Data Analysis_HB_02052016

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Descriptive Statistics

Following are relevant aggregated statistics and statistics by each of the 11 treatments for each of three relevant dependent variables. These relevant dependent variables are 1. Donation, which is the amount the subject donated in order to retire emission rights 2. Donated, which is equal to 1 if the subject donated a positive amount, and 0 otherwise 3. Belief, which is the amount the subject thinks other participants in this experiment donated on average (not incentivized)
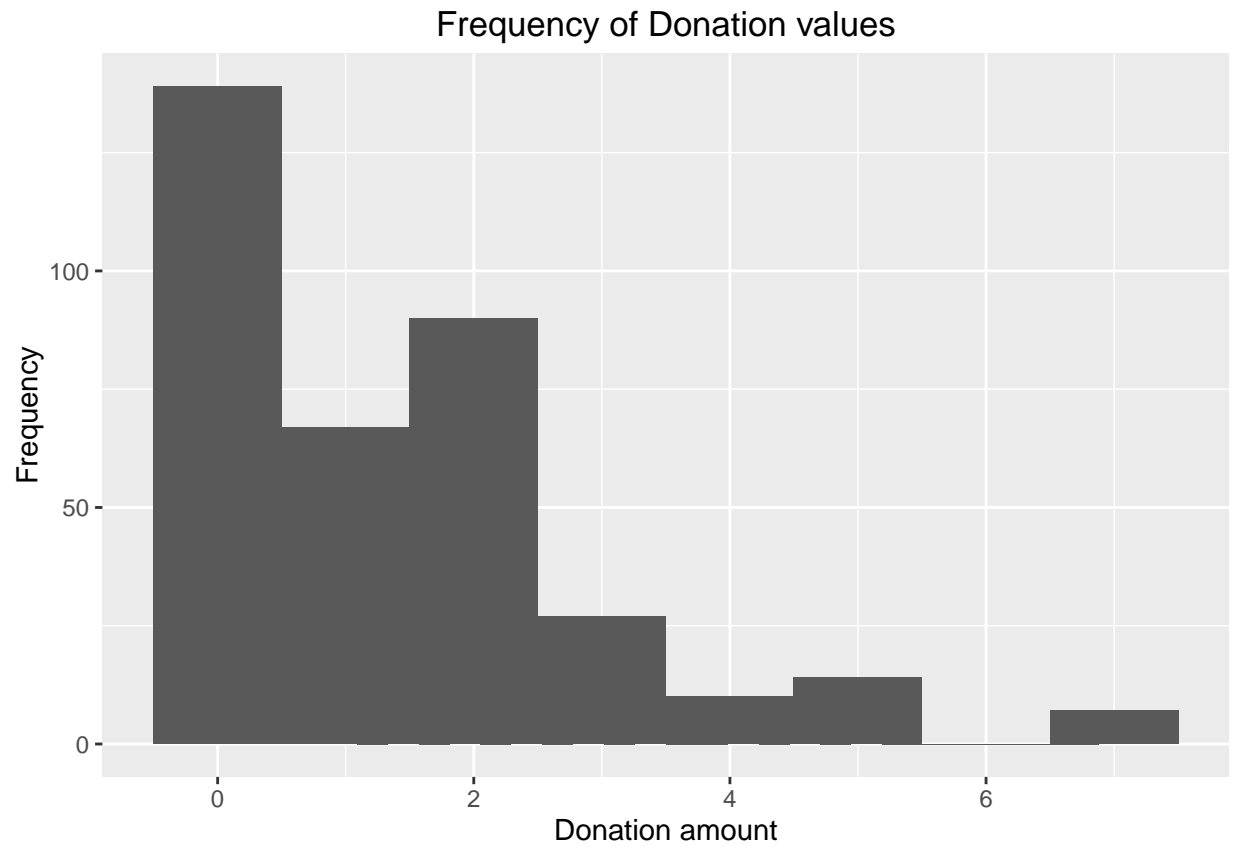
1. Variable: Donation to retire carbon licenses
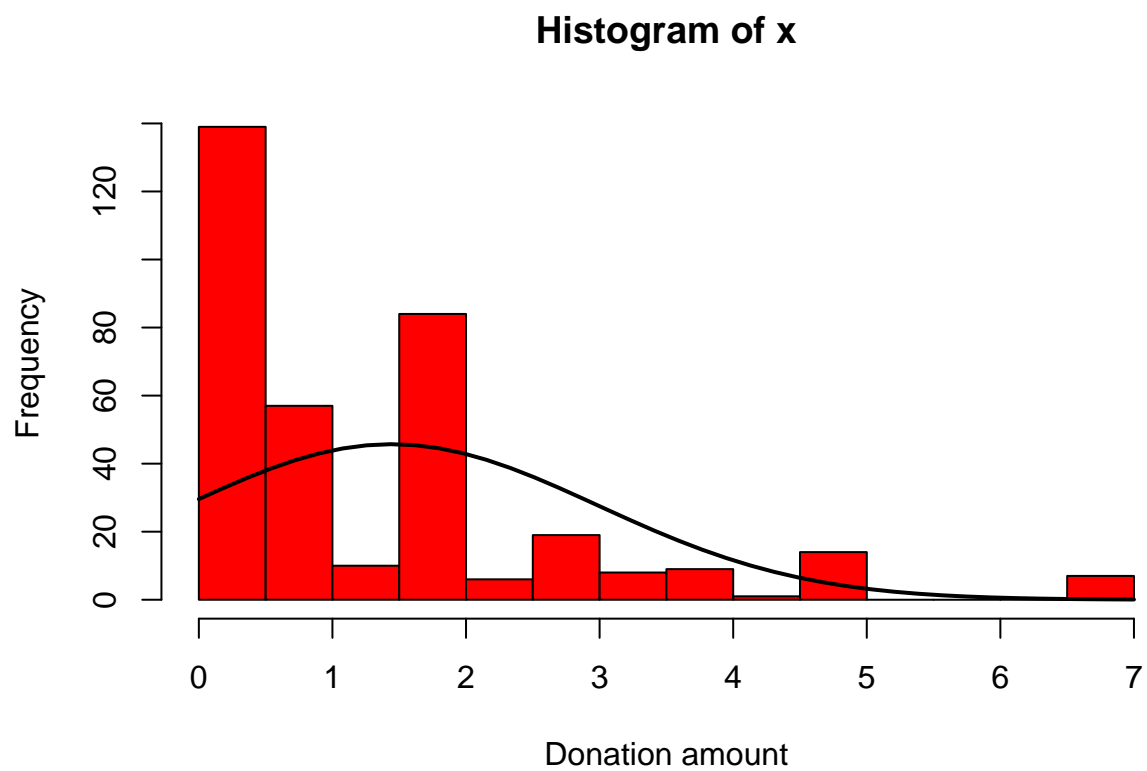
Aggregated descriptive statistics

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   0.000   0.000   1.000   1.442   2.000   7.000
```

```
## [1] 1.544451
```

Distribution of aggregated donations

Frequency of Donation values

Distribution of aggregated donations with normal curve

Histogram of x

Frequency

Donation amount

Kernel density plot of aggregated donations

density.default(x = df$Donation)
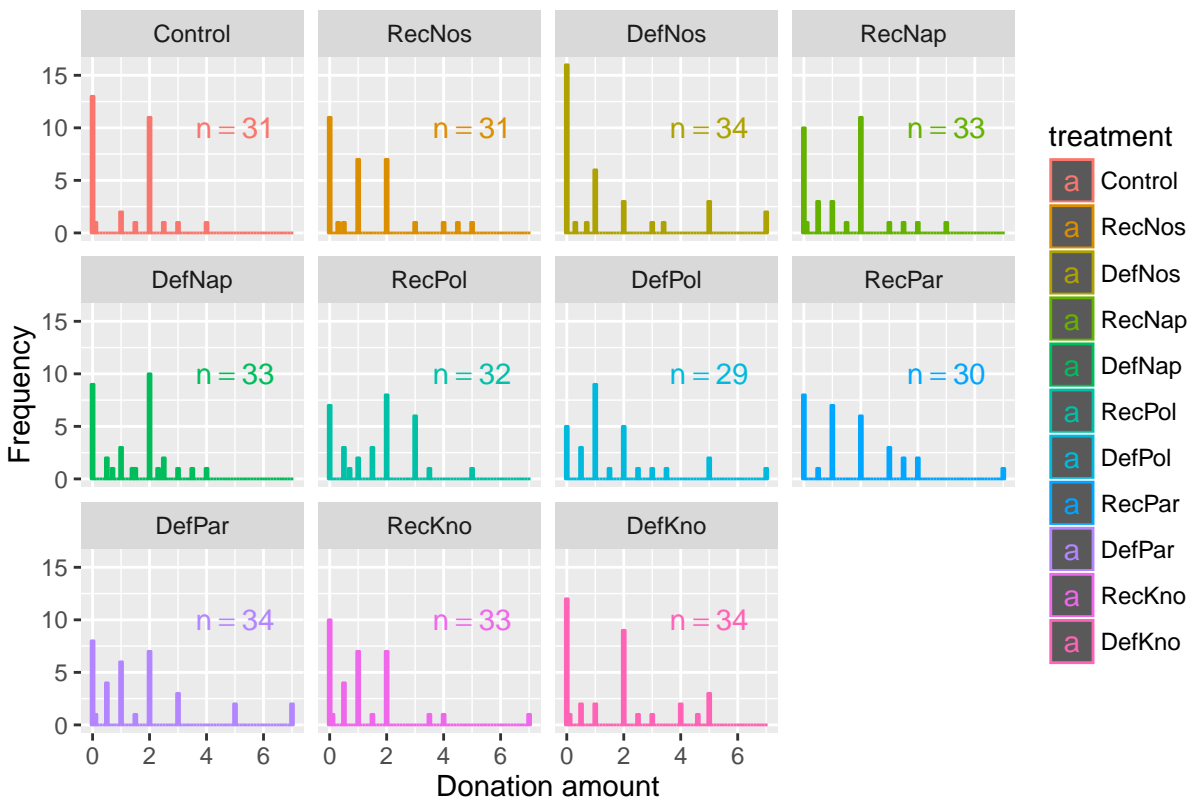

N = 354   Bandwidth = 0.4153
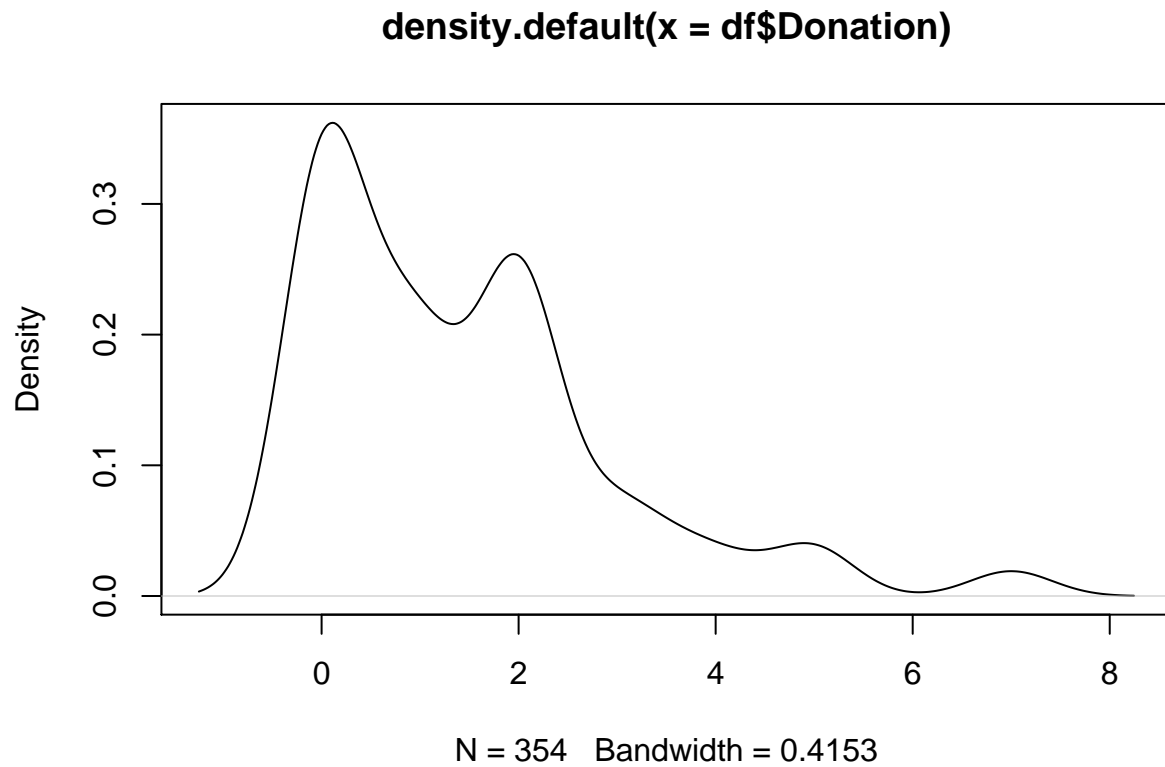
Distribution of donations by treatment

```
## group: Control
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 31 1.13 1.15      1    1.02 1.48   0   4     4 0.42    -0.94 0.21
## -----------------------------------------------------------
## group: RecNos
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 31 1.24 1.39      1    0.99 1.48   0   5     5 1.14     0.52 0.25
## -----------------------------------------------------------
## group: DefNos
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 34 1.42 2.08    0.5    1.05 0.74   0   7     7 1.46     0.93 0.36
## -----------------------------------------------------------
## group: RecNap
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 33 1.32 1.31      1    1.15 1.48   0   5     5 0.83     0.13 0.23
## -----------------------------------------------------------
## group: DefNap
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis  se
## 1    1 33 1.38 1.13    1.5    1.29 1.19   0   4     4 0.27    -0.88 0.2
## -----------------------------------------------------------
## group: RecPol
```
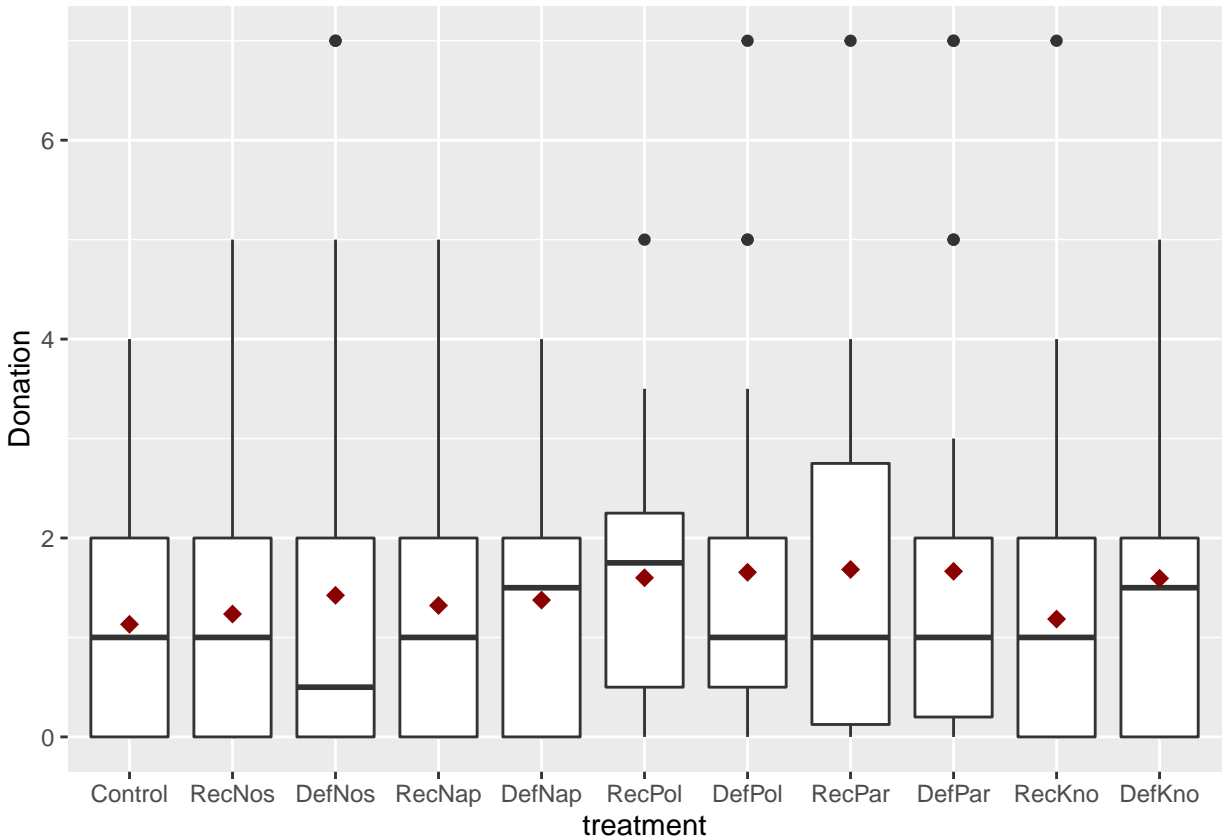
```
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 32  1.6 1.29   1.75    1.53 1.85   0   5     5 0.43    -0.48 0.23
## -----------------------------------------------------------
## group: DefPol
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 29 1.66 1.68      1    1.44 1.48   0   7     7 1.51     1.87 0.31
## -----------------------------------------------------------
## group: RecPar
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis  se
## 1    1 30 1.68 1.65      1    1.48 1.48   0   7     7 1.13     1.32 0.3
## -----------------------------------------------------------
## group: DefPar
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 34 1.66 1.89      1    1.34 1.48   0   7     7 1.46     1.49 0.32
## -----------------------------------------------------------
## group: RecKno
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 33 1.18 1.47      1    0.91 1.48   0   7     7 2.06     5.17 0.26
## -----------------------------------------------------------
## group: DefKno
##   vars  n mean  sd median trimmed  mad min max range skew kurtosis   se
## 1    1 34 1.59 1.7    1.5     1.4 2.22   0   5     5 0.73    -0.74 0.29
```


Frequency of Donation values by treatment

Donations by treatment (Boxplot)

Red diamonds in boxplots represent the respective means

Donations by aggregated treatment (Boxplot), i.e. Def vs. Rec vs. Control

```
describeBy(df$Donation, df$RecvsDef)
```

```
## group: Rec
##    vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 159  1.4 1.42      1     1.2 1.48   0   7     7 1.24     1.89 0.11
## -----------------------------------------------------------
## group: Def
##    vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 164 1.54 1.71      1    1.23 1.48   0   7     7 1.38     1.56 0.13
## -----------------------------------------------------------
## group: Control
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 31 1.13 1.15      1    1.02 1.48   0   4     4 0.42    -0.94 0.21
```
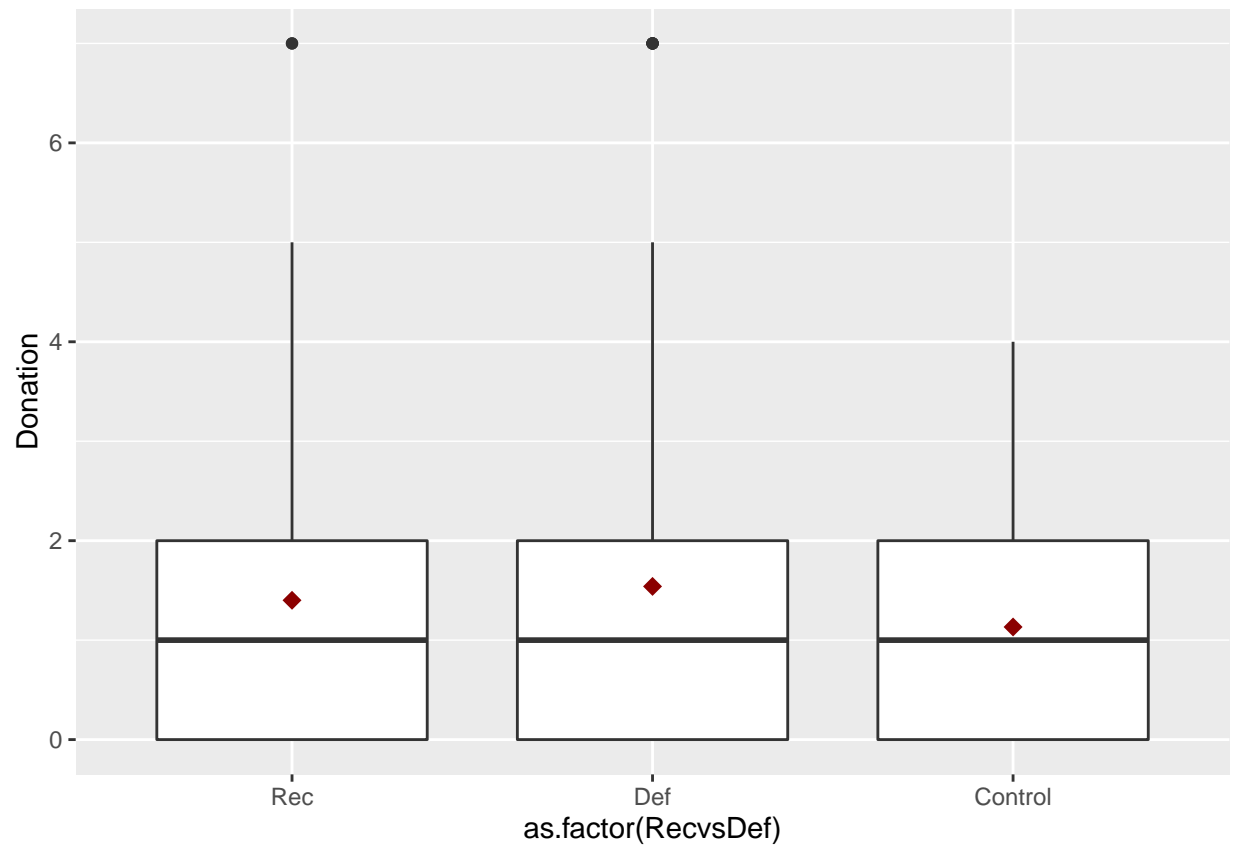
Donations by Reactance score

The reactance score was constructed by changing each of the 11 rectance-items to a dummy variable equal to 1 if the subject chose 3 or 4 on the respective item, and 0 otherwise. Afterwards, all 11 dummies were added to construct an ordinal Reactance score.
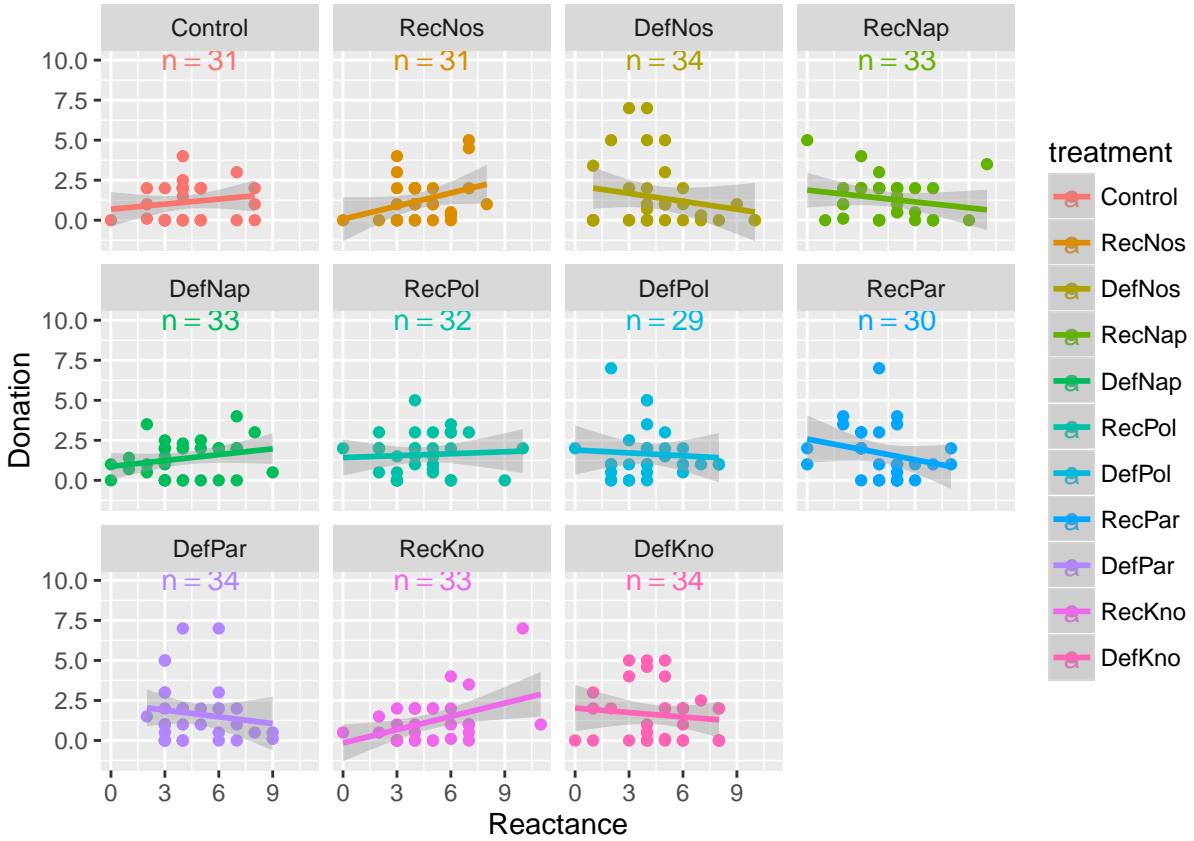
Shows a point plot (not jittered) with Donation amount and the respective Reactance score of each participant. Includes a linear regression line, including the 95% confidence region, of the Reactance score as a predictor for the Donation amount.
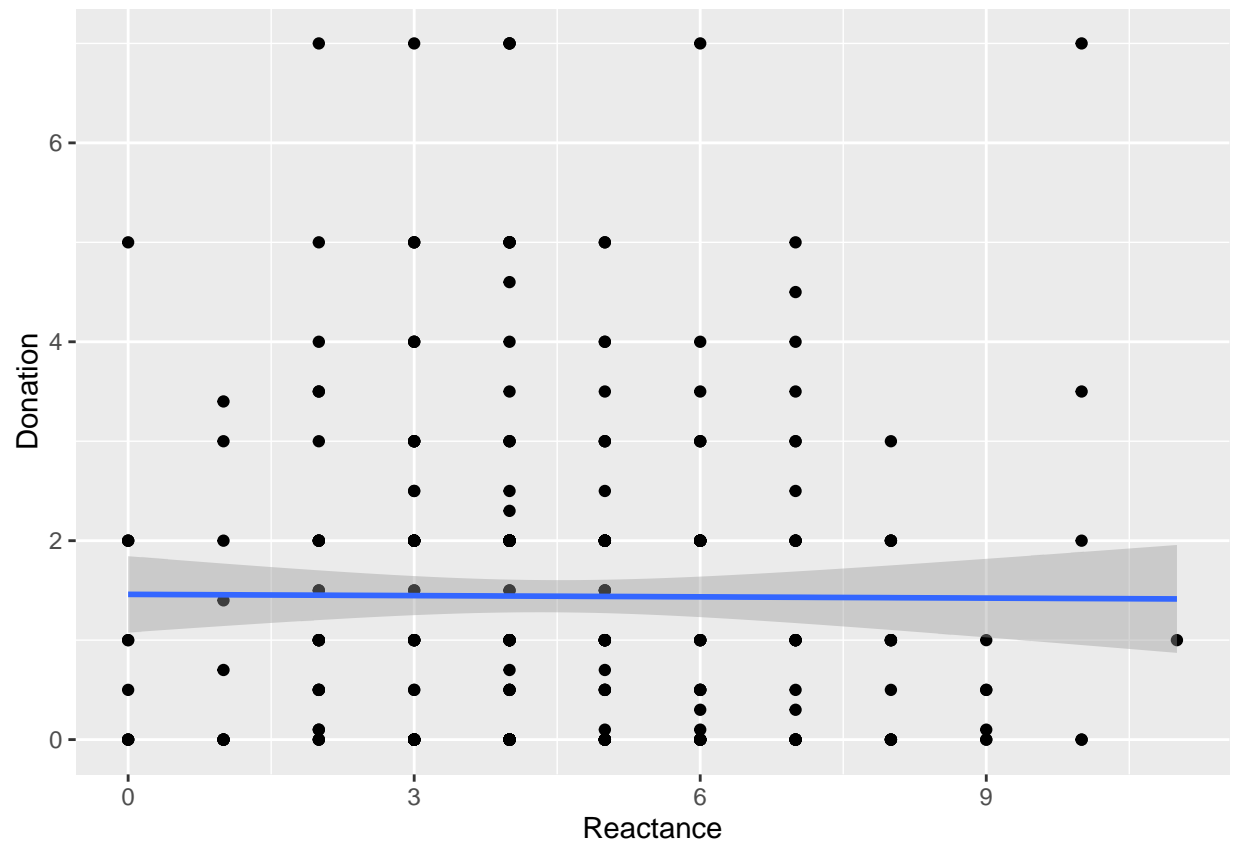
To see how often combinations of Reactance and Donation scores appeared

Donations by Reactance score per treatment   Shows a point plot (not jittered) with Donation amount and the respective Reactance score of each participant, for each treatment. Includes a linear regression line, including the 95% confidence region, of the Reactance score as a predictor for the Donation amount, for each treatment.
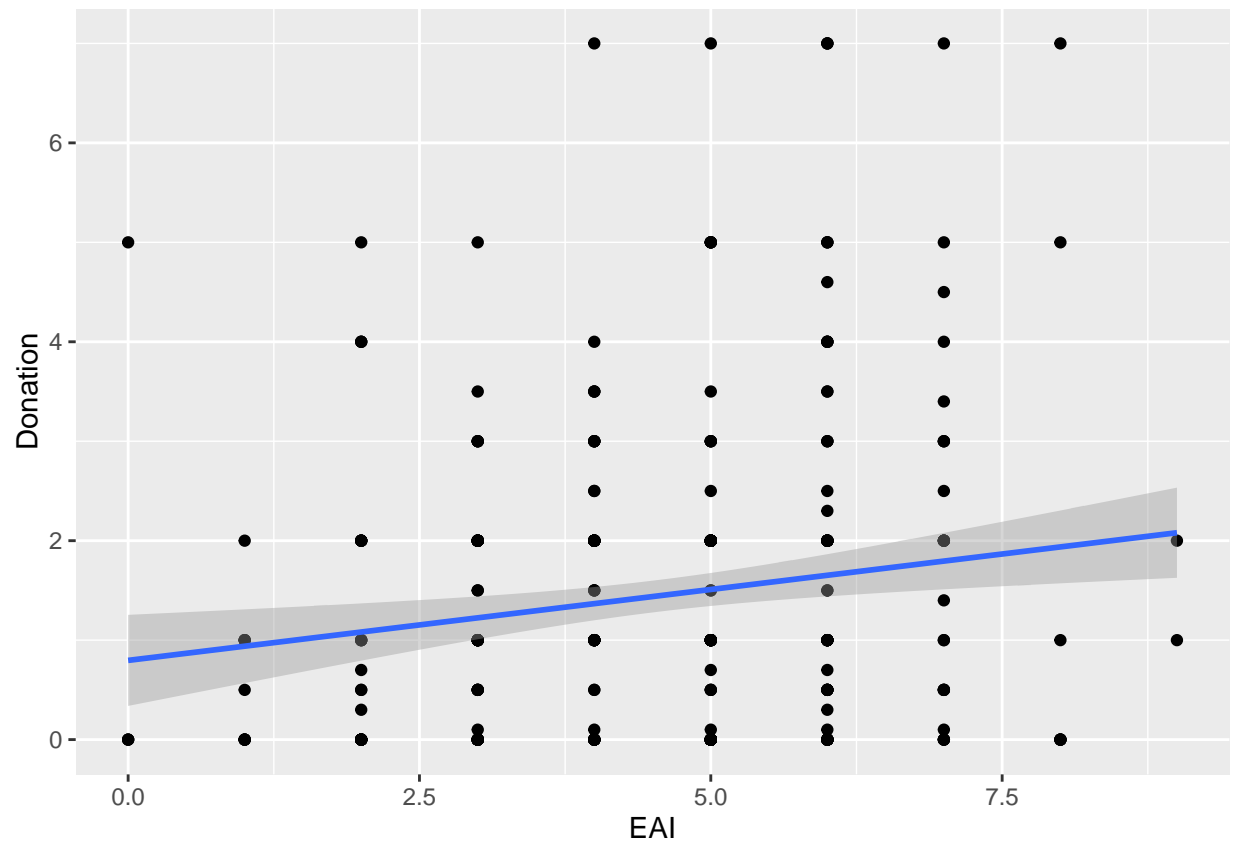
Donations by EAI score

The EAI score was constructed by changing each of the 12 EAI-items to a dummy variable equal to 1 if the subject chose 3 or 4 on the respective item, and 0 otherwise. Afterwards, all 12 dummies were added to construct an ordinal EAI score.

Shows a point plot (not jittered) with Donation amount and the respective EAI score of each participant. Includes a linear regression line, including the 95% confidence region, of the EAI score as a predictor for the Donation amount.

Donations by EAI score per treatment Shows a point plot (not jittered) with Donation amount and the respective EAI score of each participant, for each treatment. Includes a linear regression line, including the 95% confidence region, of the EAI score as a predictor for the Donation amount, for each treatment.
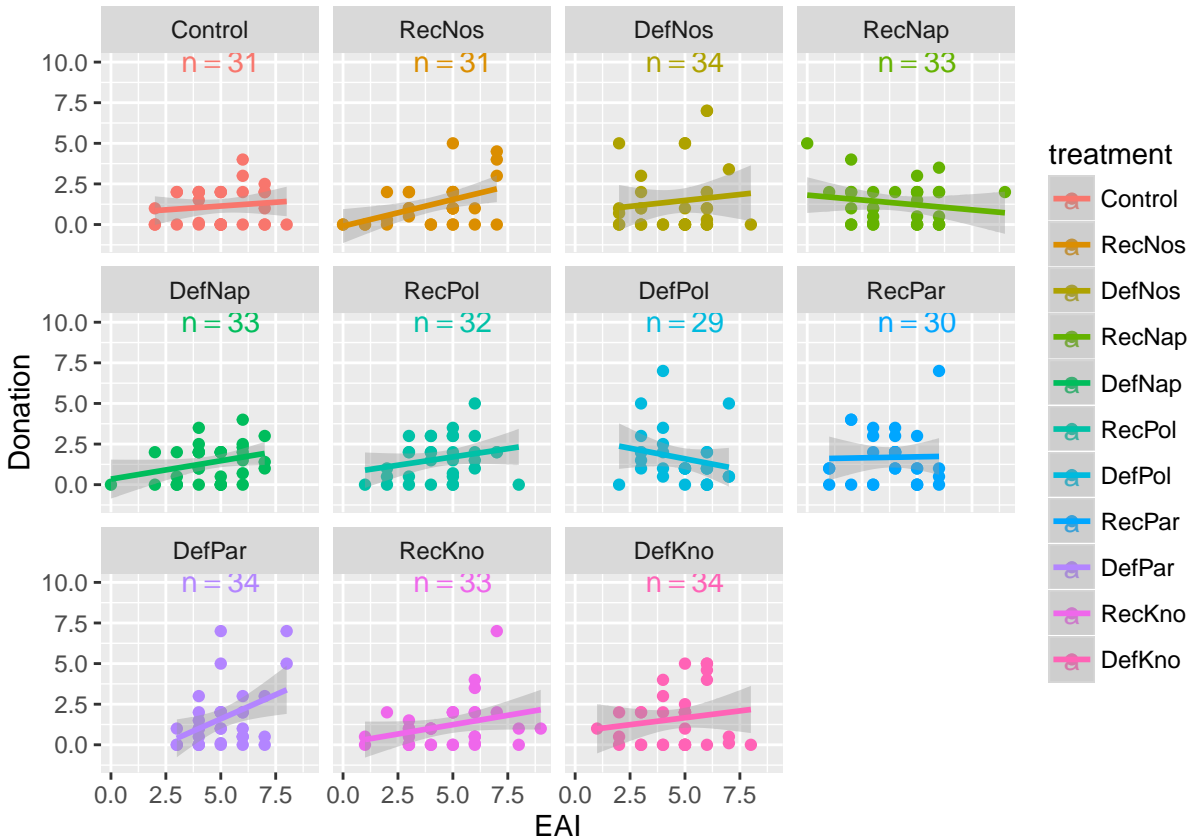
2. Variable: Donation dummy (1 if donated, 0 otherwise)

Aggregated descriptive statistics

