



CONSUMER PREFERENCES FOR FAIR TRADE PRODUCTS IN THE APPAREL INDUSTRY

GROUP 3

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AGENDA

1 2 3 4 5

**Research Problem
Goal of the Study**

**Research Question
Hypotheses &
Research Design**

**Results
of the study**

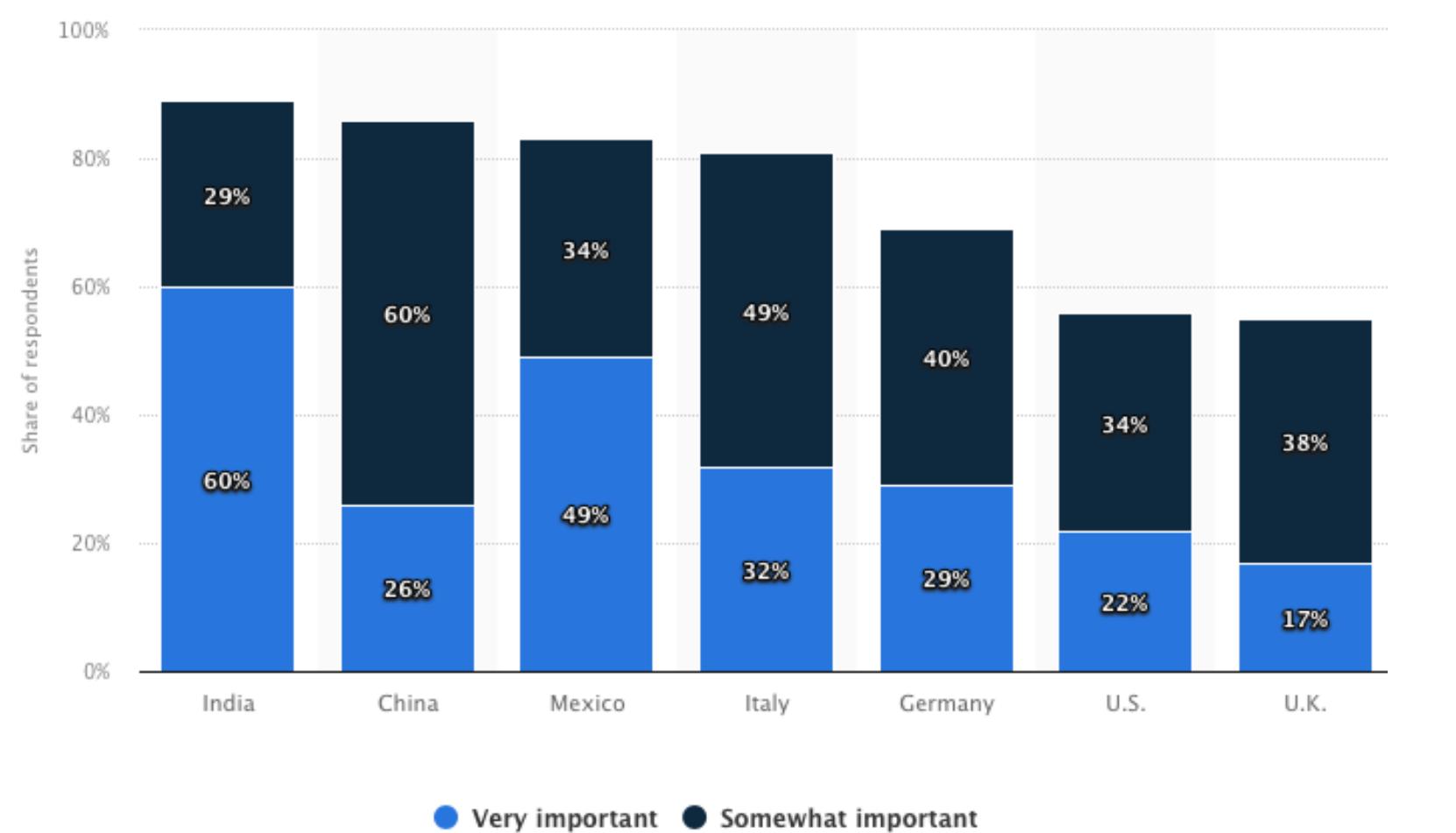
**Managerial
implications**

**Limitations of
the study**

INTRODUCTION TO THE TOPIC AND RELEVANCE OF STUDY

Fair trade = fair price, working conditions for producers and suppliers & equitable trading agreements

Fair trade experienced growth in food sector but consumers concerns in other sectors like fashion and clothing (child labour, worker's right issues, ...) show the relevance of the topic.



Example:
Importance of
sustainability to
consumers in relation
to clothing purchase
worldwide in 2017, by
country



PROBLEM STATEMENT

Compared to other sectors (e.g. food) sustainability in fashion is still not that important for consumers, therefore our study aims to:

- ... determine how much customers are **willing to pay more on fair trade products** compared to non-fair trade products
- ... convert this observation into assumptions about **consumer behavior and preferences for fair trade clothing business.**



RESEARCH QUESTIONS

- To what extent are consumers **willing to pay more** for fair trade products than non-fair trade products?
- How does **labeling a product** as fair trade change consumer's perceptions about the product attributes?



HYPOTHESES

- **Labelling** the product as a fair trade product **increases** the consumers' **willingness to pay** for that particular product.
- Consumers rate specific product attributes higher if the product is labelled as fair trade.

RESEARCH QUESTION & HYPOTHESES

H1

IV to DV

H2

Mediator for H1

IV

Fair trade product,
conventional product

Mediator

Quality, Sustainability, ...

DV

Willingness to pay

Moderator

Age, Income, country, education, ...



GENERAL INFORMATION

- **Between-subject experiment + Within-subject experiment**
- Participants randomly assigned to Group A or B
- *Aim:* Test DV (Willingness to pay) first to reduce risk of selection bias



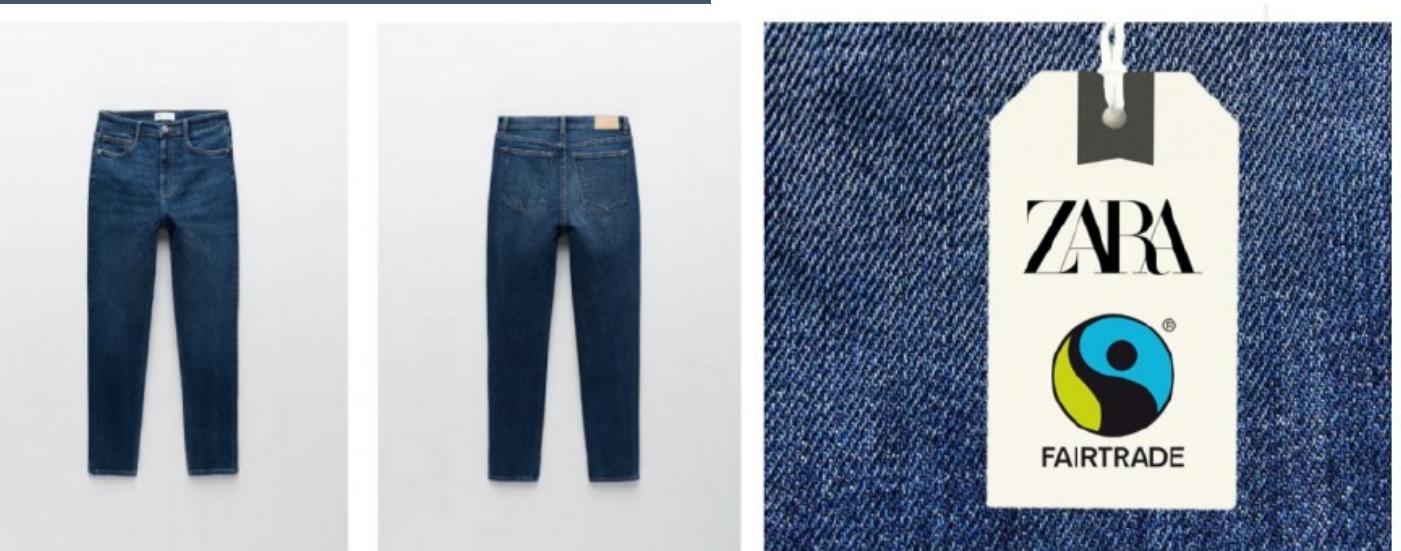
RESEARCH DESIGN

RESEARCH DESIGN

Experiment 1

(Willingness to Pay)

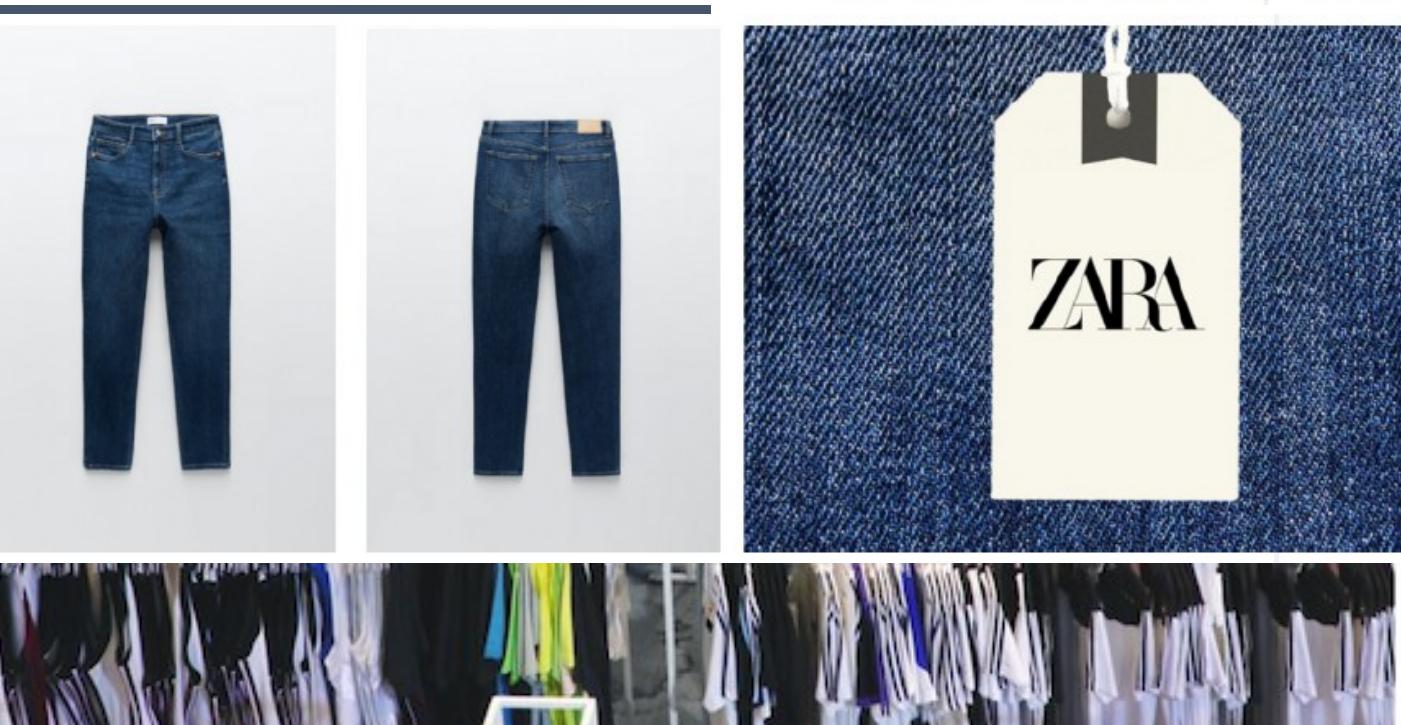
- Group A receives label with fair trade logo
- Group B receives label without fair trade logo



Experiment 2

(Percentage of future fair trade clothes)

- Group A receives educational Newspaper article
- Group B receives no Newspaper article



Experiment 3

(within subject design)

- Percentage of fair trade purchase before and after education



7 April 2020

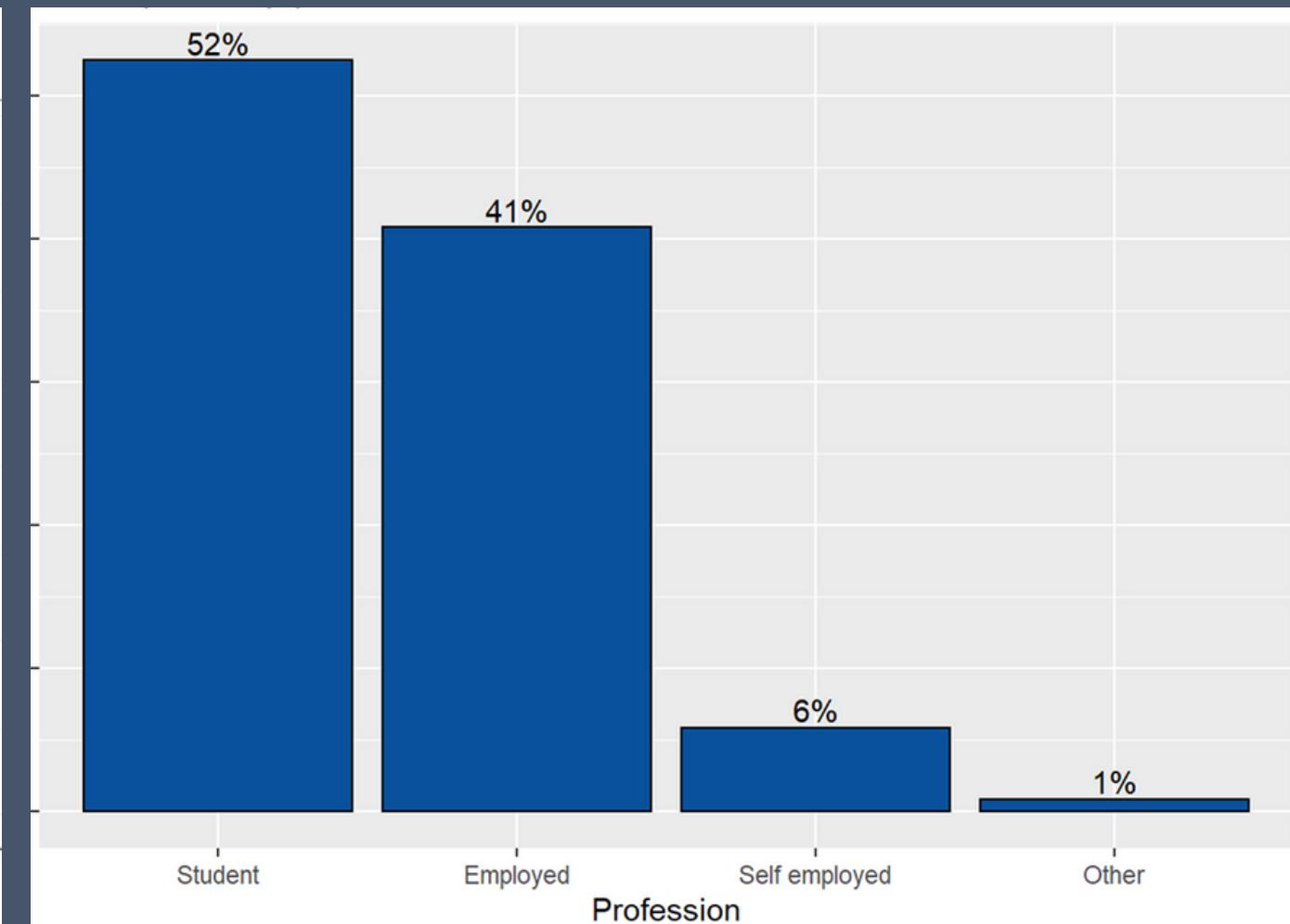
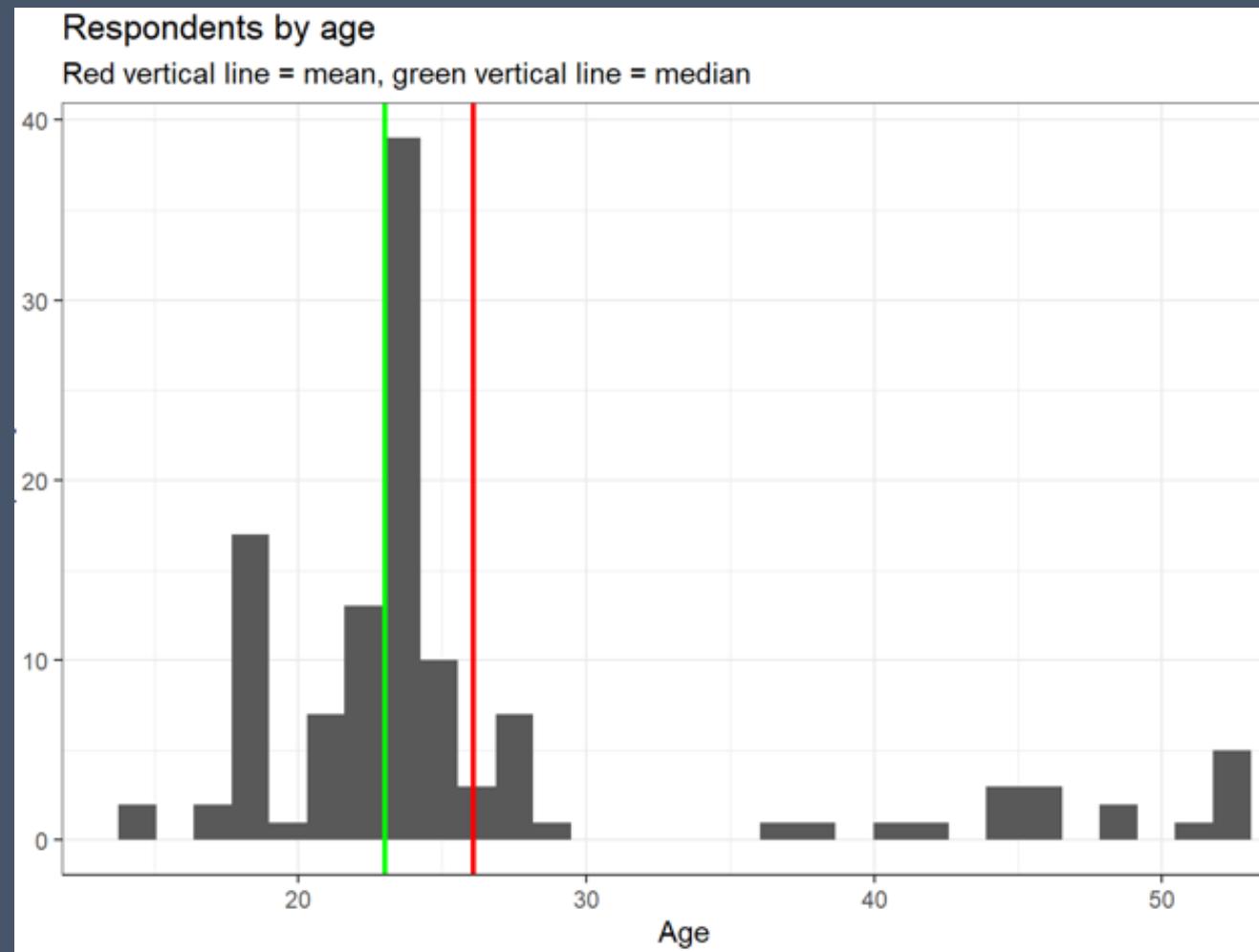
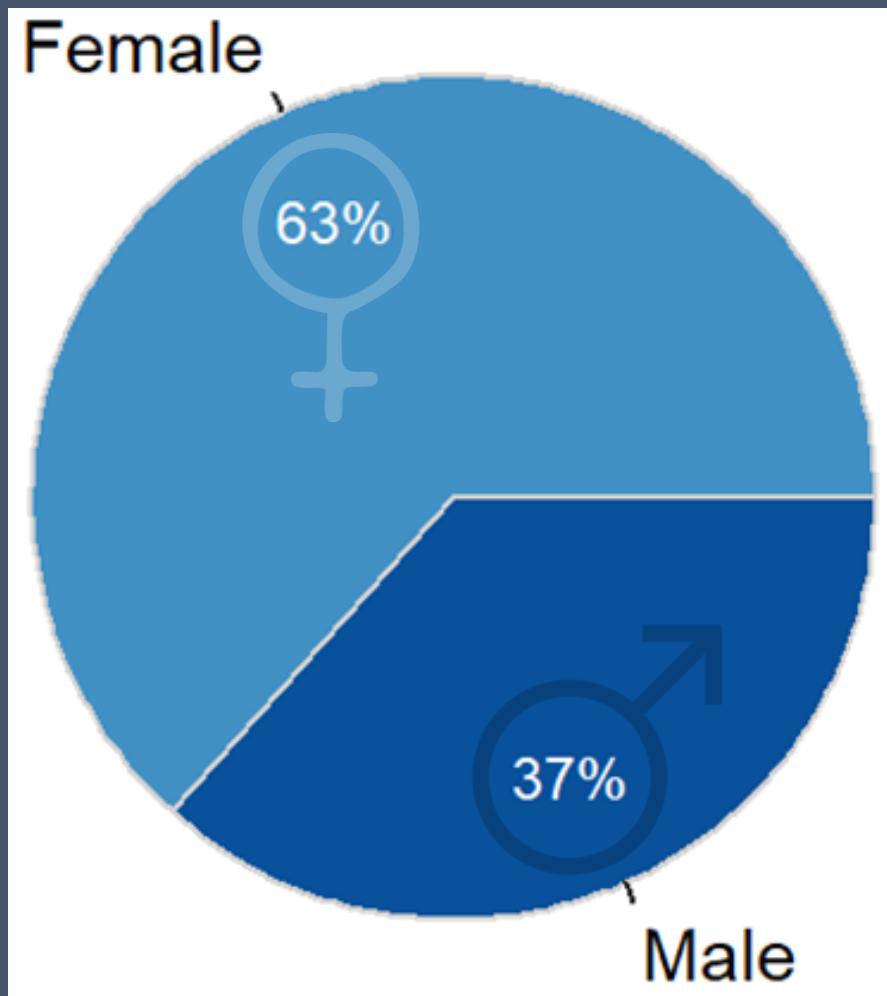
Environmental cost of 'fast fashion' is not sustainable

Urgent fundamental changes to 'fast fashion' clothing items which are treated by many as disposable is needed to stem a devastating impact upon the environment according to scientists.



