives[7], col.names = feedback.qualitative_cols[7])

If you found any part(s) in particular, difficult to use, please describe what:

very user friendly - anyone can use it

Mildly put out by the request to provide personal email address

autofill essential for email - would be better to see coin balance upfront

It was easy until directed away from app to my email

```
kable(feedback.qualitatives[8], col.names =  
feedback.qualitative_cols[8])
```

What was the best part of the experience?

reward

getting the coin!

it was easy

reward system

quick/getting coins

The graphics are nice

The offer of coins was good however im not sure how good the prizes will be

the simplicity, the speed

Not overly long to process and move on and forget

Getting something back for my purchase

coins for nothing! if the coins feel to easy to get, they feel kinda worthless.

The reward element with the coins is a nice idea for brand engagement

The reward screen. Gave me a positive feedback.

getting reward - financial/ coin based essential - prizes traded for coins must also be worthwhile

Easy to understand process

```
kable(feedback.qualitatives[9], col.names =  
feedback.qualitative_cols[9])
```

What was the worst part of the experience?

friends would get fed with me keep sending them adverts for drinks.

N/A

not a worst part

not sure if the coins are persuasive enough for me to become loyal to the brand

Request for personal data - email address

coins for nothing! if i already know and value fave coins, then getting them for just buying a drink and tapping on my phone aint bad at all

having to confirm my email address again. Personal details should already be known? On my phone, im not likely to share the reward with other people.

not seeing or being able to spend coins immediately but instead being emailed a balance and inevitably promotional offers to suit

```
kable(feedback.qualitatives[10], col.names =
feedback.qualitative_cols[10])
```

Do you have any suggestions for improvement?

The language used for the delivery of the prize

I'm assuming that the meaning of the coin is explained elsewhere and you don't think it needs any further explanation during the experience which is focused on getting a coin?

maybe saying what some of the prizes are instead of having to check inbox

Could provide notification before purchase with special offers or let you pay with reward coins.

Slight delay registered before promotion proceeded through to final email request screen.

Speed up the process, it seemed a bit slow, and could have done with info on what the coins are for before submitting my email address

As stated. A one-time registration, then keep the experience personal.

see balance immediately, spend coins immediately at machine before/after purchase, use universal app e.g. nectar to see points balance and promo offers side by side therefore able to set targets for points accrual - less likely to receive all promotions via email

keep it all in the app

When you have the coin, it doesn't tell you to click to finish. Sounds could help?!

Experiment #4

```
feedback.qualitative_cols_2 <- paste(feedback.qualitative_cols,  
 3, sep = '___')  
  
feedback.qualitatives = c()  
idx = 1  
  
for (q in feedback.qualitative_cols_2) {  
  feedback.qualitative <- as.data.frame(feedback.formatted[q]  
  [!is.na(feedback.formatted[q]),])  
  feedback.qualitatives[idx] <- feedback.qualitative  
  idx = idx + 1  
}  
  
kable(feedback.qualitatives[1], col.names =  
  feedback.qualitative_cols[1])
```

If you enjoyed any part(s) in particular, please describe what you enjoyed:

It was simple and direct

it was easy but I don't use social media so the invitation to share wasn't relevant for me,

i feel like enjoyable is perhaps the wrong word

getting more used to the app

speed

It was quick and unfussy

Quick and easy

In comparison to other minigame experiences a lot quicker.

Being thanked for my purchase and opportunity to give something good to friends

no enjoyment in sharing personal information

```
kable(feedback.qualitatives[2], col.names =  
  feedback.qualitative_cols[2])
```

If you were annoyed by any part(s) in particular, please describe what annoyed you:

Sharing with friends as before

slightly annoying re the assumption that social media is used.

I don't like the bookend tag lines

forced to share on social media

I dont like having to share content on social media without my own choosing

Request for personal info and promotion on personal media together.

Having to post on my social media channels

A little apprehensive sharing something trivial like a drink preference to my social media feed

felt invasive to be asked to post to social media just because i bought a drink

Having to keep confirming email details.

strongly dislike sharing on social media and emails especially for no reward and if to be used only for marketing purposes

It seemed pretty pointless - no reason to be clicking on anything, just asked for my email with no explanation

kable(feedback.qualitatives[3], col.names = feedback.qualitative_cols[3])

If you found any particular part(s) engaging, please describe what:

only engaging because of the context of research

it was good that it wasn't too engaging

As I only had the option to fb or tweet then I felt a bit hamstrung - I need an option to say no

the graphics were quite jolly

no engagement except sharing on social media

kable(feedback.qualitatives[4], col.names = feedback.qualitative_cols[4])

If you found any particular part(s) interesting, please describe what:

only interesting because of research factor

We all see so much of this stuff these days

inconvenient

```
kable(feedback.qualitatives[5], col.names =  
       feedback.qualitative_cols[5])
```

If you found any particular part(s) persuasive, please describe what:

I am not persuaded and have no interest in buying drinks from a vending machine

I found I was stuck having to do something but maybe in real life I wouldn't open the app. My enthusiasm for the product - a bottle of water is not that great that I want to share it

not as much as previous times

It doesn't make me want to buy more of the product than I would otherwise

Giving friends a deal on something encouraged me to share

dislike posting on social media and sharing email means less likely to return

Seemed a bit spammy

```
kable(feedback.qualitatives[6], col.names =  
       feedback.qualitative_cols[6])
```

If you found any part(s) in particular, connected you with the brand, please describe what:

I am rarely persuaded by brand but I accept that a brand can build trust so to this extent I think that the fact that the technology is easy to use, helps build trust.