```
summary(df$Donated)
```
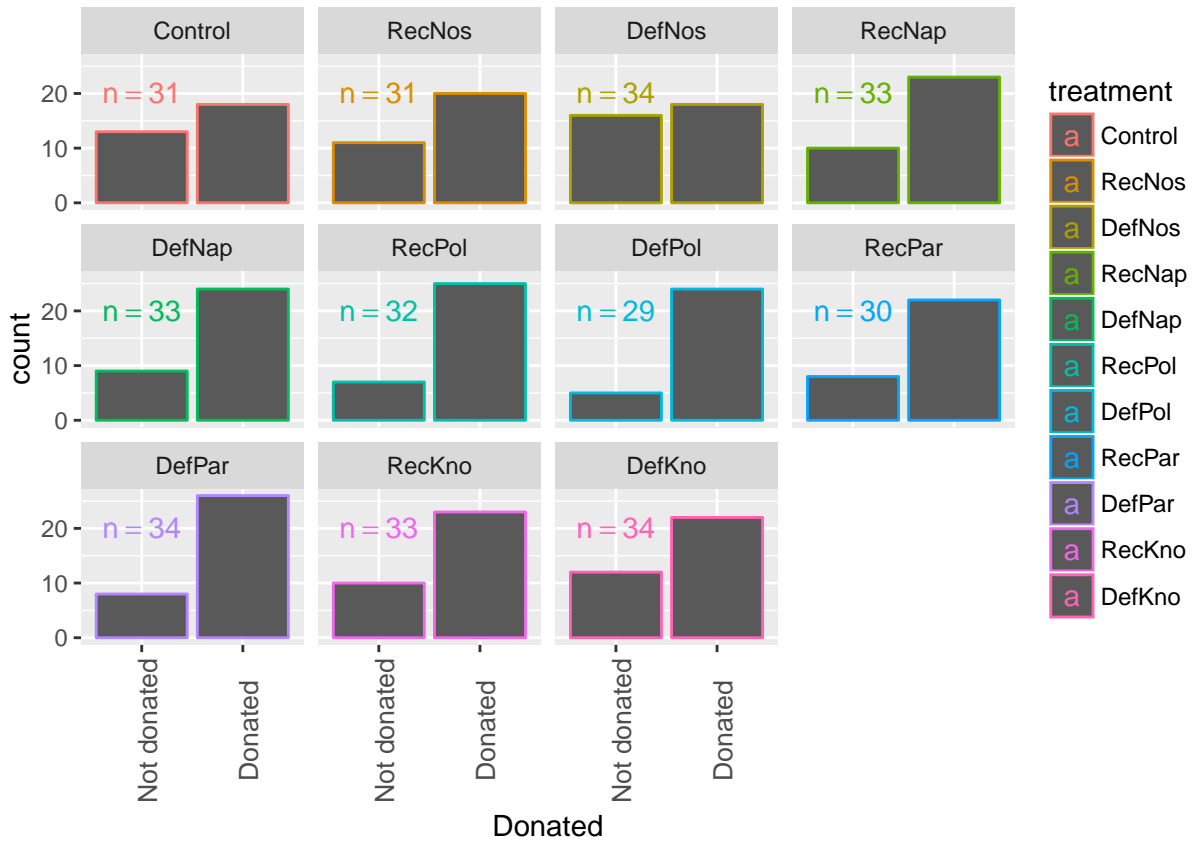
```
## Not donated      Donated
##          109          245
```

Distribution of donation dummy by treatment

```
table(df$Donated, df$treatment)
```

```
##
##               Control RecNos DefNos RecNap DefNap RecPol DefPol RecPar
##   Not donated      13     11     16     10      9      7      5      8
##   Donated          18     20     18     23     24     25     24     22
##
##               DefPar RecKno DefKno
##   Not donated      8     10     12
##   Donated         26     23     22
```

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Decision to donate by treatment graph
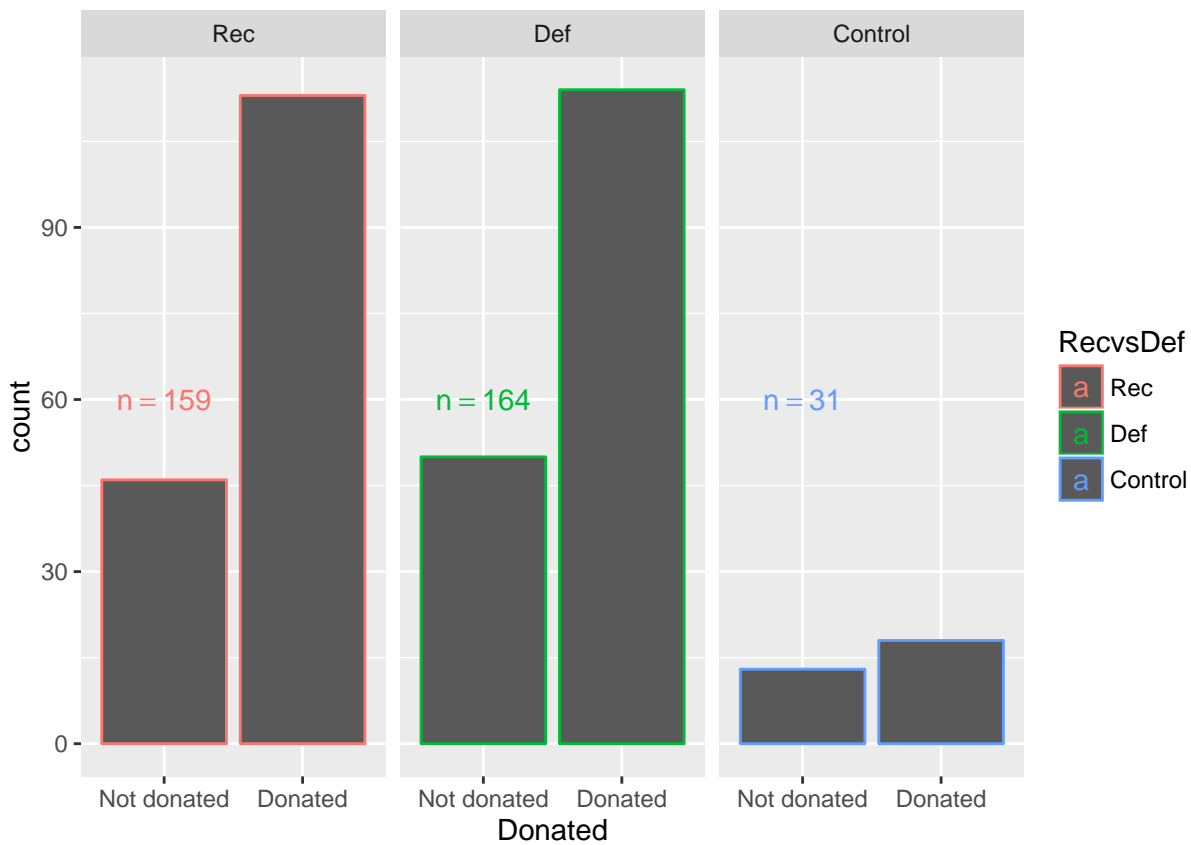
Decision to donate by Reactance score


```
chisq.test(table(df$Donated, df$Reactance))
```
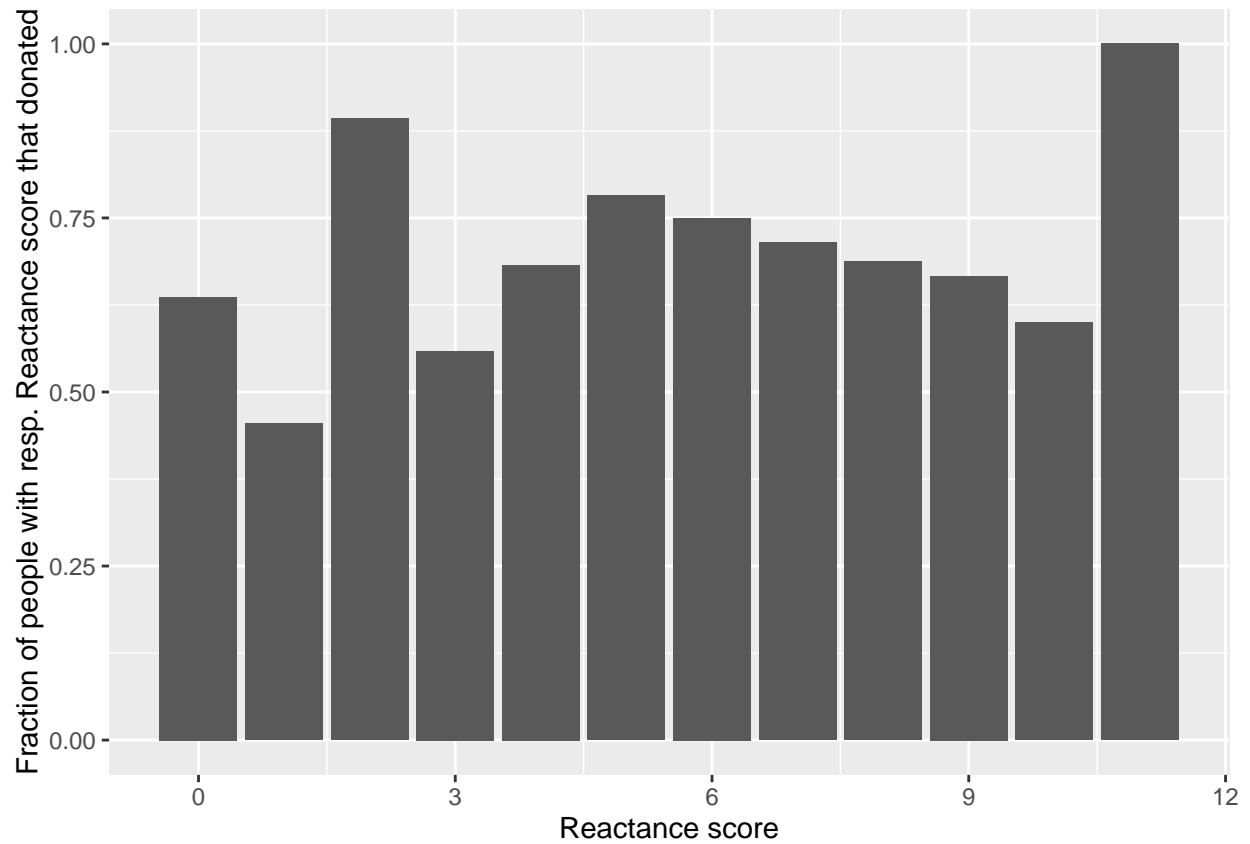
```
## Warning in chisq.test(table(df$Donated, df$Reactance)): Chi-squared
## approximation may be incorrect
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(df$Donated, df$Reactance)
## X-squared = 17.51, df = 11, p-value = 0.09367
```

Decision to donate by Reactance score and treatment

At least visually there does not seem to be a relationship of Reactance score and Donation broken down by treatment.
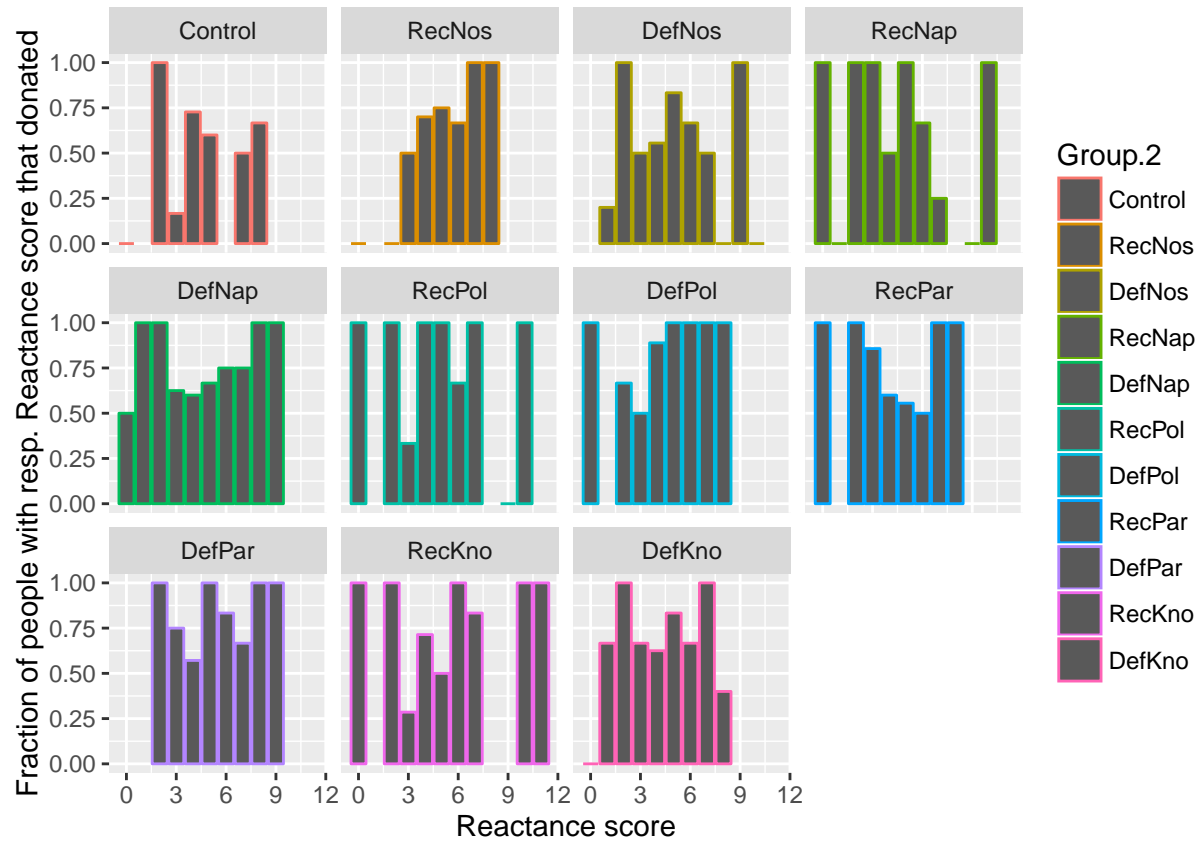
Decision to donate by EAI score
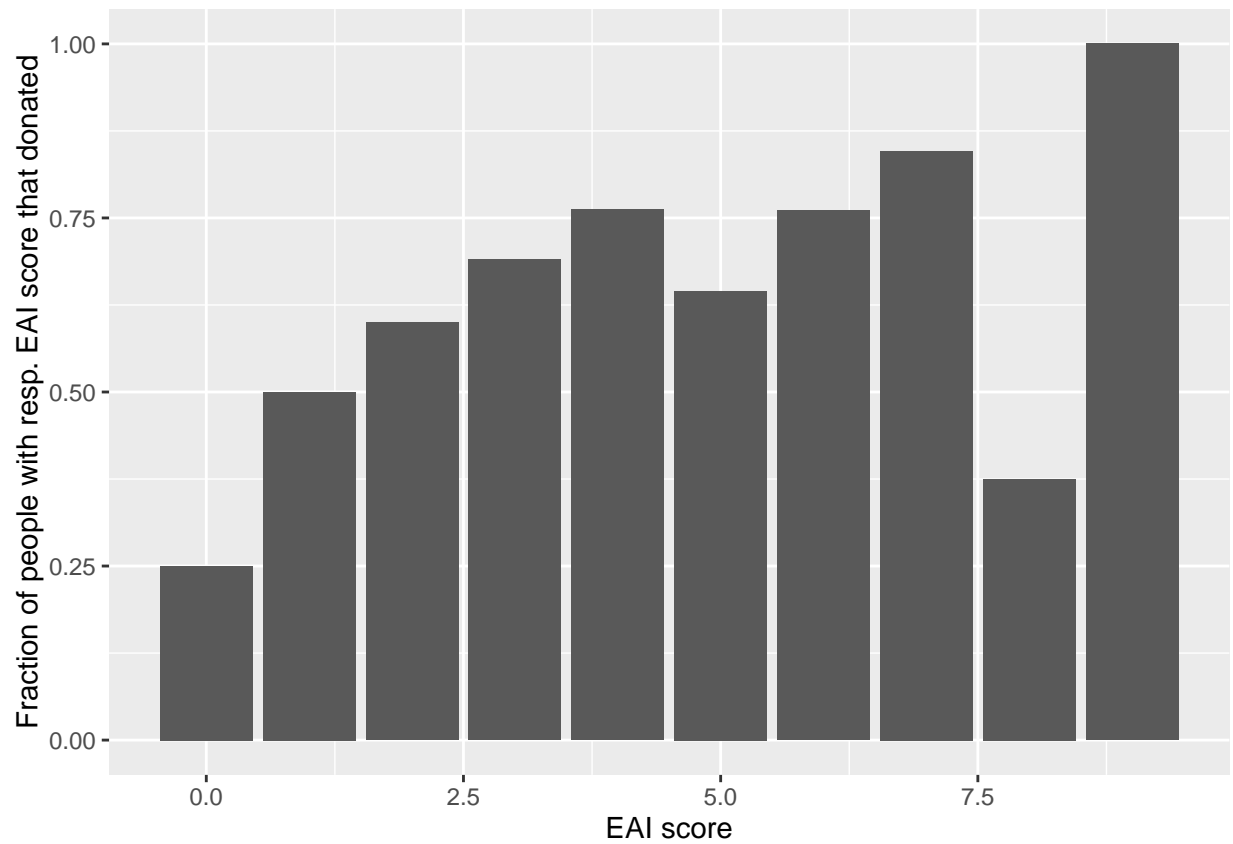

```r
chisq.test(table(df$Donated, df$EAI))
```

```
## Warning in chisq.test(table(df$Donated, df$EAI)): Chi-squared approximation
## may be incorrect
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(df$Donated, df$EAI)
## X-squared = 17.998, df = 9, p-value = 0.0352
```

The Chi²-test statistic is not significant, indicating that the decision whether or not to donate anything does not depend on the EAI.

Decision to donate by EAI score and treatment
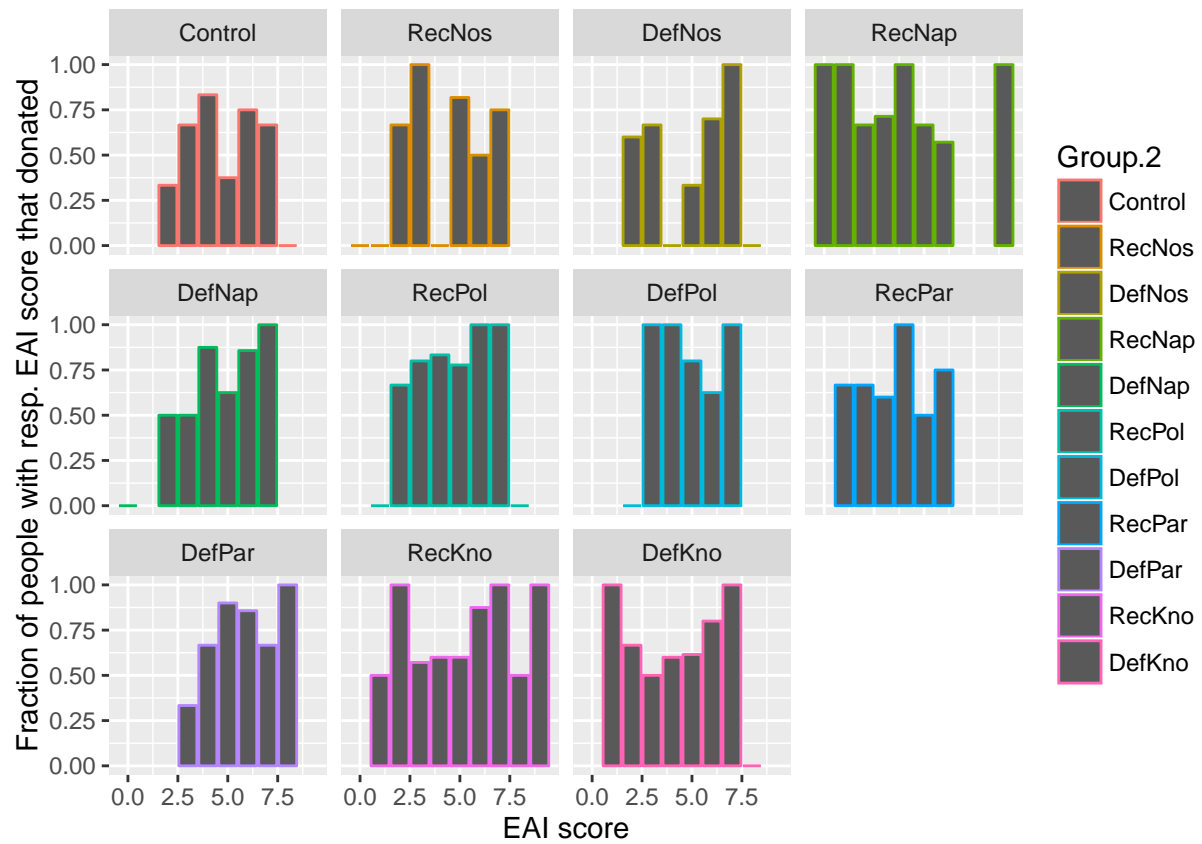
3. Variable: Beliefs about other participants donations

Aggregated descriptive statistics