STUDY
SAMPLE

RESEARCH SAMPLE



Number of participants:

Age:

Mean: 26

Median: 23

Profession:

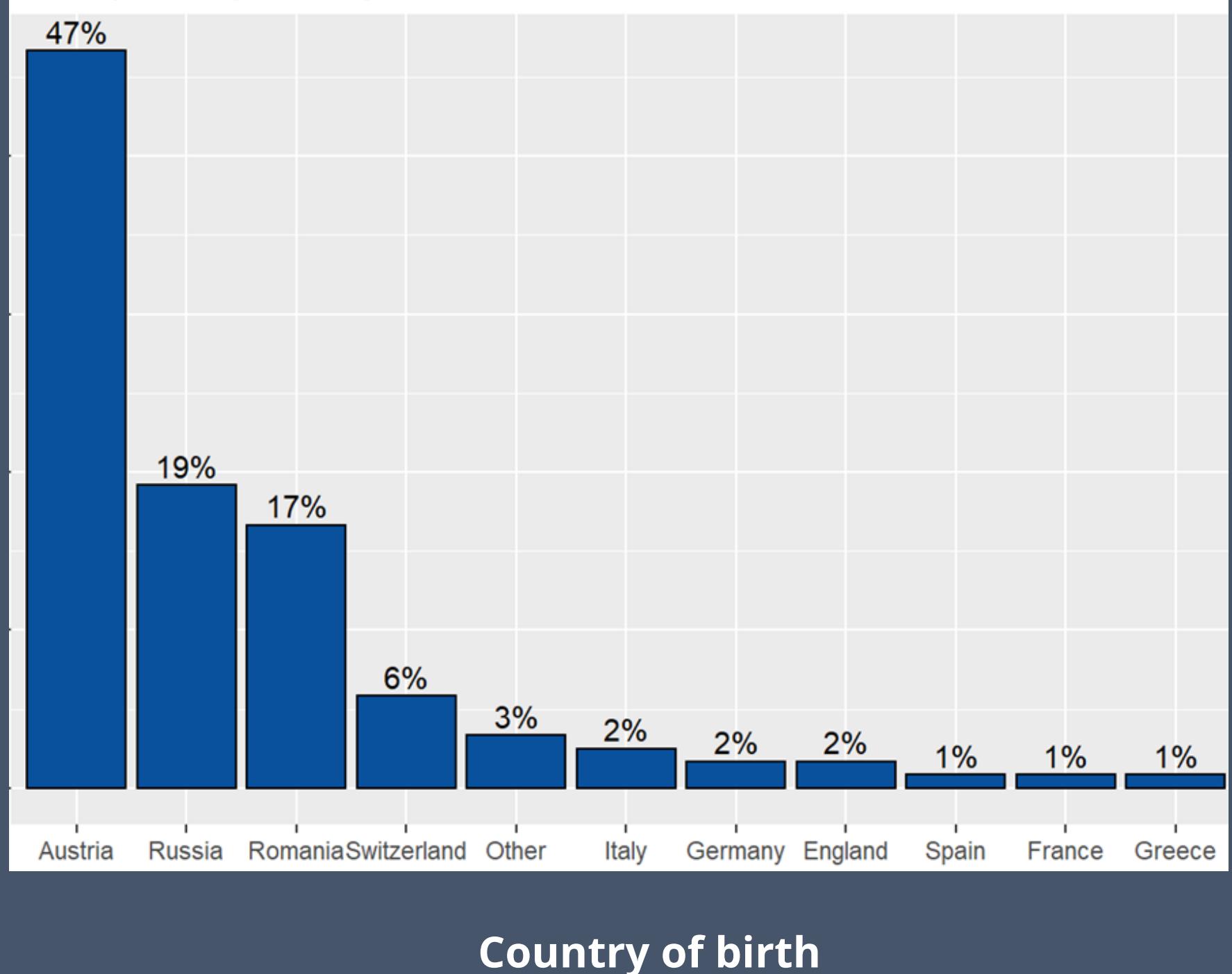
Students: 63

Employed: 49

Self employed: 7

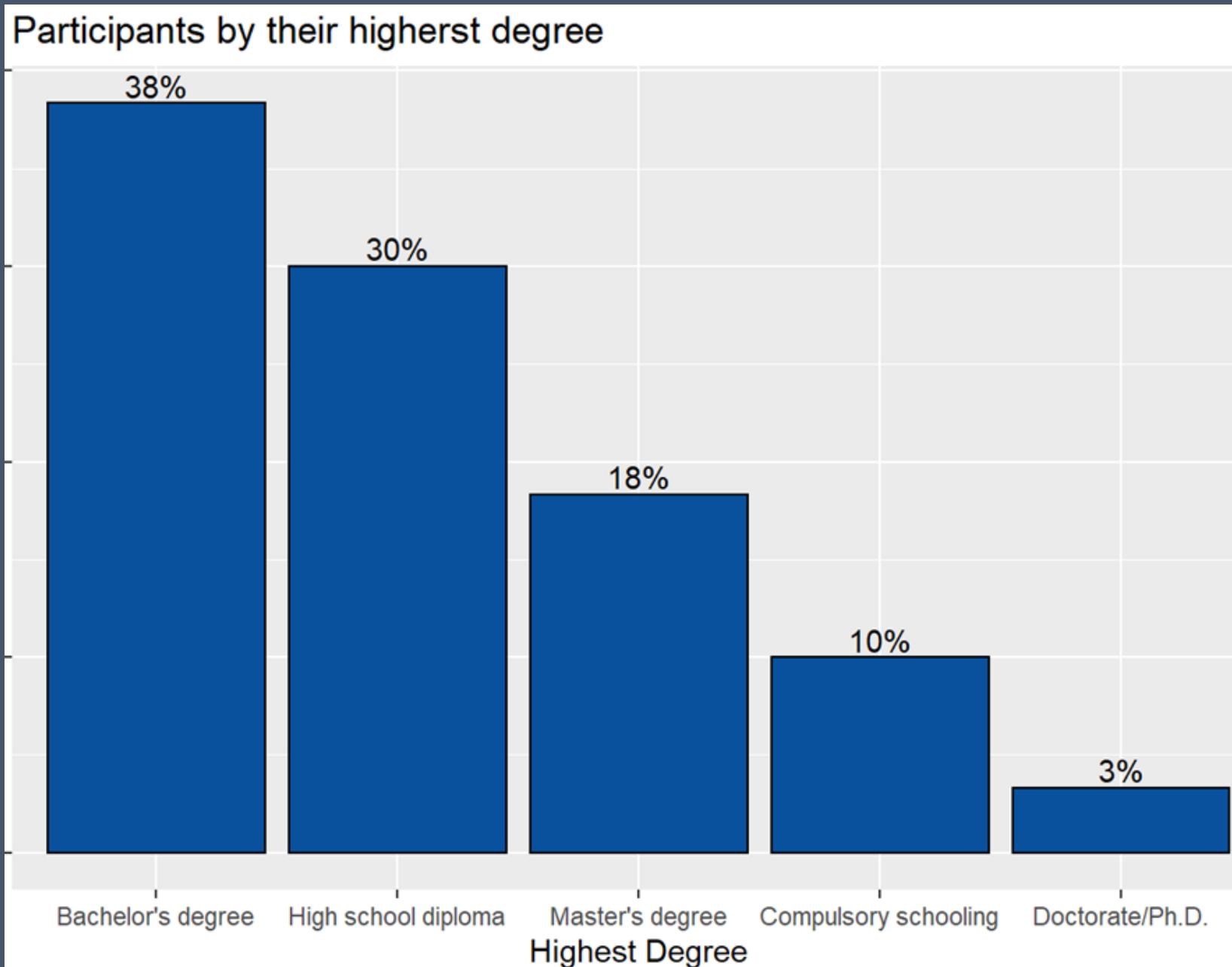
RESEARCH SAMPLE

Participants by country of birth



Respondents location

RESEARCH SAMPLE

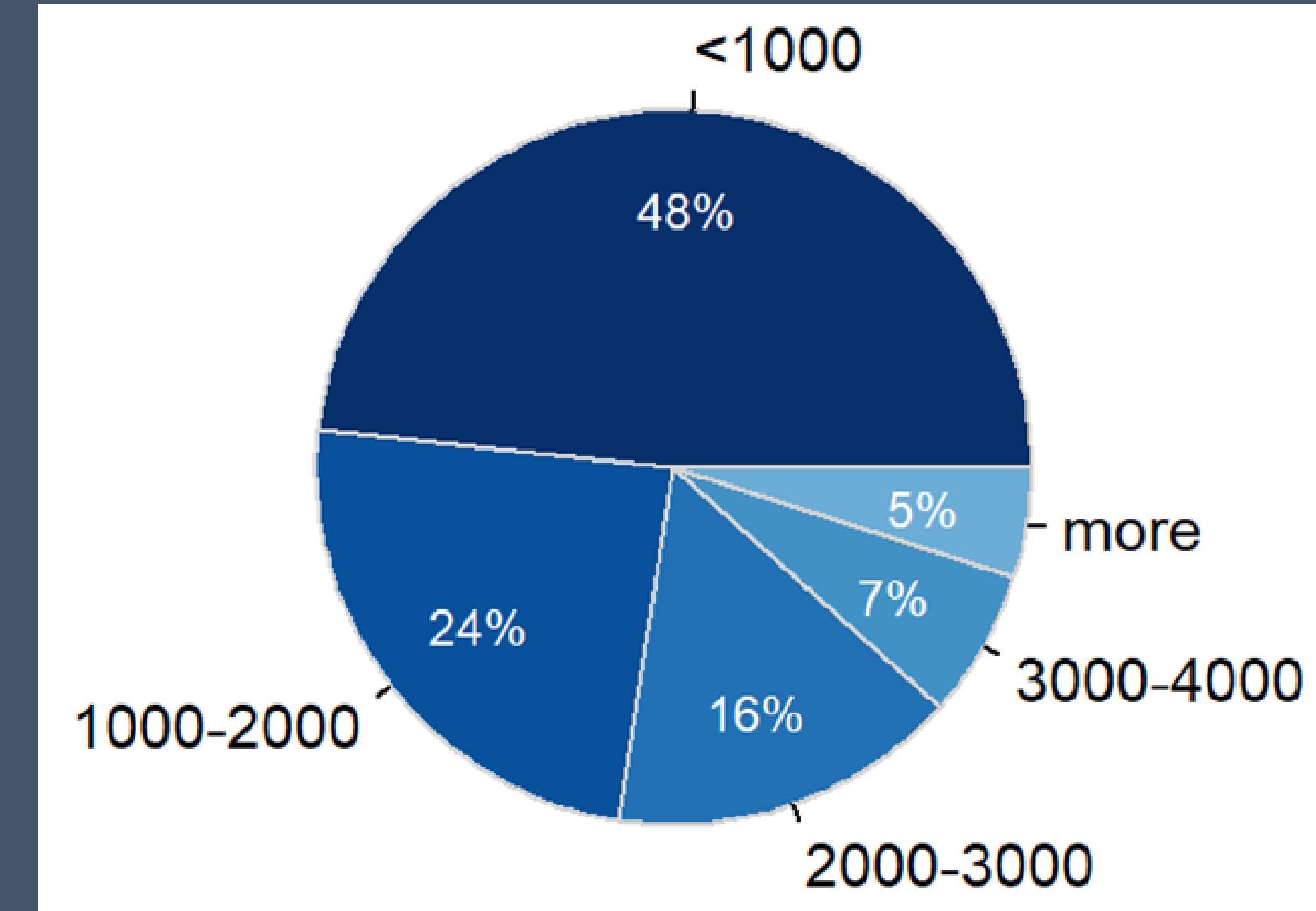


Participants by their highest degree:

Bachelor's degree: 46

High school diploma: 36

Master's degree: 22



Participants by their average net Income per month (Euro)

RESULTS OF THE STUDY



EXPERIMENT 1

Hypothesis:

$$H_0: \mu_1 = \mu_2$$

$$H_1: \mu_1 \neq \mu_2$$

Methods:

Independent T-Test,

Regression

GROUP
1



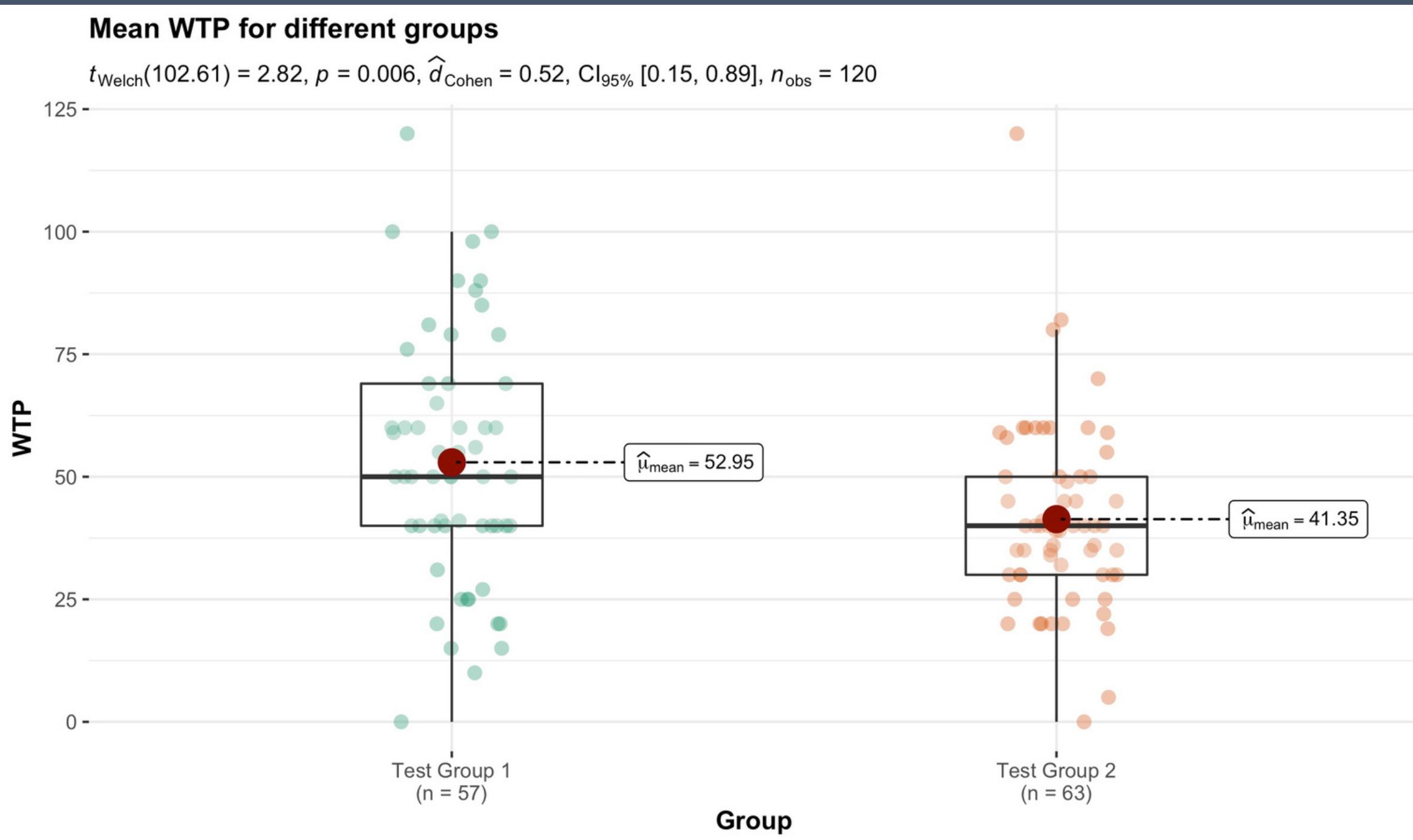
GROUP
2



RESULTS – EXPERIMENT 1

Mean WTP for different groups

$t_{\text{Welch}}(102.61) = 2.82, p = 0.006, \hat{d}_{\text{Cohen}} = 0.52, \text{CI}_{95\%} [0.15, 0.89], n_{\text{obs}} = 120$

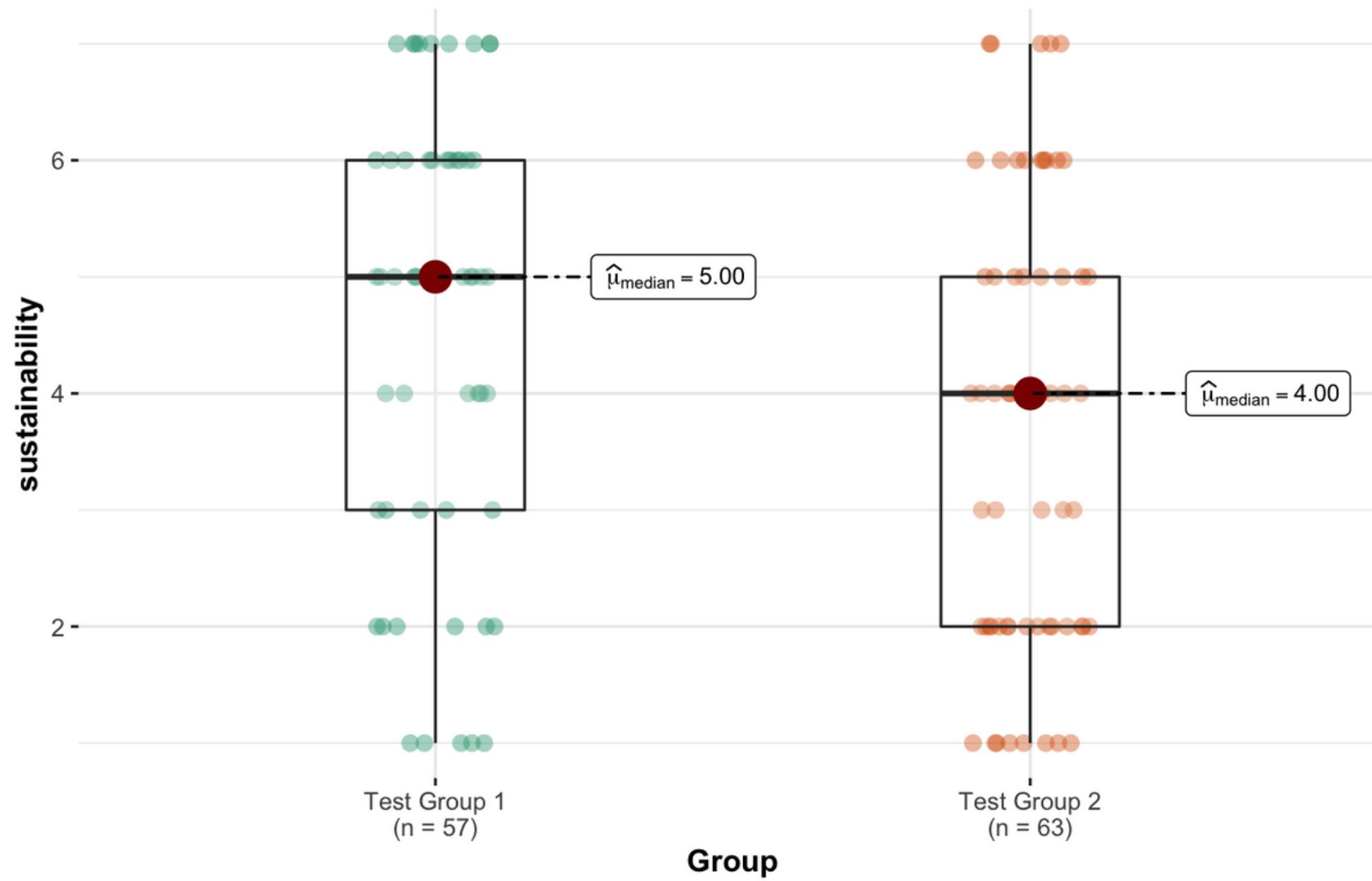


- WTP significantly higher in Group 1
- Medium effect size (0.52)
- CI [3.44;19.75]

RESULTS – EXPERIMENT 1

Rating of importance of sustainability when setting the price

$W_{\text{Mann-Whitney}} = 2.3e+03$, $p = 0.014$, $\hat{r}_{\text{biserial}}^{\text{rank}} = 0.26$, $\text{CI}_{95\%} [0.05, 0.44]$, $n_{\text{obs}} = 120$