Yes I suppose so in that the brand came up on my phone

Tiny bit.

Felt like I would be shouting out my love for the brand by sharing

forced to promote brand

```
kable(feedback.qualitatives[7], col.names =  
feedback.qualitative_cols[7])
```

If you found any part(s) in particular, difficult to use, please describe what:

Getting used to it

No clear close/ignore/skip, which I feel inclined to do once I realise what is happening.

auto fill necessary

```
kable(feedback.qualitatives[8], col.names =  
feedback.qualitative_cols[8])
```

What was the best part of the experience?

quick and easy

easy

it was simple, easy and quick

the jolly graphics

Its easy to use and relatively quick

Quick. Understood what the experience wanted of me, quick for me to dismiss.

receiving the drink

It was very simple to follow

```
kable(feedback.qualitatives[9], col.names =  
feedback.qualitative_cols[9])
```

What was the worst part of the experience?

advertising in general as well as signing up for things, nothing specific to the singular experience just advertising generally

Expectancy to share on social media without any reward

not having a choice if i wanted to share content or not

Being forced to share on socials

Confronted by the request for personal info and promotion

Feel uncomfortable sharing things on social media

lack of anything in return for social media post.

posting on social media and sharing email for likely spam

Didn't give me any incentive to engage

```
kable(feedback.qualitatives[10], col.names =
feedback.qualitative_cols[10])
```

Do you have any suggestions for improvement?

Yes have a Not now button

give option to share content or not

Make sharing optional or be able to send to specific contact?

Add more social media channels, pics on instagram maybe

I didn't really get anything out of the experience, not memorable, i simply shared my purchase on facebook, im not sure if people would really be interested in this if they get nothing in the return such as the coins.

Skip option/obvious ignore and move on with day

Give more detail on the type of promo to make it more persuasive to share on social media

the social media message wording maybe. But really i think the user needs something in exchange for the post.

There needs to be a reward if customers are being compelled to share marketing

My chosen drink was not indicated. It would be good to show me my usual flavour in some way and tailor the acknowledgement to my taste.

no social media or good reward system

More instructions and feedback

Experiment #5

```
feedback.qualitative_cols_2 <- paste(feedback.qualitative_cols,  
4, sep = '___')  
  
feedback.qualitatives = c()  
idx = 1  
  
for (q in feedback.qualitative_cols_2) {  
  feedback.qualitative <- as.data.frame(feedback.formatted[q]  
  [!is.na(feedback.formatted[q]),])  
  feedback.qualitatives[idx] <- feedback.qualitative  
  idx = idx + 1  
}  
  
kable(feedback.qualitatives[1], col.names =  
  feedback.qualitative_cols[1])
```

If you enjoyed any part(s) in particular, please describe what you enjoyed:

more enjoyable because I managed to use the technology without help

it was the first time i think id properly understood the game

playing the bottles was okay but getting the instructions / distance from the fave logo and understanding what i needed to do was a problem and I needed prompting

Game is more interesting, especially with the prospect of a reward

easy to use game

Like the way the 3 notes are in different order each time

Novelty caught attention

Fun to interact with the advertising in a new kind of way

enjoyed winning the game and getting some sweet coins

AR simple game gives reward - writing difficult to read/understand

```
kable(feedback.qualitatives[2], col.names =  
  feedback.qualitative_cols[2])
```

If you were annoyed by any part(s) in particular, please describe what annoyed you:

Same experience each time

less annoying because i was more familiar with the technology

im a ludite, generally if im using technology, i want it to be fast, the game didnt work quickly

only the part where it patronised me with well done for playing three nortes

It all just takes precious time - for a tiny reward

It caught my attention. In addition to needing me to get close to the marker to load game it requires me to backtrack to vending machine. Breaks flow as I was heading away from the machine.

Playing a game with sound in public is not appealing

AR difficult to understand, does not lend to convenience/speed. also could do without having to rotate to landscape on phone use.

kable(feedback.qualitatives[3], col.names = feedback.qualitative_cols[3])

If you found any particular part(s) engaging, please describe what:

more engaged because I was motivated to work out the technology

fun to work it out

enjoyable game and rewards

I do like the graphics

Being able to earn coins

AR game interactive and relatively new tech therefore more engaging for point of sale, use of coin system means engagement with brand more likely as they can be used for further prizes etc

kable(feedback.qualitatives[4], col.names = feedback.qualitative_cols[4])

If you found any particular part(s) interesting, please describe what:

due to the reward scenario

I don't find this experience interesting except in context of the research contribution

game element

I would find this quite boring after the first couple of times

Caught attention

both AR and loyalty points in this setting are relatively new and therefore will always trigger intrigue so long as novelty is retained or new interactions created.

kable(feedback.qualitatives[5], col.names = feedback.qualitative_cols[5])

If you found any particular part(s) persuasive, please describe what:

more persuasive depending on better understanding of reward/coin

rewards are persuasuve

more engaging than the previous options

rewards and fun game leads to a good brand

success with task/positive feedback

It won't make me more likely to buy more of a particular product

Being able to earn coins from my purchase would make me more likely to purchase from this brand from this vending machine again

winning coins

game and reward is best combo

AR new concept for this type of purchase - novelty factor may encourage repeat purchase, coin rewards also encourages repeat purchase to possibly unlimited levels based on prize in exchange for coins