```r
summary(df$belief)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   0.000   1.000   2.000   1.973   3.000   7.000
```

Distribution of aggregated beliefs about donations

Frequency of beliefs about others' donations

Distribution of beliefs by treatment

```
## group: Control
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 31 1.84 1.25      2    1.72 0.74   0   7     7  2.1     6.92 0.22
## -----------------------------------------------------------
## group: RecNos
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 31 2.06 1.15      2    1.98 1.48   0   5     5 0.47    -0.28 0.21
## -----------------------------------------------------------
## group: DefNos
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 34 1.58 1.07      2    1.55 1.48   0 4.5   4.5 0.43    -0.24 0.18
## -----------------------------------------------------------
## group: RecNap
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 33 1.67 1.01      2     1.6 1.48   0   5     5 0.97     1.55 0.18
## -----------------------------------------------------------
## group: DefNap
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 33 1.92 0.86      2    1.91 1.48 0.5   4   3.5 0.27    -0.62 0.15
## -----------------------------------------------------------
## group: RecPol
```
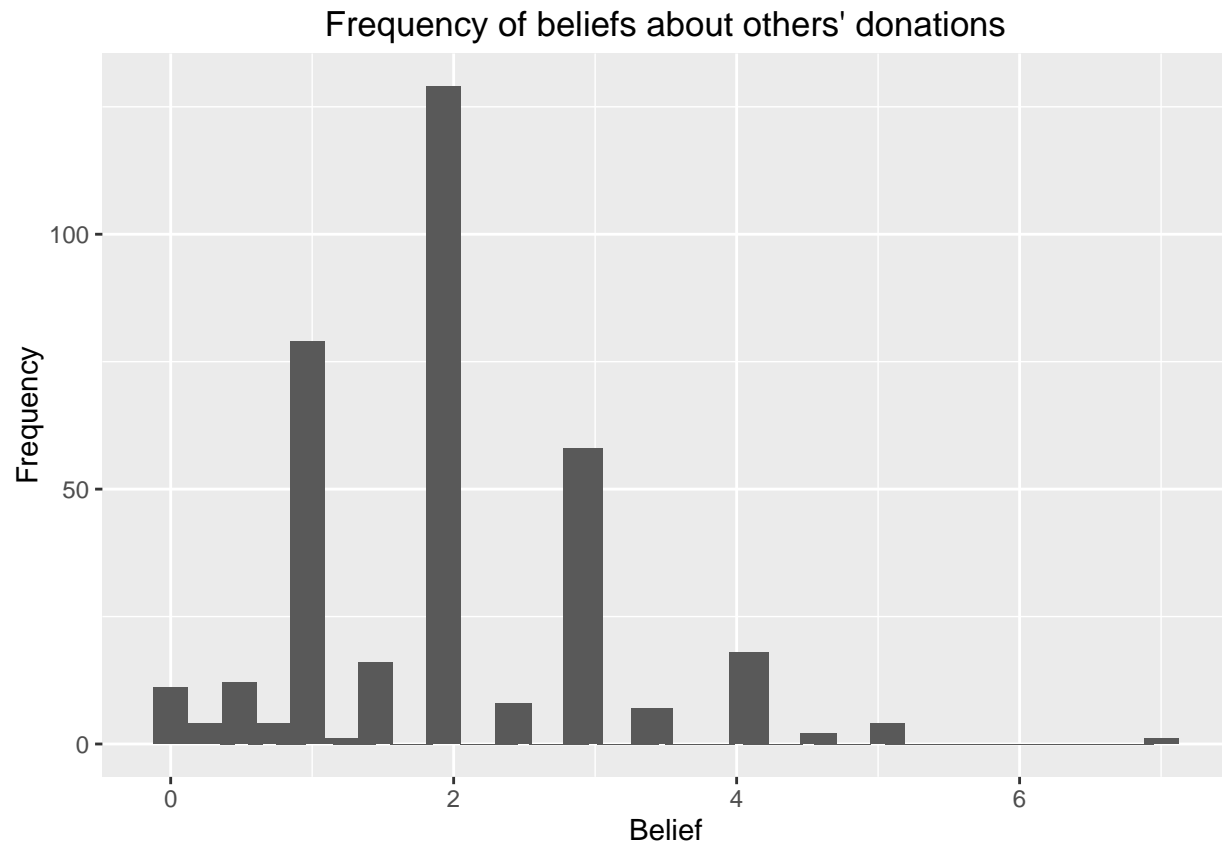
```
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 32 2.11 0.92      2     2.1 1.48 0.5   4   3.5 0.02    -0.95 0.16
## ------------------------------------------------------------
## group: DefPol
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 29 2.23 1.16      2    2.18 1.48 0.2   5   4.8 0.59    -0.45 0.21
## ------------------------------------------------------------
## group: RecPar
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis  se
## 1     1 30    2 1.07      2    1.92 1.48   0 4.5   4.5 0.46    -0.31 0.2
## ------------------------------------------------------------
## group: DefPar
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 34 2.16  1.1      2    2.16 1.48   0   4     4 -0.1    -0.93 0.19
## ------------------------------------------------------------
## group: RecKno
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 33 2.02 0.85      2       2 0.74 0.5   4   3.5 0.21    -0.64 0.15
## ------------------------------------------------------------
## group: DefKno
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 34 2.16 1.09      2    2.05 1.48   1   5     4 0.82    -0.24 0.19
```


Frequency of beliefs about others donations by treatment
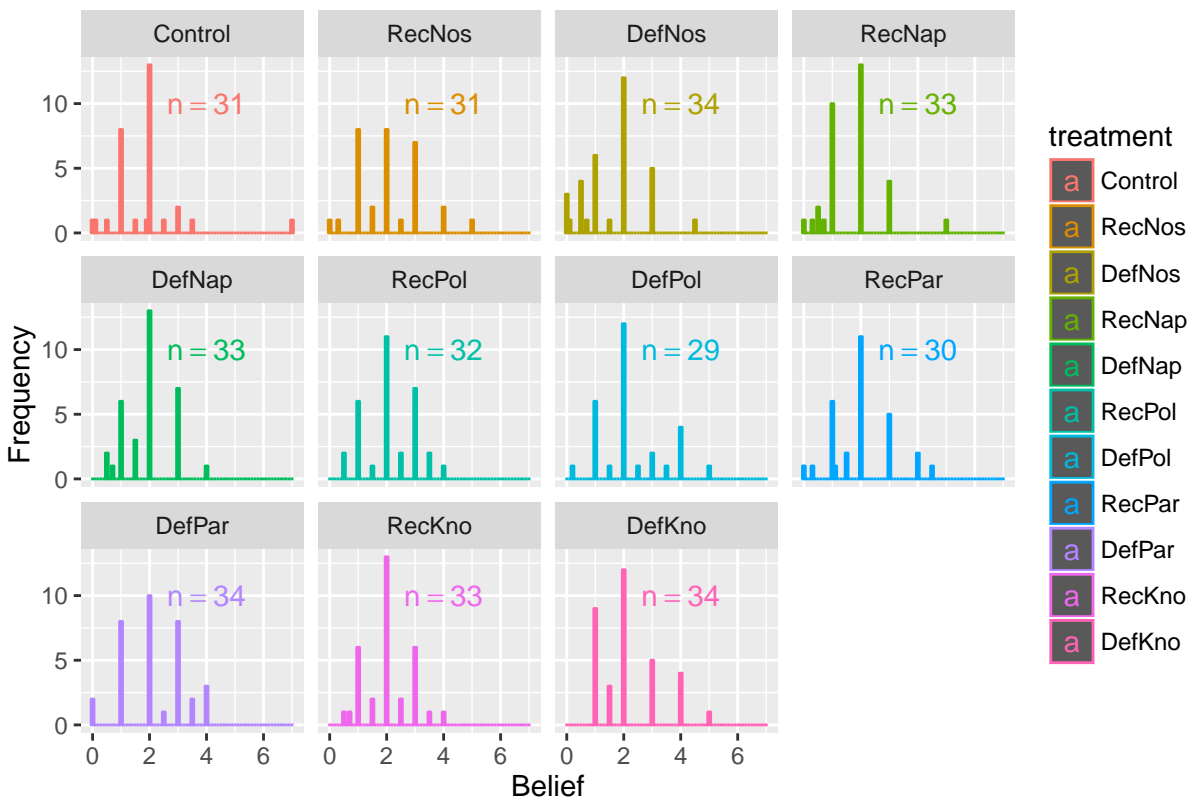
Beliefs by treatment (Boxplot)
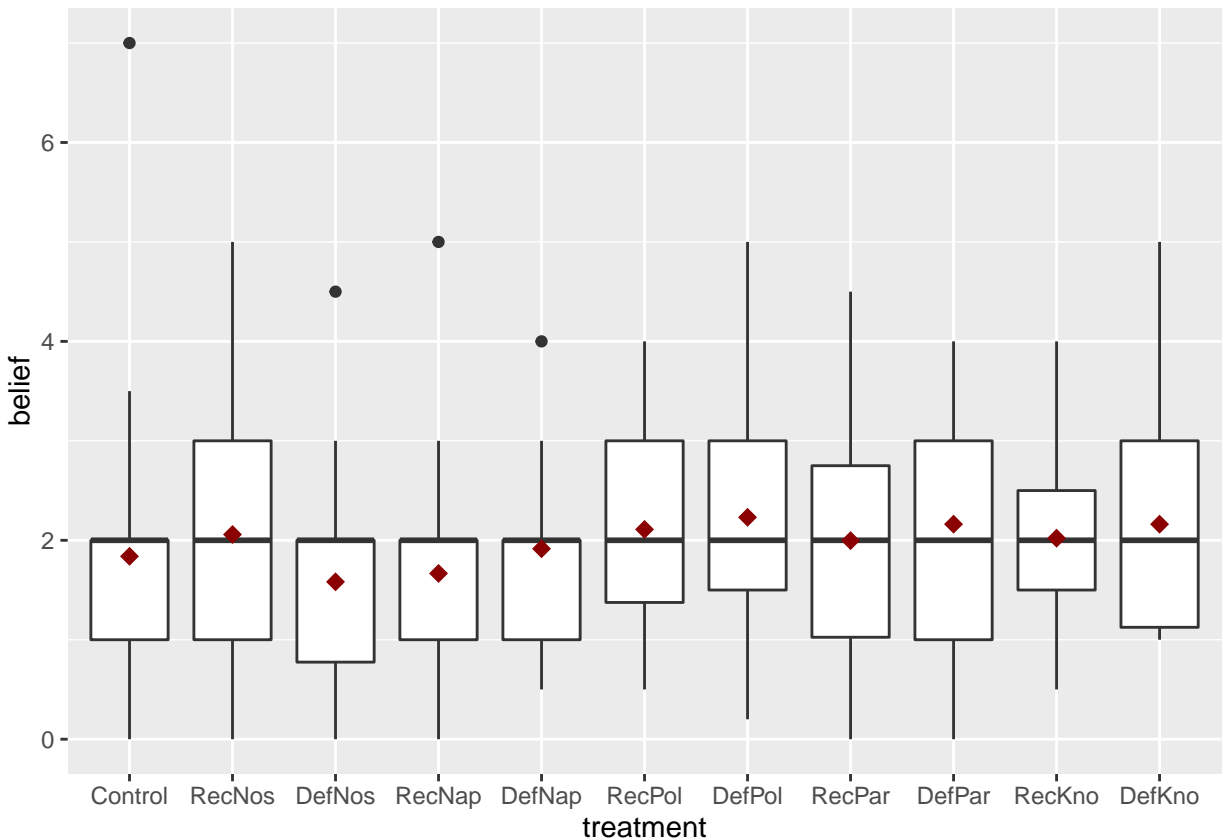
Inferential Statistics

Following are relevant inferential statistics for each of three relevant dependent variables. These relevant dependent variables are 1. Donation, which is the amount the subject donated in order to retire emission rights 2. Donated, which is equal to 1 if the subject donated a positive amount, and 0 otherwise 3. Belief, which is the amount the subject thinks other participants in this experiment donated on average (not incentivized)

1. Variable: Donation to retire carbon licenses

Kruskal-Wallis-Test

The following KW-test tests the null-hypothesis that the median donations in each treatment are the same. The test assumes variance homogeneity and equal distributions of donations in each treatment. It basically tests whether the distributions from the different treatments are shifted.

```
kruskal.test(df$Donation ~ df$treatment)
```

```
##
##  Kruskal-Wallis rank sum test
##
## data:  df$Donation by df$treatment
```

```
## Kruskal-Wallis chi-squared = 7.434, df = 10, p-value = 0.6839
```

We do not reject the null (p = .05).

ANOVA (one-way)

```
summary(aov(df$Donation ~ df$treatment))
```

```
##               Df Sum Sq Mean Sq F value Pr(>F)
## df$treatment  10   13.5   1.345   0.557  0.849
## Residuals    343  828.6   2.416
```

We do not reject the null (p = .05).

2. Variable: Donation dummy (1 if donated, 0 otherwise)

Chi² Test

The following Chi²-test tests the null-hypothesis that whether or not a participant decides to donate anything to retire emission rights (extensive margin) is independent of the treatments.

```
table(df$Donated, df$treatment)
```

```
##
##               Control RecNos DefNos RecNap DefNap RecPol DefPol RecPar
##   Not donated      13     11     16     10      9      7      5      8
##   Donated          18     20     18     23     24     25     24     22
##
##               DefPar RecKno DefKno
##   Not donated      8     10     12
##   Donated         26     23     22
```

```
chisq.test(table(df$Donated, df$treatment))
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(df$Donated, df$treatment)
## X-squared = 11.645, df = 10, p-value = 0.3095
```

We fail to reject the null (p = .05)

3. Variable: Beliefs about other participants donations

Kruskal-Wallis Test

The following KW-test tests the null-hypothesis that the median beliefs about other participants average donations in each treatment are the same. The test assumes variance homogeneity and equal distributions of donations in each treatment. It basically tests whether the distributions from the different treatments are shifted.

```
kruskal.test(df$belief ~ df$treatment)
```

```
##
##  Kruskal-Wallis rank sum test
##
## data:  df$belief by df$treatment
## Kruskal-Wallis chi-squared = 14.128, df = 10, p-value = 0.1672
```

We do not reject the null. The beliefs about other participants donation amounts do not differ significantly between the treatments.

Test of hypotheses from the working paper

H0a

Mean and median payments to retire carbon licenses in the control condition are close to zero.

H0: Average Donations = 0 HA: Average Donations >< 0

```
t.test(df$Donation, mu = 0)
```

```
##
##  One Sample t-test
##
## data:  df$Donation
## t = 17.564, df = 353, p-value < 2.2e-16
## alternative hypothesis: true mean is not equal to 0
## 95 percent confidence interval:
##  1.280368 1.603248
## sample estimates:
## mean of x
##  1.441808
```

```
wilcox.test(df$Donation, mu = 0)
```

```
##
##  Wilcoxon signed rank test with continuity correction
##
## data:  df$Donation
## V = 30135, p-value < 2.2e-16
## alternative hypothesis: true location is not equal to 0
```

We reject the null that Donations are equal to 0

H0b

The share of subjects whose payments correspond to the recommended, respectively defaulted payment-value (convergence) is higher than in the control condition. Additionally, we expect that the share of subjects converging to the default is higher than the share converging to the recommendation.

Aggregated donations in recommendation treatments > donations in control group

```
describeBy(df$Donation, df$RecvsC)
```

```
## group: Control
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 31 1.13 1.15      1    1.02 1.48   0   4     4 0.42    -0.94 0.21
## ---------------------------------------------------------
## group: Rec
##   vars   n mean   sd median trimmed mad min max range skew kurtosis   se
## 1    1 159  1.4 1.42      1     1.2 1.48   0   7     7 1.24     1.89 0.11
```

```
t.test(df$Donation ~ df$RecvsC)
```

```
##
##  Welch Two Sample t-test
##
## data:  df$Donation by df$RecvsC
## t = -1.1398, df = 49.594, p-value = 0.2598
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.7413806  0.2046388
## sample estimates:
## mean in group Control    mean in group Rec
##              1.132258             1.400629
```

```
wilcox.test(df$Donation ~ df$RecvsC)
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$RecvsC
## W = 2244, p-value = 0.4199
## alternative hypothesis: true location shift is not equal to 0
```

We cannot reject the null that Donations in recommendation treatments are equal to donations in control condition.

Aggregated donations in default treatments > donations in control group

```
describeBy(df$Donation, df$DefvsC)
```

```
## group: Control
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 31 1.13 1.15      1    1.02 1.48   0   4     4 0.42    -0.94 0.21
## ---------------------------------------------------------
## group: Def
##   vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 164 1.54 1.71      1    1.23 1.48   0   7     7 1.38     1.56 0.13
```

```
t.test(df$Donation ~ df$DefvsC)
```

```
##
##  Welch Two Sample t-test
##
## data:  df$Donation by df$DefvsC
## t = -1.6562, df = 58.519, p-value = 0.103
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.90097966  0.08500798
## sample estimates:
## mean in group Control     mean in group Def
##             1.132258              1.540244
```

```
wilcox.test(df$Donation ~ df$DefvsC)
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$DefvsC
## W = 2289.5, p-value = 0.3698
## alternative hypothesis: true location shift is not equal to 0
```

We cannot reject the null that Donations in default treatments are equal to donations in control condition.

Aggregated donations in default treatments > donations in recommendation treatments

```
describeBy(df$Donation, df$RecvsDef)
```

```
## group: Rec
##    vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 159  1.4 1.42      1     1.2 1.48   0   7     7 1.24     1.89 0.11
## ------------------------------------------------------------
## group: Def
##    vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 164 1.54 1.71      1    1.23 1.48   0   7     7 1.38     1.56 0.13
## ------------------------------------------------------------
## group: Control
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 31 1.13 1.15      1    1.02 1.48   0   4     4 0.42    -0.94 0.21
```

```
t.test(df$Donation[df$RecvsDef != "Control"] ~ df$RecvsDef[df$RecvsDef != "Control"])
```

```
##
##  Welch Two Sample t-test
##
## data:  df$Donation[df$RecvsDef != "Control"] by df$RecvsDef[df$RecvsDef != "Control"]
## t = -0.79821, df = 313.39, p-value = 0.4254
## alternative hypothesis: true difference in means is not equal to 0
```

```
## 95 percent confidence interval:
##  -0.4837626  0.2045326
## sample estimates:
## mean in group Rec mean in group Def
##          1.400629          1.540244
```

```
# the above is the syntax alternative to Dummies, finally...
wilcox.test(df$Donation ~ df$RecvsDefD)
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$RecvsDefD
## W = 12914, p-value = 0.8804
## alternative hypothesis: true location shift is not equal to 0
```

We cannot reject the null that Donations in default treatments are equal to donations in recommendation treatments.

H0c

The share of subjects converging to the recommended, respectively defaulted payment-values in the name and picture condition is higher than in the neutral source-condition.

For Recommendations: Donations in Name and Picture treatments > Donations in No-Source treatments

```
describeBy(df$Donation, df$RecNapvsRecNos)
```

```
## group: RecNap
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 33 1.32 1.31      1    1.15 1.48   0   5     5 0.83     0.13 0.23
## -------------------------------------------------------
## group: RecNos
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 31 1.24 1.39      1    0.99 1.48   0   5     5 1.14     0.52 0.25
```

```
t.test(df$Donation ~ df$RecNapvsRecNos)
```

```
##
##  Welch Two Sample t-test
##
## data:  df$Donation by df$RecNapvsRecNos
## t = 0.25345, df = 61.007, p-value = 0.8008
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.5906449  0.7621014
## sample estimates:
## mean in group RecNap mean in group RecNos
##             1.321212             1.235484
```

```
wilcox.test(df$Donation ~ df$RecNapvsRecNos)
```

```
## Warning in wilcox.test.default(x = c(2, 0.5, 0, 2, 1, 2, 3.5, 2, 3, 0,
## 0.5, : cannot compute exact p-value with ties
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$RecNapvsRecNos
## W = 546, p-value = 0.6373
## alternative hypothesis: true location shift is not equal to 0
```

We cannot reject the null that Donations in recommendation treatments informing about the name and picture of the source are equal to donations in recommendation treatments providing no information about the source of the recommendation.

For Defaults: Donations in Name and Picture treatments > Donations in No-Source treatments

```
describeBy(df$Donation, df$DefNapvsDefNos)
```

```
## group: DefNap
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis  se
## 1    1 33 1.38 1.13    1.5    1.29 1.19   0   4     4 0.27    -0.88 0.2
## -----------------------------------------------------------
## group: DefNos
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 34 1.42 2.08    0.5    1.05 0.74   0   7     7 1.46     0.93 0.36
```

```
t.test(df$Donation ~ df$DefNapvsDefNos)
```

```
##
##  Welch Two Sample t-test
##
## data:  df$Donation by df$DefNapvsDefNos
## t = -0.11715, df = 51.157, p-value = 0.9072
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.8663619  0.7708183
## sample estimates:
## mean in group DefNap mean in group DefNos
##             1.375758             1.423529
```

```
wilcox.test(df$Donation ~ df$DefNapvsDefNos)
```

```
## Warning in wilcox.test.default(x = c(2, 0.7, 2, 3.5, 1, 0.5, 2, 0, 3, 0, :
## cannot compute exact p-value with ties
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$DefNapvsDefNos
## W = 656, p-value = 0.2211
## alternative hypothesis: true location shift is not equal to 0
```

We cannot reject the null that Donations in default treatments informing about the name and picture of the source are equal to donations in default treatments providing no information about the source of the default.

H1

A subject's reaction towards the respective intervention ~~depends on~~ is predicted by trait reactance.

The following are not rigurous tests of the respective hypotheses, but rather approaches to get an idea about relationships and predictions.

Relation between Donation and Reactance score
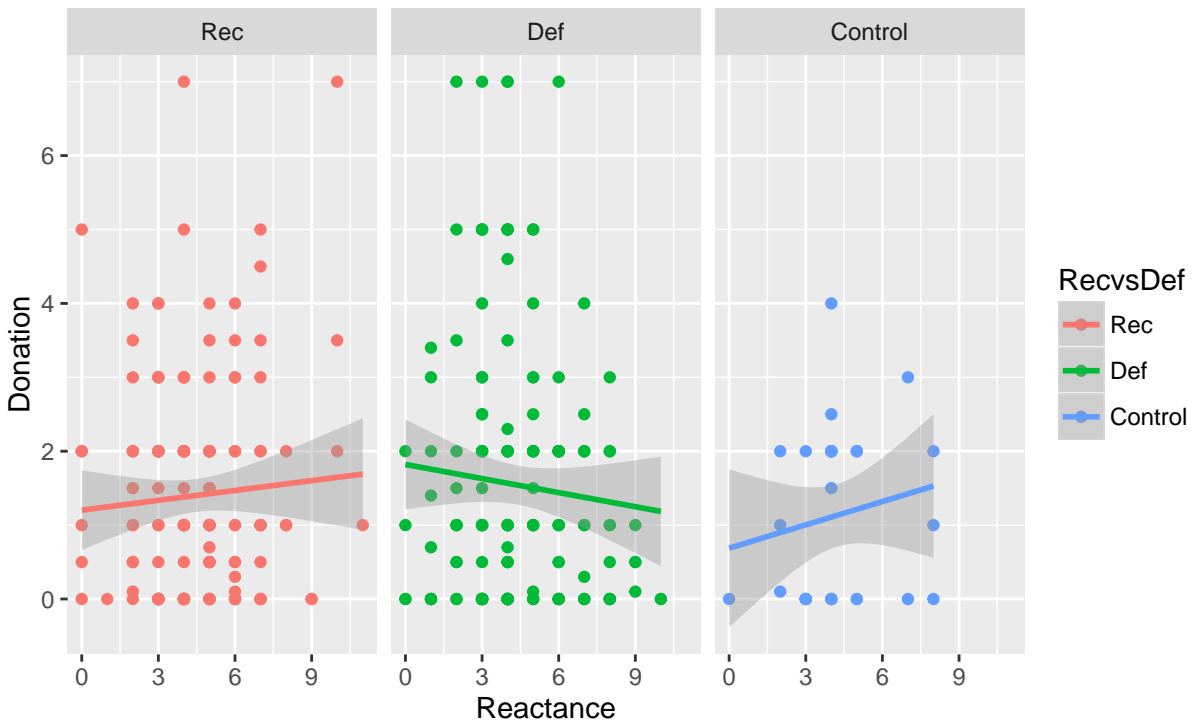
conditional on treatment
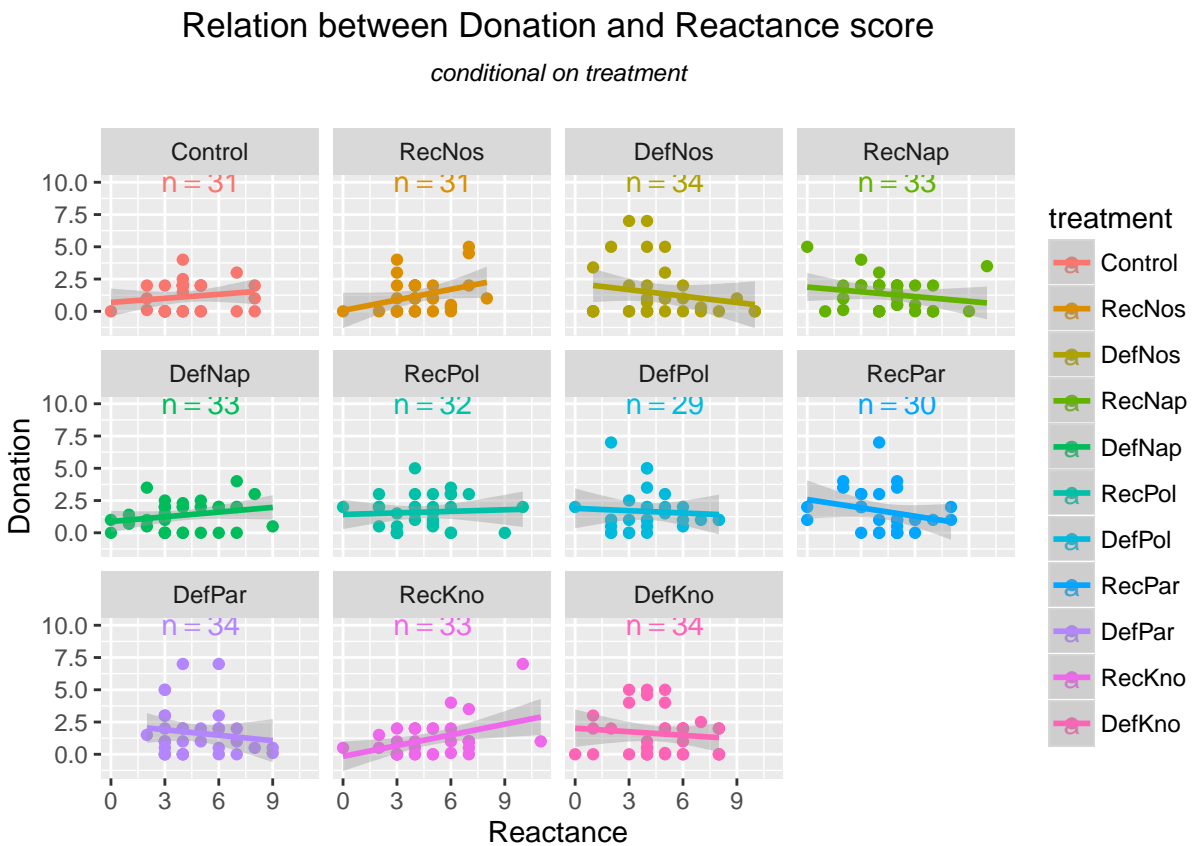
H1a

A subject that scores high on trait reactance is less likely to converge to the recommended and defaulted payment-values, than a subject scoring low on trait reactance. *The following treats the Reactance score as metric.*

Relation between Donation and Reactance score
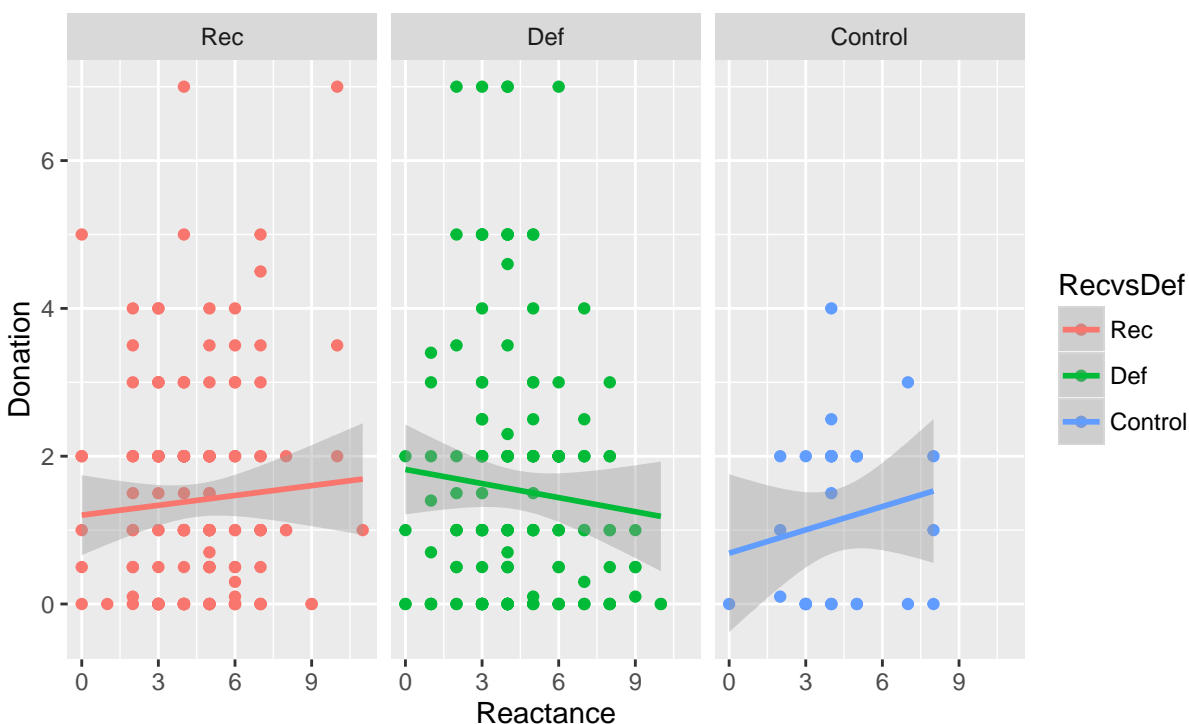
resp. for Rec and Def treatment groups

H1b

A subject that scores high on trait reactance is less likely to converge to the defaulted than to the recommended payment-value.

Relation between Donation and Reactance score

resp. for Rec and Def treatment groups

Left is recommendation group, middle is default group, right is Control.

H2

The share of subjects converging to the recommended, respectively defaulted payment-values in the condition informing about the academic degree of the source is higher than in the name and picture condition.

For Recommendations: Donations in Knowledge treatments > Donations in Name and Picture treatments