- Sustainability was significantly more important for group 1

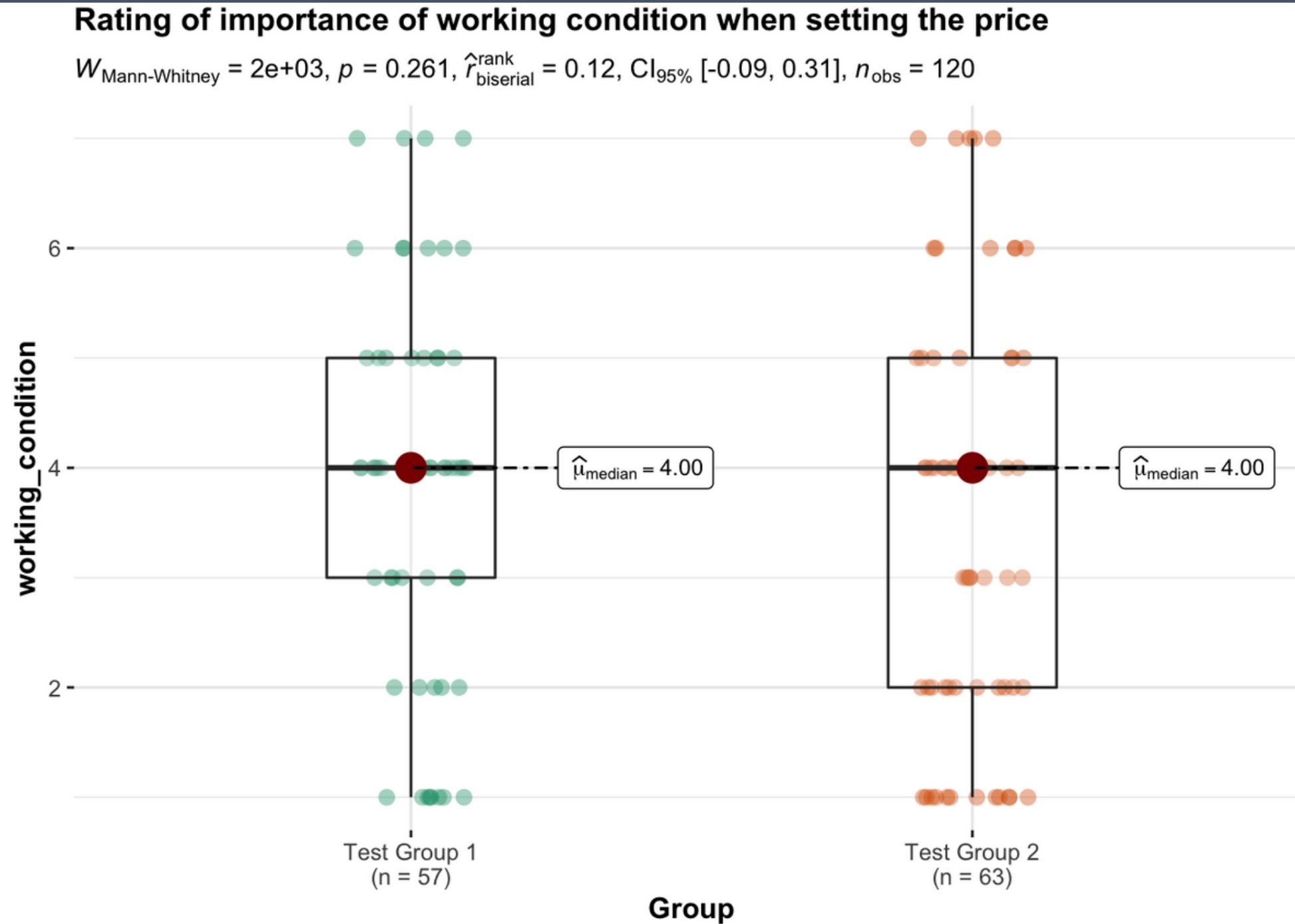
- Small effect size (0.26)

Maybe people need an input about sustainability to consider it to be more important

RESULTS – EXPERIMENT 1

Rating of importance of working condition when setting the price

$W_{\text{Mann-Whitney}} = 2e+03$, $p = 0.261$, $\hat{r}_{\text{biserial}}^{\text{rank}} = 0.12$, $\text{CI}_{95\%} [-0.09, 0.31]$, $n_{\text{obs}} = 120$



- Working condition was not more important for group 1
 - Small effect size (0.12)
- Possibly fair trade is more associated with sustainability than working condition

REGRESSION MODEL

$$WTP = \beta_0 + \beta_1 * sustainability + \beta_2 * style + \beta_3 * label + \beta_4 * indisponsability + \beta_5 * personalpreferences + \beta_6 * workingcondition + \beta_7 * groupnew$$

Call:
lm(formula = WTP ~ sustainability + working_condition + style +
label + indispensability + personal_preferences + Groupnew,
data = fair_trade_dataset)

Residuals:

Min	1Q	Median	3Q	Max
-38.055	-13.907	-1.835	11.291	66.533

Coefficients:

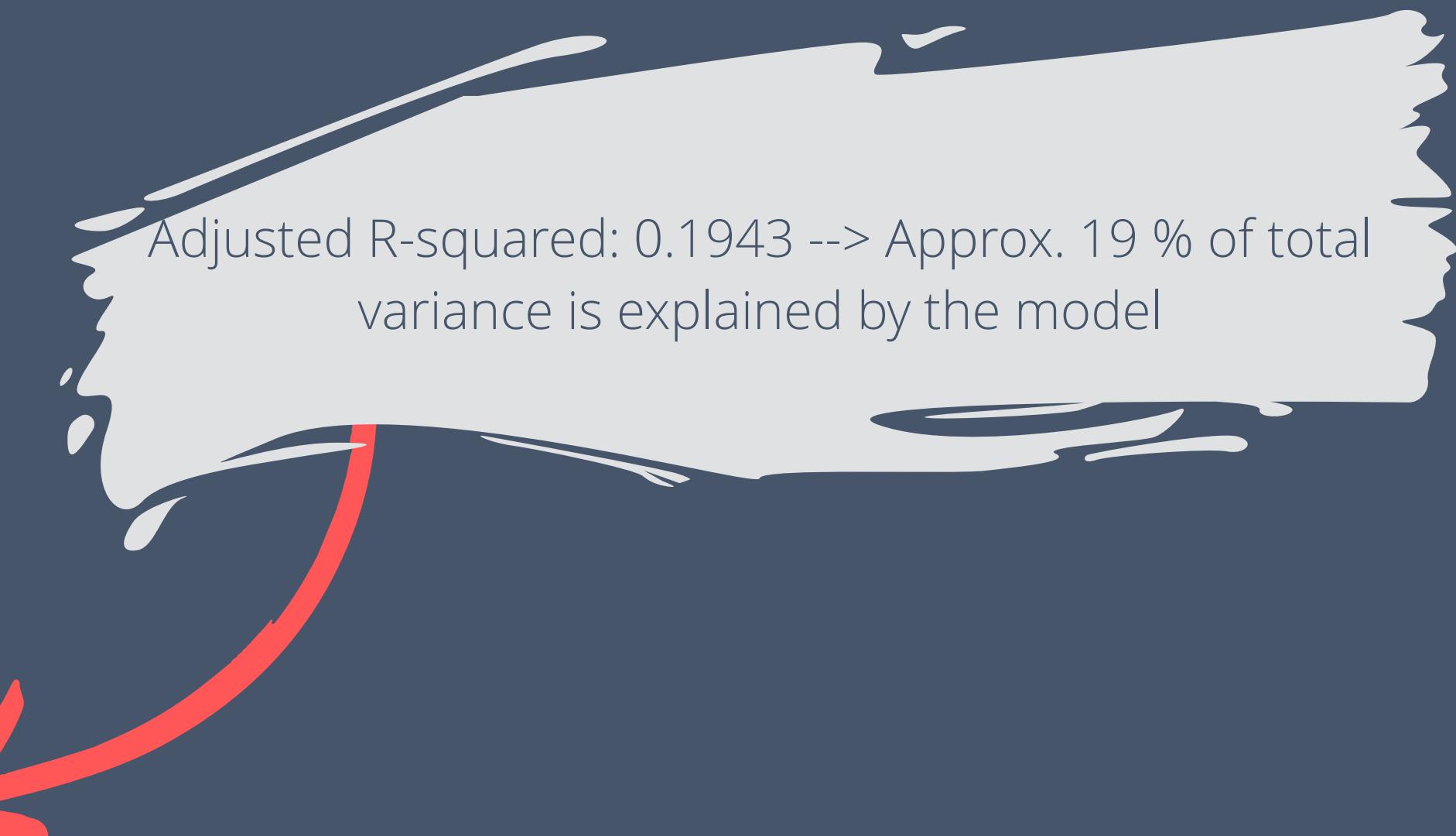
	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	46.8240	11.8722	3.944	0.00014 ***	
sustainability	0.8250	1.0910	0.756	0.45114	
working_condition	2.0736	1.1434	1.813	0.07244 .	
style	0.7307	1.3705	0.533	0.59499	
label	1.6370	1.0627	1.540	0.12628	
indispensability	3.6871	1.4772	2.496	0.01402 *	
personal_preferences	-3.8363	1.4728	-2.605	0.01044 *	
Groupnew	-10.3520	3.9131	-2.645	0.00933 **	

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 20.49 on 112 degrees of freedom

Multiple R-squared: 0.2417, Adjusted R-squared: 0.1943

F-statistic: 5.101 on 7 and 112 DF, p-value: 4.689e-05



Adjusted R-squared: 0.1943 --> Approx. 19 % of total variance is explained by the model

RESULTS – REGRESSION

```
## =====
##             Dependent variable:
##                   WTP
## -----
##   ## Sustainability      0.825
##   ##                      (1.091)
##   ##
##   ## Working condition  2.074*
##   ##                      (1.143)
##   ##
##   ## Style               0.731
##   ##                      (1.371)
##   ##
##   ## Label                1.637
##   ##                      (1.063)
##   ##
##   ## Indispensability    3.687**
##   ##                      (1.477)
##   ##
##   ## Personal preferences -3.836**
##   ##                      (1.473)
##   ##
##   ## Group              -10.352***
##   ##                      (3.913)
##   ##
##   ## Constant            46.824***
##   ##                      (11.872)
##   ##
## -----
##   ## Observations        120
##   ## R2                  0.242
##   ## Adjusted R2         0.194
##   ## Residual Std. Error 20.488 (df = 112)
##   ## F Statistic         5.101*** (df = 7; 112)
```



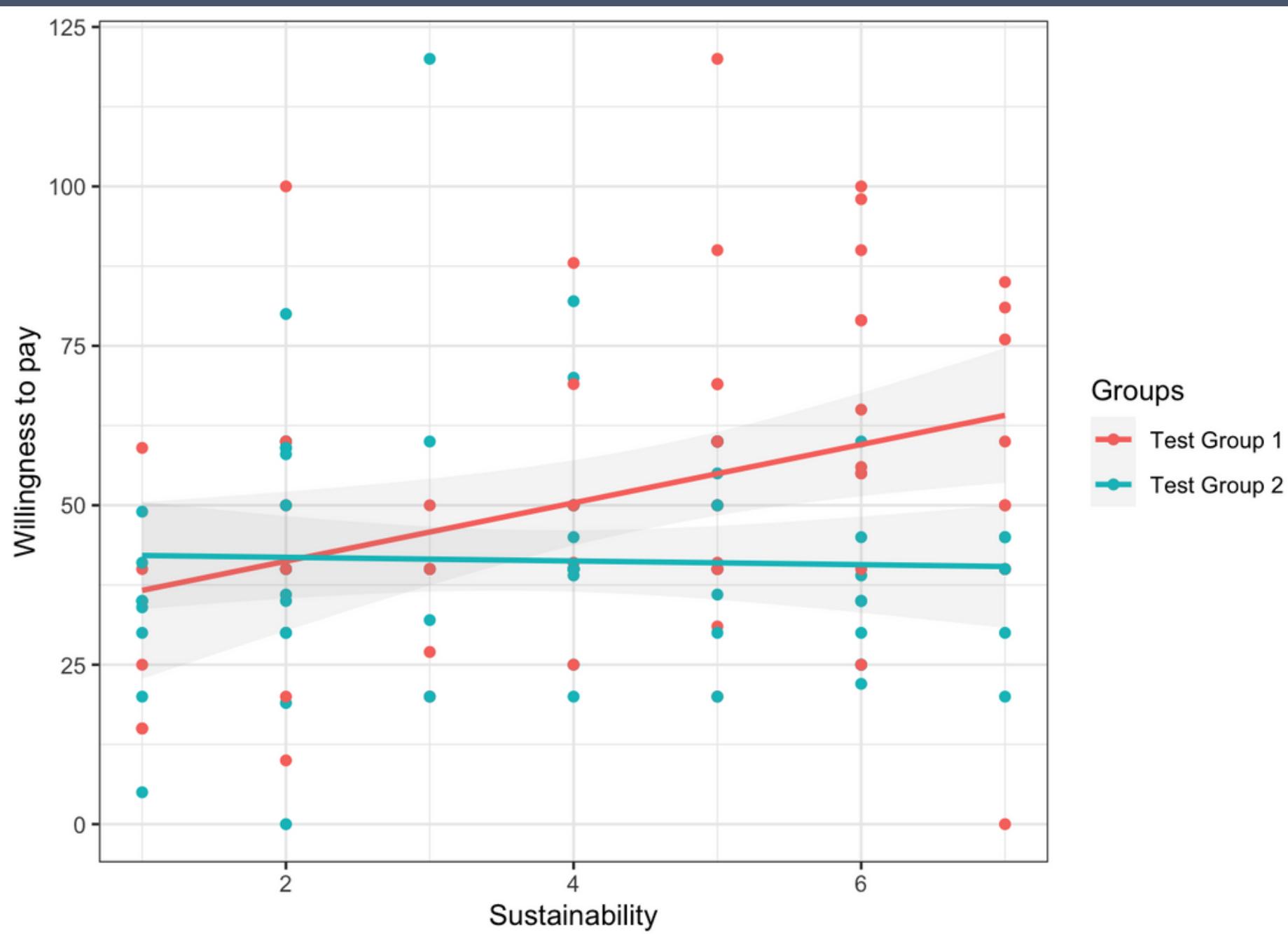
RESULTS – REGRESSION

```
Call:  
lm(formula = WTP ~ sustainability + working_condition + style +  
    label + indispensability + personal_preferences + Groupnew,  
    data = fair_trade_dataset)  
  
Standardized Coefficients::  
            (Intercept)      sustainability   working_condition       style          label  
            0.000000000        0.06936675        0.16424546        0.05647364        0.13108697  
indispensability personal_preferences           Groupnew  
        0.22160746        -0.27586339        -0.22742727
```

Strongest effects:

- Personal preferences
- Group
- Indispensability
- Working condition

REGRESSION – INTERACTION



- Difference in effect of importance of sustainability on WTP
- For respondents in the No-Fair-Trade group, choosing one additional point of importance of sustainability decreases the willingness to pay by approximately 1.171€

EXPERIMENT 2 – BETWEEN SUBJECT DESIGN

Hypothesis:

$$H_0 = \mu_1 = \mu_2$$

$$H_1 = \mu_1 \neq \mu_2$$

Method:

Independent T-Test

Group 1



7 April 2020

Environmental cost of 'fast fashion' is not sustainable

Urgent fundamental changes to 'fast fashion' clothing items which are treated by many as disposable is needed to stem a devastating impact upon the environment according to scientists.

The fashion industry has been heavily criticised for the devastating environmental pollution caused by its global operations. Despite the widely publicised environmental impacts, however, the industry continues to grow, in part due to the rise of fast fashion, which relies on cheap mass-manufacturing, frequent consumption and short-lived garment use.

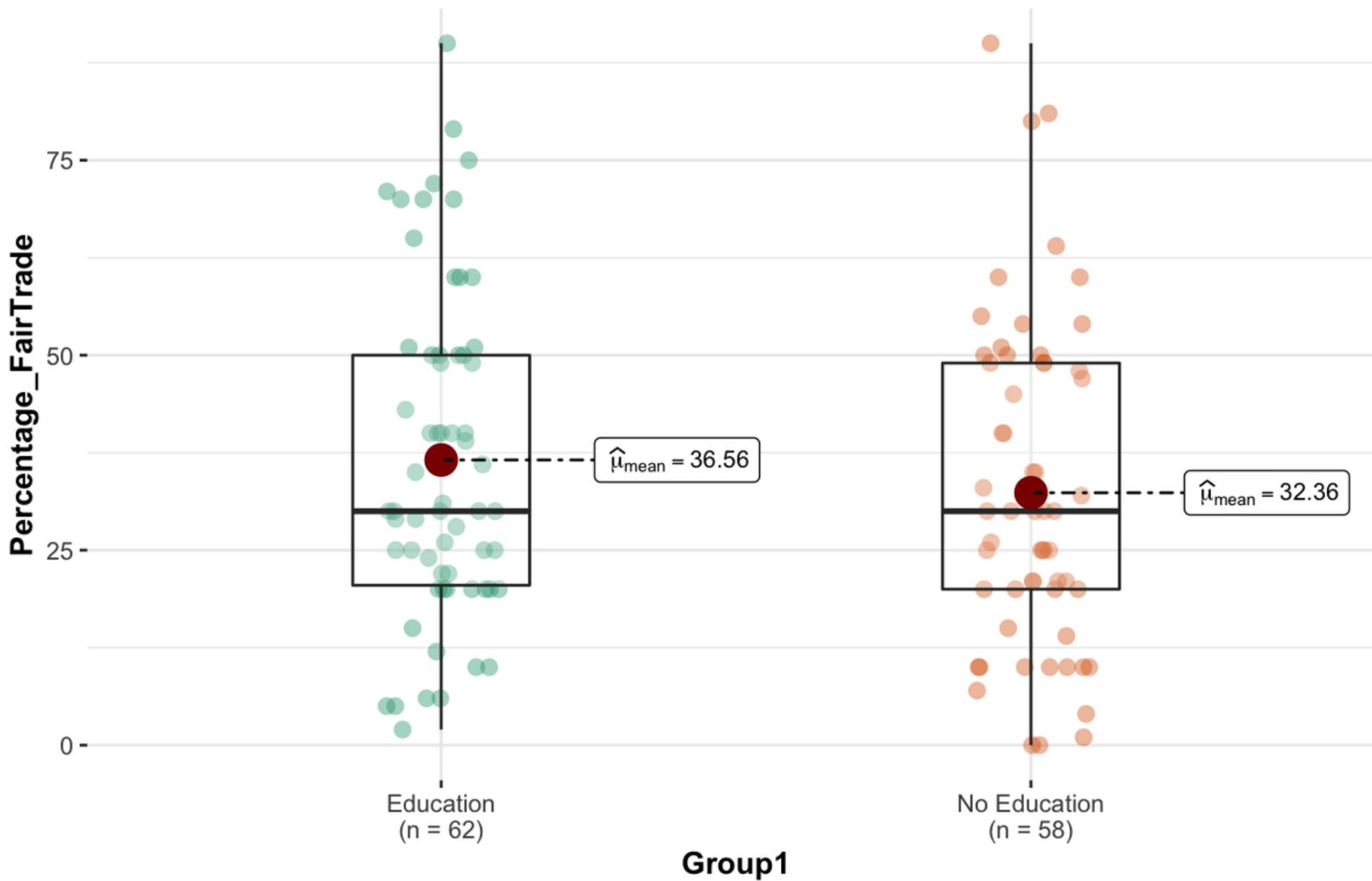
Group2



RESULTS – EXPERIMENT 2

Mean of Percentage of Fair Trade clothes in next 12 months

$t_{\text{Welch}}(117.58) = 1.10, p = 0.275, \hat{d}_{\text{Cohen}} = 0.20, \text{CI}_{95\%} [-0.16, 0.56], n_{\text{obs}} = 120$



Between Subject Design

- No significant result ($p = 0.275$)
- Small effect size (0.20)
- CI[-3.39;11.79]
- Tendency identifiable