Email address entering after game was better

kable(feedback.qualitatives[6], col.names = feedback.qualitative_cols[6])

If you found any part(s) in particular, connected you with the brand, please describe what:

rewards

no not really

Not really

Earning coins and the potential to earn more through more purchases

tapping directly onto the product as part of the game

coin reward system means customer is tied to brand but for the customer it feels more like a choice as there is the potential to gain a return in exchange for repeat custom

kable(feedback.qualitatives[7], col.names = feedback.qualitative_cols[7])

If you found any part(s) in particular, difficult to use, please describe what:

much easier to use the 2nd time round!

changing orientation was difficult holding the drink

only with help / prompting

Rotating the screen seemed a bit buggy, could have been smoother

the game wasn't easy to see as the vending machine is in the background and the drinks on the screen dont stand out against it

Minigame gameplay rule not immediatley clear. Missed first note cues before I grasped what I needed to do.

AR difficult to understand - would be more convenient with immediate access to coins and coin balance

kable(feedback.qualitatives[8], col.names = feedback.qualitative_cols[8])

What was the best part of the experience?

being able to use the technology

rewards

rewards

It was quite a slick little app

The game is fun and a surprise but on a second play was a bit less interesting. After first play the game gets a bit boring quite quickly

the interactive element / augmented reality experience

The interactive nature of the advertising

the AR game

The feeling of winning a prize.

coin in return for AR

Instructions were better and took you through journey more.

Liked how you had to play the game, was interactive, sounds, engaging and then winning a coin - also had more text saying what you had won and how to get access to coins etc

```
kable(feedback.qualitatives[9], col.names =  
       feedback.qualitative_cols[9])
```

What was the worst part of the experience?

Language "YOU HAVE COIN"

changing orientation

working out what I was meant to do

Not really a worst part

the game wasn't clear or easy to understand

Time out of my activity to ask me for personal info (email address) at the end.

The fact that it played sound on the phone

sharing email address

```
kable(feedback.qualitatives[10], col.names =  
feedback.qualitative_cols[10])
```

Do you have any suggestions for improvement?

Change the language to something more exciting

maybe think about whether more helpful to get the technology easy to use first time round!

simplify the language, orientation isn't a game that would appeal to anyone who struggles with english language

yes a bit more info on the screen and don't say 'well done' maybe 'room for improvement'

Make the game a bit smoother and maybe different games??

Ability to login to app

the game could work better if the vending machine was a lighter colour in order to see the drinks in the screen. I felt i had to move the phone around in order to read the game instructions

Skip option or option to ignore not obvious

Give more detail on what I can use the coins for before I submit my email address so I can decided if it is really worth it

Knowing how many Fave Coins i won and what they can be exchanged for could have made more excited about entering the experience and more likely to check the follow up email immediately.

There was no quantity of coin specified. It would be a good idea to specify difficulty levels, which would in turn have varying levels of rewards.

more coins, better AR game, no email sharing (probably necessary for coin collection) maybe use app instead.
best version yet

Have more info before you play game about what you can do with coins and how to use

Experiment #6

```
feedback.qualitative_cols_2 <- paste(feedback.qualitative_cols,  
5, sep = '___')
```

```
feedback.qualitatives = c()  
idx = 1
```

```
for (q in feedback.qualitative_cols_2) {  
  feedback.qualitative <- as.data.frame(feedback.formatted[q]  
  [!is.na(feedback.formatted[q]),])  
  feedback.qualitatives[idx] <- feedback.qualitative  
  idx = idx + 1  
}  
  
kable(feedback.qualitatives[1], col.names =  
  feedback.qualitative_cols[1])
```

If you enjoyed any part(s) in particular, please describe what you enjoyed:

finally worked out that if I point the phone at Fave then the bottles appear!

i enjoyed making music - interactive

The game

As a novelty it caught my interest.

no reward only asking for email and posting gives impression of likely promo spamming and pointless sharing of promos using my own channels - nothing given back only taken - I AM THE CUSTOMER not marketing mule

```
kable(feedback.qualitatives[2], col.names =  
  feedback.qualitative_cols[2])
```

If you were annoyed by any part(s) in particular, please describe what annoyed you:

Not enough practice

just wanted drink

there was a lot to do, changing orientation of the phone whilst holding the product was irritating

playing bottles software was too slow

Social media sharing

Its good to have use to share on social media but I don't always like sharing that sort of content on the net

It all takes time. And do social media friends really want to be tweeted about this?

Required a moment to get what the game expected of me. Despite understanding the objective from the description, what I had to do wasn't jump straight in obvious or why (afterwards).

Having a game that plays sound out loud without knowing in advance is annoying, and don't like sharing things on social media

being asked for email AND social media post back to back felt over the top. I was kinda happy to give the email, but as soon as the social media screen appeared, it annoyed me and even made me question why my email had been requested at all.