```
describeBy(df$Donation, df$RecNapvsRecKno)
```

```
## group: RecNap
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 33 1.32 1.31      1    1.15 1.48   0   5     5 0.83     0.13 0.23
## --------------------------------------------------------
## group: RecKno
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 33 1.18 1.47      1    0.91 1.48   0   7     7 2.06     5.17 0.26
```

```
t.test(df$Donation ~ df$RecNapvsRecKno)
```

```
##
```

```
##  Welch Two Sample t-test
##
## data:  df$Donation by df$RecNapvsRecKno
## t = 0.3982, df = 63.131, p-value = 0.6918
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.5479357  0.8206629
## sample estimates:
## mean in group RecNap mean in group RecKno
##             1.321212             1.184848
```

```r
wilcox.test(df$Donation ~ df$RecNapvsRecKno)
```

```
## Warning in wilcox.test.default(x = c(2, 0.5, 0, 2, 1, 2, 3.5, 2, 3, 0,
## 0.5, : cannot compute exact p-value with ties
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$RecNapvsRecKno
## W = 593, p-value = 0.5271
## alternative hypothesis: true location shift is not equal to 0
```

For Defaults: Donations in Knowledge treatments > Donations in Name and Picture treatments

```r
describeBy(df$Donation, df$DefNapvsDefKno)
```

```
## group: DefNap
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis  se
## 1    1 33 1.38 1.13    1.5    1.29 1.19   0   4     4 0.27    -0.88 0.2
## --------------------------------------------------------
## group: DefKno
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 34 1.59  1.7    1.5     1.4 2.22   0   5     5 0.73    -0.74 0.29
```

```r
t.test(df$Donation ~ df$DefNapvsDefKno)
```

```
##
##  Welch Two Sample t-test
##
## data:  df$Donation by df$DefNapvsDefKno
## t = -0.62073, df = 57.523, p-value = 0.5372
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.9226528  0.4859326
## sample estimates:
## mean in group DefNap mean in group DefKno
##             1.375758             1.594118
```

```
wilcox.test(df$Donation ~ df$DefNapvsDefKno)
```

```
## Warning in wilcox.test.default(x = c(2, 0.7, 2, 3.5, 1, 0.5, 2, 0, 3, 0, :
## cannot compute exact p-value with ties
```

```
##
##   Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$DefNapvsDefKno
## W = 557.5, p-value = 0.9691
## alternative hypothesis: true location shift is not equal to 0
```

H3-1

The share of subjects converging to the recommended, respectively defaulted payment-values in the condition informing about the political characteristic of the source is lower than in the name and picture condition.

For Recommendations: Donations in Political treatments < Donations in Name and Picture treatments

```
describeBy(df$Donation, df$RecNapvsRecPol)
```

```
## group: RecNap
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 33 1.32 1.31      1    1.15 1.48   0   5     5 0.83     0.13 0.23
## ------------------------------------------------------------
## group: RecPol
##    vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 32  1.6 1.29   1.75    1.53 1.85   0   5     5 0.43    -0.48 0.23
```

```
t.test(df$Donation ~ df$RecNapvsRecPol)
```

```
##
##   Welch Two Sample t-test
##
## data:  df$Donation by df$RecNapvsRecPol
## t = -0.86661, df = 62.985, p-value = 0.3894
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.9216563  0.3640806
## sample estimates:
## mean in group RecNap mean in group RecPol
##             1.321212             1.600000
```

```
wilcox.test(df$Donation ~ df$RecNapvsRecPol)
```

```
## Warning in wilcox.test.default(x = c(2, 0.5, 0, 2, 1, 2, 3.5, 2, 3, 0,
## 0.5, : cannot compute exact p-value with ties
```

```
## 
##  Wilcoxon rank sum test with continuity correction
## 
## data:  df$Donation by df$RecNapvsRecPol
## W = 458, p-value = 0.3506
## alternative hypothesis: true location shift is not equal to 0
```

We cannot reject the null that Donations in recommendation treatments informing about the political mandate of the source are equal to donations in recommendations treatments providing the name and picture of the source.

For Defaults: Donations in Political treatments < Donations in Name and Picture treatments

describeBy(df$Donation, df$DefNapvsDefPol)

```
## group: DefNap
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis  se
## 1    1 33 1.38 1.13    1.5    1.29 1.19   0   4     4 0.27    -0.88 0.2
## ----------------------------------------------------------
## group: DefPol
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 29 1.66 1.68      1    1.44 1.48   0   7     7 1.51     1.87 0.31
```

t.test(df$Donation ~ df$DefNapvsDefPol)

```
## 
##  Welch Two Sample t-test
## 
## data:  df$Donation by df$DefNapvsDefPol
## t = -0.75775, df = 48.01, p-value = 0.4523
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -1.0208211  0.4619914
## sample estimates:
## mean in group DefNap mean in group DefPol
##             1.375758             1.655172
```

wilcox.test(df$Donation ~ df$DefNapvsDefPol)

```
## Warning in wilcox.test.default(x = c(2, 0.7, 2, 3.5, 1, 0.5, 2, 0, 3, 0, :
## cannot compute exact p-value with ties
```

```
## 
##  Wilcoxon rank sum test with continuity correction
## 
## data:  df$Donation by df$DefNapvsDefPol
## W = 466.5, p-value = 0.8689
## alternative hypothesis: true location shift is not equal to 0
```

We cannot reject the null that donations in default treatments informing about the political mandate of the source are equal to donations in default treatments providing the name and picture of the source.

H3-2

When the source is political the share of subjects converging to the default is lower than the share of subjects converging to the recommendation.

Donations in default treatments informing about the political characteristics of the source < donations in recommendation treatments informing about the political characteristics of the source

```
describeBy(df$Donation, df$RecPolvsDefPol)
```

```
## group: RecPol
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 32  1.6 1.29   1.75    1.53 1.85   0   5     5 0.43    -0.48 0.23
## ------------------------------------------------------
## group: DefPol
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 29 1.66 1.68      1    1.44 1.48   0   7     7 1.51     1.87 0.31
```

```
t.test(df$Donation ~ df$RecPolvsDefPol)
```

```
##
##  Welch Two Sample t-test
##
## data:  df$Donation by df$RecPolvsDefPol
## t = -0.14289, df = 52.32, p-value = 0.8869
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.8298648  0.7195200
## sample estimates:
## mean in group RecPol mean in group DefPol
##             1.600000             1.655172
```

```
wilcox.test(df$Donation ~ df$RecPolvsDefPol)
```

```
## Warning in wilcox.test.default(x = c(3, 1, 0.5, 3.5, 0, 0, 0.5, 0, 2, 1, :
## cannot compute exact p-value with ties
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$RecPolvsDefPol
## W = 486, p-value = 0.7531
## alternative hypothesis: true location shift is not equal to 0
```

We cannot reject the null that donations in default treatments informing about the political characteristics of the source are equal to donations in recommendation treatments informing about the political characteristics of the source.

H3a (HERE ALSO INCLUDE PARTY TREATMENTS, NOT JUST POLITICAL?)

A subject that scores high on trust in politics is more likely to converge to the recommended and defaulted payment-values, than a subject scoring low on trust in politics. *In treatments informing about the political characteristics of the source.*

Relationship between trust in politics dummy and Donation

resp. for RecPol and DefPol treatment groups
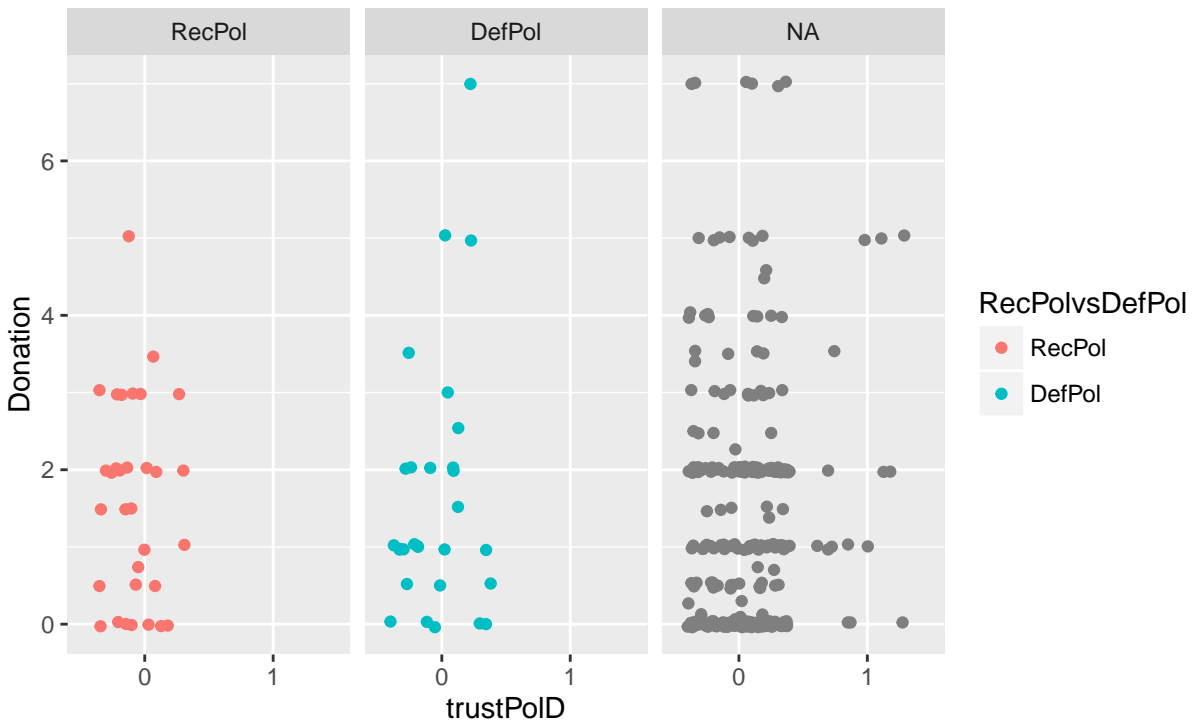

```
## 
##  Wilcoxon rank sum test with continuity correction
## 
## data:  df$Donation by df$trustPolD
## W = 2104, p-value = 0.2474
## alternative hypothesis: true location shift is not equal to 0
```
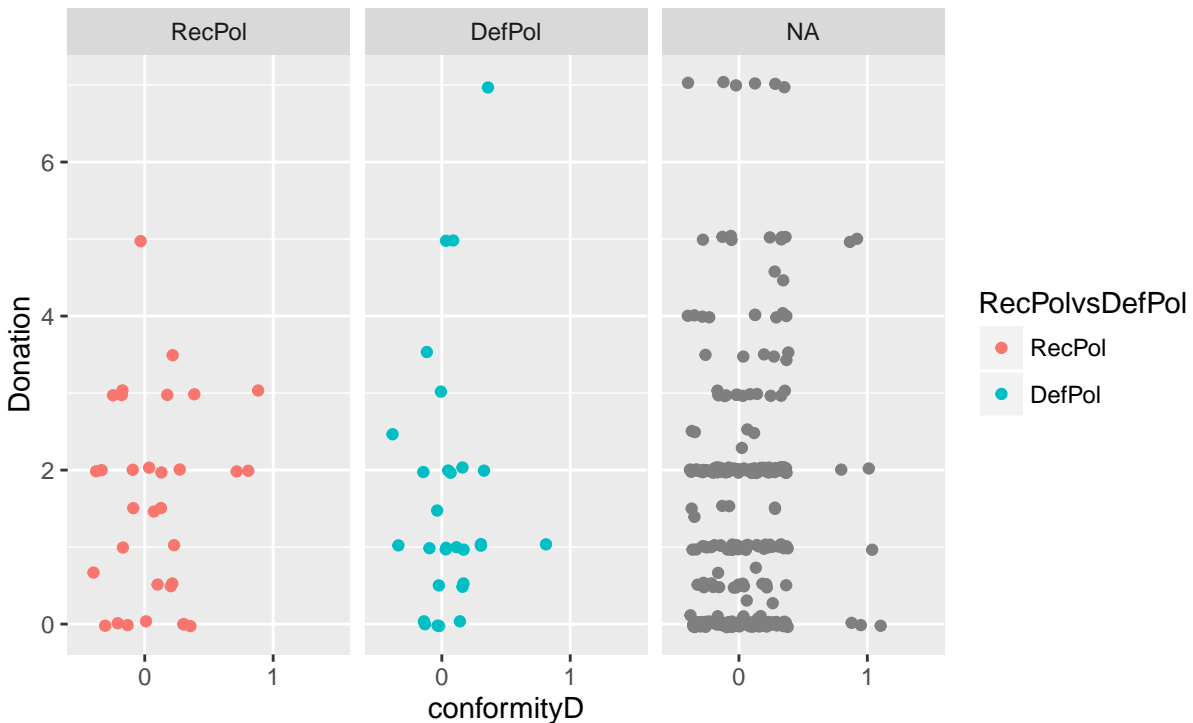
Problem is that there are not enough observations with high trust in politics (no observation in Default x Political treatment.

H3b

A subject that values conformity, i.e. doing what the majority does, is more likely to converge to the recommended and defaulted payment-values, than a subject that does not value conformity.

Relationship between conformity dummy and Donation

resp. for RecPol and DefPol treatment groups


```
## 
##  Wilcoxon rank sum test with continuity correction
## 
## data:  df$Donation by df$conformityD
## W = 1696, p-value = 0.2961
## alternative hypothesis: true location shift is not equal to 0
```

Problem is that there are not enough observations with high trust in politics.

H4

The share of subjects converging to the recommended, respectively defaulted payment-values, relative to the political-characteristic condition, is higher for subjects with same party preferences, and lower for subjects with different party preferences. **Hypothesis is possibly phrased wrongly.**

```
table(df$party)
```

```
## 
##               AfD           Andere     Bündnis90/Grüne
##                 9               21                  71
##           CDU/CSU        Die Linke                 FDP
##                58               65                  11
## Keine (Nichtwähler)    Keine Angabe                SPD
##                44                7                  68
```

```r
table(df$party, df$treatment)
```

```
## 
##                         Control RecNos DefNos RecNap DefNap RecPol DefPol
##     AfD                       2      1      0      2      0      0      1
##     Andere                    2      3      1      3      1      1      1
##     Bündnis90/Grüne           6      6      7      8      7      7      5
##     CDU/CSU                   5      7      4      2      5      4      5
##     Die Linke                 7      4      6      5      8      8      5
##     FDP                       0      1      2      1      1      0      0
##     Keine (Nichtwähler)       5      5      6      3      2      2      3
##     Keine Angabe              1      0      3      0      0      0      2
##     SPD                       3      4      5      9      9     10      7
##     
##                         RecPar DefPar RecKno DefKno
##     AfD                       0      0      1      2
##     Andere                    2      1      3      3
##     Bündnis90/Grüne           2     11      5      7
##     CDU/CSU                   6      7     10      3
##     Die Linke                 7      5      6      4
##     FDP                       0      0      3      3
##     Keine (Nichtwähler)       7      5      3      3
##     Keine Angabe              1      0      0      0
##     SPD                       5      5      2      9
```

```r
chisq.test(table(df$party, df$treatment))
```

```
## Warning in chisq.test(table(df$party, df$treatment)): Chi-squared
## approximation may be incorrect
```

```
## 
##  Pearson's Chi-squared test
## 
## data:  table(df$party, df$treatment)
## X-squared = 82.373, df = 80, p-value = 0.4058
```

```
## 
##           Control RecNos DefNos RecNap DefNap RecPol DefPol RecPar
##   Not green    25     25     27     25     26     25     24     28
##   Green         6      6      7      8      7      7      5      2
## 
##           DefPar RecKno DefKno
##   Not green    23     28     27
##   Green        11      5      7
```

```
## 
##           RecPar DefPar
##   Not green    28     23
##   Green         2     11
```
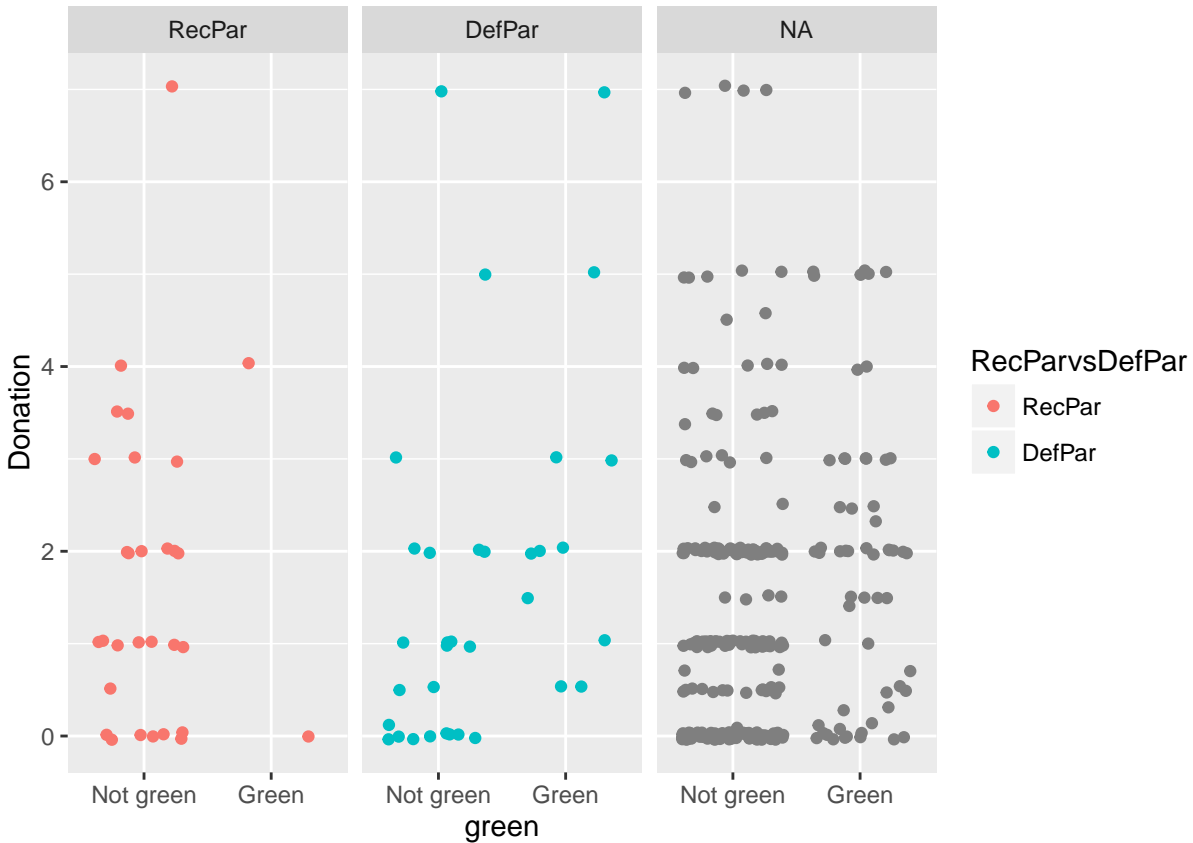
Further Statistics and Tests

Compare observations that believe we cooperated with Julia Verlinden vs. those who don't

Variable: Donation amount

```
## group: Ja
##   vars   n mean   sd median trimmed  mad min max range skew kurtosis  se
## 1    1 153 1.32 1.27      1    1.16 1.48   0   5     5 0.88     0.23 0.1
## ------------------------------------------------------------
## group: Nein
##   vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 109 1.73 1.79    1.5    1.45 1.48   0   7     7  1.3     1.38 0.17


##
##  Welch Two Sample t-test
##
## data:  df$Donation by df$believe2
## t = -2.0378, df = 182.44, p-value = 0.04301
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.80107778 -0.01294152
## sample estimates:
```

```
##   mean in group Ja mean in group Nein
##           1.324183           1.731193
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$believe2
## W = 7631.5, p-value = 0.2333
## alternative hypothesis: true location shift is not equal to 0
```

*Participants who believe we cooperated with Julia Verlinden have a **lower** mean Donation, and also a **lower** variance. The difference is significant ($p < .1$) judged by the Welch Two Sample t-test, but insignificant judged by the Wilcoxon-Mann-Whitney-U test.*

Variable: Decision to donate

```
##
##                 Ja Nein
##   Not donated   41   30
##   Donated      112   79
```

```r
chisq.test(table(df$Donated, df$believe2))
```

```
##
##  Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table(df$Donated, df$believe2)
## X-squared = 5.7642e-31, df = 1, p-value = 1
```

The Chi²-Test is not significant. This implies that the decision whether or not to contribute anything vs. nothing is not dependent on the answer to the question whether the respondent believed that we really cooperated with Julia Verlinden.

Decision to donate for subjects seeing a recommendation vs. subjects seeing a default, irrespective of source

```r
table(df$Donated, df$RecvsDef)
```

```
##
##                 Rec Def Control
##   Not donated    46  50      13
##   Donated       113 114      18
```

```r
chisq.test(table(df$Donated, df$RecvsDef))
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(df$Donated, df$RecvsDef)
## X-squared = 2.072, df = 2, p-value = 0.3549
```

The Chi²-Test is not significant. This implies that the decision whether or not to contribute anything vs. nothing is not dependent on whether the subjects encountered a recommendation or a default value with our without any specific source or information on the source (or nothing at all, as in the control group).

Decision to donate for subjects seeing a recommendation vs. subjects seeing a default, with non-political source-information

```
##
##              Non-political/partisan Rec Non-political/partisan Def
##   Not donated                         31                         37
##   Donated                             66                         64
```

```
##
##  Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table(df$Donated, df$RecvsDefNonPolPar)
## X-squared = 0.29465, df = 1, p-value = 0.5873
```

The Chi²-Test is not significant. This implies that the decision whether or not to contribute anything vs. nothing is not dependent on whether the subjects encountered a non-political or non-partisan recommendation or a respective default value.
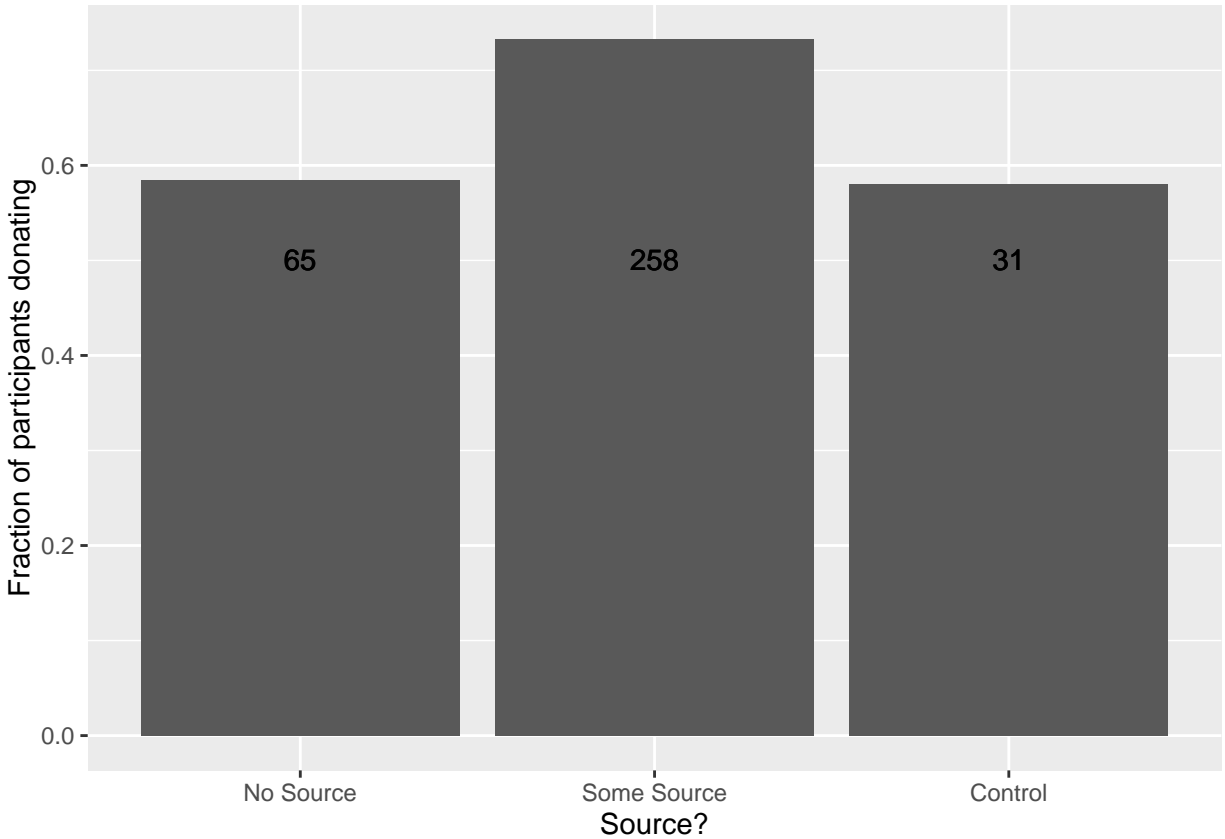
Decision to donate for subjects seeing an intervention without source-information vs. some source-information