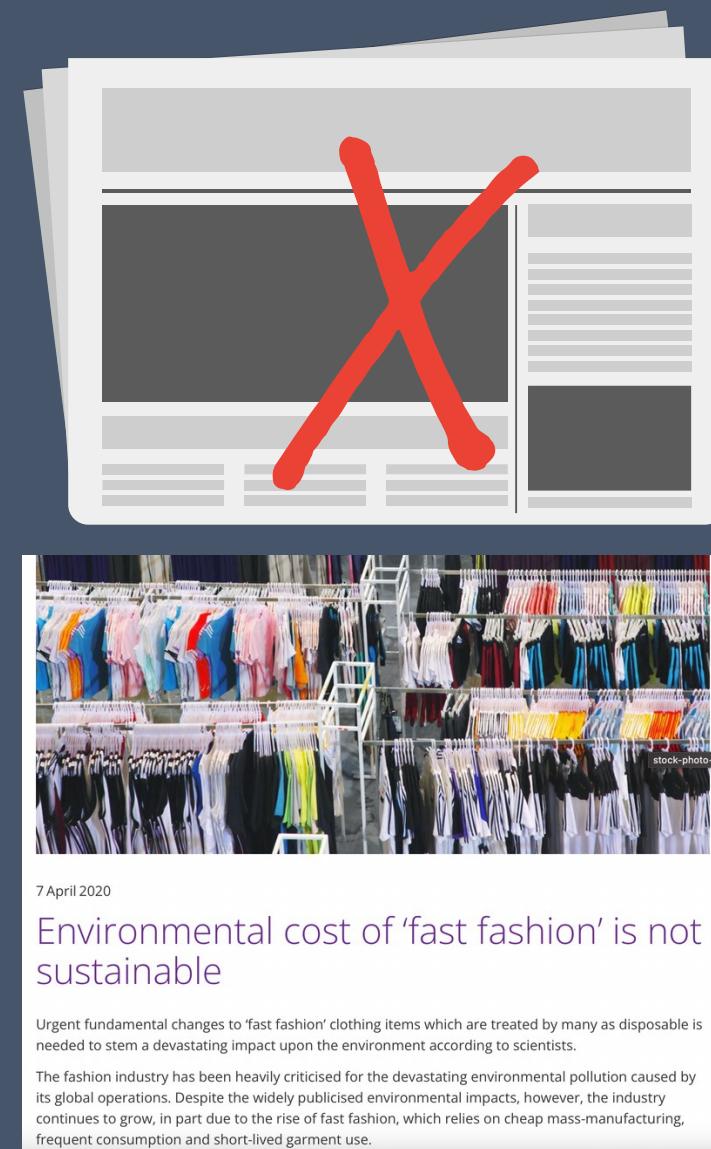
EXPERIMENT 3 – WITHIN SUBJECT DESIGN

Hypothesis:

$$H_0: \mu_1 = \mu_2$$

$$H_1: \mu_1 \neq \mu_2$$

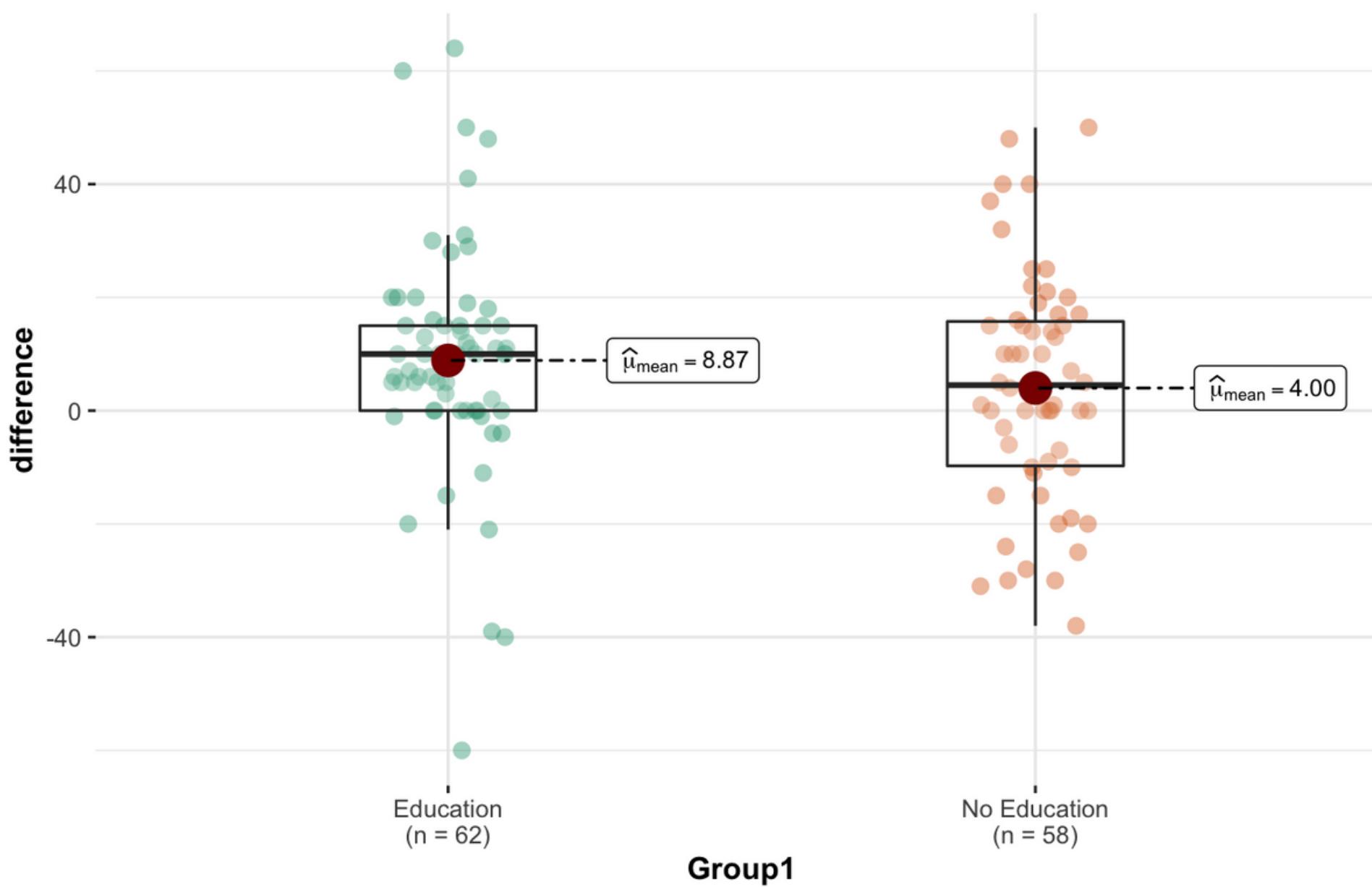
Method: Independent T-Test
between the differences of both
groups



RESULTS – EXPERIMENT 3

Mean of difference of percentage of Fair Trade clothes before and after

$t_{\text{Welch}}(117.71) = 1.31, p = 0.194, \hat{d}_{\text{Cohen}} = 0.24, \text{CI}_{95\%} [-0.12, 0.60], n_{\text{obs}} = 120$



Within Subject Design

- No significant result ($p = 0.194$)
- Small effect size (0.194)
- CI[-2.51;12.26]
- Tendency identifiable



MANAGERIAL IMPLICATIONS

FUTURE IMPLICATIONS

Resulting from experiment 1:



This experiment is useful for fashion companies in order to **understand** which **factors** contribute most to willingness to pay.



This could be useful for them to correctly **price** their fashion items and to know in advance the factors that will contribute more to **customers choosing their items**.



According to our experiment, the factors on which companies should focus on more are matching the **personal preferences of customers and the indispensability factor**.



These information should be considered as a **starting point** for more detailed research.

FUTURE IMPLICATIONS

Resulting from experiment 2 and 3:



Fashion brands are well advised to use **educational campaigns** to educate people and get them to buy more sustainable clothes.



Making customers **understand the negative issues** related to the sustainability could be something that helps companies to **sell a higher amount of fair trade and sustainable clothes**.

This could lead to fashion companies selling a higher number of sustainable items and customers purchasing them, so both parties would **act in a more sustainable way**.



The shift of attitude is expected to be something not achieved in the short-term, since educating customers will **require a long-term time span** and additional campaigns.



It's advisable to do **further research** to observe the effects that a larger sample will have.





LIMITATIONS OF THE RESEARCH

- **Limited Sample**

Sample size: n=120

Age: (50% of participants were under 23 years old)

Gender: Majority of participants was female with 63%

Education: Mostly students participated

Income: Low/er income groups

- This study only focuses on fair trade fashion, fair trade observations in different fields (e.g. food) might differ.
- Reverse order of causality?

THANK YOU FOR YOUR ATTENTION

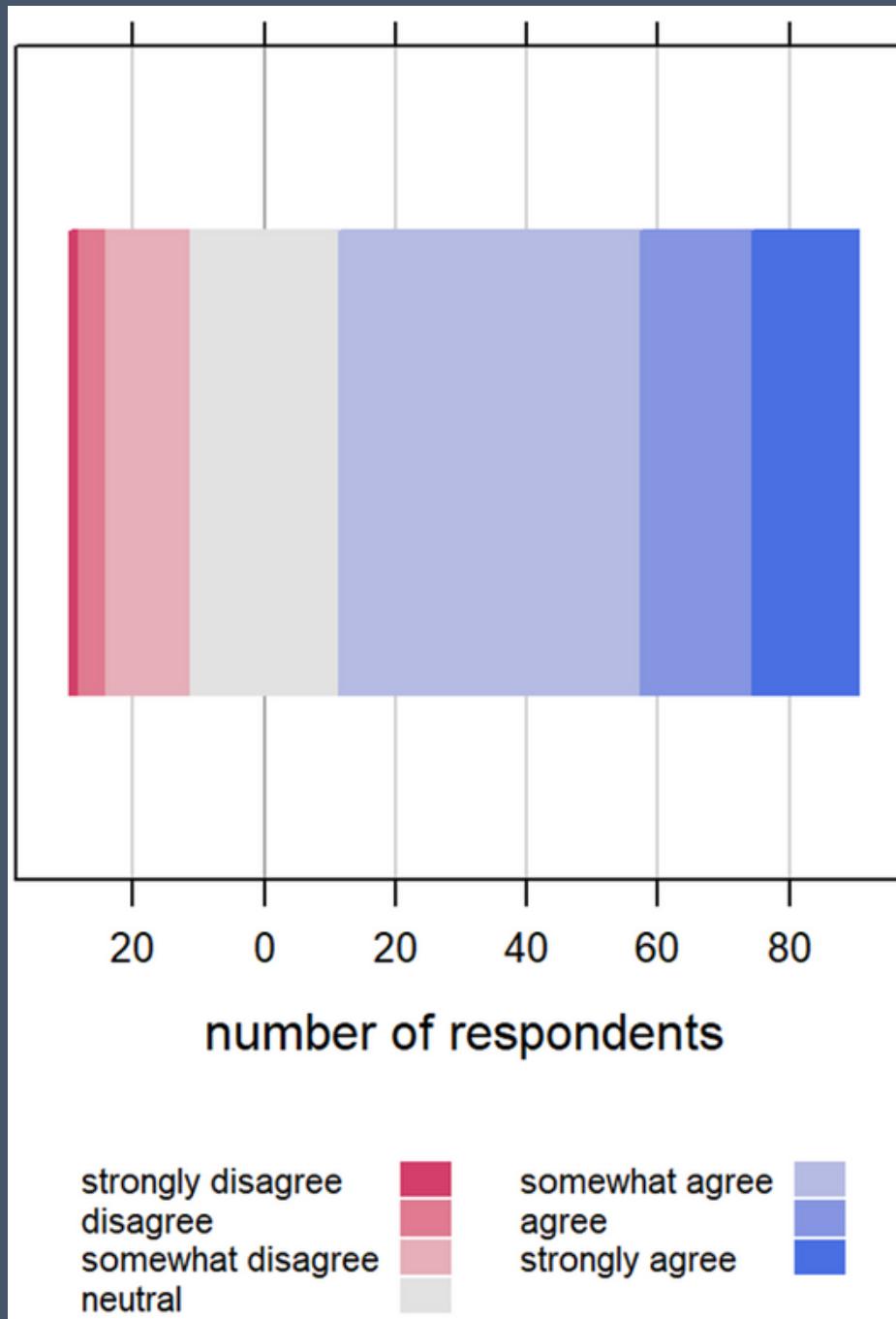




APPENDIX

SURVEY ANALYSIS

What I wear is a reflection of my identity/personality



The majority of respondents responded **positively**, confirming the link between the clothing choice and the self-image

SURVEY ANALYSIS

What are the three most important attributes when you think of clothing?

Attribute 1



Attribute 2



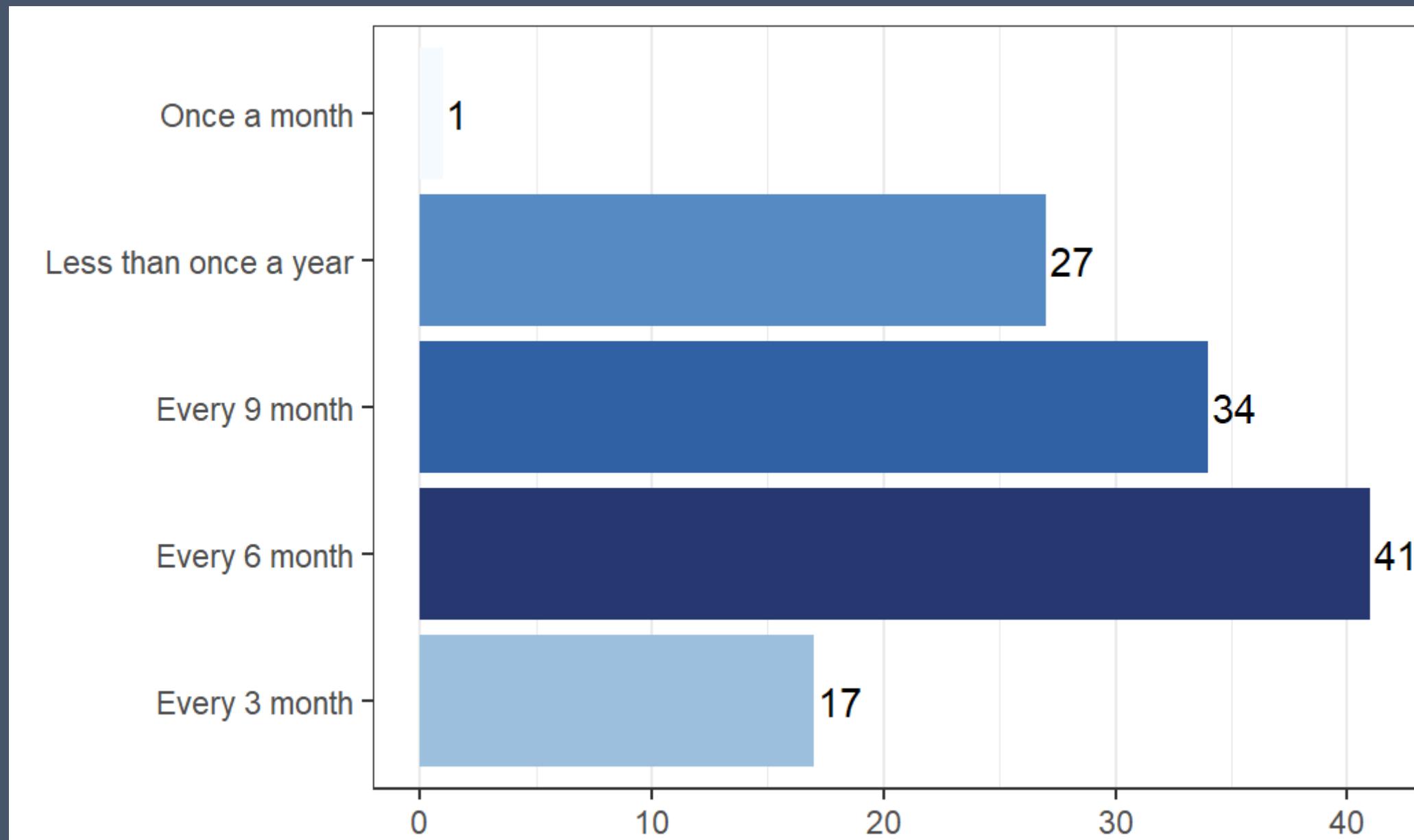
Attribute 3



The most frequent attributes were "**comfort**", "**price**", "**quality**", "**style**" and
"sustainability"

SURVEY ANALYSIS

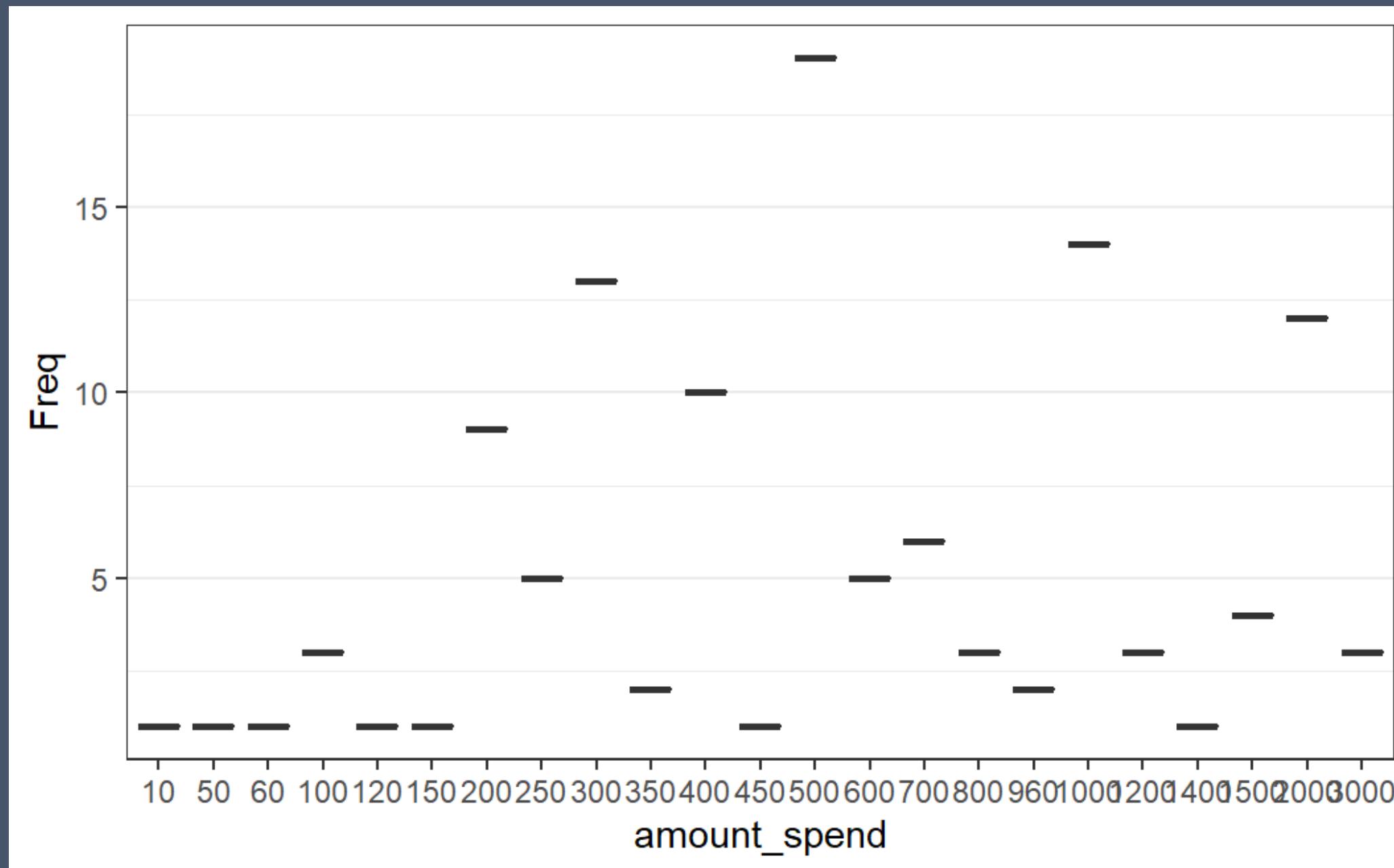
How often do you buy a new pair of jeans?



The majority usually buys a pair of jeans once **in 6 months** or once **in 9 months** (41 and 34 respondents, accordingly)

SURVEY ANALYSIS

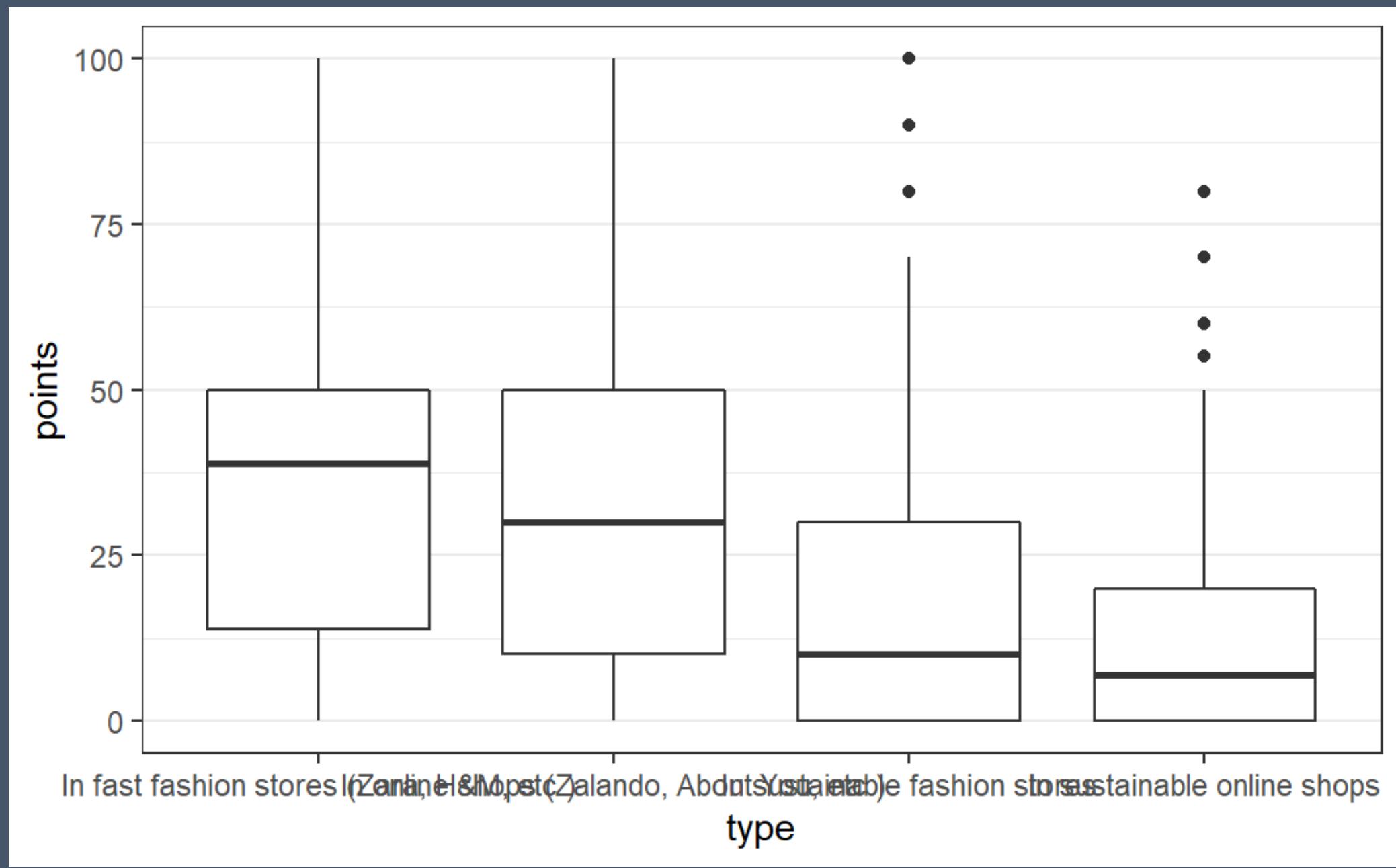
How much money do you spend per year on clothes?



The most frequent amount was €**500** (19), however other popular numbers were the interval between €**300** and €**400** (25), €**1000** (14) and €**2000** (12)

SURVEY ANALYSIS

If you had to distribute 100 points, where would you buy your clothes?