Assuming this was a regular purchase, I wouldn't want to play the AR game every time.

ibid Q1

the noise of the game, and also didn't explain the incentive before you play

```
kable(feedback.qualitatives[3], col.names =  
       feedback.qualitative_cols[3])
```

If you found any particular part(s) engaging, please describe what:

The idea of taking part in something new

more engaging once I got my head around playing the game!

it was engaging in the sense that i had a lot to do, the engagement was a bad point rather than a good one in this instance

fun to play/music game interesting element

It was a tiny bit fun to play the notes back - I am not musical and don't get to do things like that often

Caught attention and required input - that wasn't personal which would have put me off straight away.

forced to engage - game engaging but offers no reward

```
kable(feedback.qualitatives[4], col.names =  
       feedback.qualitative_cols[4])
```

If you found any particular part(s) interesting, please describe what:

What the advertiser is looking for

the game was interesting

nice graphics

As a novelty interaction it caught interest.

simply using customers as marketing agents not interesting more annoying

```
kable(feedback.qualitatives[5], col.names =  
       feedback.qualitative_cols[5])
```

If you found any particular part(s) persuasive, please describe what:

i dont know what i was supposed to be persuaded by, i already had the drink in my hand

Good way to share info on a brand you liked

Wouldn't make me choose this item over another

Being able to share promos with friends is nice

The social media sharing was a good tool. Not sure I want my friends knowing my drink preferences though!

asking me to post and share email discourages repeat purchase

```
kable(feedback.qualitatives[6], col.names =  
       feedback.qualitative_cols[6])
```

If you found any part(s) in particular, connected you with the brand, please describe what:

The bottle video game made me remember the brand

game connected to brand

not necessarily

If it did connect me with the brand, it was on a level which I am not conscious of

The request for promotion on personal media connect me but triggered a mildly negative response

shackled to brand through posting and sharing email for inevitable marketing mail

```
kable(feedback.qualitatives[7], col.names =  
       feedback.qualitative_cols[7])
```

If you found any part(s) in particular, difficult to use, please describe what:

The first time of using any new app has to make one think more than the following attempts. But it was pretty easy

much easier now I understand how to use the technology

changing orientation and the game wasnt easy, theres also no objective to the game that i could understand

i copy the tune / order of the bottles playing but the phone is slow to react so I have finished the tune before the bottles play - there is a time lapse

found it easier due to doing a similar experience

The more i use the app the easier it is to use but even after a couple of tries it isn't clear on the screen,

Rules/how to play minigame not particularly clear

AR difficult to understand

Took a while to realise what I had to point phone towards - (the fave in the box) rather than the white marker

```
kable(feedback.qualitatives[8], col.names =  
       feedback.qualitative_cols[8])
```

What was the best part of the experience?

Being involved

it's the last experience!

it was fairly quick

the music

incentives

the jumping bottles were nice

The game is quite fun but better with coin rewards

interesting idea to be able to share something you've just purchased with your friends online immediately

Thanking me for my purchase

receiving the drink

```
kable(feedback.qualitatives[9], col.names =  
feedback.qualitative_cols[9])
```

What was the worst part of the experience?

Not knowing what to do beforehand

more social media

it wasn't quick enough

repeat experience so a bit boring - why would i bother doing this more than a couple fo times to find out all the patterns.

having to share on social media

Having to share to socials

reading the screen whist the bottles are on the screen

After the attention grab the realisation of advertising demand on my personal media.

Having a game with sound

not knowing why my email address was asked for.

posting on social media and sharing email - no reward given

Trying to find the thing to point the phone at

```
kable(feedback.qualitatives[10], col.names =  
feedback.qualitative_cols[10])
```

Do you have any suggestions for improvement?

A short summary of how the app works beforehand

speed up the bottle playing and make the tunes more demanding. Put in a race game or a super mario type character each time and involve the product in the game

give option to share or not to share

have option to not share

Could share scores in SM posts. Also, game should be played away from machine to prevent queuing.

make the bottles /augmented reality screen easier to read, then i think the whole experience becomes more engaging and memorable. This experience didn't seem different enough from the previous ones.

Skip option to get on with my day

Use an AR game with no sound

Perhaps, if the game had a top score, It would make a better use of the social media. Gamifying the interaction will draw me back and be competitive with my peers.

give a reward or don't ask to post on social media - sharing email for further interactivity expected but not if it would only be used for promo emails.

There was no reason to share on social media - maybe more points?

Clearer instructions for user?!

Experiment #7

```
feedback.qualitative_cols_2 <- paste(feedback.qualitative_cols,  
6, sep = '___')  
  
feedback.qualitatives = c()  
idx = 1  
  
for (q in feedback.qualitative_cols_2) {  
  feedback.qualitative <- as.data.frame(feedback.formatted[q]  
  [!is.na(feedback.formatted[q]),])  
  feedback.qualitatives[idx] <- feedback.qualitative  
  idx = idx + 1  
}  
  
kable(feedback.qualitatives[1], col.names =  
  feedback.qualitative_cols[1])
```

If you enjoyed any part(s) in particular, please describe what you enjoyed:

I was more familiar with the process

This time I got some coins - though I don't know how much they were worth

good reward system

the speed, ease of use, neat (no wallets/cards/money)

Relief to just be able to end the purchase process quickly

Getting a free reward coin but nnoying having to share on socials

Quicker to present coin reward.

Earning something back for my purchase

Dislike posting to social media

```
kable(feedback.qualitatives[2], col.names =  
  feedback.qualitative_cols[2])
```

If you were annoyed by any part(s) in particular, please describe what annoyed you:

The app asks to share with friends every time it is used?