```
##
##              No Source Some Source Control
##   Not donated        27          69      13
##   Donated            38         189      18
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(df$Donated, df$NosvsSome)
## X-squared = 7.3127, df = 2, p-value = 0.02583
```

```
## Warning in Ops.factor(left, right): '/' not meaningful for factors
```
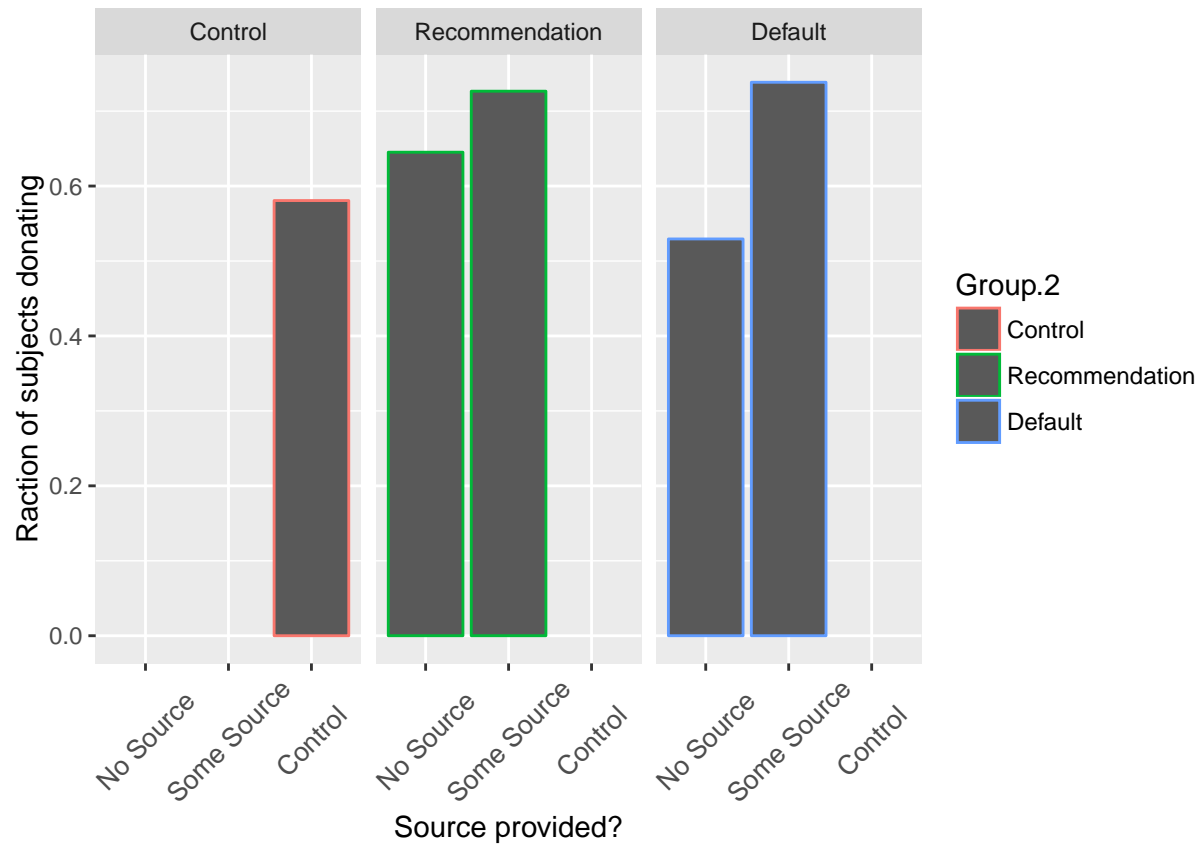
```
## 
## Call:
## glm(formula = Donated ~ NosvsSome, family = "binomial", data = df)
## 
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.6241  -1.3256   0.7889   0.7889   1.0427
## 
## Coefficients:
##                       Estimate Std. Error z value Pr(>|z|)
## (Intercept)            0.34175    0.25170   1.358   0.1745
## NosvsSomeSome Source   0.66589    0.28833   2.309   0.0209 *
## NosvsSomeControl      -0.01633    0.44253  -0.037   0.9706
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 437.13  on 353  degrees of freedom
## Residual deviance: 430.04  on 351  degrees of freedom
## AIC: 436.04
## 
## Number of Fisher Scoring iterations: 4
```

The Chi² test is significant ($p < .1$). This implies that the decision whether or not to contribute or not depends on whether or not some source-information vs. no source-information is provided. In the logit regression, the

estimator for the provision of any source-information is also statistically significant.

Further investigation of this effect: Variation by type of intervention?

Don't know how to automatically pick scale for object of type data.frame. Defaulting to continuous.


```
##
## Call:
## glm(formula = Donated ~ Sourcetype * RecvsDefD, family = "binomial",
##     data = df)
##
## Deviance Residuals:
##     Min      1Q   Median      3Q      Max
## -1.8750  -1.2278   0.7325   0.8497   1.1278
##
## Coefficients:
##                                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)                         0.5978     0.3754   1.593    0.111
## SourcetypeNameAndPicture            0.2351     0.5333   0.441    0.659
## SourcetypeKnowledgeable             0.2351     0.5333   0.441    0.659
## SourcetypePolitical                 0.6751     0.5690   1.187    0.235
## SourcetypePartisan                  0.4138     0.5580   0.742    0.458
## RecvsDefDDef                       -0.4801     0.5089  -0.943    0.346
## SourcetypeNameAndPicture:RecvsDefDDef 0.6280   0.7451   0.843    0.399
## SourcetypeKnowledgeable:RecvsDefDDef  0.2533   0.7289   0.348    0.728
```

```
SourcetypePolitical:RecvsDefDDef   0.7757   0.8267   0.938   0.348
SourcetypePartisan:RecvsDefDDef   0.6471   0.7700   0.840   0.401
##
(Dispersion parameter for binomial family taken to be 1)
##
Null deviance: 393.08 on 322 degrees of freedom
Residual deviance: 383.31 on 313 degrees of freedom
(31 observations deleted due to missingness)
AIC: 403.31
##
Number of Fisher Scoring iterations: 4

##
Call:
glm(formula = Donated ~ NosvsSomeD * RecvsDefD, family = "binomial",
data = df)
##
Deviance Residuals:
Min   1Q   Median   3Q   Max
-1.6378 -1.2278   0.7787   0.7993   1.1278
##
Coefficients:
Estimate Std. Error z value Pr(>|z|)
(Intercept)   0.5978   0.3754   1.593   0.111
NosvsSomeDSome Source   0.3794   0.4245   0.894   0.371
RecvsDefDDef   -0.4801   0.5089 -0.943   0.346
NosvsSomeDSome Source:RecvsDefDDef 0.5408   0.5815   0.930   0.352
##
(Dispersion parameter for binomial family taken to be 1)
##
Null deviance: 393.08 on 322 degrees of freedom
Residual deviance: 386.93 on 319 degrees of freedom
(31 observations deleted due to missingness)
AIC: 394.93
##
Number of Fisher Scoring iterations: 4
```
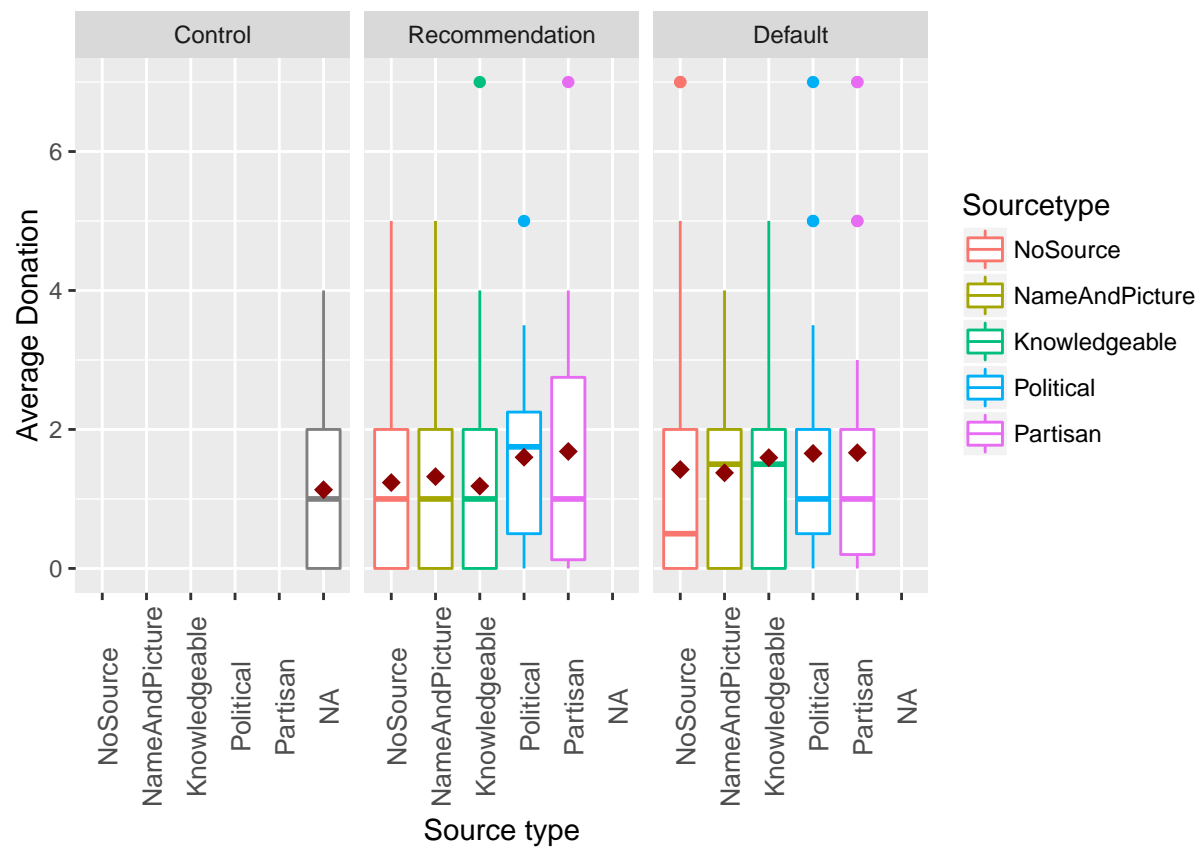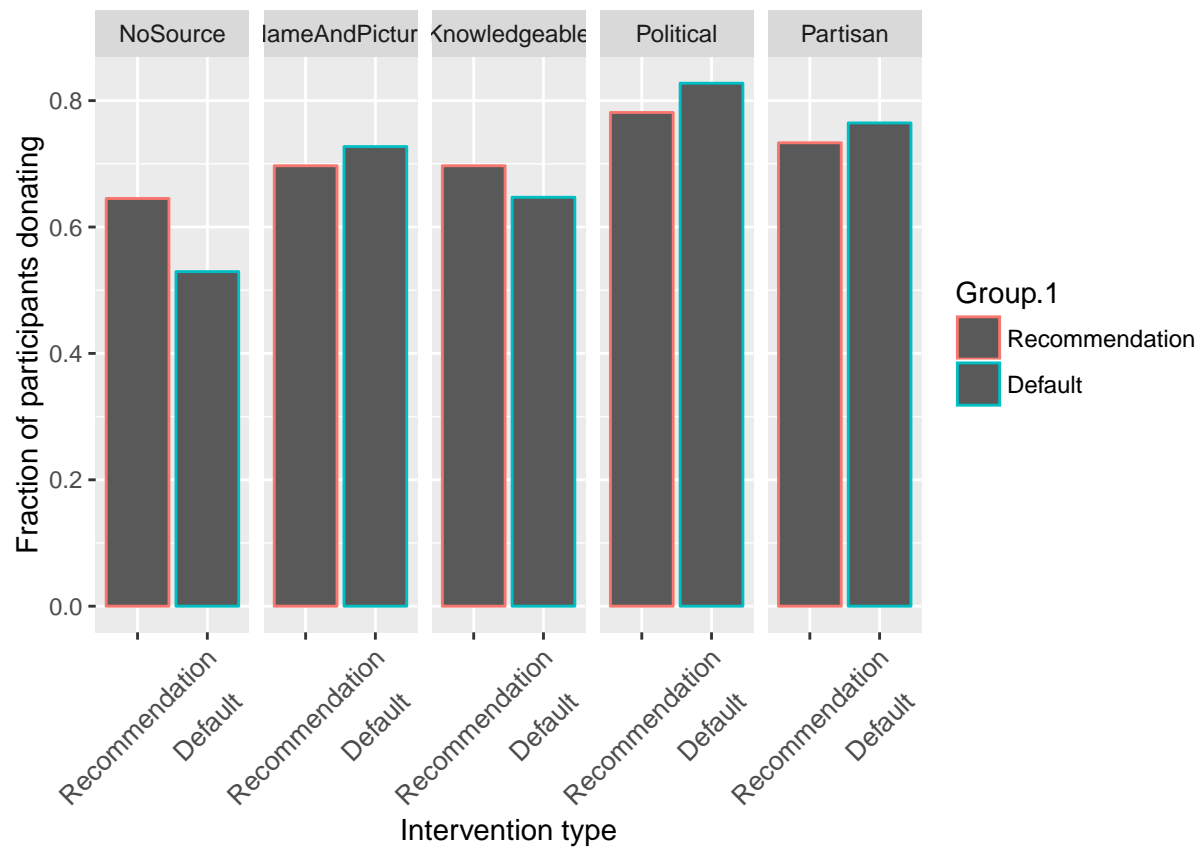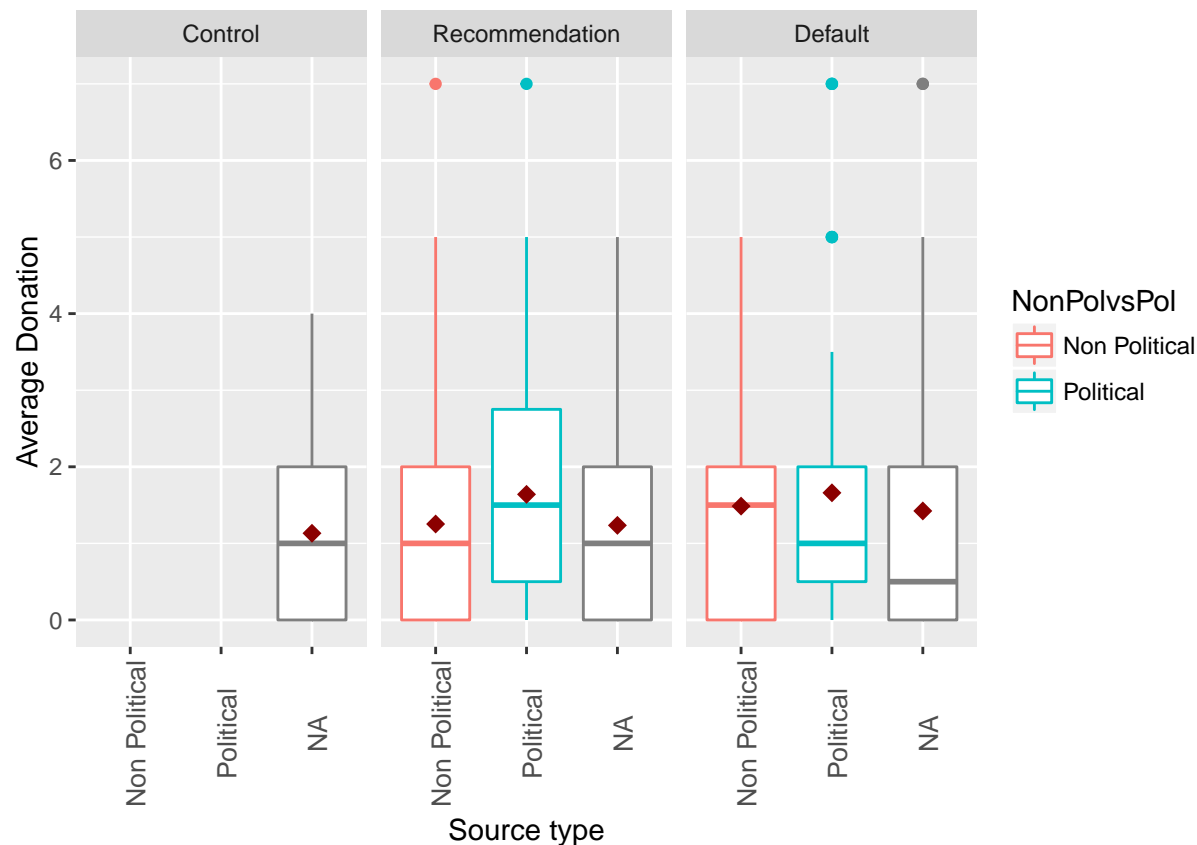
**Graphs in order to see potential interactions (CHANGE TO BOXPLOTS)**
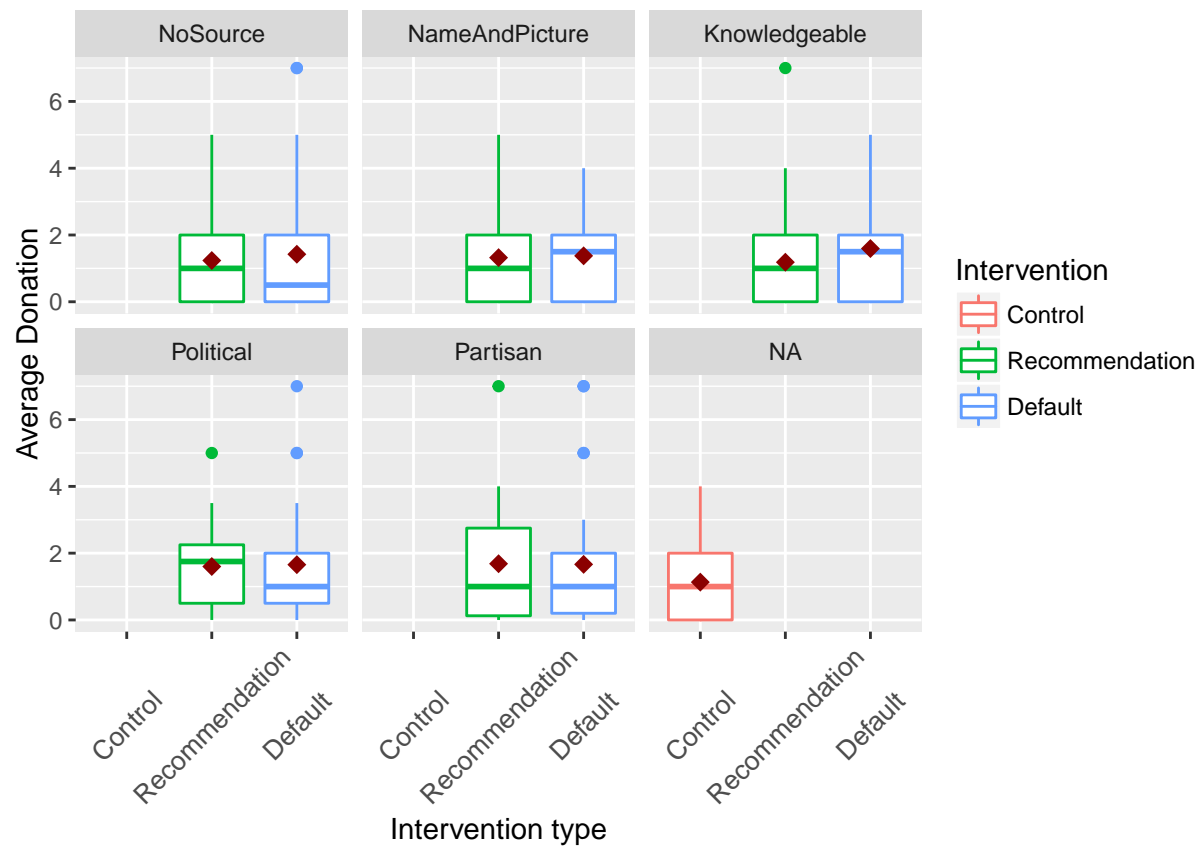


```
## Warning in Ops.factor(left, right): '/' not meaningful for factors

## Warning in Ops.factor(left, right): '/' not meaningful for factors
```

```
## group: Non Political
##   vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 133 1.37 1.41      1    1.16 1.48   0   7     7 1.15     1.35 0.12
## ---------------------------------------------------------
## group: Political
##   vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 125 1.65 1.62      1     1.4 1.48   0   7     7 1.36     1.93 0.15


##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$NonPolvsPol
## W = 7533, p-value = 0.1848
## alternative hypothesis: true location shift is not equal to 0


##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation[df$Intervention == "Recommendation"] by df$NonPolvsPol[df$Intervention == "Recomme
## W = 1710.5, p-value = 0.103
## alternative hypothesis: true location shift is not equal to 0


##
## Call:
## lm(formula = Donation ~ NonPolvsPol * Intervention, data = df)
```
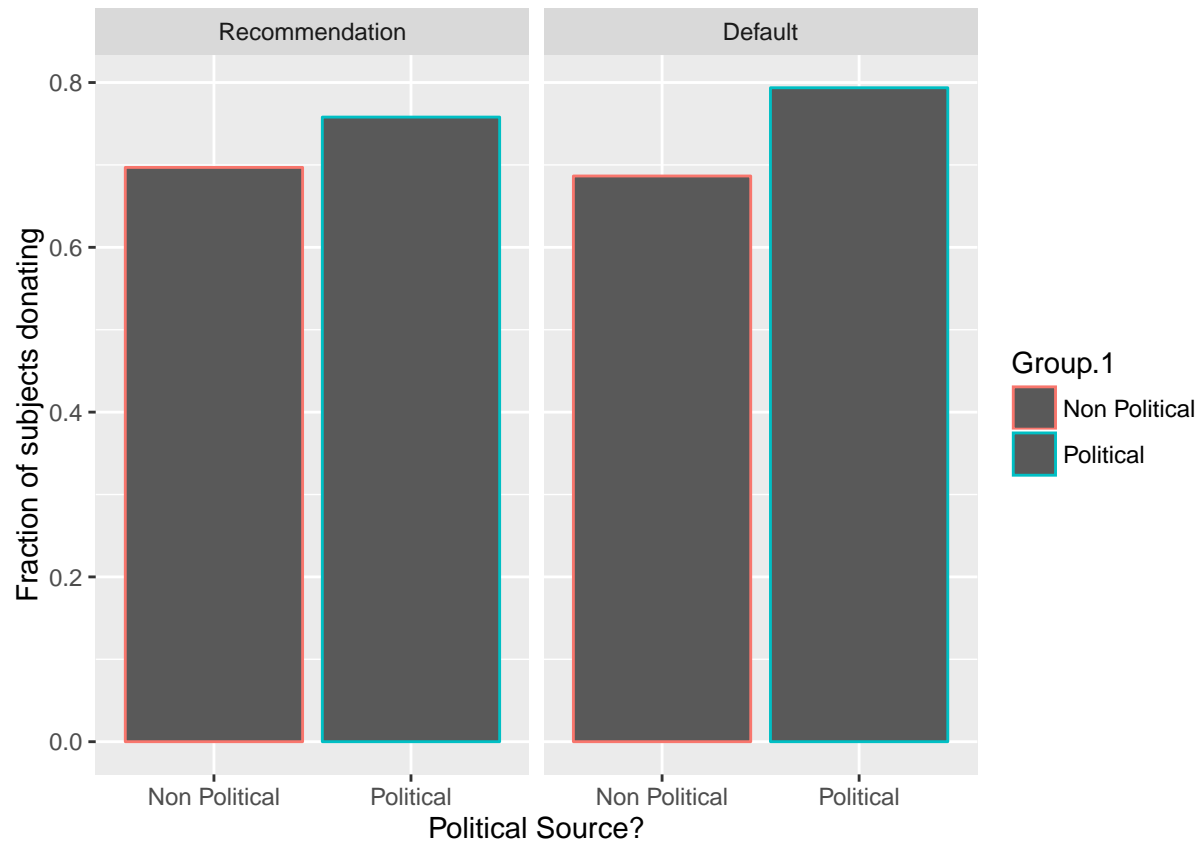
```
## 
## Residuals:
##    Min     1Q Median     3Q    Max
## -1.660 -1.253 -0.253  0.747  5.747
## 
## Coefficients:
##                                        Estimate Std. Error t value
## (Intercept)                              1.2530     0.1874   6.688
## NonPolvsPolPolitical                     0.3873     0.2692   1.439
## InterventionDefault                      0.2335     0.2640   0.885
## NonPolvsPolPolitical:InterventionDefault -0.2135     0.3793  -0.563
##                                        Pr(>|t|)
## (Intercept)                            1.43e-10 ***
## NonPolvsPolPolitical                      0.151
## InterventionDefault                       0.377
## NonPolvsPolPolitical:InterventionDefault  0.574
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## Residual standard error: 1.522 on 254 degrees of freedom
##    (96 observations deleted due to missingness)
## Multiple R-squared:  0.01154,    Adjusted R-squared:  -0.0001395
## F-statistic: 0.9881 on 3 and 254 DF,  p-value: 0.399
```

This suggests (visually) that providing information about political/partisan aspects of the source has an impact for average contributions for Recommendations, but not for Defaults. Further investigation with Wilcoxon Test and linear OLS-regression finds no significant effects.