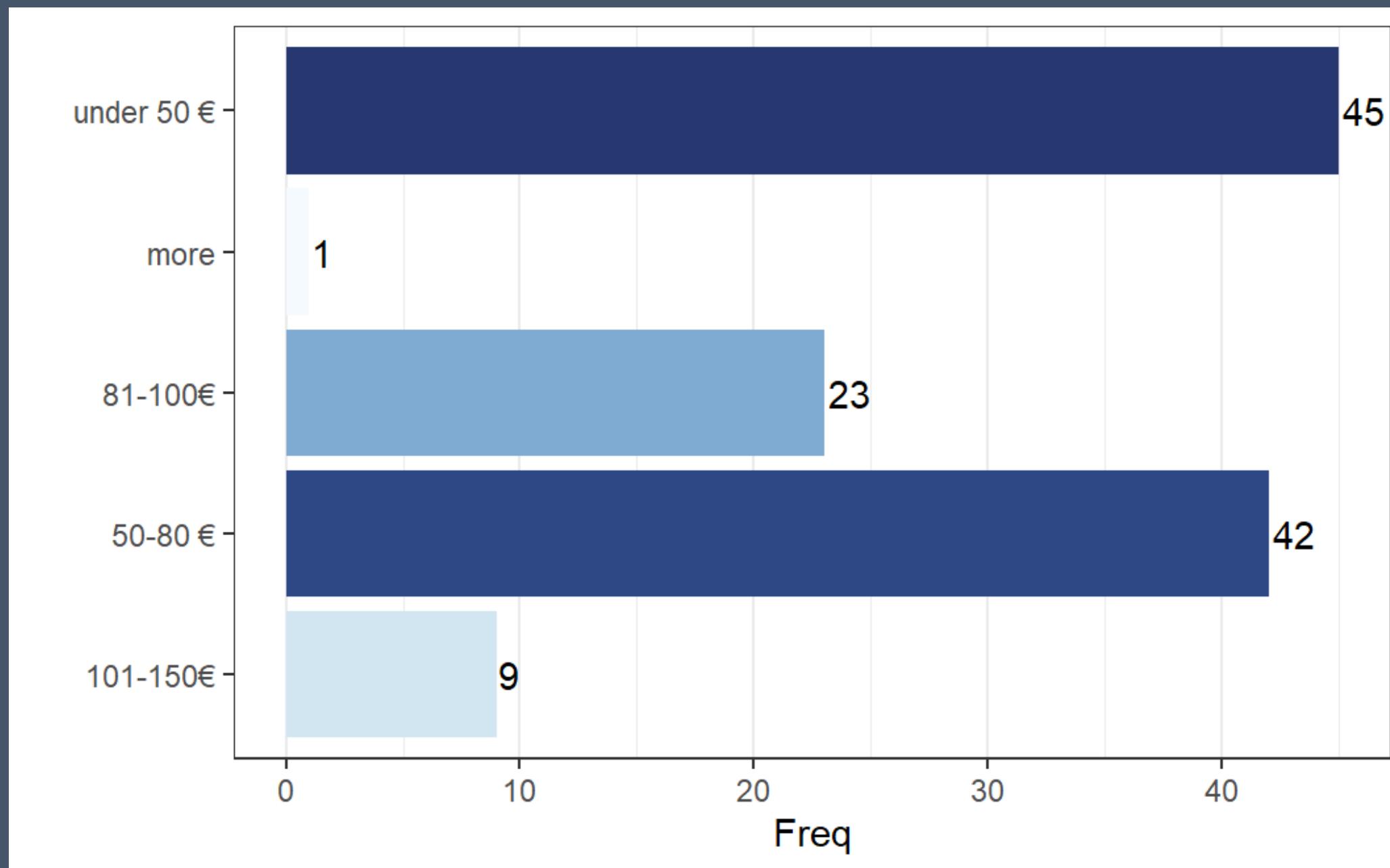


The most popular category was the **fast fashion stores**, as 50% of the respondents showed the highest result, around more than 40 points.

The least popular was "**In sustainable online shops**" (50% marked around less than 7 points)

SURVEY ANALYSIS

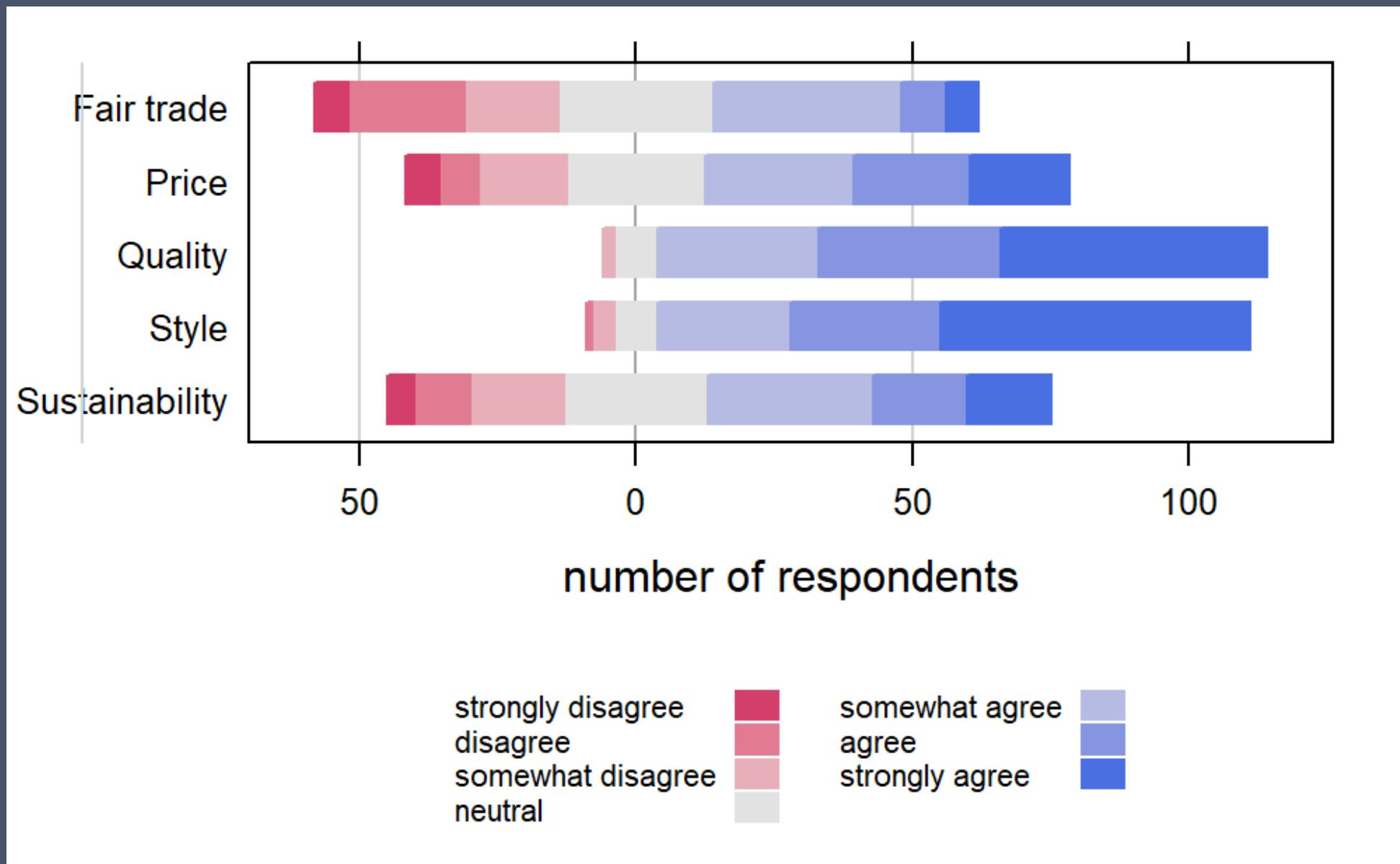
How much do you normally pay for a pair of jeans?



The majority usually pays for a pair of jeans **less than €50** or between **€50-80** (45 and 42 respondents, accordingly)

SURVEY ANALYSIS

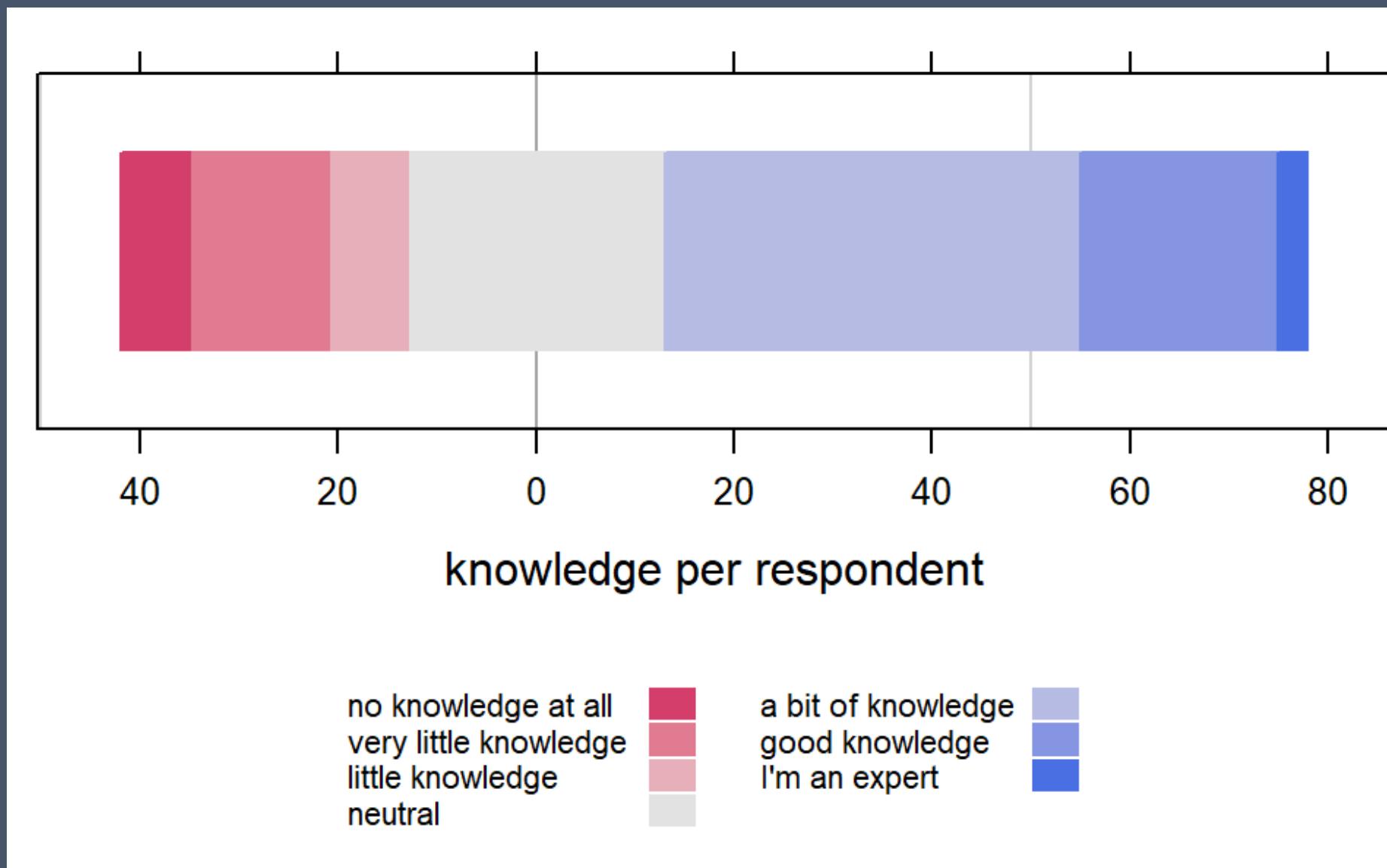
What is most important for you when you buy a pair of jeans?



The most popular indicators were **quality and style**, while **fair trade and sustainability** showed the less importance resulting in the largest amount of negative responses

SURVEY ANALYSIS

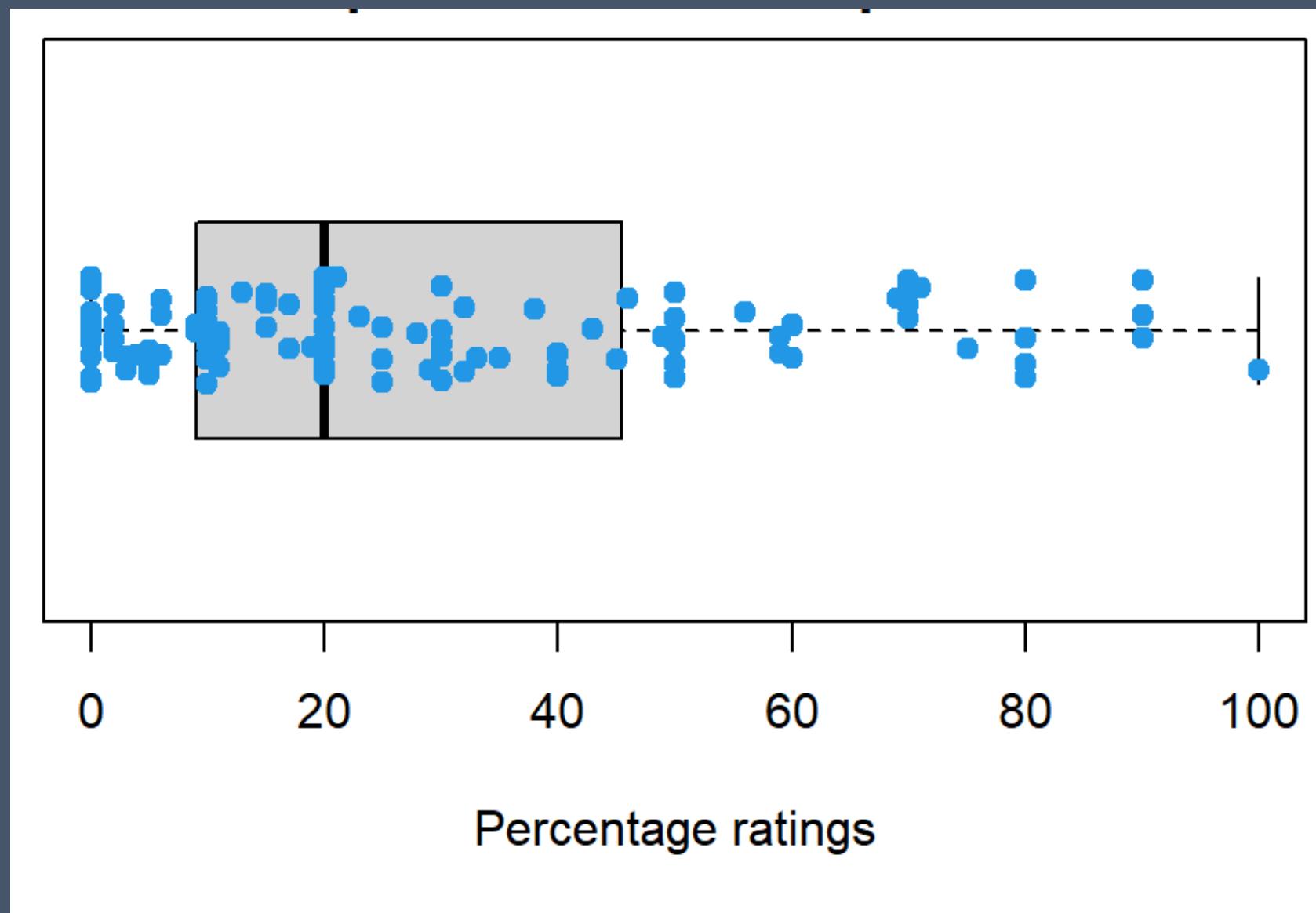
How familiar are you with the term fair trade?



The majority of respondents responded **positively**, confirming that they have some knowledge of the term fair trade

SURVEY ANALYSIS

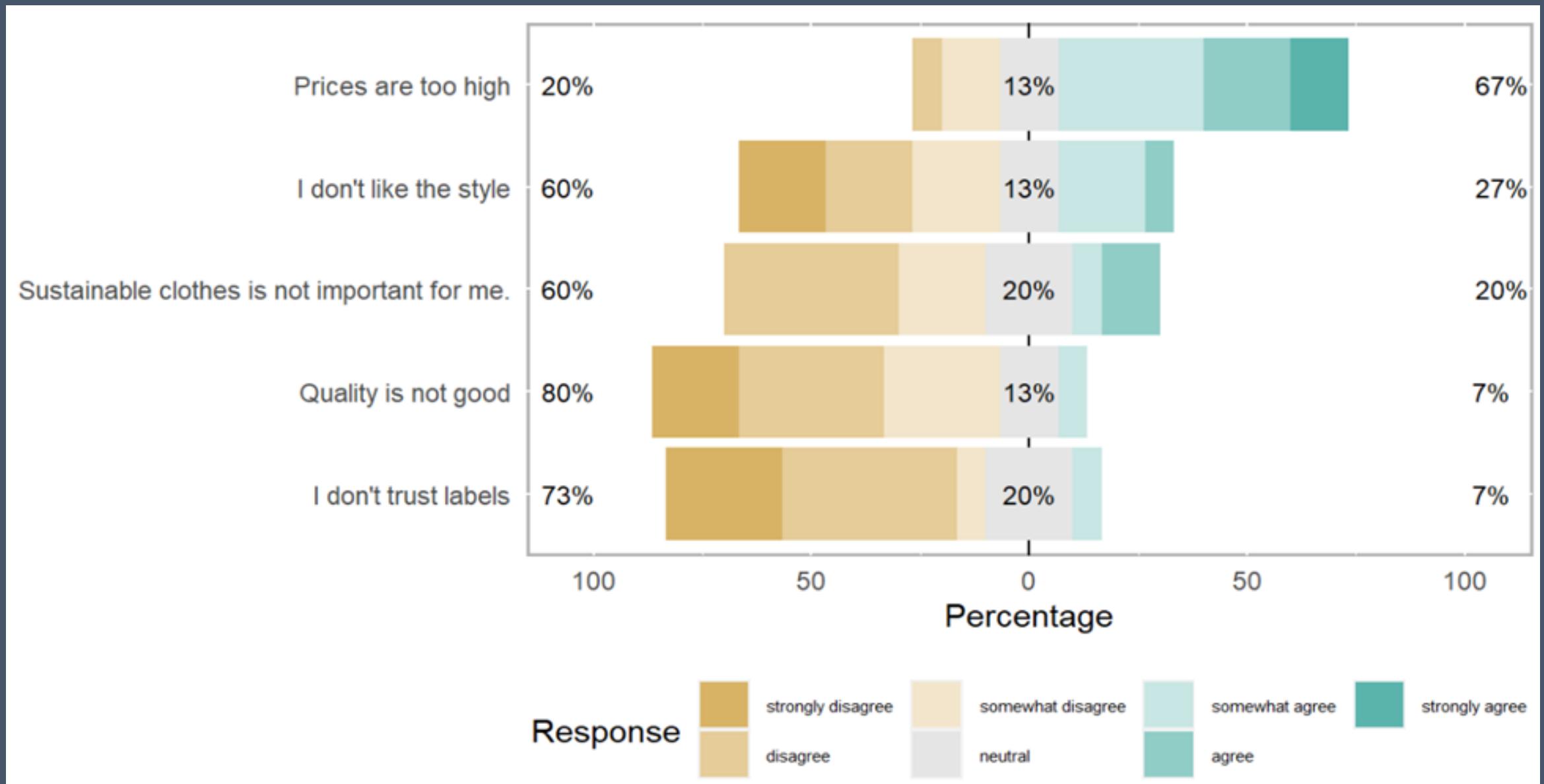
What percentage of your clothes that you bought in the last 12 months is fair trade?