I was annoyed to have to choose from social media which I don't actually use.

advertising annoys me

Prompted to share on social media before completion

didn't like having to share my email address with another brand

not sure how much i want to share with people on social media yet

This wasn't too bad - no time-consuming bottlenecks game

Less annoying as email address is taken in return for a reward but being forced to share on socials is not good

Request for personal information or promotion feel invasive

Having to share on social media

sharing email and posting to social media annoying, 1 coin not good enough.

```
kable(feedback.qualitatives[3], col.names =  
       feedback.qualitative_cols[3])
```

If you found any particular part(s) engaging, please describe what:

I don't find the experience engaging other than the fact that I have achieved what I wanted ie buying a drink.

having to literally do the thing engaged me, i liked the addition of the coins though i don't know what they're for

Not addictive nor engaging

again, simple but effective design - visually engaging

rewarding to get coins/positive feedback

Was very clear and the reward was good incentive but again annoying to have to share

coin gives engagement but less likely to engage because of social media and email share

```
kable(feedback.qualitatives[4], col.names =  
       feedback.qualitative_cols[4])
```

If you found any particular part(s) interesting, please describe what:

What peoples reactions would be to be sent a share each time the app is used

Yes as this was the first time that I got coins

It would be interesting if it was the first time I'd used this app

Reward can be used for multiple things so is quite interesting

coin reward in this setting is interesting but sharing info is not

```
kable(feedback.qualitatives[5], col.names =  
       feedback.qualitative_cols[5])
```

If you found any particular part(s) persuasive, please describe what:

I believe that younger people would engage with the app far better than the older generations of smartphone users

I don't know what would be persuasive about it

rewarding - good way to get repeat custom

Wouldn't make me buy more of this product or favour it over a rival

Would make me want to buy the drink but forced to share really annoying

Being able to earn coins

posting to social media, sharing email and receiving promotional content as a result more likely to drive me away.

Told me why i should use the app right at the start - exchanging coin

the simplicity of being rewarded just for buying the drink

```
kable(feedback.qualitatives[6], col.names =  
       feedback.qualitative_cols[6])
```

If you found any part(s) in particular, connected you with the brand, please describe what:

The continuity of brand name being shown

the coins seemed to connect me

Fave came up on the screen

repeated use of brand logo

It didn't really connect me to brand

Would want the drink more because of reward but not like the brand because of being forced to share

There felt a forced connection to the brand in the request to promote on personal media.

Being able to earn coins would make me more loyal to the brand

coins help connection, posting and sharing does not

kable(feedback.qualitatives[7], col.names = feedback.qualitative_cols[7])

If you found any part(s) in particular, difficult to use, please describe what:

n/a

this was very easy

was very simple to follow

easy to share and submit, would be easier if I had access to my coins and coin balance - difficult to understand why I have to post and share.

V clear instructions/prompts

the fact that it was simply sent to your email

kable(feedback.qualitatives[8], col.names = feedback.qualitative_cols[8])

What was the best part of the experience?

the addition of the coins

reward system, easy to use

receipt of drink/speed

that the brand is attempting to connect with the customer on not just a sales level, perhaps this makes the brand more relevant.

Gaining coins but not having to partake in the game

Earning coins

coin

```
kable(feedback.qualitatives[9], col.names =
feedback.qualitative_cols[9])
```

What was the worst part of the experience?

the promotion for social media. I particularly dislike Facebook.

social media sharing

having to give email address and having to share on social media - i like to be in control of who im sharing content with

being asked to share

Felt a longer than desirable process with multiple opening pages/content to be parsed.

Sharing on social media

Sharing with friends. Not really wanted, but was very prominently displayed.

posting to social media and sharing email

Social media sharing - no reason to share with friends?

Not as fun without a game

```
kable(feedback.qualitatives[10], col.names =
feedback.qualitative_cols[10])
```

Do you have any suggestions for improvement?

Scrap Facebook

a brief explanation of the coins, are they reward points?

As before a no thank you or not now button on social media page

Promise of more coins if you share on social media

It could be clearer what you're getting for your coins and where your interaction with the brand will lead.

No skip option to ignore and move on.

The pre-filled social media post could be linked to the coins rather than just sharing deals, or maybe I should get extra coins for sharing on social media

maybe the social media post could be incentivized. "Double your fave coins for sharing"

Perhaps an option to share with your favourite social media as a setting, then kept away from you, or some notification when done, but not always prompted.

no social media - AT ALL. easier access to coins

Experiment #8

```
feedback.qualitative_cols_2 <- paste(feedback.qualitative_cols,
  7, sep = '__')

feedback.qualitatives = c()
idx = 1

for (q in feedback.qualitative_cols_2) {
  feedback.qualitative <- as.data.frame(feedback.formatted[q]
    [!is.na(feedback.formatted[q])])
  feedback.qualitatives[idx] <- feedback.qualitative
  idx = idx + 1
}

kable(feedback.qualitatives[1], col.names =
  feedback.qualitative_cols[1])
```

If you enjoyed any part(s) in particular, please describe what you enjoyed:

i like the game

a repeat of the bottle playing

liked the music game and being rewarded

THe game

I enjoyed the tune

too many interactions but game gives reward

Interactive game, image and music

the interactive element

```
kable(feedback.qualitatives[2], col.names =  
       feedback.qualitative_cols[2])
```

If you were annoyed by any part(s) in particular, please describe what annoyed you:

As before resubmitting my email

I found this experience more annoying because it was less easy to use and I needed help with the process.

the game doesnt entirely work and doesnt seem to work

not annoying but wonder if anybody will bother - alright for 5 year olds doing the tune

didnt like that i had to share info on soical media

Request for personal info and my promotion of the brand on social media after my attention and time used.