```
ü <- aggregate(df$Donatedm, list(df$NonPolvsPol, df$Intervention), sum)
ü$n <- aggregate(df$Donatedm, list(df$NonPolvsPol, df$Intervention), length)[3]
ggplot(data = ü, aes(x = Group.1, y = x/n, colour = Group.1)) +
  facet_grid(~Group.2) +
  geom_bar(stat = "identity") +
  xlab("Political Source?") +
  ylab("Fraction of subjects donating")
```

```
## Don't know how to automatically pick scale for object of type data.frame. Defaulting to continuous.
```
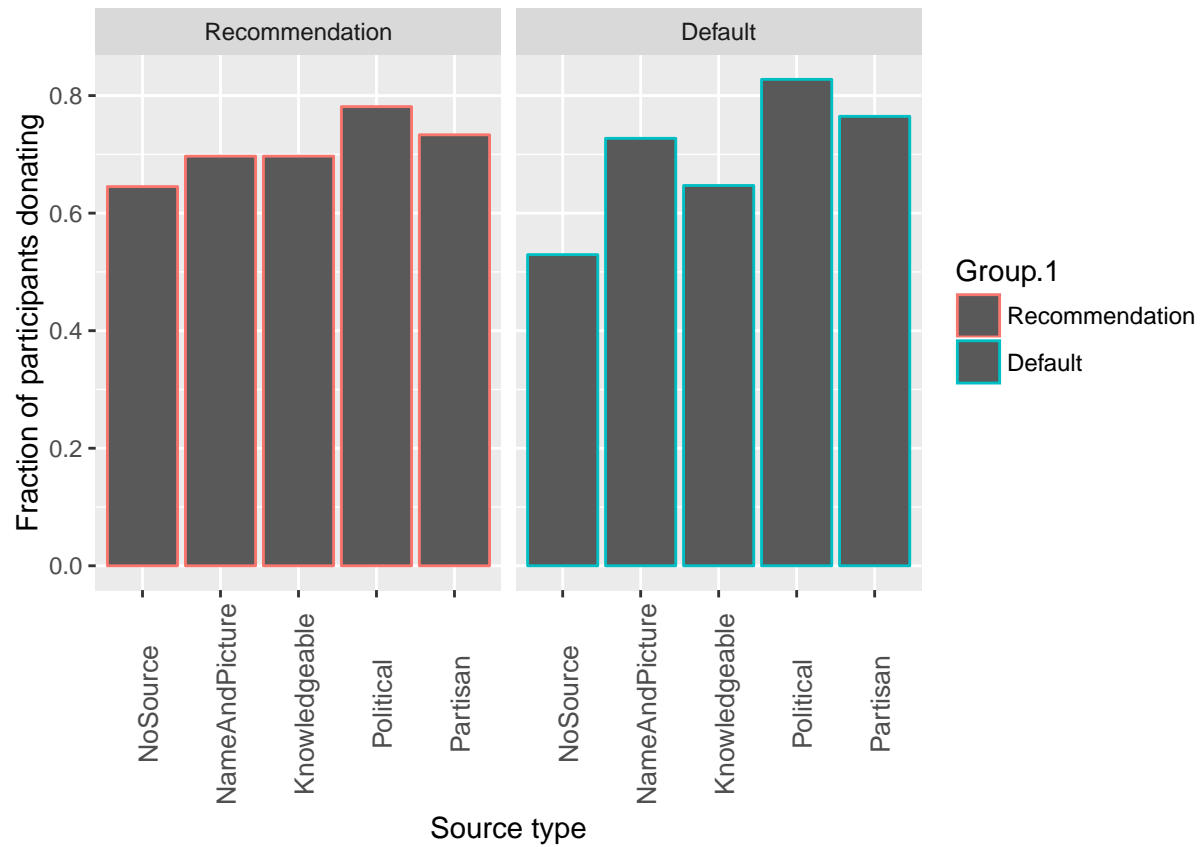
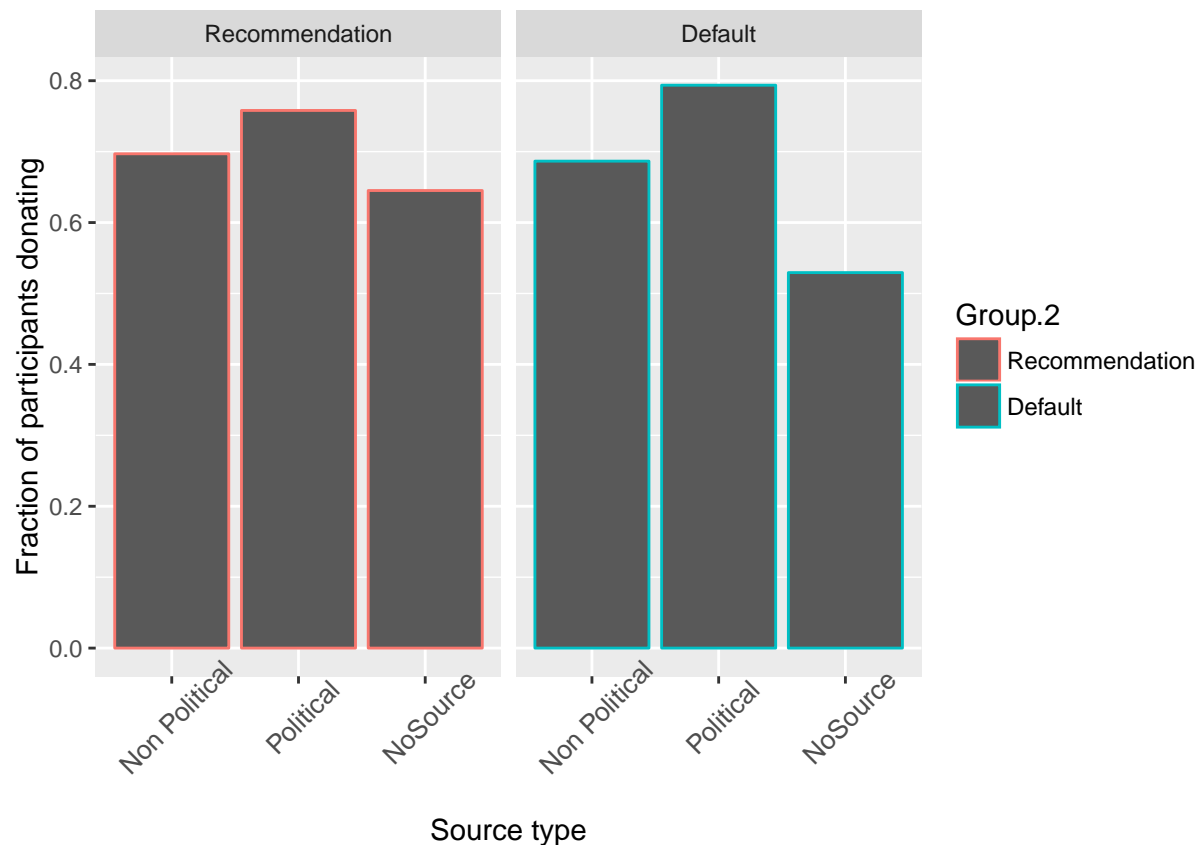*There does not seem to be anything of interest here.*

```
## Warning in Ops.factor(left, right): '/' not meaningful for factors
```

```
## Warning in Ops.factor(left, right): '/' not meaningful for factors
```

Don't know how to automatically pick scale for object of type data.frame. Defaulting to continuous.

```
##
## Call:
## glm(formula = Donated ~ NonPolvsPolA * Intervention, family = "binomial",
##     data = df)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.7766  -1.2278   0.7443   0.8672   1.1278
##
## Coefficients:
##                                          Estimate Std. Error z value
## (Intercept)                               0.83291    0.26784   3.110
## NonPolvsPolAPolitical                     0.30919    0.39960   0.774
## NonPolvsPolANoSource                     -0.23507    0.46114  -0.510
## InterventionDefault                      -0.04879    0.37563  -0.130
## NonPolvsPolAPolitical:InterventionDefault 0.25377    0.57093   0.444
## NonPolvsPolANoSource:InterventionDefault -0.43126    0.63250  -0.682
##                                          Pr(>|z|)
## (Intercept)                               0.00187 **
## NonPolvsPolAPolitical                     0.43908
## NonPolvsPolANoSource                      0.61022
## InterventionDefault                       0.89665
## NonPolvsPolAPolitical:InterventionDefault 0.65670
## NonPolvsPolANoSource:InterventionDefault  0.49534
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 393.08  on 322  degrees of freedom
## Residual deviance: 384.39  on 317  degrees of freedom
##   (31 observations deleted due to missingness)
## AIC: 396.39
## 
## Number of Fisher Scoring iterations: 4
```
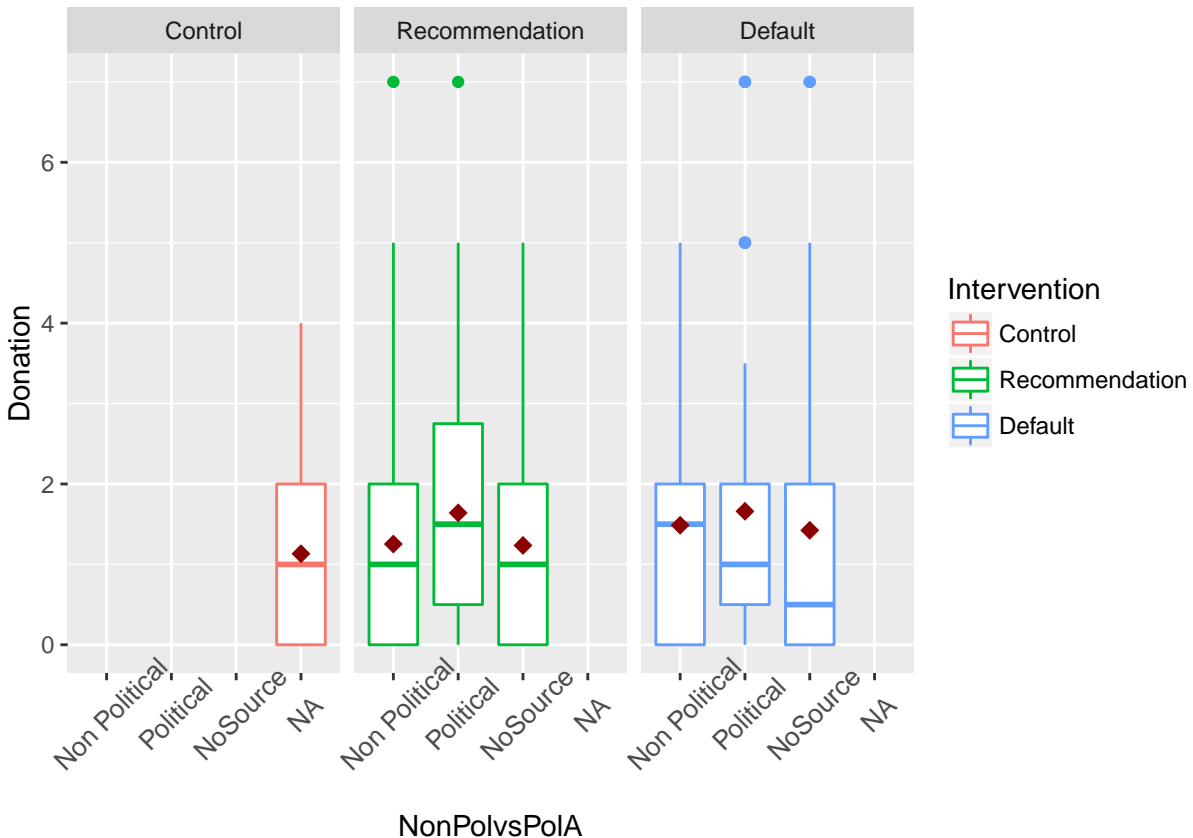


```
## 
##  Kruskal-Wallis rank sum test
## 
## data:  df$Donation[df$Intervention == "Recommendation"] by df$NonPolvsPolA[df$Intervention == "Recomm
## Kruskal-Wallis chi-squared = 3.3912, df = 2, p-value = 0.1835
```

```
## 
##  Kruskal-Wallis rank sum test
## 
## data:  df$Donation[df$Intervention == "Default"] by df$NonPolvsPolA[df$Intervention == "Default"]
## Kruskal-Wallis chi-squared = 2.7509, df = 2, p-value = 0.2527
```

The logistic regression does not produce any significant predictors. Neither do the Kruskal WAllis tests for the respective interventions.

```
## Warning in Ops.factor(left, right): '/' not meaningful for factors

## Warning in Ops.factor(left, right): '/' not meaningful for factors
```
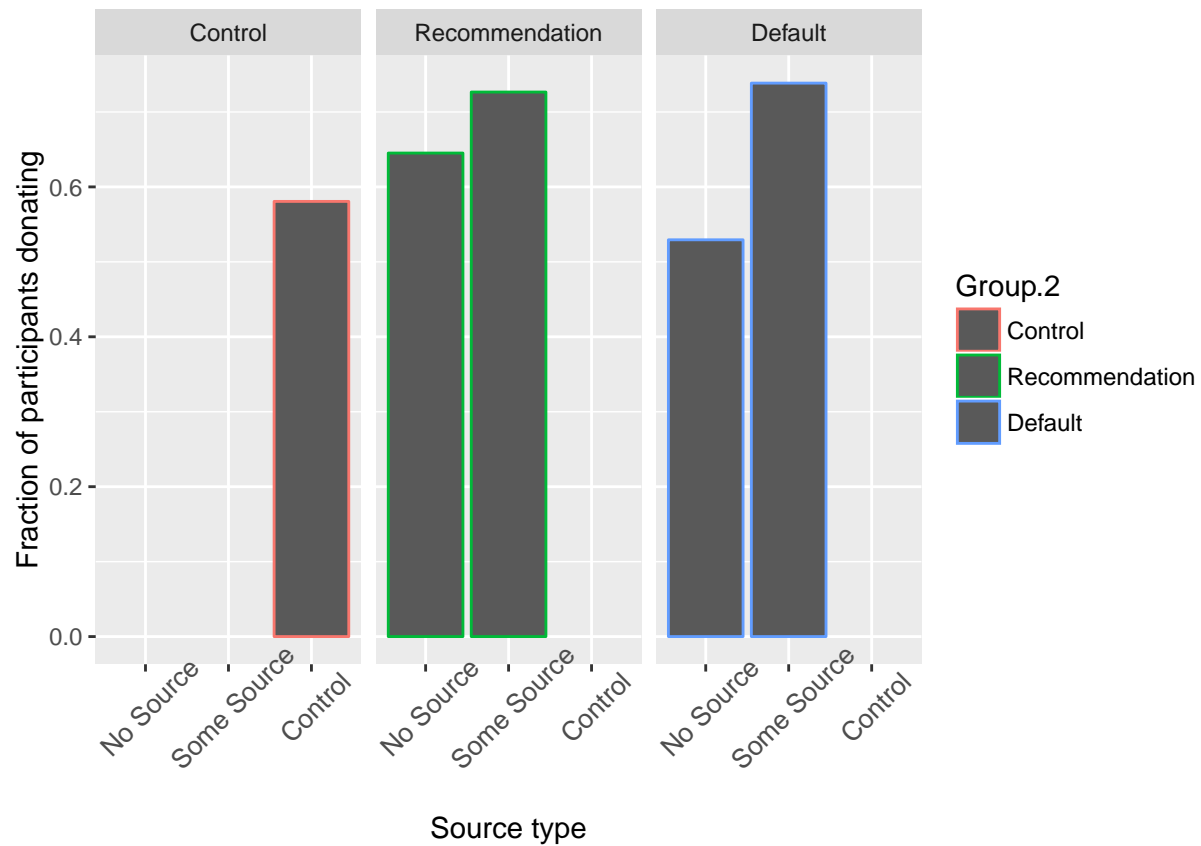


```
##
## Call:
## glm(formula = Donated ~ NosvsSome * RecvsDefD, family = "binomial",
##     data = df)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.6378  -1.2278   0.7787   0.7993   1.1278
##
## Coefficients:
##                                Estimate Std. Error z value Pr(>|z|)
## (Intercept)                      0.5978     0.3754   1.593    0.111
## NosvsSomeSome Source             0.3794     0.4245   0.894    0.371
## RecvsDefDDef                    -0.4801     0.5089  -0.943    0.346
## NosvsSomeSome Source:RecvsDefDDef  0.5408   0.5815   0.930    0.352
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 393.08  on 322  degrees of freedom
## Residual deviance: 386.93  on 319  degrees of freedom
##   (31 observations deleted due to missingness)
```

```
## AIC: 394.93
##
## Number of Fisher Scoring iterations: 4
```

Suggests that the provision of any kind of source information increases the likelyhood to donate (Extensive margin), especially for defaults. However, the logistic estimation model suggests that there is no interaction between the provision of some source information and the type of intervention. When including the type of intervention, the sourcetype is not significant anymore.
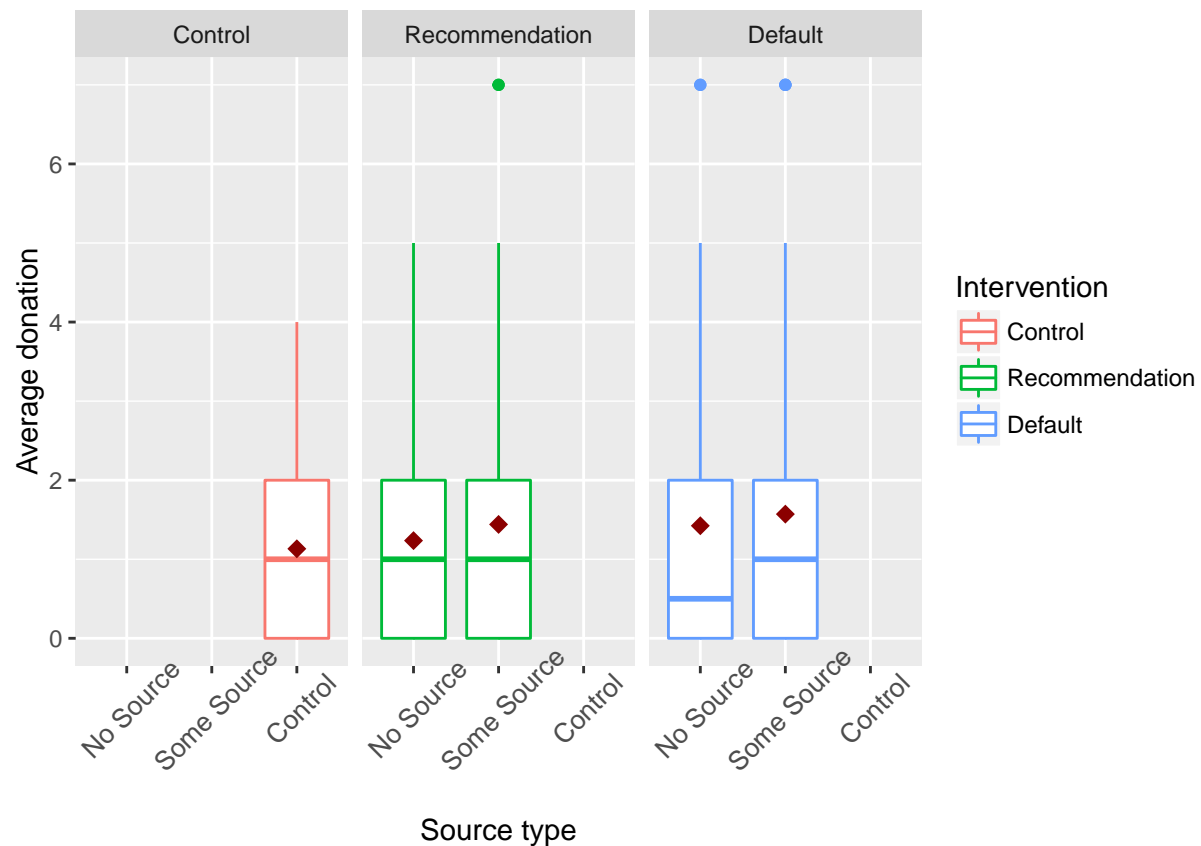
Gender differences

Average donation gender differences (by treatment)

```
## group: Keine Angabe
##   vars n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 4    3 3.56    2.5       3 3.71   0   7     7  0.1    -2.32 1.78
## -----------------------------------------------------------
## group: Männlich
##   vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 141  1.1 1.39    0.7    0.85 1.04   0   7     7 1.81        4 0.12
## -----------------------------------------------------------
## group: Weiblich
##   vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 209 1.64 1.55    1.5    1.43 1.48   0   7     7 1.13     1.35 0.11
```
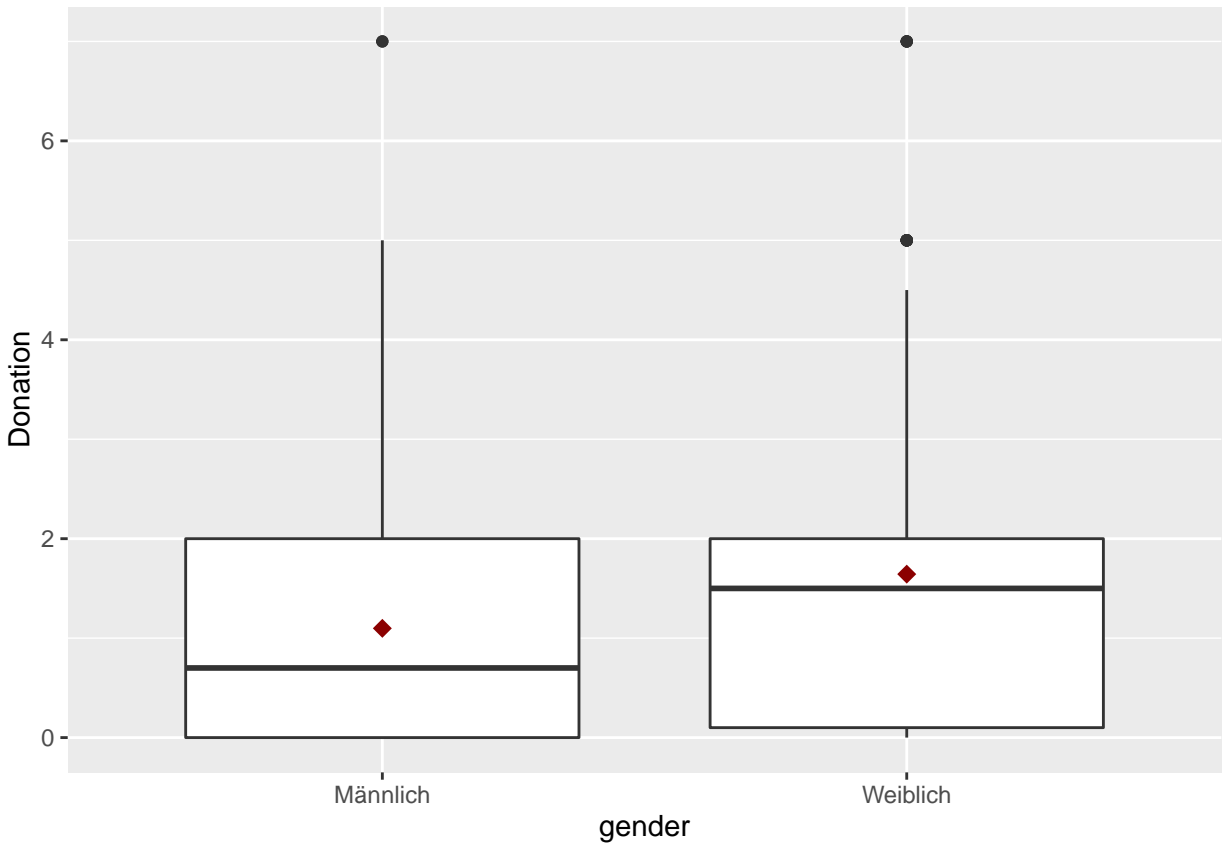
```
## 
##  Welch Two Sample t-test
## 
## data:  dfsub$Donation by dfsub$gender
## t = -3.4369, df = 321.65, p-value = 0.0006658
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.8569099 -0.2330083
## sample estimates:
## mean in group Männlich mean in group Weiblich
##               1.098582                 1.643541


## 
##  Wilcoxon rank sum test with continuity correction
## 
## data:  dfsub$Donation by dfsub$gender
## W = 11246, p-value = 0.0001193
## alternative hypothesis: true location shift is not equal to 0
```
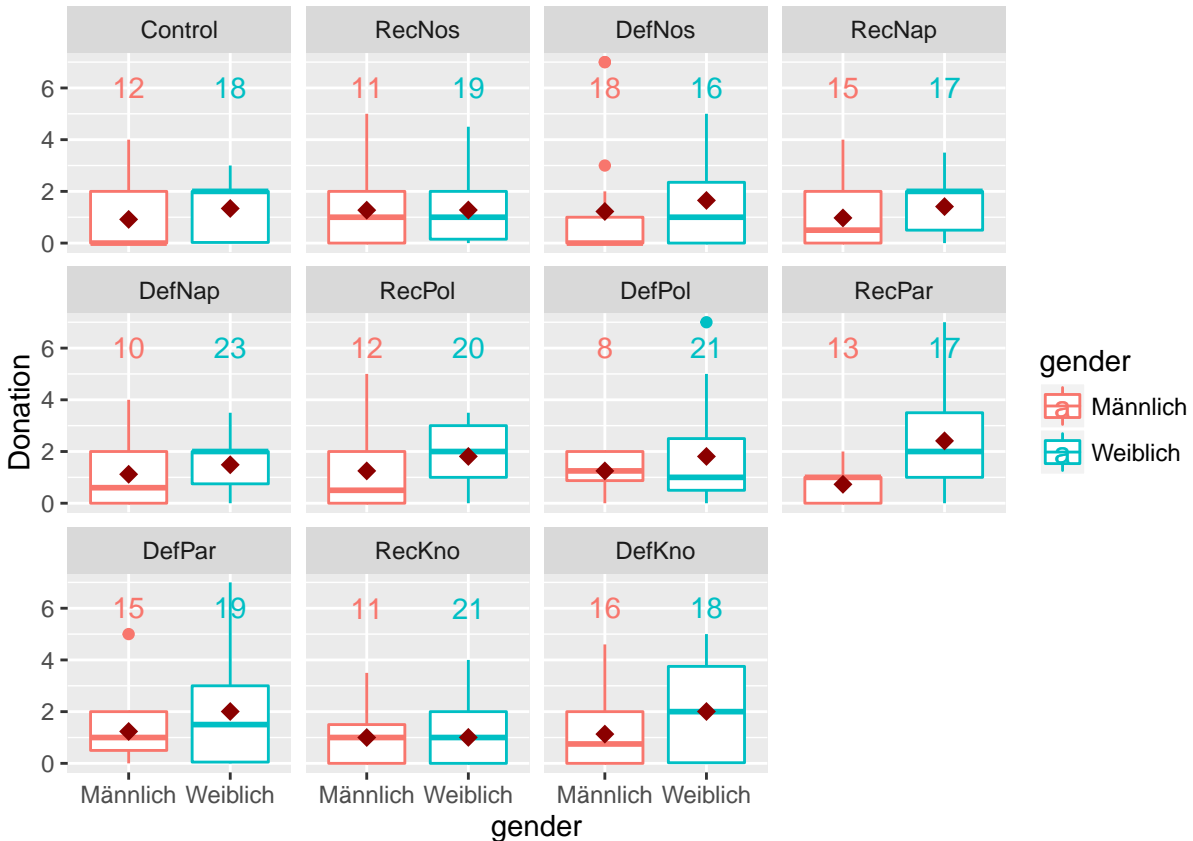
```
## 
##  Kruskal-Wallis rank sum test
## 
## data:  df$Donation[df$gender == "Weiblich"] by df$treatment[df$gender == "Weiblich"]
## Kruskal-Wallis chi-squared = 10.783, df = 10, p-value = 0.3746


## 
##  Kruskal-Wallis rank sum test
## 
## data:  df$Donation[df$gender == "Männlich"] by df$treatment[df$gender == "Männlich"]
## Kruskal-Wallis chi-squared = 3.978, df = 10, p-value = 0.9483
```

Could be interesting. For example, when looking at Control, RecNos, RecNap, RecPol, RecPar, (And RecKno), the treatment-effect seems to be present for women, but not (or even negatively) for men. This seems to be also true for Defaults, but slightly different. However, according to two Kruskal Wallis Tests there is no treatment effect for men, and none for women.

Extensive margin (by treatment)

```
## 
## Call:
## glm(formula = gender ~ treatment, family = "binomial", data = dfsub)
## 
## Deviance Residuals:
```

```
##     Min      1Q   Median      3Q      Max
## -1.6049  -1.2793   0.8497   1.0108   1.2278
##
## Coefficients:
##                  Estimate Std. Error z value Pr(>|z|)
## (Intercept)        0.4055     0.3727   1.088    0.277
## treatmentRecNos    0.1411     0.5314   0.265    0.791
## treatmentDefNos   -0.5232     0.5069  -1.032    0.302
## treatmentRecNap   -0.2803     0.5142  -0.545    0.586
## treatmentDefNap    0.4274     0.5314   0.804    0.421
## treatmentRecPol    0.1054     0.5217   0.202    0.840
## treatmentDefPol    0.5596     0.5581   1.003    0.316
## treatmentRecPar   -0.1372     0.5241  -0.262    0.793
## treatmentDefPar   -0.1691     0.5081  -0.333    0.739
## treatmentRecKno    0.2412     0.5267   0.458    0.647
## treatmentDefKno   -0.2877     0.5069  -0.568    0.570
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 471.91  on 349  degrees of freedom
## Residual deviance: 463.97  on 339  degrees of freedom
## AIC: 485.97
##
## Number of Fisher Scoring iterations: 4