In the previous year half of the respondents bought **less or more than 20%** of fair trade clothes. 25% showed results **above approximately 45%** of their total clothing and another 25% purchased **less than about 10%**

SURVEY ANALYSIS

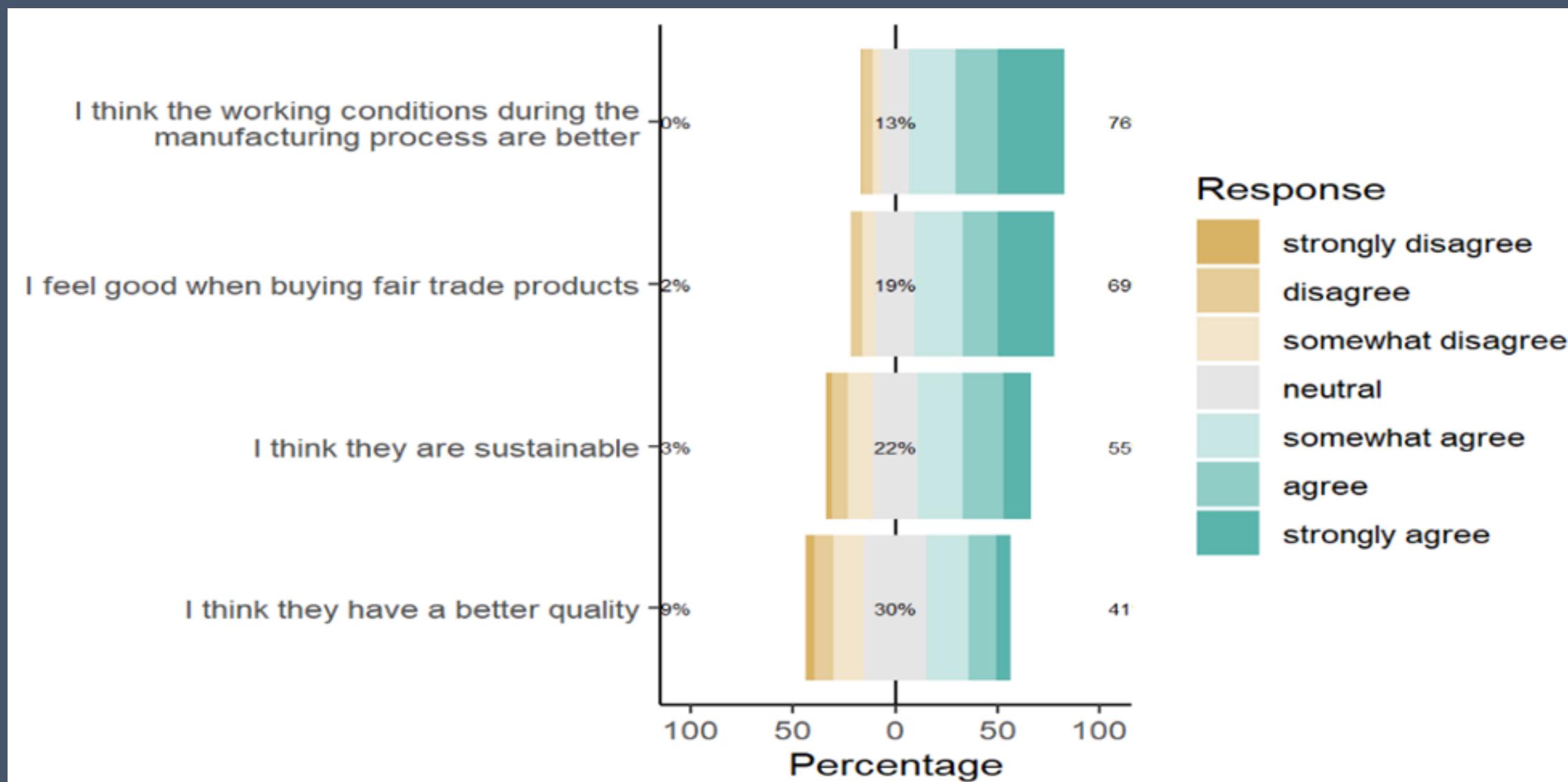
Why do you not buy "fair trade" clothes?



The main reason was because of the **high price** (67% agree), while the least popular answers were because of the **bad quality** (80% disagree) and the **distrust of the label** (73% disagree)

SURVEY ANALYSIS

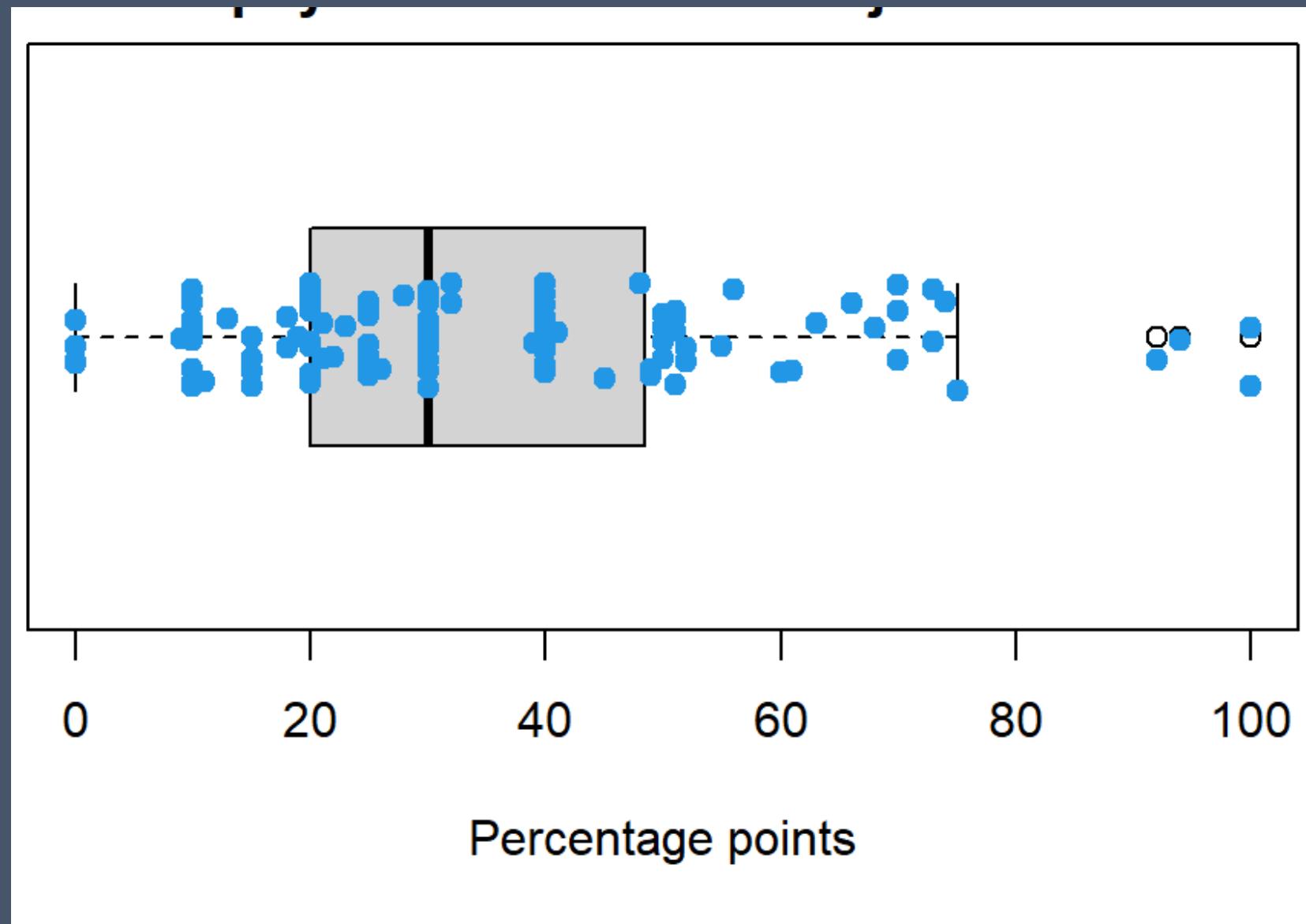
I buy "fair trade" products because:



The main reasons were because of the **better working conditions** (76% agree) and the better **self-image** (69% agree), while the least popular answer was because of the **better quality** (41% agree).

SURVEY ANALYSIS

How many percentage points would you be willing to pay more for a "fair trade" jeans compared to a conventional jeans?



Half of the respondents are going to pay **less or more than around 30%** for fair trade jeans. 25% showed results **above approximately 48%** and another 25% is willing to overpay for **less than about 20%**.

SURVEY ANALYSIS

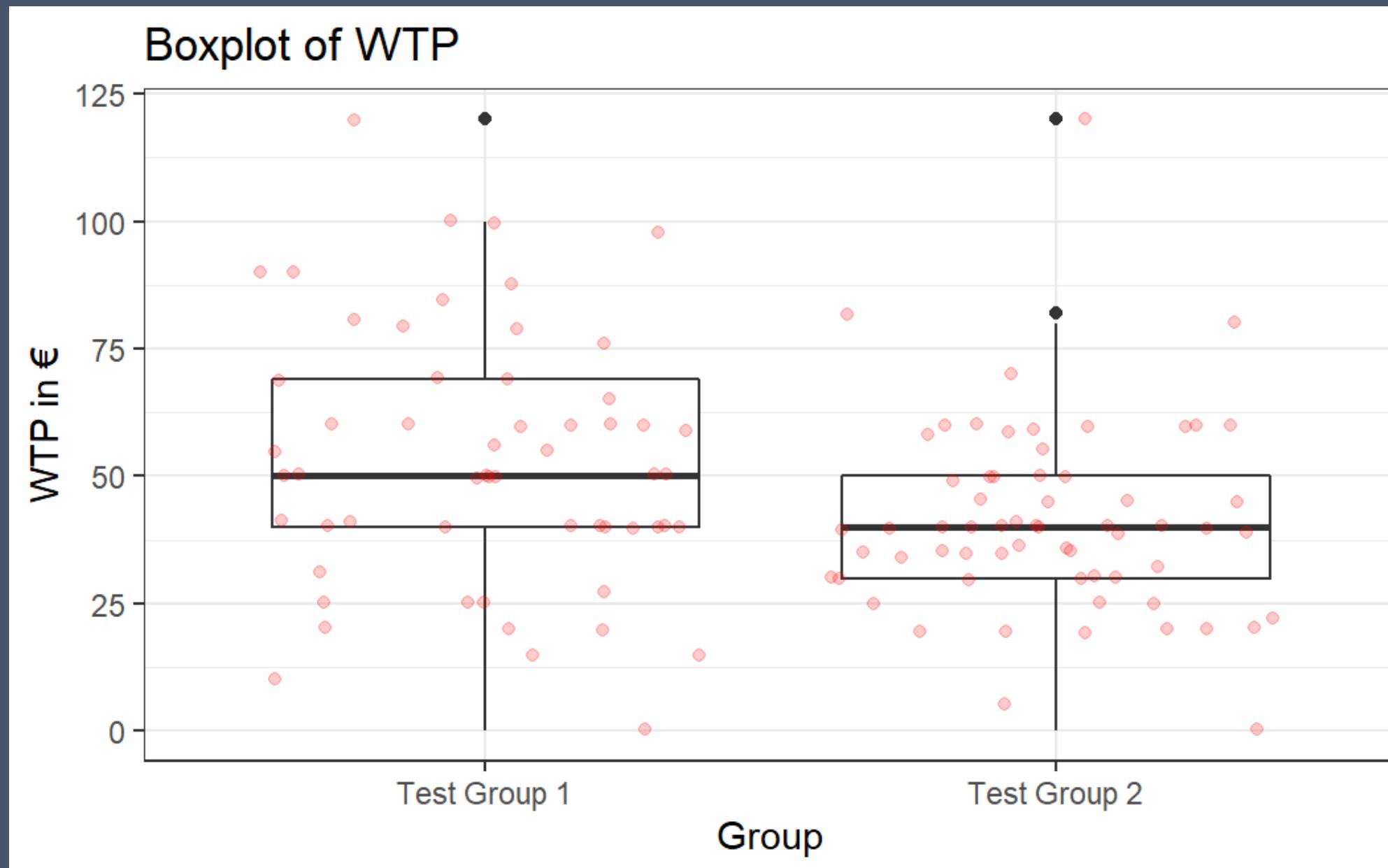
To what extent do you agree with the following statements?



The majority agree with the statements that **fair trade purchases have a good self impact** (69% agree) and that **fair trade for clothes is as important as food** (67% agree), while the least popular answer was the **checking of fair trade label before buying** (73% disagree)

EXPERIMENT 1 – INDEPENDENT T-TEST

First visualization of the data



We can already see that the median of the WTP is higher in Group 1, so **it proves the hypothesis** that the willingness to pay is significantly higher for Test Group 1 compared to Test Group 2

EXPERIMENT 1 – INDEPENDENT T-TEST

Testing the assumptions

```
Levene's Test for Homogeneity of Variance (center = mean)
  Df F value Pr(>F)
group    1  6.1777 0.01434 *
           118
```

We don't have equal variances,

```
wilcoxon rank sum test with continuity correction

data: WTP by Group
W = 2356, p-value = 0.003149
alternative hypothesis: true location shift is not equal to 0
```

The test is **significant**, so the WTP in group 1 is higher than in group 2 (p value <0.05, T-value greater 1.96). We therefore reject H0

```
> cohensD(WTP ~ Group, data = fair_trade_dataset)
[1] 0.52325
```

The Cohens D is 0.52, so the effect size is medium

EXPERIMENT 1 – INDEPENDENT T-TEST

Testing the assumptions for Sustainability indicator

```
Levene's Test for Homogeneity of Variance (center = mean)
  Df F value Pr(>F)
group    1  0.1228 0.7267
        118
```

The levene Test is not significant, so we can compute an independent t-test

```
Welch Two Sample t-test

data: sustainability by Group
t = 2.4665, df = 117, p-value = 0.01509
alternative hypothesis: true difference in means between group Test Group 1
and group Test Group 2 is not equal to 0
95 percent confidence interval:
 0.1669343 1.5273013
sample estimates:
mean in group Test Group 1 mean in group Test Group 2
        4.561404             3.714286
```

There is a **significant result** ($p<0.05$). So, the fair trade group rated the importance for sustainability, while setting the price higher [CI= 0.17, 1.53]

```
> cohensD(sustainability ~ Group, data = fair_trade_dataset)
[1] 0.4506848
```

The Cohens D is 0.45, so the effect size is **medium**

EXPERIMENT 1 – INDEPENDENT T-TEST

Testing the assumptions for Working Conditions indicator

```
Levene's Test for Homogeneity of Variance (center = mean)
  Df F value Pr(>F)
group    1  2.0308 0.1568
        118
```

The levene Test is not significant, so we can compute an independent t-test

```
Welch Two Sample t-test
```

```
data: working_condition by Group
t = 1.0645, df = 117.99, p-value = 0.2893
alternative hypothesis: true difference in means between group Test Group 1
and group Test Group 2 is not equal to 0
95 percent confidence interval:
-0.3011395  1.0012230
sample estimates:
mean in group Test Group 1 mean in group Test Group 2
            3.842105             3.492063
```

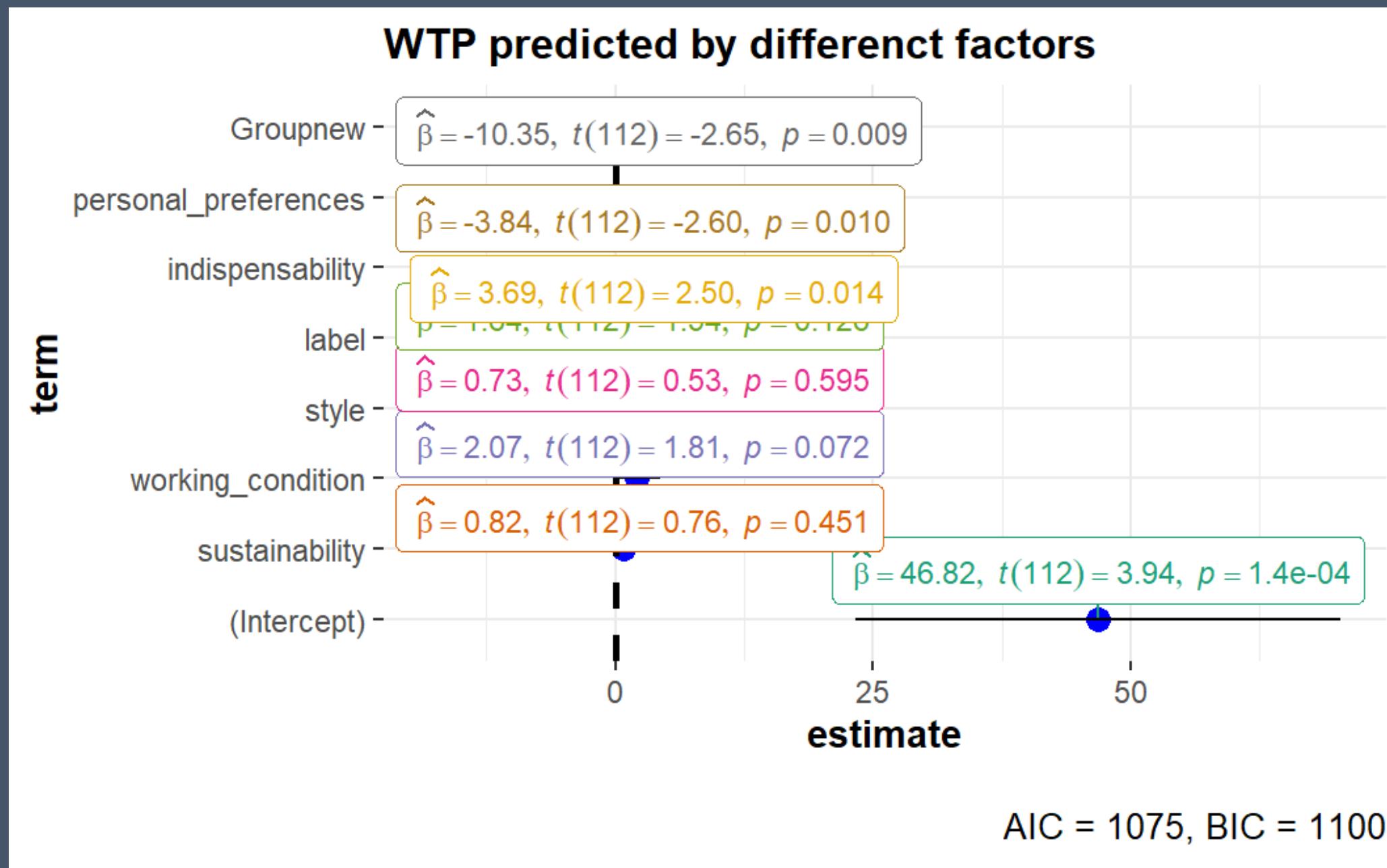
The t-test regarding the working condition is **not significant**. We cannot reject the null hypothesis in this case

```
> cohensD(working_condition ~ Group, data = fair_trade_dataset)
[1] 0.1937079
```

The Cohens D is 0.19, so the effect size is **small**

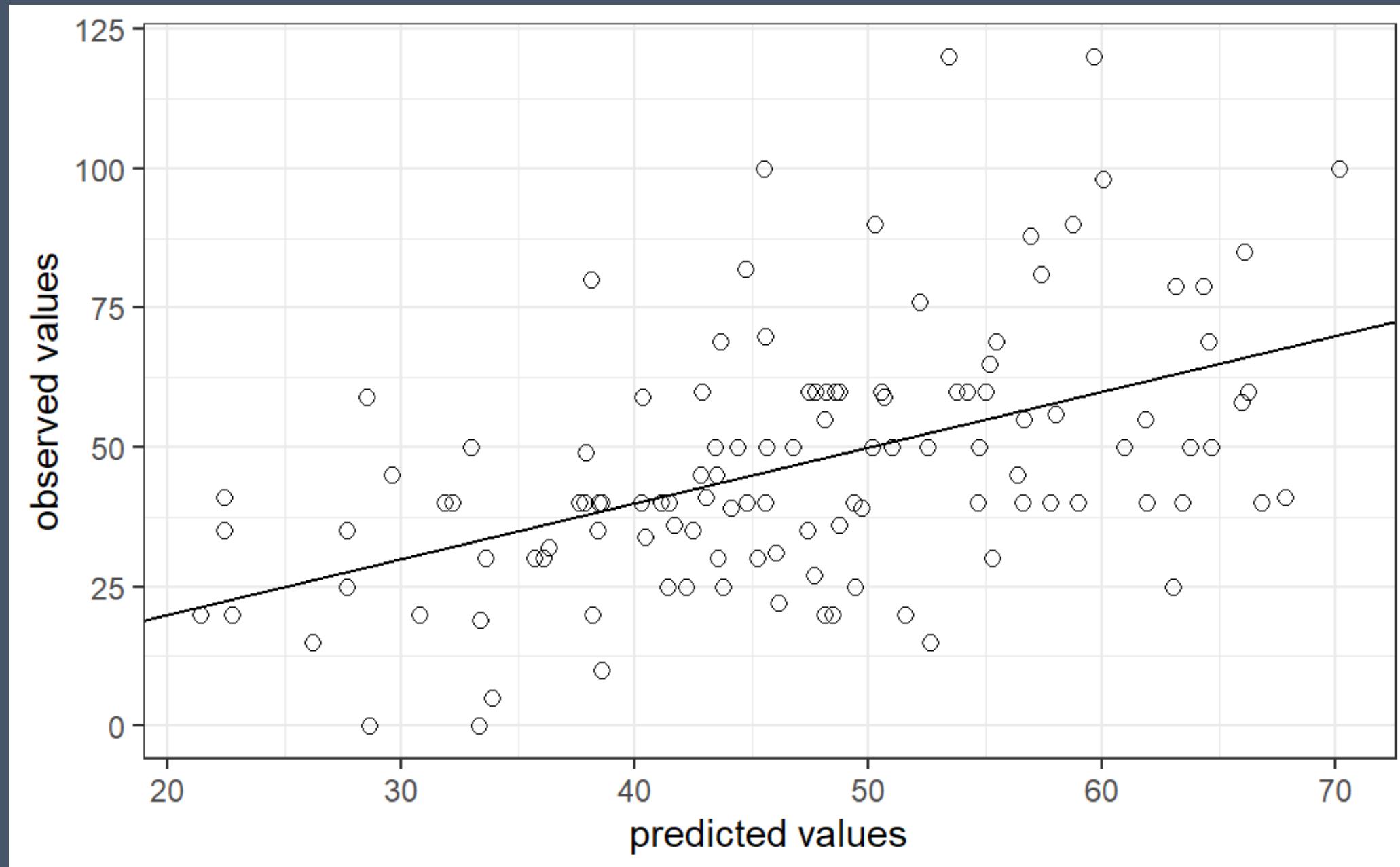
EXPERIMENT 1 – REGRESSION

Visualization of the output from the regression model including the confidence intervals