Having to post on my social media chanel

Both sound on game and sharing on social media

The social media section, particularly the pre-filled message isnt something i would share with friends.

too many interactions, AR difficult to read/ understand. DESPISE the idea of sharing on social media - if doing so reward must be much greater or at least proportionate to the level of marketing carried out by the individual posting i.e if customer has 700 followers and 7 people then purchase products poster should be given reward proportionate to the custom received by marketing - £5/10 off voucher, 100-250 coins per person

I would want to be warned if sound was about to come out of my phone in public

```
kable(feedback.qualitatives[3], col.names =  
feedback.qualitative_cols[3])
```

If you found any particular part(s) engaging, please describe what:

Interesting that the app will probably engage younger people very quickly

not engaging because not easy for me to use

engaging in this experiment but I wouldn't play the game ordinarily

Not particularly engaging after the same minigame. Possibility of some coins/rewards being useful is slightly engaging.

The inclusion of the AR game

The coins gave me a reason to play the game

the game

too engaging - too many interactions with email, AR game, Coins, email

```
kable(feedback.qualitatives[4], col.names =  
feedback.qualitative_cols[4])
```

If you found any particular part(s) interesting, please describe what:

Interesting in that it will pull younger users into playing the game

a little interesting because it was significantly more difficult for me to use.

the coins and rewards

felt more like a game/interesting visuals

THe AR

The AR game

AR interesting as concept for point of sale

```
kable(feedback.qualitatives[5], col.names =  
feedback.qualitative_cols[5])
```

If you found any particular part(s) persuasive, please describe what:

the coins would persuade me to continue and do it again, rewards in exchange for time and effort is persuading

If I had this app I probably would not use it so I am not persuaded

reward system is good to encourage repeat custom

directed to play

Earning coins

felt less trusting of the brand after the social media section

anything that asks me to post on social media has immediately lost its persuasion as it feels as though I am doing their marketing for them. also without significant reward that makes the potential embarrassment of posting an advert for a likely unhealthy product it will simply discourage me from re-buying.

Winning a coin - share to win!

kable(feedback.qualitatives[6], col.names = feedback.qualitative_cols[6])

If you found any part(s) in particular, connected you with the brand, please describe what:

The constant picture of the bottles

I didn't feel connected with the brand during the experience.

rewards will keep me coming back

graphics

seeing the Fave bottles jumping about reinforced the brand

Not in a positive way - overall slightly negative in that I didn't want to connect with the brand and the request to associate me with it isn't appealing even for reward. Especially if unknown what I would receive.

Earning coins would make me want to be loyal, however sharing on social media kind of ruined it

maybe overly connected due to social media part

coins make connection, Social media is shackling customer to brand, AR game engages but can be seen as inconvenience

The game was related to the product

Again, colours and font stick in the brain

```
kable(feedback.qualitatives[7], col.names =  
       feedback.qualitative_cols[7])
```

If you found any part(s) in particular, difficult to use, please describe what:

I didn't find the bottles to tap without more help and I held the phone the wrong way to rotate to portrait.

the game wasn't particularly easy, changing orientation whilst holding the product was difficult

now i have done it a couple of times yes

Couldn't find marker straight away

Slightly confused by the game

AR difficult to understand

There were quite a lot of clicks between screens and wasn't really sure what was going on

```
kable(feedback.qualitatives[8], col.names =  
       feedback.qualitative_cols[8])
```

What was the best part of the experience?

Being more aware of what to do

knowing I would get the help I need!

rewards

mini game

rewarding

Getting the reward

The game was really cool and surprisingly fun

the concept that you receive coins as loyalty is good idea, the process is easy to use and also pretty quick

Earning coins

Ar game

receiving coin reward

Interactive game, playing with music

the fact that it involved you in an interactive way

```
kable(feedback.qualitatives[9], col.names =  
       feedback.qualitative_cols[9])
```

What was the worst part of the experience?

Expecting the user to share with friends

the game is a bit boring.

not being able to do it independently

the game

havign to share content on social media

being asked to share again

It was just a bit of a hassle

Being forced to share on socials makes it feel like you are being controlled and would make me not buy the drink

A lot of screen transitions requireng user input to progress.

The sound on the game, however as I was earning coins I would probably still play again if the reward was good enough

Social media

The AR game, again. Wasn't optional.

having to post on social media - very little will make me post on social media - usually have to be in return for a free product or service. only example of when I have been persuaded to post on behalf of company is at nightclub in return for free entry/drinks

```
kable(feedback.qualitatives[10], col.names =  
       feedback.qualitative_cols[10])
```

Do you have any suggestions for improvement?

Yes a additional option of sharing that can be by private messaging or email

I think this experience needs looking at in terms of how easy it is to use.

whats the point in the game?

as before maybe more instruction like hold the camera around a metre from the fave logo

The game was fine, it's just that we are bombarded with this stuff now and it all takes up so much time

have option not to share

Could the marker be on the drink instead of the vending machine, then you can grab your drink and scan whilst you're on the go rather than standing by the machine.