##
##  Pearson's Chi-squared test
##
## data:  table(factor(dfsub$gender), dfsub$treatment)
## X-squared = 7.8565, df = 10, p-value = 0.6429
```

Gender is not significantly differently represented along tratments

```
##
##  Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table(dfsub$Donated, factor(dfsub$gender))
## X-squared = 10.039, df = 1, p-value = 0.001533


##
## Call:
## glm(formula = Donated ~ treatment * gender, family = "binomial",
##     data = dfsub)
##
## Deviance Residuals:
##     Min      1Q   Median      3Q      Max
## -2.1460  -1.2557   0.6841   0.8203   1.3232
##
## Coefficients:
##                               Estimate Std. Error z value Pr(>|z|)
## (Intercept)                    -0.3365     0.5855  -0.575   0.5655
## treatmentRecNos                 0.5188     0.8423   0.616   0.5380
## treatmentDefNos                 0.1133     0.7536   0.150   0.8805
```

```
## treatmentRecNap                      0.7419    0.7878   0.942    0.3463
## treatmentDefNap                      0.7419    0.8715   0.851    0.3946
## treatmentRecPol                      0.6729    0.8281   0.813    0.4164
## treatmentDefPol                      2.2824    1.2189   1.873    0.0611 .
## treatmentRecPar                      0.8065    0.8172   0.987    0.3237
## treatmentDefPar                      1.7228    0.8715   1.977    0.0481 *
## treatmentRecKno                      0.8961    0.8577   1.045    0.2962
## treatmentDefKno                      0.5878    0.7725   0.761    0.4467
## genderWeiblich                       1.2920    0.7873   1.641    0.1008
## treatmentRecNos:genderWeiblich      -0.4447    1.1216  -0.396    0.6917
## treatmentDefNos:genderWeiblich      -0.5580    1.0543  -0.529    0.5966
## treatmentRecNap:genderWeiblich      -0.5188    1.1066  -0.469    0.6392
## treatmentDefNap:genderWeiblich      -0.4165    1.1367  -0.366    0.7140
## treatmentRecPol:genderWeiblich       0.5688    1.2321   0.462    0.6444
## treatmentDefPol:genderWeiblich      -1.7910    1.4393  -1.244    0.2134
## treatmentRecPar:genderWeiblich      -0.2215    1.1617  -0.191    0.8488
## treatmentDefPar:genderWeiblich      -1.6487    1.1436  -1.442    0.1494
## treatmentRecKno:genderWeiblich      -0.9353    1.1162  -0.838    0.4021
## treatmentDefKno:genderWeiblich      -0.5878    1.0727  -0.548    0.5837
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 430.94  on 349  degrees of freedom
## Residual deviance: 405.43  on 328  degrees of freedom
## AIC: 449.43
##
## Number of Fisher Scoring iterations: 4


## Warning in Ops.factor(left, right): '/' not meaningful for factors

## Warning in Ops.factor(left, right): '/' not meaningful for factors

## Warning in Ops.factor(left, right): '/' not meaningful for factors
```
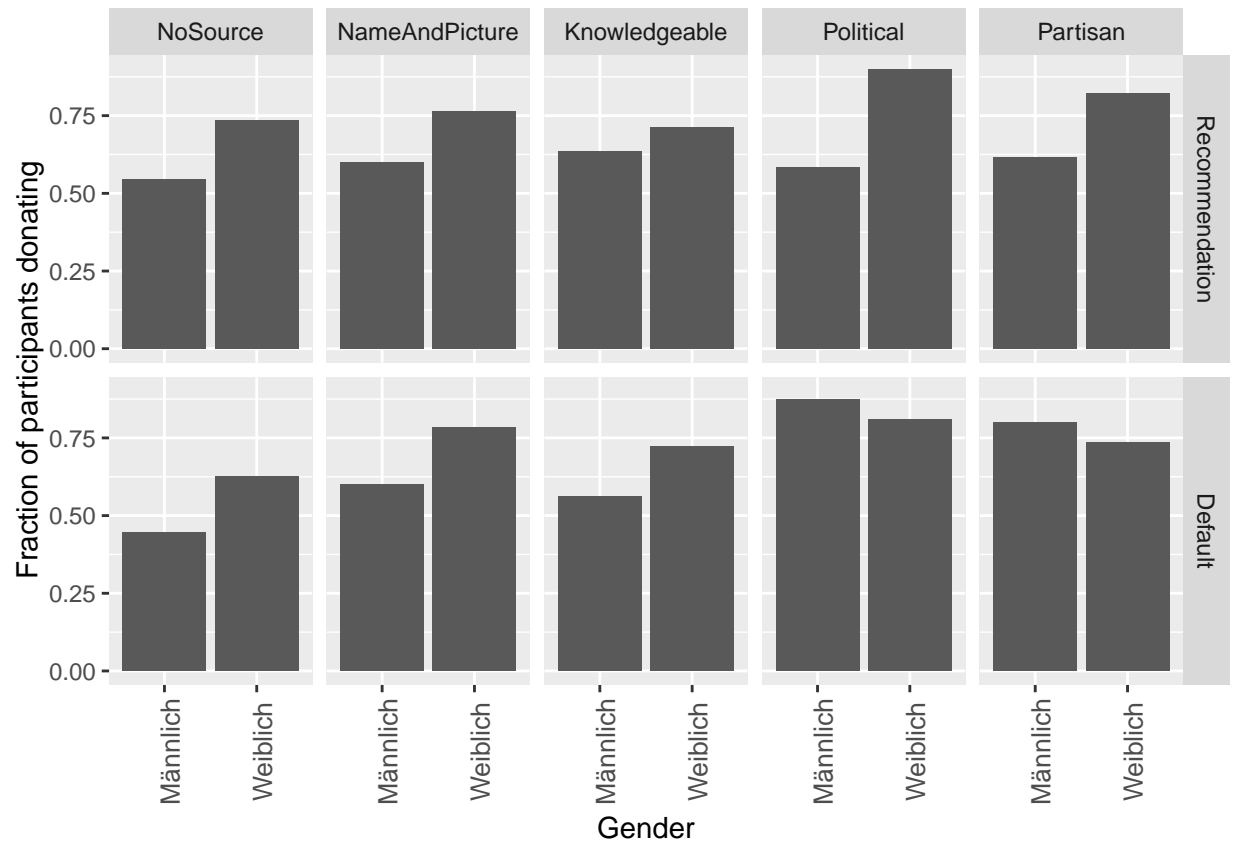
Judging based on the logistic regression, controlling for gender, contributing is significantly more likely for subjects seeing a default by a partisan-source compared to the control group, i.e. seeing no intervention and source.

Gender differences (by Intervention type)
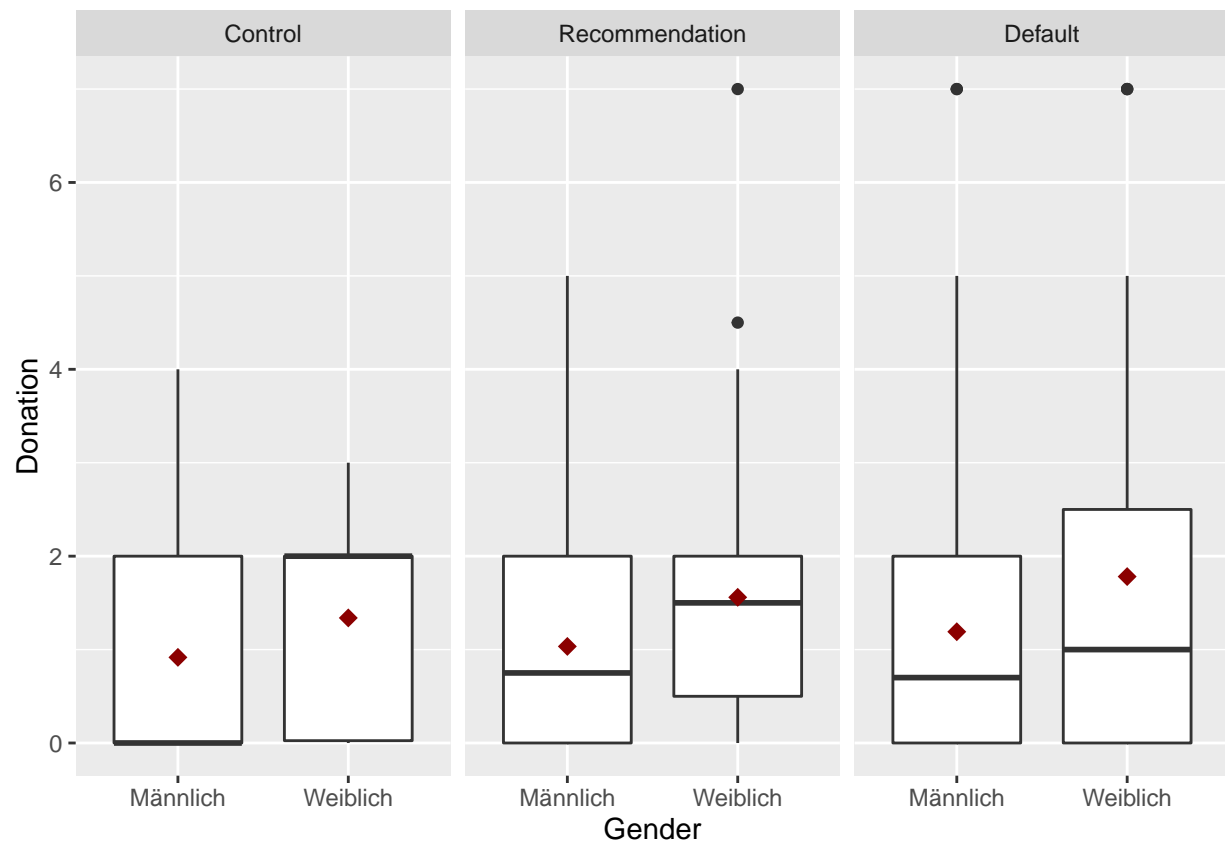
Gender differences (by Source type)
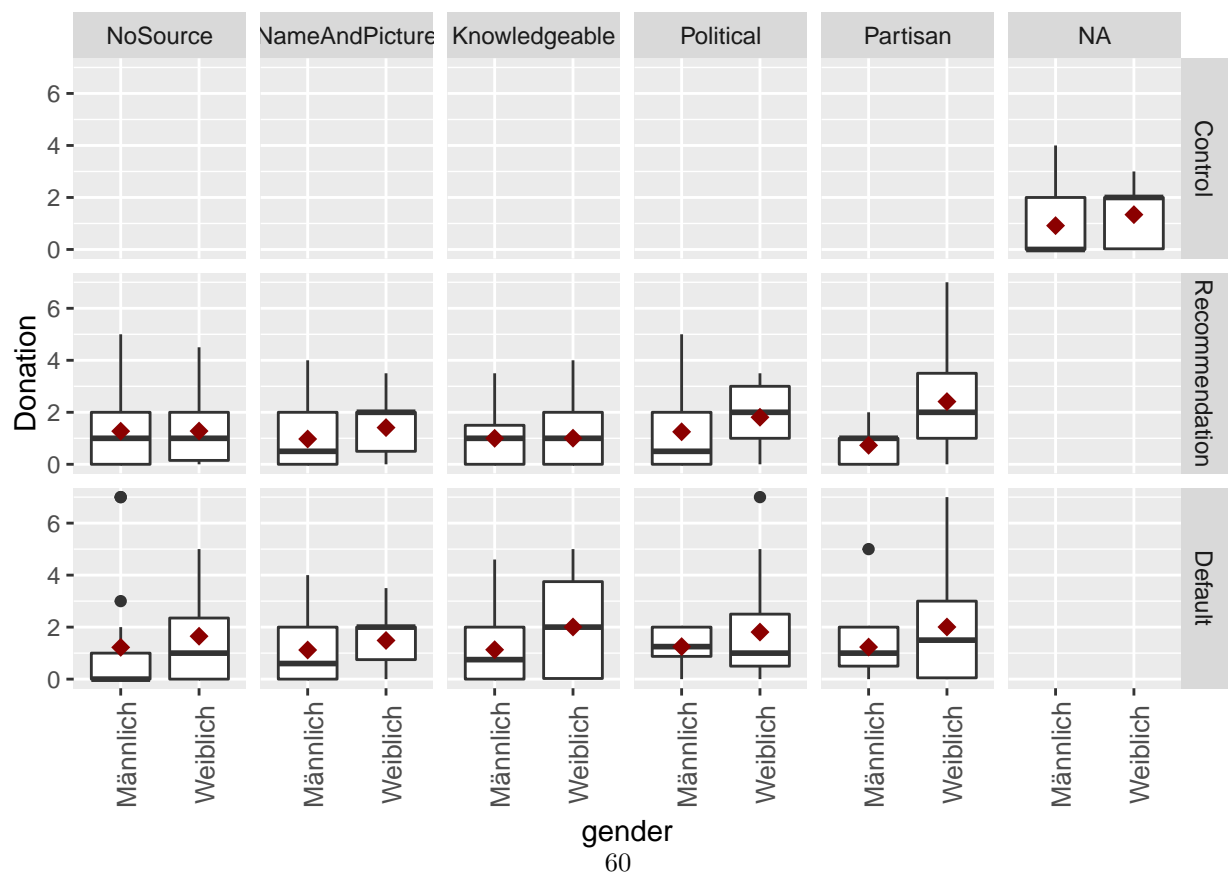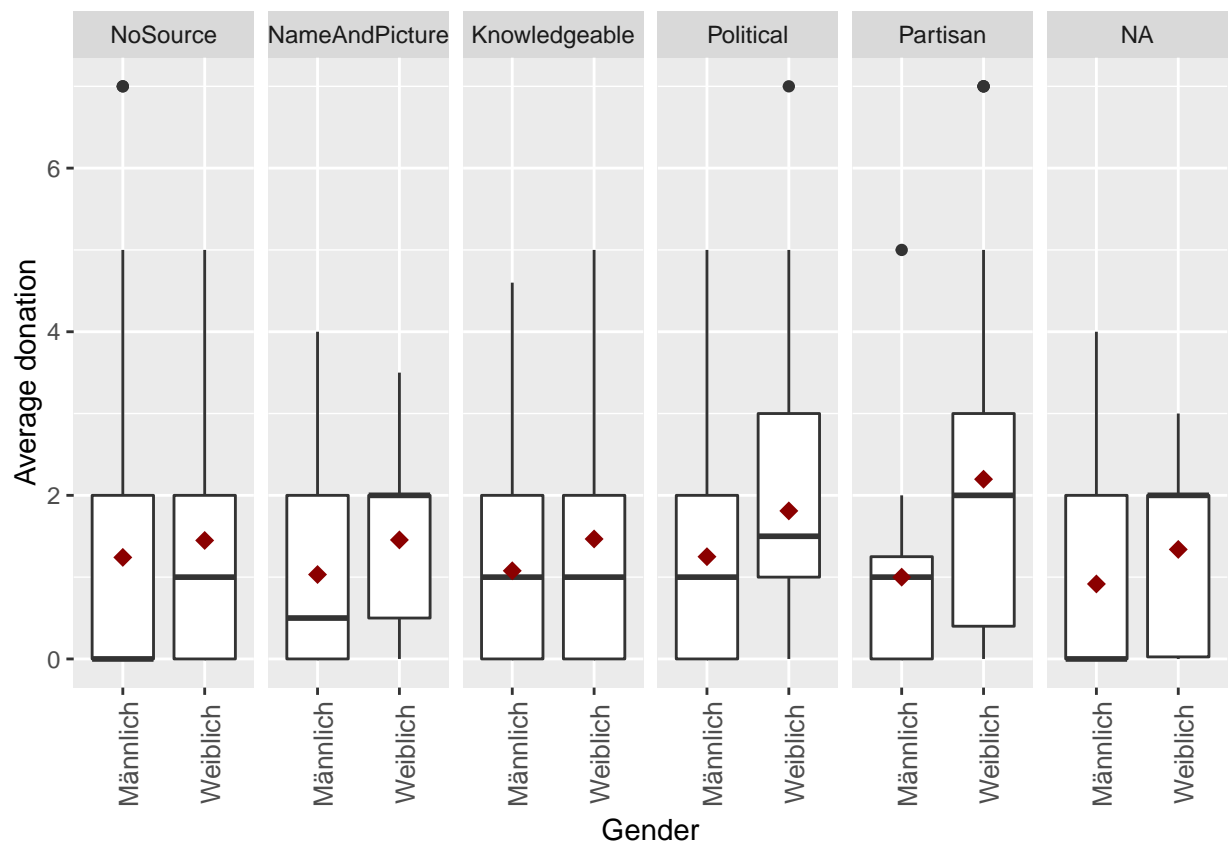
```
## 
##  Kruskal-Wallis rank sum test
## 
## data:  dfsub$Donation[dfsub$gender == "Weiblich" & dfsub$Intervention == "Recommendation"] by dfsub$S
## Kruskal-Wallis chi-squared = 10.733, df = 4, p-value = 0.02973


## 
##  Kruskal-Wallis rank sum test
## 
## data:  dfsub$Donation[dfsub$gender == "Weiblich" & dfsub$Intervention == "Default"] by dfsub$Sourcety
## Kruskal-Wallis chi-squared = 0.61934, df = 4, p-value = 0.9609


## 
##  Kruskal-Wallis rank sum test
## 
## data:  dfsub$Donation[dfsub$gender == "Männlich" & dfsub$Intervention == "Recommendation"] by dfsub$S
## Kruskal-Wallis chi-squared = 0.40054, df = 4, p-value = 0.9824


## 
##  Kruskal-Wallis rank sum test
## 
## data:  dfsub$Donation[dfsub$gender == "Männlich" & dfsub$Intervention == "Default"] by dfsub$Sourcety
## Kruskal-Wallis chi-squared = 2.8933, df = 4, p-value = 0.5758


## 
## Call:
## lm(formula = Donation ~ gender * RecvsDefD * Sourcetype, data = dfsub)
## 
## Residuals:
##     Min      1Q  Median      3Q     Max 
## -2.4118 -1.1200 -0.2789  0.7667  5.7778 
## 
## Coefficients:
##                                                       Estimate Std. Error
## (Intercept)                                           1.272727   0.459882
## genderWeiblich                                        0.006220   0.577870
## RecvsDefDDef                                         -0.050505   0.583726
## SourcetypeNameAndPicture                             -0.299394   0.605463
## SourcetypeKnowledgeable                              -0.272727   0.650371
## SourcetypePolitical                                  -0.022727   0.636678
## SourcetypePartisan                                   -0.541958   0.624856
## genderWeiblich:RecvsDefDDef                           0.421558   0.780114
## genderWeiblich:SourcetypeNameAndPicture               0.432211   0.791122
## genderWeiblich:SourcetypeKnowledgeable               -0.001458   0.810065
## genderWeiblich:SourcetypePolitical                    0.553780   0.802571
## genderWeiblich:SourcetypePartisan                     1.674775   0.806061
## RecvsDefDDef:SourcetypeNameAndPicture                 0.197172   0.853504
## RecvsDefDDef:SourcetypeKnowledgeable                  0.181755   0.835241
## RecvsDefDDef:SourcetypePolitical                      0.050505   0.908517
## RecvsDefDDef:SourcetypePartisan                       0.553069   0.821452
## genderWeiblich:RecvsDefDDef:SourcetypeNameAndPicture -0.493033   1.110994
## genderWeiblich:RecvsDefDDef:SourcetypeKnowledgeable   0.447986   1.097951
## genderWeiblich:RecvsDefDDef:SourcetypePolitical      -0.422034   1.149064
```

```
## genderWeiblich:RecvsDefDDef:SourcetypePartisan          -1.330623    1.096319
##                                                        t value Pr(>|t|)
## (Intercept)                                              2.768   0.0060 **
## genderWeiblich                                           0.011   0.9914
## RecvsDefDDef                                            -0.087   0.9311
## SourcetypeNameAndPicture                                -0.494   0.6213
## SourcetypeKnowledgeable                                 -0.419   0.6753
## SourcetypePolitical                                     -0.036   0.9715
## SourcetypePartisan                                      -0.867   0.3865
## genderWeiblich:RecvsDefDDef                              0.540   0.5893
## genderWeiblich:SourcetypeNameAndPicture                 0.546   0.5852
## genderWeiblich:SourcetypeKnowledgeable                 -0.002   0.9986
## genderWeiblich:SourcetypePolitical                      0.690   0.4907
## genderWeiblich:SourcetypePartisan                       2.078   0.0386 *
## RecvsDefDDef:SourcetypeNameAndPicture                   0.231   0.8175
## RecvsDefDDef:SourcetypeKnowledgeable                    0.218   0.8279
## RecvsDefDDef:SourcetypePolitical                        0.056   0.9557
## RecvsDefDDef:SourcetypePartisan                         0.673   0.5013
## genderWeiblich:RecvsDefDDef:SourcetypeNameAndPicture   -0.444   0.6575
## genderWeiblich:RecvsDefDDef:SourcetypeKnowledgeable     0.408   0.6835
## genderWeiblich:RecvsDefDDef:SourcetypePolitical        -0.367   0.7137
## genderWeiblich:RecvsDefDDef:SourcetypePartisan         -1.214   0.2258
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.525 on 300 degrees of freedom
##   (30 observations deleted due to missingness)
## Multiple R-squared:  0.07393,    Adjusted R-squared:  0.01528
## F-statistic: 1.261 on 19 and 300 DF,  p-value: 0.2084


##
##  Kruskal-Wallis rank sum test
##
## data:  dfsub$Donation[dfsub$gender == "Weiblich" & dfsub$Intervention == "Recommendation"] by dfsub$
## Kruskal-Wallis chi-squared = 8.9371, df = 2, p-value = 0.01146
```

Same as above, the treatment effect seems to be present for females, but only when the source of the recommendation is political or associated with the green party. For males, the treatment effect seems to be zero, or slightly negative. Kruskal Wallis Tests confirm this (threat of sequential tests, so maybe Bonferroni correction should be used).

Gender and Reactance interaction per treatment
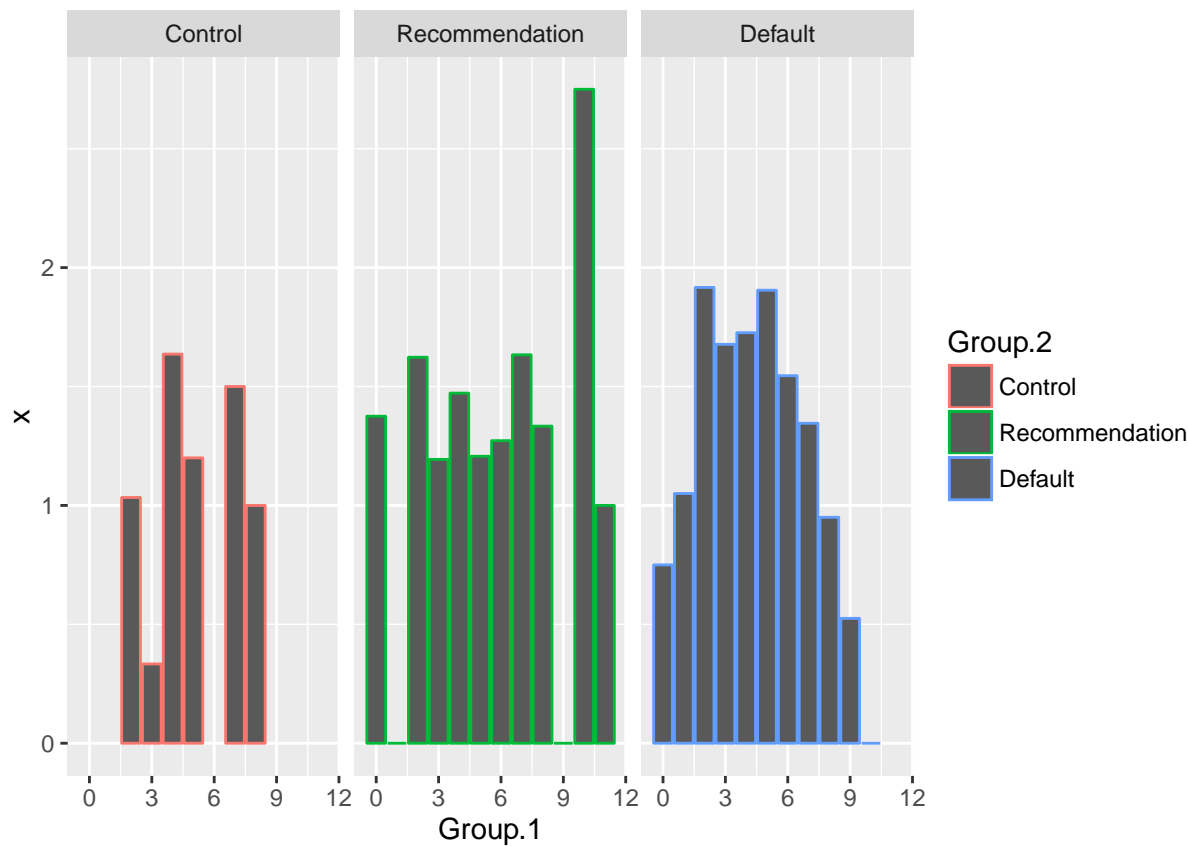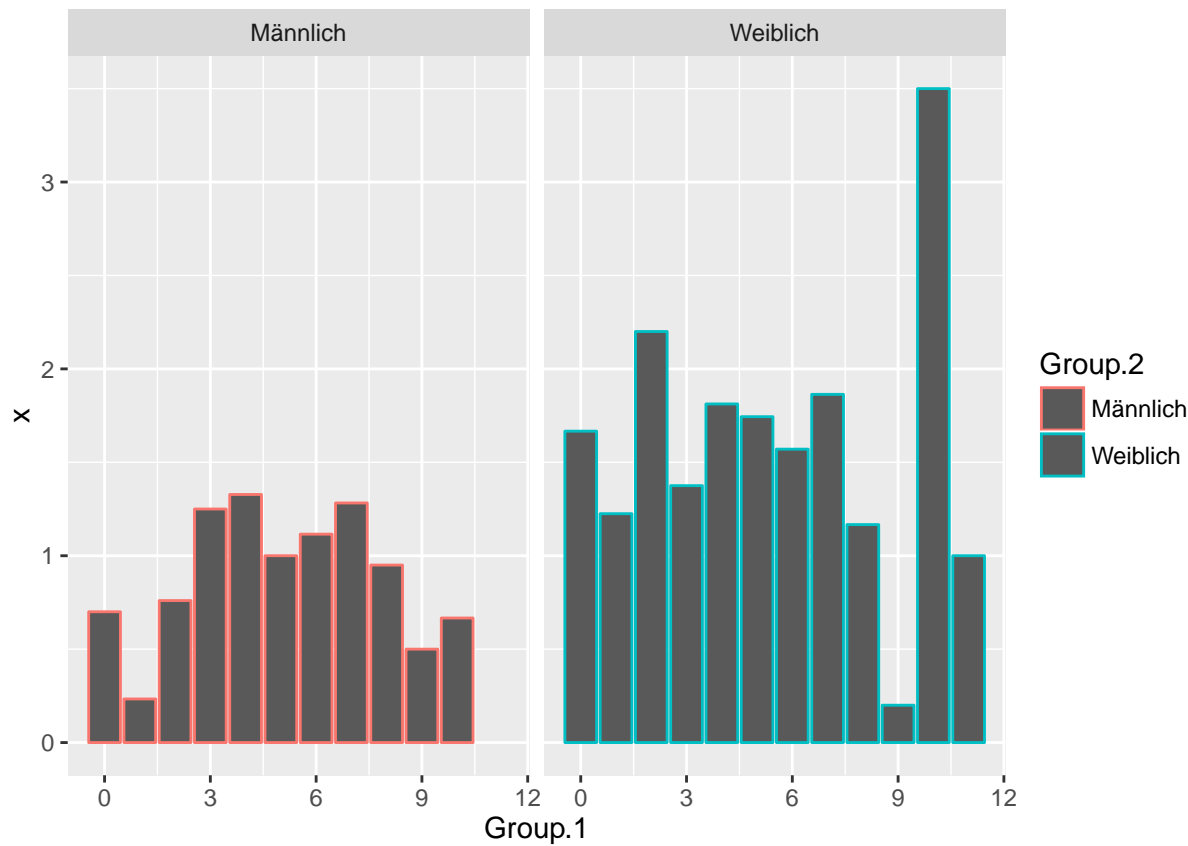
Party preference differences

Including only "believers" in Julia Verlinden

First check if whether subjects believe we cooperated depends on treatment