EXPERIMENT 1 – REGRESSION

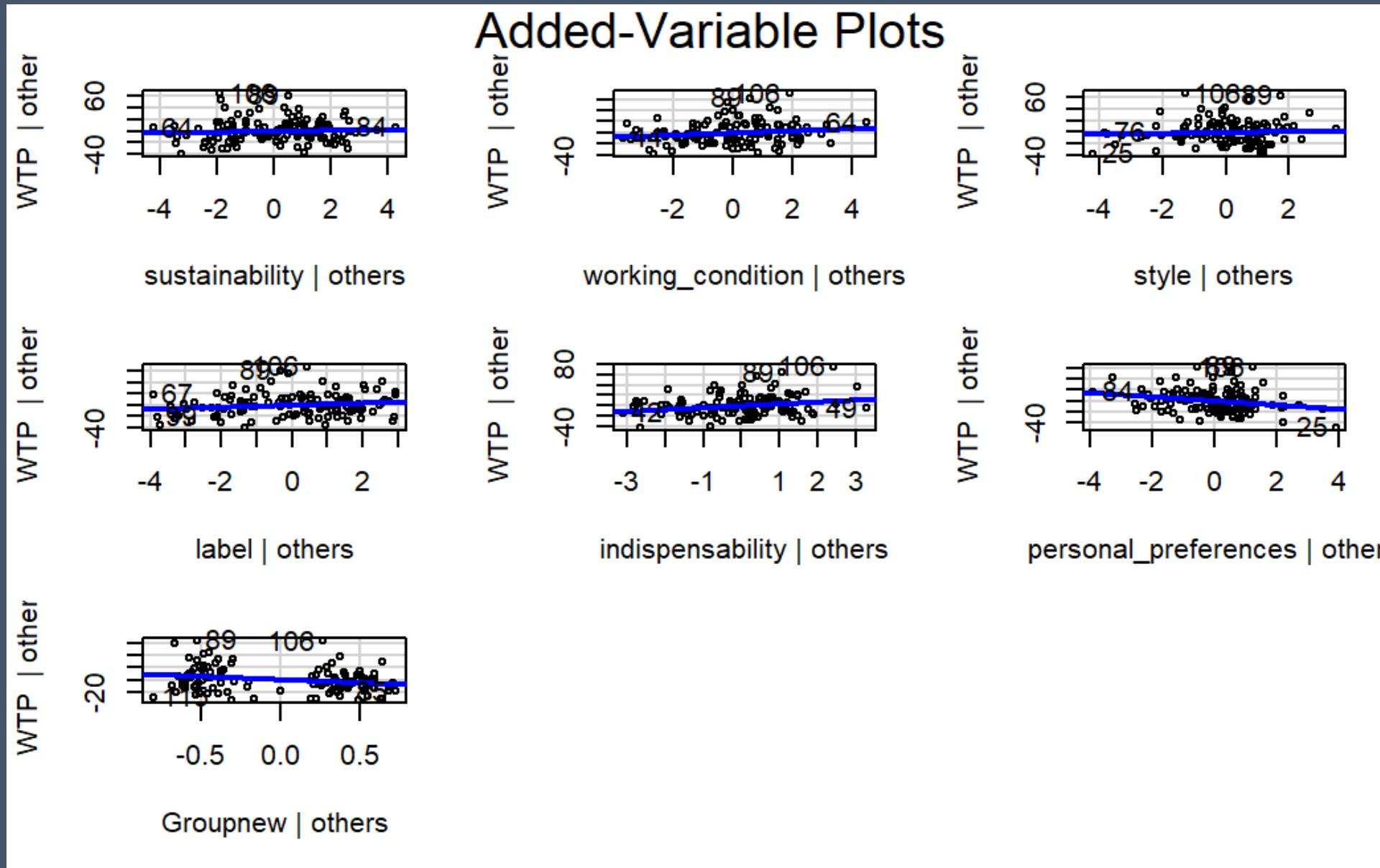
Visually inspect the fit of the model



The model will predict well the observed values as in total, the **majority of points** are **close** to the **diagonal line**

EXPERIMENT 1 – REGRESSION

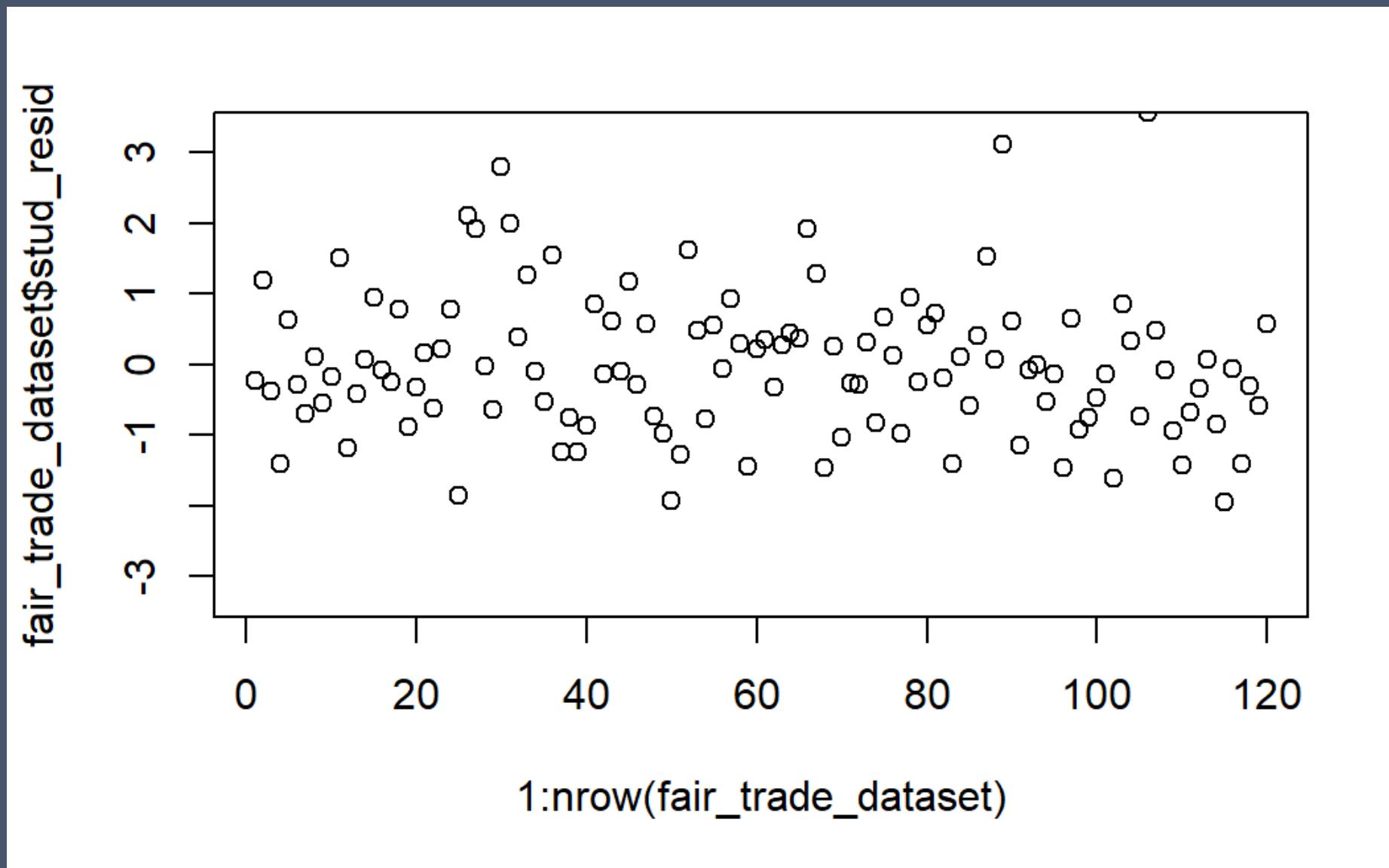
Testing the assumptions - Linearity



In total, it appears that
linear relationships
can be reasonably
assumed

EXPERIMENT 1 – REGRESSION

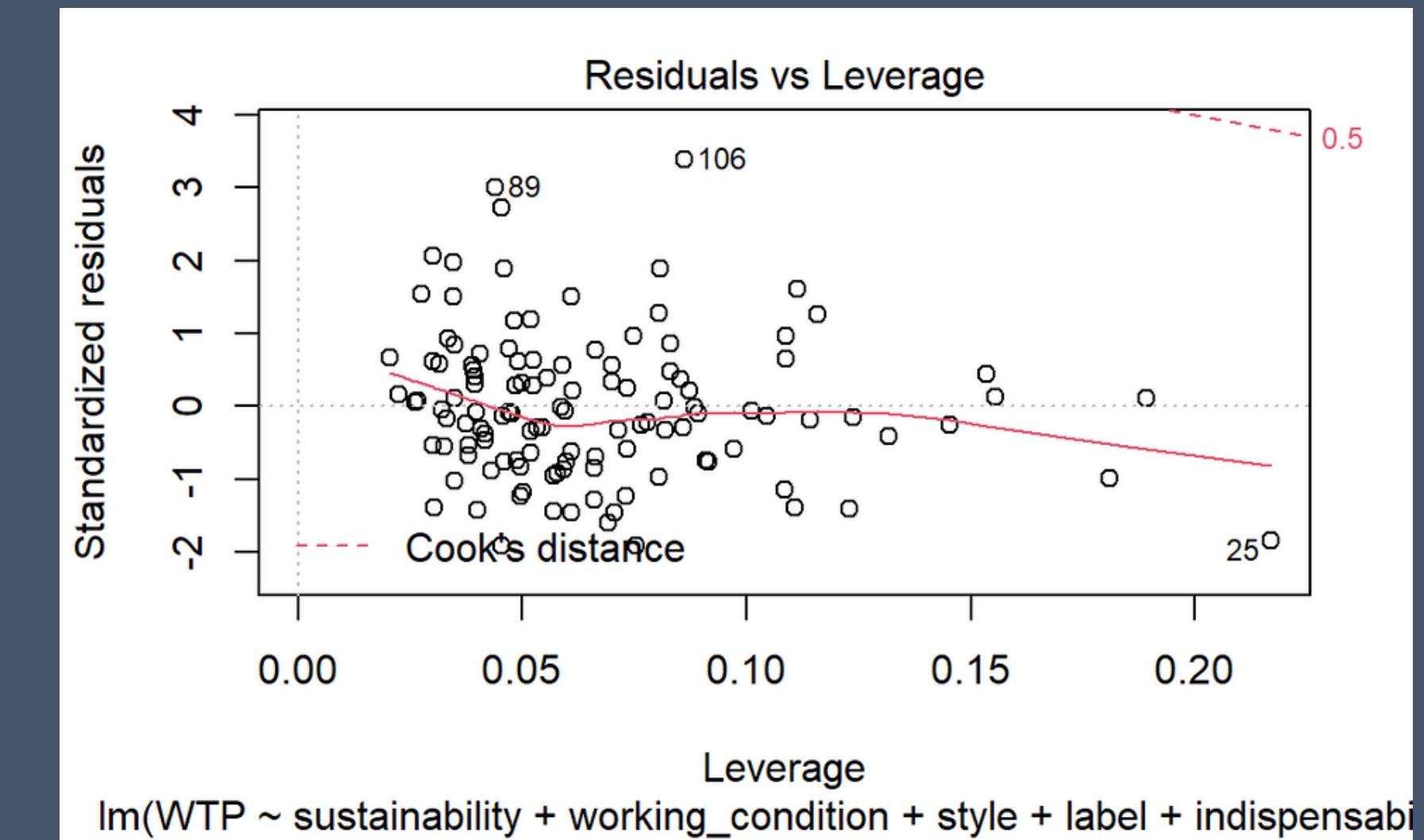
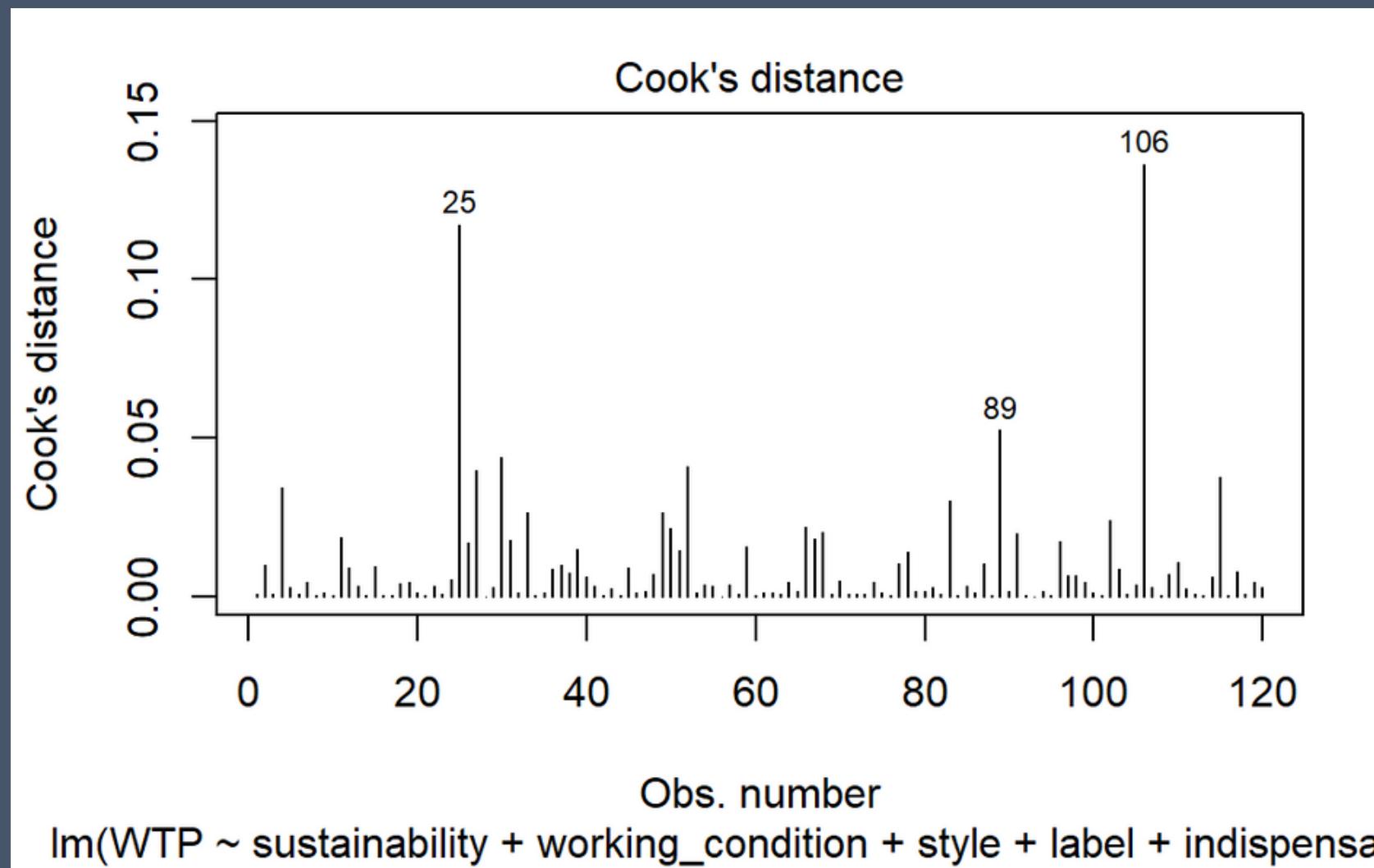
Testing the assumptions - Outliers



We look at the studentized residuals with a scatter plot and check that the majority of **studentized residuals** are between -3 and 3.

EXPERIMENT 1 – REGRESSION

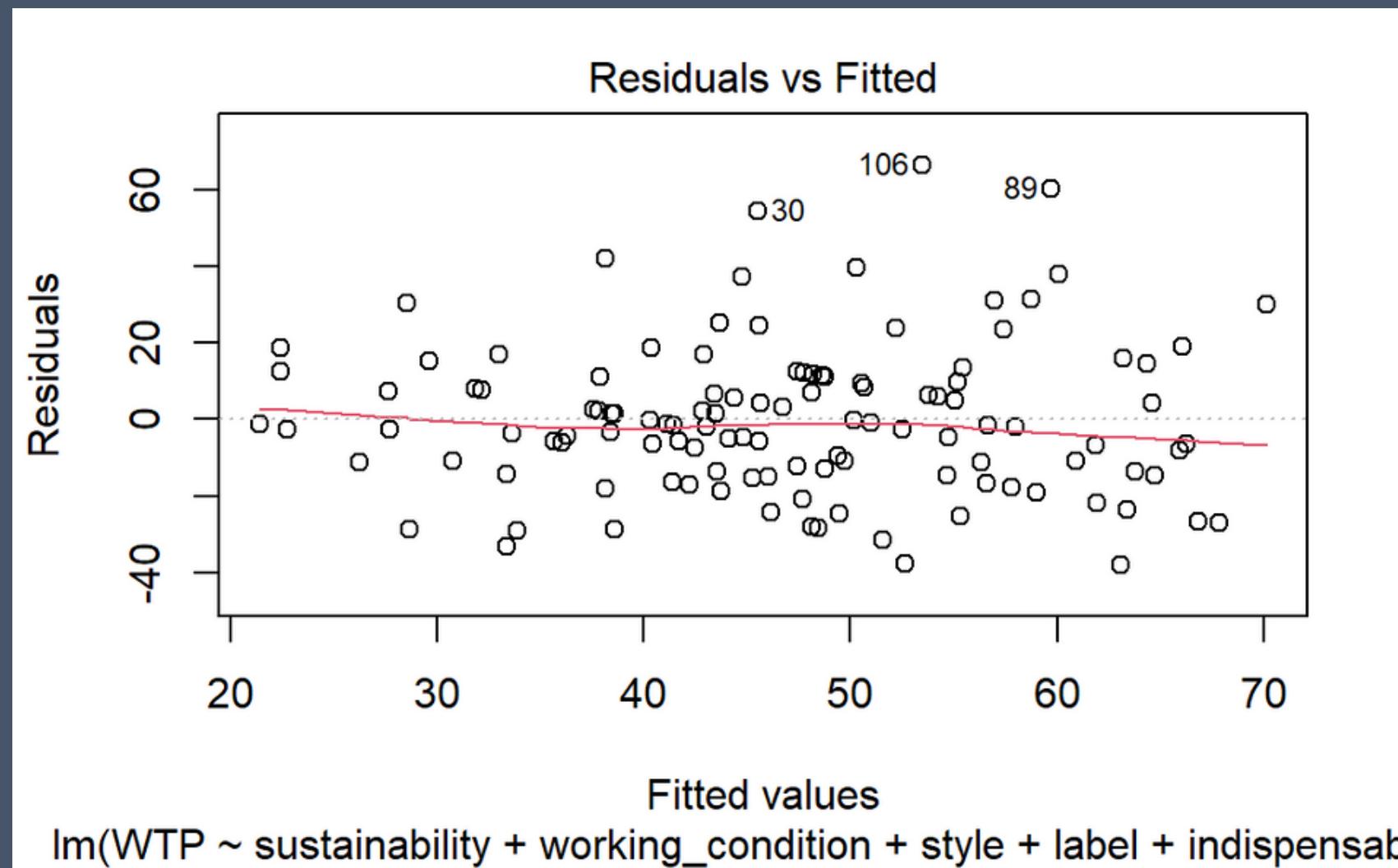
Testing the assumptions - Cook's distance



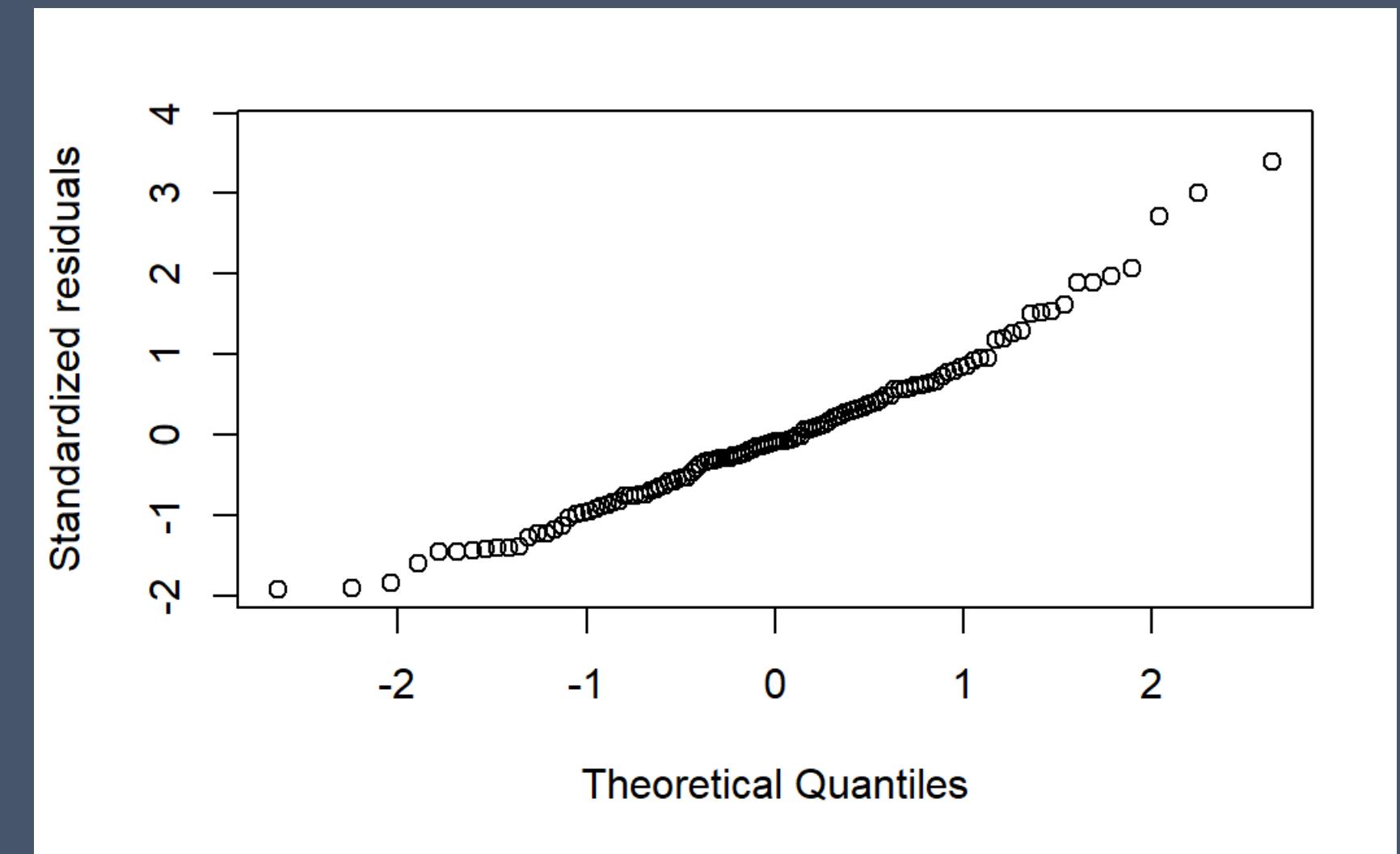
There are no influential observations, as none of the Cook's distance values is close to the critical value of 1. What is more, the plot for looking the cases outside of a dashed line is also fine, in total.