Skip option/obvious 'ignorability' once engaging with promotional app

Make the pre-filled social media post contain a link to the game so anyone can earn a few initial coins without having to make a purchase

adapt the message so that its more specifically tied to the game experience or rewards

Remove social media posting or increase reward - combination of AR for reward where AR is very simple as in experiment works well provided reward and reward spending system is made worthwhile and easy to use.

More information about why I should be taking part

Bottles appeared slightly off the screen to left (might be because i wasn't pointing at the marker properly though!)

Summary feedback

```
feedback.qualitative_cols_summary <- c("Do you have any
thoughts on the the wireless IoT device triggering the
interaction?", "Do you have any thoughts on the the smartphone element of the
interaction?")
```

```
feedback.qualitatives = c()
idx = 1
```

```
for (q in feedback.qualitative_cols_summary) {
  feedback.qualitative <- as.data.frame(feedback.formatted[q]
  [!is.na(feedback.formatted[q]),])}
```

```
feedback.qualitatives[idx] <- feedback.qualitative
idx = idx + 1
}

kable(feedback.qualitatives[1], col.names =
feedback.qualitative_cols_summary[1])
```

Do you have any thoughts on the the wireless IoT device triggering the interaction?

No its just part of the experiment

important for me to have choice to not be engaged at all

I think there needs to be an option for people to take their drink and go rather than engage in the technology. The technology might be welcomed by some people but not everyone wants to go through this especially giving their email address.

it didn't completely work

A bit slow as in the bottles I didn't like the tag lines 'Thank you' and 'Amazing' I wasn't amazing and you started off saying goodbye (Thank you) at the beginning. I guess it is thank you for purchasing the fave drink but taht doesn't really connect

Clever, but intrusive

Good idea - if people dont want to use it then turn bluetooth off

easy to use/immediate feedback

thought it was clever

Good idea, should trigger on point of payment or drink collection? Notification if you don't take drink?

device works well, so easy to use

Breaks up your activity of purchasing a drink to get on with quenching thirst by causing you to have to stop and turn/return to marker.

It was a process that I would deem to be second nature.

some people may find it invasive.. but others will be delighted by the surprise!

It could at times be quite intrusive.

worrying trend increasing of contactless fraud and phone hacking- would need to see better use of phone payment as simply being in the same room sets it off

I think it's quite cool that it pops up and you can use your phone to discover stuff

it was easier than clicking loads of things and entering text - instant

```
kable(feedback.qualitatives[2], col.names =  
feedback.qualitative_cols_summary[2])
```

Do you have any thoughts on the the smartphone element of the interaction?

Bit basic

I am personally uncomfortable that my email gets captured every time.

It wasn't intuitive and was rather slow - by the time phone event had got going I would have moved on

sometimes you don't want to be bothered with games, sharing content etc when you just want to buy something

Dont like having to download apps as they use up precious memory and screen space on my smartphone. Find it a bit of a nuisance to be asked to do it

seemed like a natural experience to have on your phone

Not comfortable with the seamless communication of social media platforms to each other and with the payment system/process. I would not permit access of various apps to features such as camera.

I was, apart from the processing of entering my e-mail address and posting to social media.

use phone for many contactless payments already - AR could be better without the need for portrait rotation - added inconvenience

```
feedback.qualitative <- select(feedback.formatted, c("Overall,  
which was your most preferred experiment?", "Why was this your  
most preferred experiment?")) %>%  
filter(!is.na(`Why was this your most preferred experiment?`))
```

```
kable(feedback.qualitative)
```

Overall, which was your most preferred experiment?

#2

Why was this your most preferred experiment?

I had more of an idea of what was expected but enjoyed them all

#3

5

#7

i liked playing the games to win coins.

#3

opportunity to get a free drink

#1

it was the quickest and required the least effort

Overall, which was your most preferred experiment?**Why was this your most preferred experiment?**

- #1 They all seemed too similar to remember which was best This is a required answer so I had to put something so this is random choice
- #3 Simplest, with reward
- #3 you got thanked for being a customer and rewarded but didnt have to share content
- #8 3 - first music task
- #3 Quick and easy to get through
- #3 Because it was good to get a reward without the game
- #7 Coin and SM sharing, plus quick so I can get down to drinking!
- #3 i like the idea of being rewarded with a fave coin, but not having to use social media as its not something i'd be interest to share online.Also there is no augmented reality element in this experience. I felt the augmented elememt didnt really add to the experience.
- #3 In retrospect; quick and not many screens, coin/point reward clear, option to engage to receive it by submiting email address (ecxhange is more explicit and more agreeable in that I get opt to get/continue)
- #3 Because it featured the AR game but didn't ask me to enter my social media information
- #3 I felt like I was getting something back for my purchase which would encourage me to be too loyal. The experiment was short and didn't ask me for too much information or expect me to share anything on social media, which I generally do not like to do.
- #5 i like the game idea with the email sign up justified by the reward and no social media request.
- #5 best combination
-

Overall, which was your most preferred experiment?	Why was this your most preferred experiment?
#5	I had the feeling of purpose in the engagement in the game. Plus the reward.
#5	AR game for coin is simplest, least sharing of info - AR could be better
#3	Explained what was going on from start (incentive), didn't push me to share on social media, which can be annoying, esp if also giving out email address -
#5	Because you got to play a game, it had sounds and was interactive and then you won a coin. You also don't have to share with friends - which I find annoying
#1	it had the least amount of clicks to sign up for, the simplicity worked best as you didnt have to do anything before entering email

```
feedback.qualitative <- select(feedback.formatted, c("Overall,
which was your least preferred experiment?", "Why was this
your least preferred experiment?")) %>%
filter(!is.na(`Why was this your least preferred experiment?`))

kable(feedback.qualitative)
```