EXPERIMENT 1 – REGRESSION

**Testing the assumptions - Non-constant error variance and
Non-normally distributed errors**



According to the plot, the assumption of homoskedasticity is met



According to the Q-Q plot, errors are normally distributed

EXPERIMENT 1 – REGRESSION

Testing the assumptions - Collinearity

	sustainability	working_condition	style
sustainability	1.00	0.32	-0.24
working_condition	0.32	1.00	-0.04
style	-0.24	-0.04	1.00
label	0.03	0.19	0.07
indispensability	0.10	0.22	0.15
personal_preferences	-0.11	-0.07	0.60
Groupnew	-0.22	-0.10	0.06
	label	indispensability	
sustainability	0.03	0.10	
working_condition	0.19	0.22	
style	0.07	0.15	
label	1.00	0.13	
indispensability	0.13	1.00	
personal_preferences	0.10	0.23	
Groupnew	-0.10	0.12	

	label	indispensability
sustainability	0.7688	0.2606
working_condition	0.0360	0.0156
style	0.4624	0.1140
label		0.1626
indispensability	0.1626	
personal_preferences	0.2588	0.0106
Groupnew	0.2922	0.1860

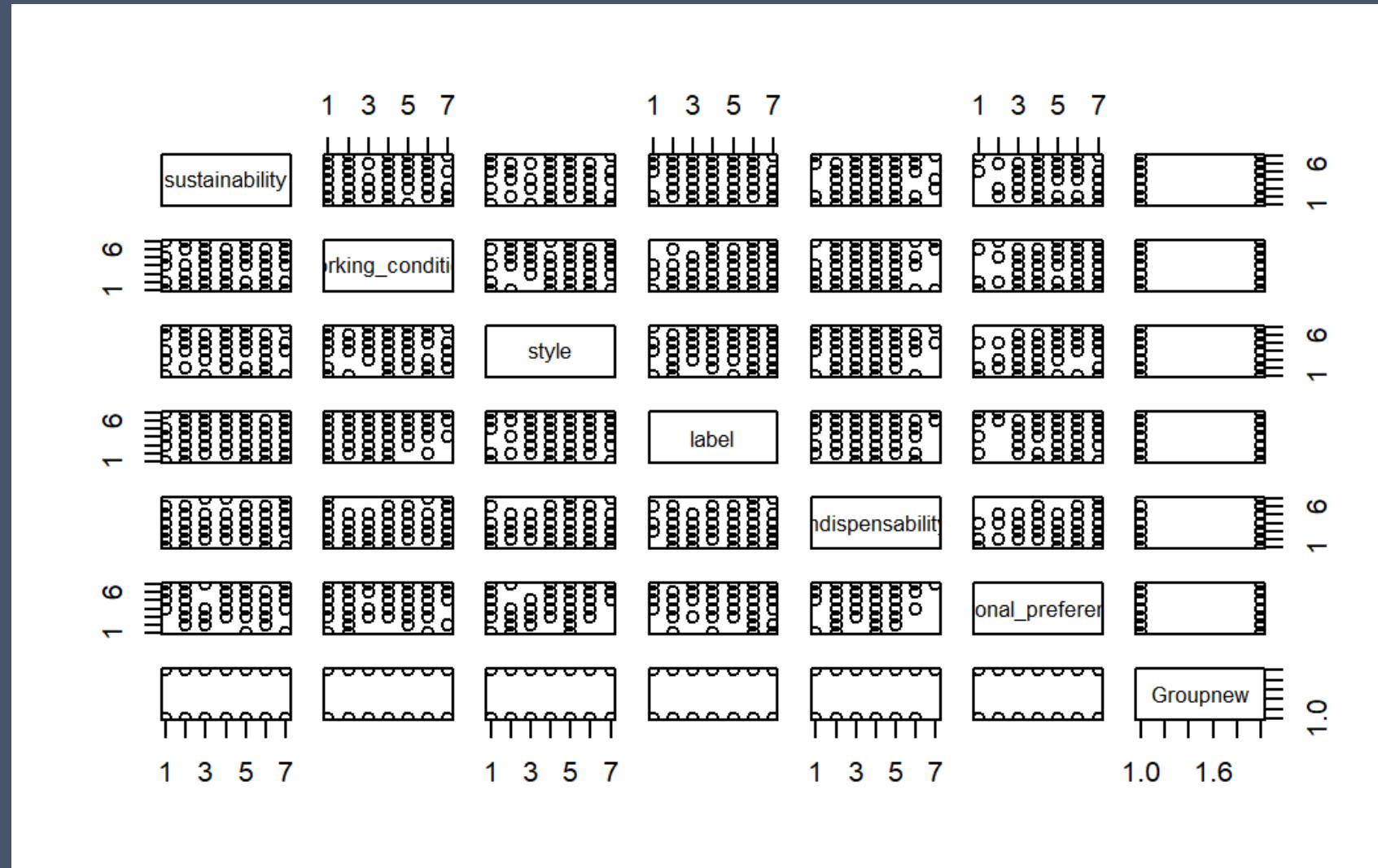
	sustainability	working_condition	style
sustainability	0.0004	0.0088	0.0088
working_condition	0.0004	0.6500	0.6500
style	0.0088	0.6500	0.6500
label	0.7688	0.0360	0.4624
indispensability	0.2606	0.0156	0.1140
personal_preferences	0.2156	0.4770	0.0000
Groupnew	0.0151	0.2915	0.4931
	label	indispensability	
sustainability	0.7688	0.2606	
working_condition	0.0360	0.0156	
style	0.4624	0.1140	
label		0.1626	
indispensability	0.1626		
personal_preferences	0.2588	0.0106	
Groupnew	0.2922	0.1860	

	personal_preferences	Groupnew
sustainability	0.2156	0.0151
working_condition	0.4770	0.2915
style	0.0000	0.4931
label	0.2588	0.2922
indispensability	0.0106	0.1860
personal_preferences		0.5855
Groupnew	0.5855	

According to the correlation matrix of the data, there is no obvious multicollinearity, as there are no values > 0.8 - 0.9

EXPERIMENT 1 – REGRESSION

Testing the assumptions - Collinearity



```
> vif(multiple_regression)
  sustainability    working_condition        style
  1.242990          1.211587          1.657254
    label           indispensability personal_preferences
  1.069648          1.164316          1.656581
  Groupnew
  1.091597
```

The bivariate correlations

The values are well below the cutoff, indicating that we **do not have to worry about multicollinearity**

EXPERIMENT 1 – REGRESSION

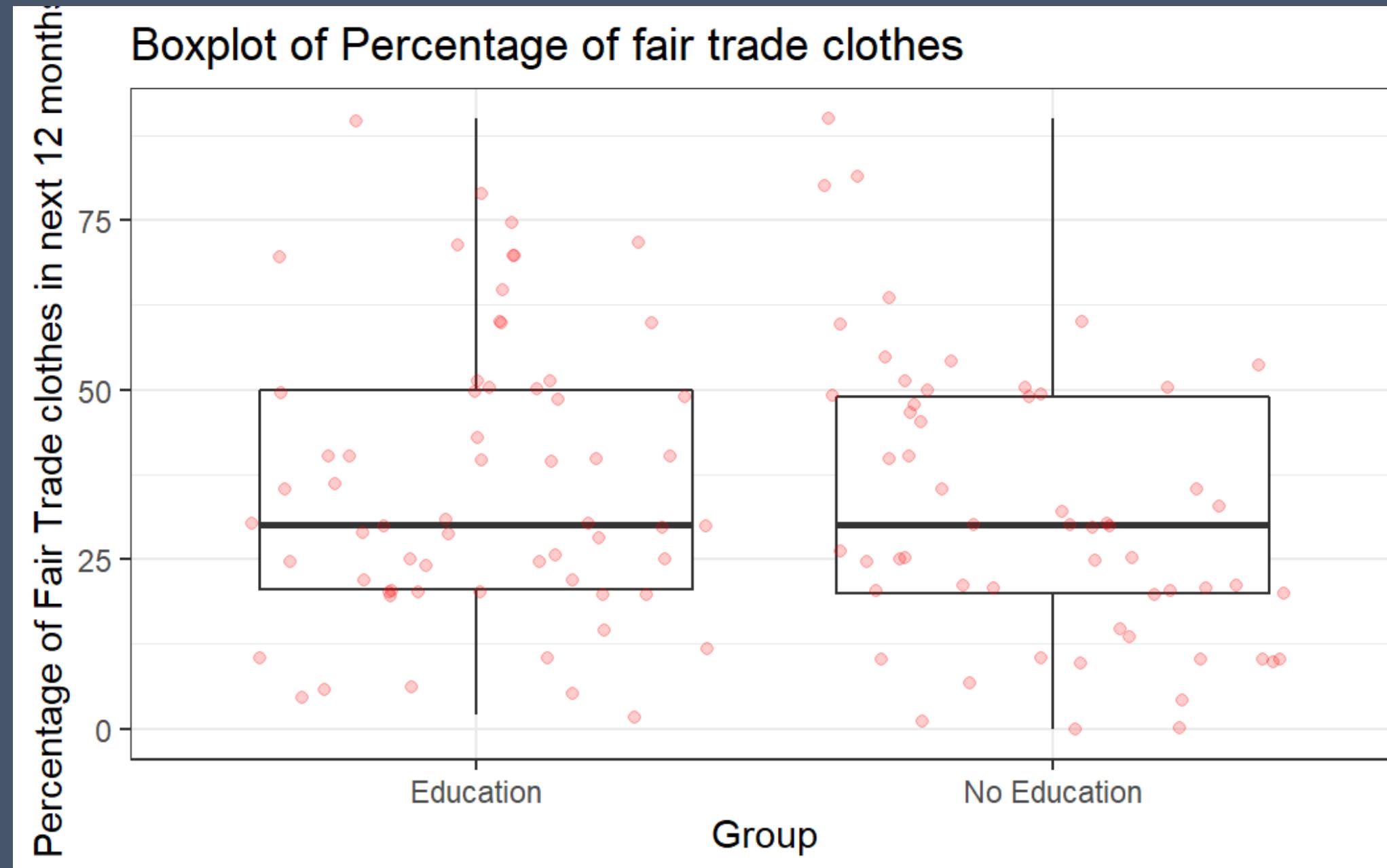
Interaction effects

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	22.821	12.002	1.901	0.0598 .
sustainability	3.199	1.574	2.032	0.0445 *
working_condition	2.534	1.149	2.205	0.0295 *
style	1.164	1.367	0.851	0.3965
label	1.561	1.048	1.490	0.1392
indispensability	3.007	1.493	2.014	0.0464 *
personal_preferences	-3.486	1.462	-2.385	0.0188 *
GroupTest Group 2	8.096	9.730	0.832	0.4072
sustainability:GroupTest Group 2	-4.370	2.116	-2.065	0.0412 *

The interaction effect is significant ($p < 0.05$), so effect of the sustainability indicator is **less effective** for the group who didn't see the fair-trade logo ($3.199 - 4.370 = -1.171$). For this group choosing one additional point of sustainability indicator will **decrease** the willingness to pay for jeans by approximately 1.171 Euro

EXPERIMENT 2 – INDEPENDENT T-TEST

First visualization of the data



Looking at the boxplot, we can see that the **medians** of both groups seem to be **very similar**

EXPERIMENT 2 – INDEPENDENT T-TEST

Testing the assumptions

```
Levene's Test for Homogeneity of variance (center = mean)
  Df F value Pr(>F)
group    1  0.0243 0.8764
        118
```

The Levene Test is not significant, so we can compute an independent t-test

```
Welch Two Sample t-test

data: Percentage_FairTrade by Group1
t = 1.0963, df = 117.58, p-value = 0.2752
alternative hypothesis: true difference in means between group Education and
group No Education is not equal to 0
95 percent confidence interval:
 -3.389107 11.794001
sample estimates:
 mean in group Education mean in group No Education
            36.56452                 32.36207
```

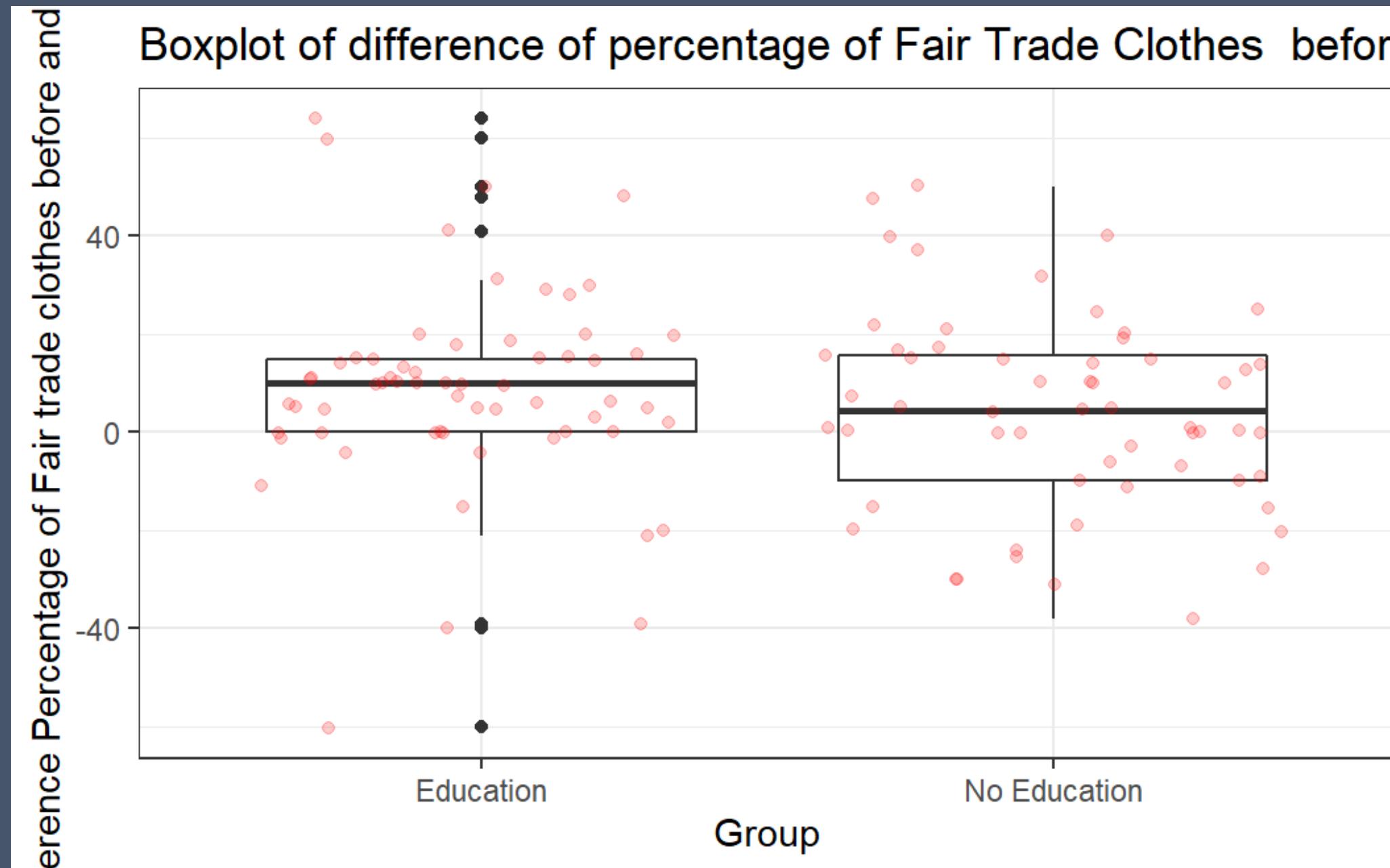
Looking at the result of the T-test we do not see a significant result (T value < 1.96, p value > 0.05). Therefore we **cannot reject our null hypothesis.**

```
> cohensD(Percentage_FairTrade ~ Group1, data = fair_trade_dataset)
[1] 0.2002115
```

The Cohens D is 0.20, so the effect size is small

EXPERIMENT 3 – INDEPENDENT T-TEST

First visualization of the data



We can already see that the median is **higher** in Group Education, that received the news

EXPERIMENT 3 – INDEPENDENT T-TEST

Testing the assumptions

```
Levene's Test for Homogeneity of Variance (center = mean)
  Df F value Pr(>F)
group    1  0.8798 0.3502
          118
```

The Levene Test is not significant, so we can compute an independent t-test

```
Two Sample t-test

data: difference by Group1
t = 1.3062, df = 118, p-value = 0.194
alternative hypothesis: true difference in means between group Education and
group No Education is not equal to 0
95 percent confidence interval:
-2.513948 12.255884
sample estimates:
mean in group Education mean in group No Education
8.870968           4.000000
```

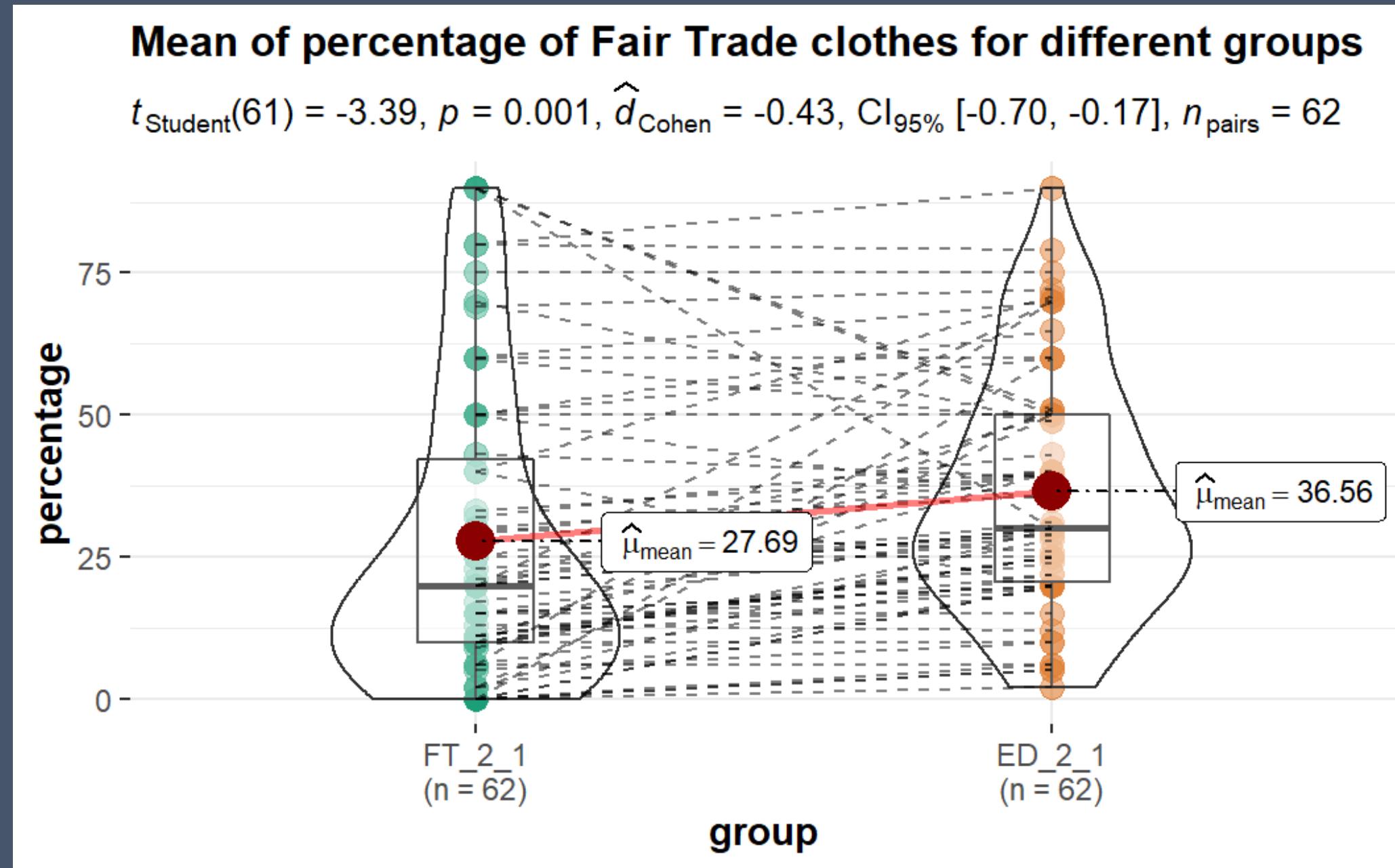
Looking at the result of the T-test we do not see a significant result (T value < 1.96, p value > 0.05). Therefore we **cannot reject our null hypothesis**

```
> cohensD(difference ~ Group1, data = fair_trade_dataset)
[1] 0.2386027
```

The Cohens D is 0.23, so the effect size is small

EXPERIMENT 3 – ADDITIONAL

Visualization



We additionally created a subset of Group 1 and conducted a dependent T-Test. This test analyzes if the percentage before and after the news was different. The result is **significant** for this group