Overall, which was your least preferred experiment?	Why was this your least preferred experiment?
#8	My reaction to sharing with friends
#6	most time consuming with smallest reward
#4	having to send adverts to friends.
#4	Because i don't like social media, especially Facebook
#6	i didnt completely understand the game for a couple of turns, this affects my answers for a few experiments
#1	They all seemed too similar to remember which was worst This is a required answer so I had to put something so this is random choice

Overall, which was your least preferred experiment?**Why was this your least preferred experiment?**

#4	Sign up with social media share with no reward
#8	too many steps and needing too much info and sharing of personal information
#4	no coins and no game
#8	Found it all took too long - too many clicks
#2	Because you are forced to share it without getting a reward or a game
#1	No explanation, just email capture.
#2	It seemed to be purely a game. I 'signed up', but not sure for what?
#6	Too much input required, many screen transitions and decisions/options presented
#4	It asked for all my information without any real interactions
#2	I didn't like the game, mainly because of the sound, and in this version there was no real incentive to play it (like earning coins). To then have to share my email address after that seemed more negative than in other experiments.
#4	asking for email without reason and social media interaction felt lazy and invasive on their own. Together it was really annoying and kinda suspicious
#7	Not sure about sharing drink preferences with my friends on social media. Didn't see the point in it.
#4	No AR game, no reward, only used as marketing mule - hate posting on social media

Overall, which was your least preferred experiment?

#6

Why was this your least preferred experiment?

Didn't tell me why i should play game, no incentive, then didn;t tell me why i ahed played - just says 'well done'. Also lots of 'asks' at the end - give email address, share with friends, etc - what's in it for me? Also felt like there were more screens even though there actually weren;t

#4

You have to sign up and share on social media however you don't get anything in return

#8

as there were several steps to go through, although i enjoyed the interactive element, when you are in a rush and on the go you might not have time to play the game

kable(as.data.frame(feedback.formatted\$`Lastly, do you have any other feedback regarding the experiments?

`[!is.na(feedback.formatted\$`Lastly, do you have any other feedback regarding the experiments?`)]), col.names = 'Lastly, do you have any other feedback regarding the experiments?')

Lastly, do you have any other feedback regarding the experiments?

I do believe that there would be added value if the app were to have a login that offered a loyalty card and was added as a smartphone wallet so that one could chose there favourite drink and just automatically wave their phone at the vending machine pick up their drink and leave.

I believe we live in a Corporatocracy and this whole process of feedback, loyalty and reward is only there to truly benefit the corporations and move us further away from conscious awareness by creating mechanical type behaviours.

I think there should be different types of adverts as they could become boring seeing the same ones.

Firstly thank you for being welcoming and supportive. My experience of these experiments has been to recognise how much technology intrudes into purchasing experiences and my view is that the more our purchasing is tracked by technology the more our freedoms and autonomy are threatened. I am very ambivalent now about loyalty incentives because they track my life and I find this intrusive. Most people are involved with social media and this technology re-inforces the power of social media. This is of concern to me, especially as I am aware of the risks to mental health that social media presents and especially to young people who I believe are mainly targetted by this technology.

Lastly, do you have any other feedback regarding the experiments?

the language isn't simple enough for children or people who don't speak English, the changing orientation is annoying

This is a required answer so I had to put something so this is random choice. Needs some work All the best
Stephen

Massively disliked the social media aspect, especially if there's no reward

could see it becoming repetitive so less engaging over time. don't like being asked to share all the time!

Hate typing using my smartphone QWERTY keyboard to give info like email address as keys are so small. I would probably, realistically, not bother with this

I'd imagine this would be interesting for a young demographic who like interact with social media, but personally I don't think I'd like to share with social media or use the augmented reality element. Using your phone to collect coins seems a good idea though.

Took a few goes before I got what to expect from each run. Maybe 2 trial runs (extreme examples not useful for the actual experiments) would be helpful as at first I didn't grasp what the differences I was looking out for were. Minigame took a moment to get to grips with.

They are all very similar - if the games could be differentiated that would make the process easier to compare and more enjoyable overall

Ordering all the tests was quite confusing even with the sheets!

I like the game idea, especially if it's fun and quick. Making the game result tied to the amount of fave coins awarded could make the game more engaging and make me look forward to buying my next can of sweet sweet Fave!

The AR element is fun for being new(ish) and different, but forcing the customer to stay near the vending machine to play might put me off. I could feel awkward standing in front of the machine or I might have places to be. It would be good to reward for things like - coins go to your favorite charity / rewards for using provided bins - maybe using QR codes to register disposal etc and reward. No social media, make rewards better or make prizes traded for rewards amazing, AR game better or not at all, email okay (to be expected) but only in return for coins or not at all - all other aspects good |
The social media element needs more incentive, and there should be more explanation on why I am getting the notification and how it benefits me before I am asked to do anything, the gaming thing is fun - but if you're in a rush it would be good to be able to have an option to 'play later' | Game with coin was best - however also shorter versions of this advert |