```
##
##        RecNap DefNap RecPol DefPol RecPar DefPar RecKno DefKno
##   Ja       18     24     15     15     16     16     25     21
##   Nein     15      9     17     14     14     18      8     13
```

```
## Warning in chisq.test(table(dfbelA$believe2, dfbelA$treatment)): Chi-
## squared approximation may be incorrect
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(dfbelA$believe2, dfbelA$treatment)
## X-squared = NaN, df = 10, p-value = NA
```

```
##
## Call:
## glm(formula = believe2 ~ treatment, family = "binomial", data = dfbelA)
##
## Deviance Residuals:
##     Min      1Q   Median      3Q      Max
## -1.2310  -1.1010  -0.7452   1.2068   1.6835
##
## Coefficients:
##                 Estimate Std. Error z value Pr(>|z|)
## (Intercept)     -0.18232    0.34960  -0.522   0.6020
## treatmentDefNap -0.79851    0.52440  -1.523   0.1278
## treatmentRecPol  0.30748    0.49771   0.618   0.5367
## treatmentDefPol  0.11333    0.51021   0.222   0.8242
## treatmentRecPar  0.04879    0.50611   0.096   0.9232
## treatmentDefPar  0.30010    0.49018   0.612   0.5404
## treatmentRecKno -0.95711    0.53593  -1.786   0.0741 .
## treatmentDefKno -0.29725    0.49675  -0.598   0.5496
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 350.80  on 257  degrees of freedom
## Residual deviance: 338.81  on 250  degrees of freedom
## AIC: 354.81
##
## Number of Fisher Scoring iterations: 4
```

```
##
## Call:
## glm(formula = believe2 ~ Sourcetype * Intervention, family = "binomial",
```

```
##      data = dfbelA)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.2310  -1.1010  -0.7452   1.2068   1.6835
##
## Coefficients:
##                                            Estimate Std. Error z value
## (Intercept)                                -0.18232    0.34960  -0.522
## SourcetypeKnowledgeable                    -0.95711    0.53593  -1.786
## SourcetypePolitical                         0.30748    0.49771   0.618
## SourcetypePartisan                          0.04879    0.50611   0.096
## InterventionDefault                        -0.79851    0.52440  -1.523
## SourcetypeKnowledgeable:InterventionDefault 1.45837   0.75136   1.941
## SourcetypePolitical:InterventionDefault     0.60435    0.73388   0.823
## SourcetypePartisan:InterventionDefault      1.04982    0.72594   1.446
##                                            Pr(>|z|)
## (Intercept)                                  0.6020
## SourcetypeKnowledgeable                      0.0741 .
## SourcetypePolitical                          0.5367
## SourcetypePartisan                           0.9232
## InterventionDefault                          0.1278
## SourcetypeKnowledgeable:InterventionDefault  0.0523 .
## SourcetypePolitical:InterventionDefault      0.4102
## SourcetypePartisan:InterventionDefault       0.1481
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 350.80  on 257  degrees of freedom
## Residual deviance: 338.81  on 250  degrees of freedom
## AIC: 354.81
##
## Number of Fisher Scoring iterations: 4
```

Check average donations by treatment only for those that believed we cooperated with Julia Verlinden

```
## group: Control
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 31 1.13 1.15      1    1.02 1.48   0   4     4 0.42    -0.94 0.21
## -------------------------------------------------------
## group: RecNos
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 31 1.24 1.39      1    0.99 1.48   0   5     5 1.14     0.52 0.25
## -------------------------------------------------------
## group: DefNos
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1     1 33 1.45 2.11    0.3    1.06 0.44   0   7     7 1.41     0.77 0.37
## -------------------------------------------------------
## group: RecNap
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
```

```
## 1     1 18 0.98 0.96    0.75    0.91 1.11   0   3      3  0.5    -1.17 0.23
## ------------------------------------------------------------
## group: DefNap
##   vars  n mean  sd median trimmed  mad min max range skew kurtosis   se
## 1    1 24  1.5 1.2      2    1.43 1.48   0   4     4 0.18    -1.09 0.25
## ------------------------------------------------------------
## group: RecPol
##   vars  n mean  sd median trimmed  mad min max range skew kurtosis   se
## 1    1 16 1.54 1.5   1.25    1.41 1.85   0   5     5 0.66     -0.6 0.38
## ------------------------------------------------------------
## group: DefPol
##   vars  n mean  sd median trimmed  mad min max range skew kurtosis   se
## 1    1 17 1.44 1.4      1     1.3 1.48   0   5     5 0.98     0.11 0.34
## ------------------------------------------------------------
## group: RecPar
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 16 1.81 1.12      2    1.79 1.48   0   4     4 0.34       -1 0.28
## ------------------------------------------------------------
## group: DefPar
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 16 1.16 1.32      1    0.97 1.04   0   5     5 1.55     1.87 0.33
## ------------------------------------------------------------
## group: RecKno
##   vars  n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 25 1.06 1.14      1    0.91 1.48   0   4     4 0.92     0.02 0.23
## ------------------------------------------------------------
## group: DefKno
##   vars  n mean  sd median trimmed  mad min max range skew kurtosis   se
## 1    1 21 1.12 1.5    0.1    0.86 0.15   0   5     5 1.09     0.11 0.33
```
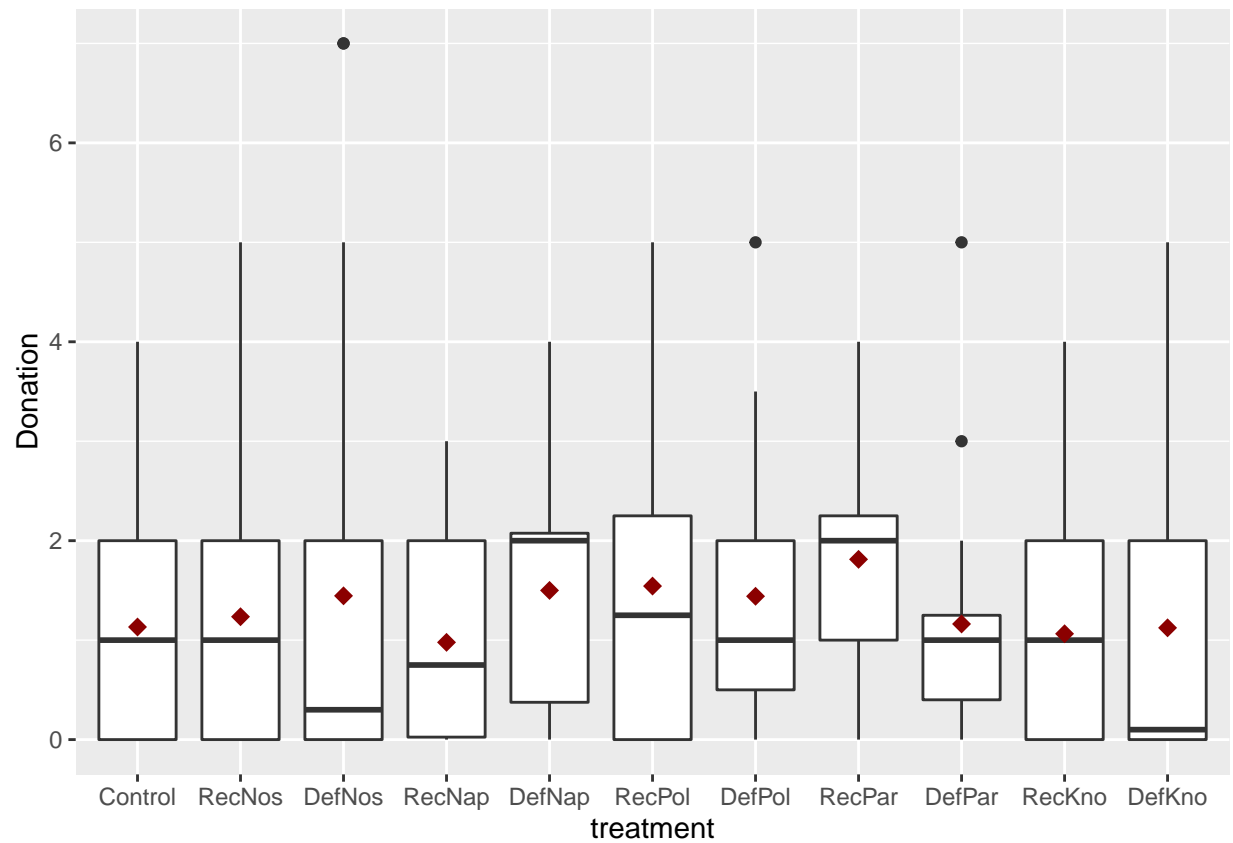
```
## 
##  Kruskal-Wallis rank sum test
## 
## data:  dfbel$Donation by dfbel$treatment
## Kruskal-Wallis chi-squared = 9.363, df = 10, p-value = 0.498
```

Kruskal Wallis test is not significant. This means that there are also no significant differences in Donations for those that believed we cooperated with Julia Verlinden.

Treatment interactions with. . .

. . . personal Interest and Knowledge w.r.t climate protection

. . . warm Glow feeling/ feeling of guilt when (not) protecting the climate
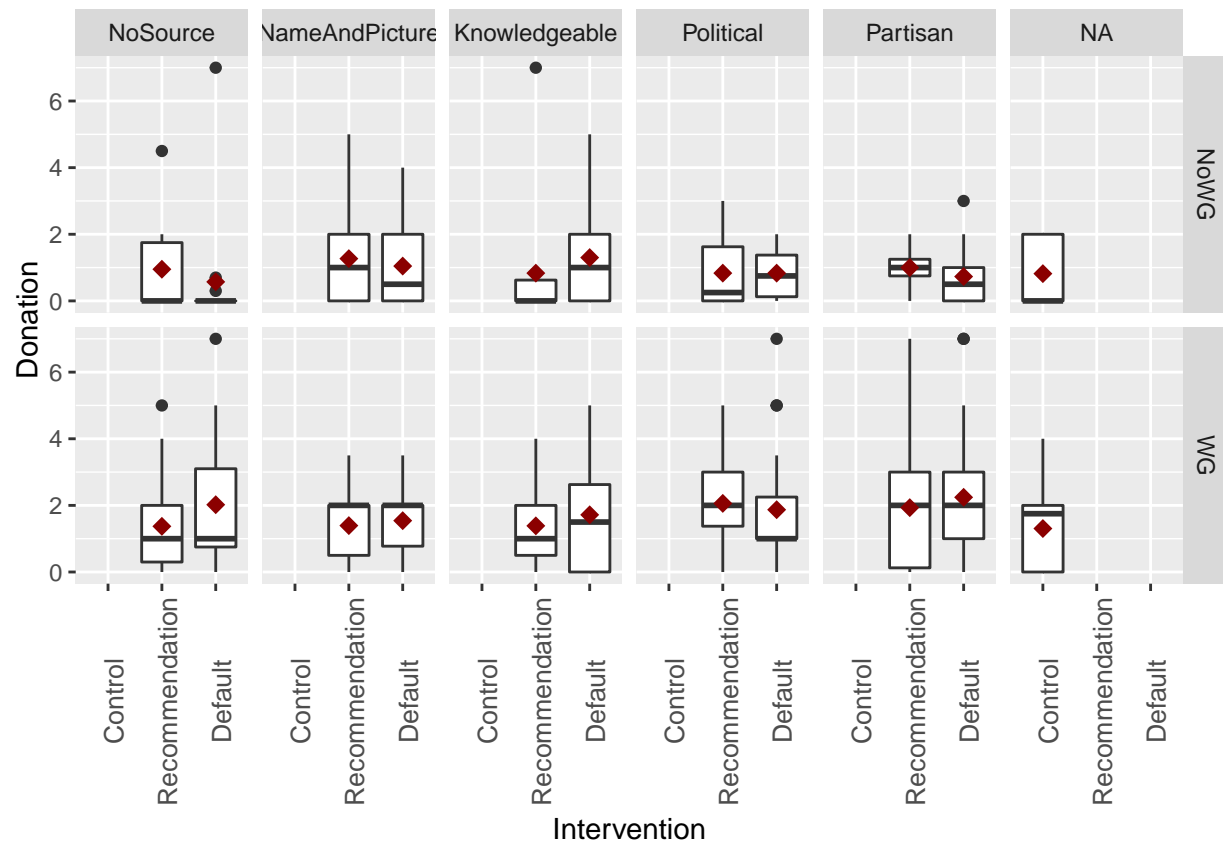
. . . judging carbon offsetting as a efficient way to protect the climate

```
##
##    0   1   2   3   4
##   34  55 140 102  23


##
##     Control RecNos DefNos RecNap DefNap RecPol DefPol RecPar DefPar RecKno
## 0         4      4      3      5      2      3      4      2      2      2
## 1         7      1      4      2      6      8      5      2      5      9
## 2         9     12     18     11     13     11     10     17     14     10
## 3         7     12      9     13     10      6      7      7     12     10
## 4         4      2      0      2      2      4      3      2      1      2
##
##     DefKno
## 0        3
## 1        6
## 2       15
```

```
##   3       9
##   4       1


## Warning in chisq.test(table(df$retireEffic, df$treatment)): Chi-squared
## approximation may be incorrect


##
##  Pearson's Chi-squared test
##
## data:  table(df$retireEffic, df$treatment)
## X-squared = 36.118, df = 40, p-value = 0.6457


##
## Call:
## glm(formula = retireEffD ~ treatment, family = "binomial", data = df)
##
## Deviance Residuals:
##     Min        1Q   Median        3Q       Max
## -1.1010   -0.9508  -0.8446    1.3867    1.6304
##
## Coefficients:
##                  Estimate Std. Error z value Pr(>|z|)
## (Intercept)      -0.59784    0.37538  -1.593    0.111
## treatmentRecNos   0.40368    0.52073   0.775    0.438
## treatmentDefNos  -0.42381    0.54039  -0.784    0.433
## treatmentRecNap   0.41552    0.51296   0.810    0.418
## treatmentDefNap   0.03822    0.52140   0.073    0.942
## treatmentRecPol  -0.19062    0.53513  -0.356    0.722
## treatmentDefPol  -0.04402    0.54179  -0.081    0.935
## treatmentRecPar  -0.24946    0.54739  -0.456    0.649
## treatmentDefPar   0.11826    0.51522   0.230    0.818
## treatmentRecKno   0.03822    0.52140   0.073    0.942
## treatmentDefKno  -0.27763    0.53158  -0.522    0.601
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 459.74  on 353  degrees of freedom
## Residual deviance: 454.50  on 343  degrees of freedom
## AIC: 476.5
##
## Number of Fisher Scoring iterations: 4
```
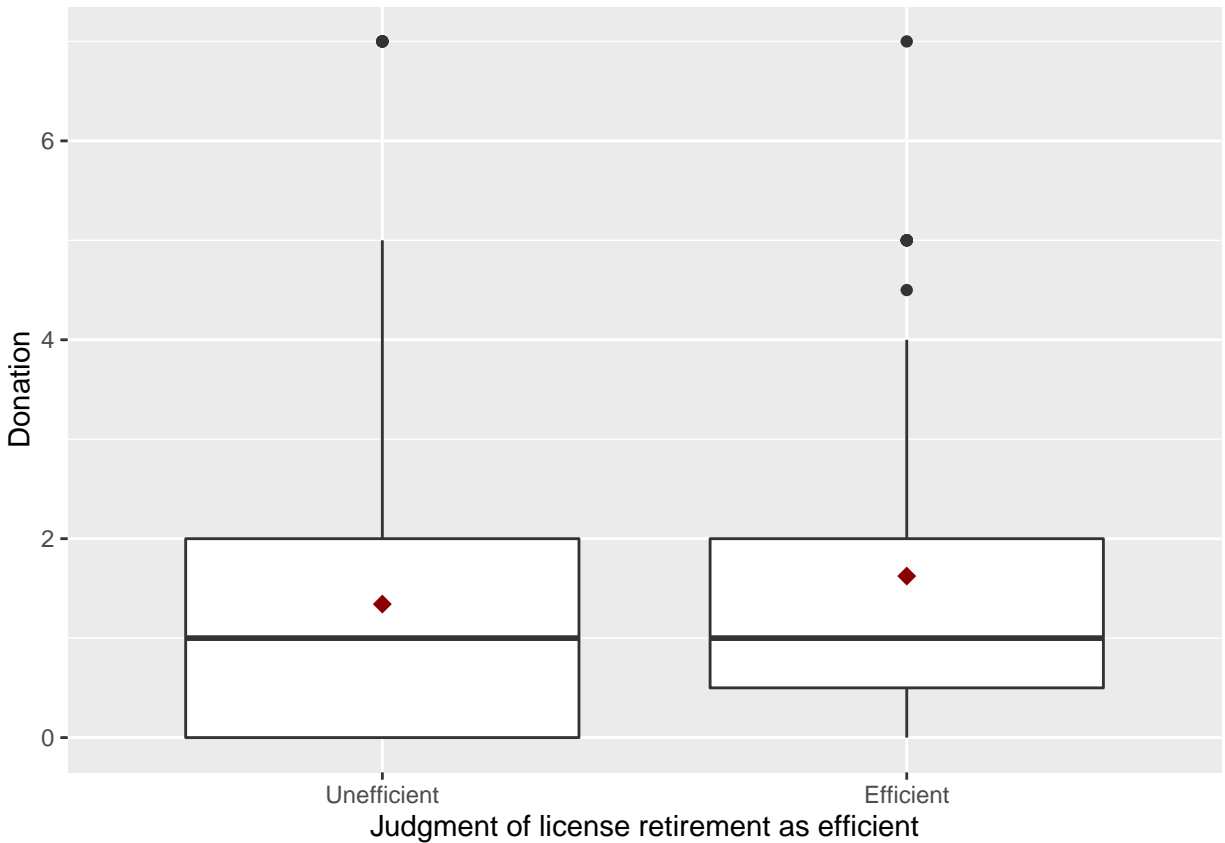
*Judgment (dummy) is independent of treatment*

Average donation efficiency-judgment differences (by treatment)

```
## group: Unefficient
##   vars   n mean  sd median trimmed  mad min max range skew kurtosis   se
## 1    1 229 1.34 1.6      1    1.05 1.48   0   7     7 1.58     2.63 0.11
## -------------------------------------------------------
## group: Efficient
##   vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 125 1.62 1.43      1    1.45 1.48   0   7     7 0.97     0.78 0.13
```

```
##
##   Welch Two Sample t-test
##
## data:  df$Donation by df$retireEffD
## t = -1.6958, df = 278.81, p-value = 0.09104
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##   -0.60857476  0.04529092
## sample estimates:
## mean in group Unefficient    mean in group Efficient
##                  1.342358                   1.624000


##
##   Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$retireEffD
## W = 11934, p-value = 0.008118
## alternative hypothesis: true location shift is not equal to 0
```
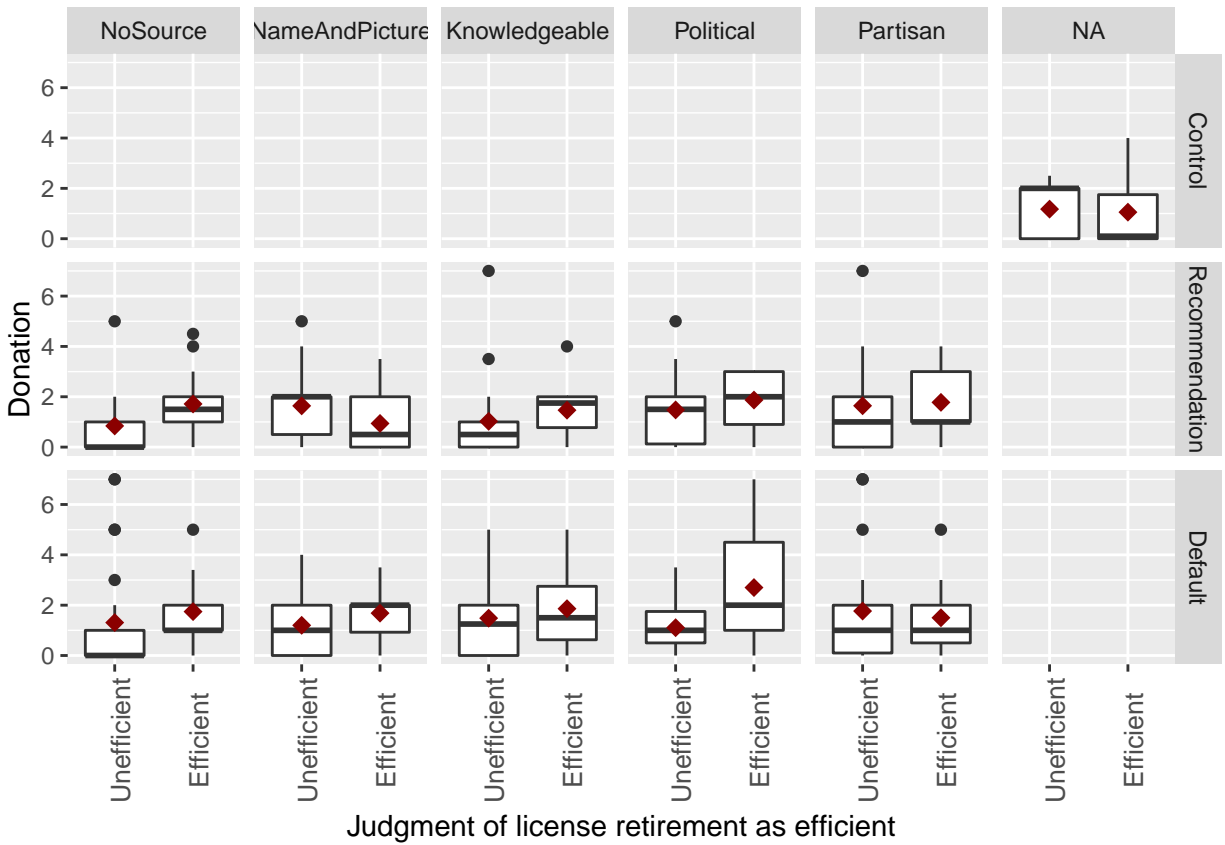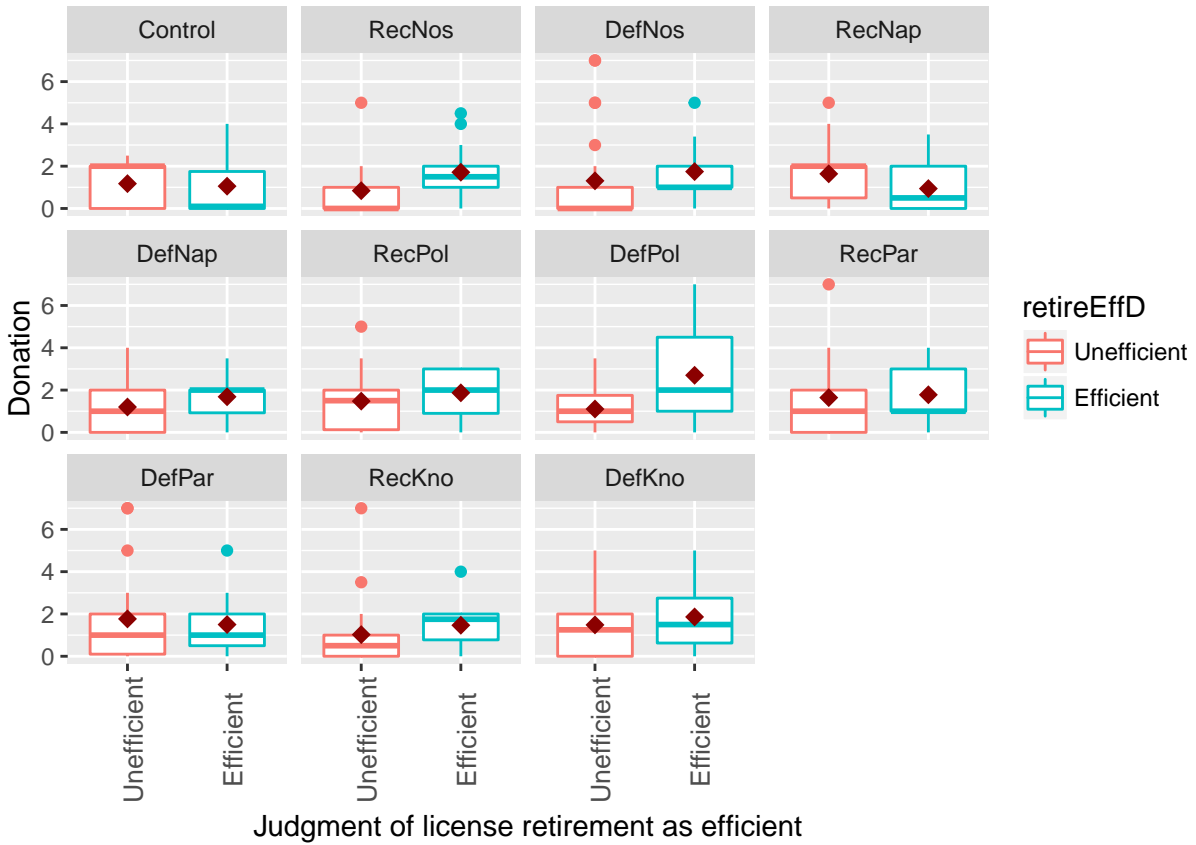
```
##
## Call:
## lm(formula = Donation ~ treatment * retireEffD, data = df)
##
## Residuals:
##    Min    1Q Median    3Q    Max
## -2.700 -1.175 -0.308  0.800  5.976
##
## Coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                           1.17500    0.34595   3.396 0.000765
## treatmentRecNos                      -0.33382    0.51037  -0.654 0.513511
## treatmentDefNos                       0.13300    0.46413   0.287 0.774632
## treatmentRecNap                       0.46389    0.50265   0.923 0.356734
## treatmentDefNap                       0.02500    0.48338   0.052 0.958784
## treatmentRecPol                       0.30227    0.47799   0.632 0.527574
## treatmentDefPol                      -0.06974    0.49564  -0.141 0.888191
## treatmentRecPar                       0.46786    0.48338   0.968 0.333807
## treatmentDefPar                       0.59167    0.48338   1.224 0.221814
## treatmentRecKno                      -0.15119    0.48338  -0.313 0.754647
## treatmentDefKno                       0.30833    0.46841   0.658 0.510833
## retireEffDEfficient                  -0.12045    0.58075  -0.207 0.835816
## treatmentRecNos:retireEffDEfficient   0.99356    0.80563   1.233 0.218346
## treatmentDefNos:retireEffDEfficient   0.55690    0.83604   0.666 0.505802
## treatmentRecNap:retireEffDEfficient  -0.57843    0.79361  -0.729 0.466600
## treatmentDefNap:retireEffDEfficient   0.60379    0.80667   0.748 0.454693
## treatmentRecPol:retireEffDEfficient   0.51318    0.82791   0.620 0.535779
## treatmentDefPol:retireEffDEfficient   1.71519    0.83822   2.046 0.041521
## treatmentRecPar:retireEffDEfficient   0.25538    0.84688   0.302 0.763185
## treatmentDefPar:retireEffDEfficient  -0.14621    0.79710  -0.183 0.854573
## treatmentRecKno:retireEffDEfficient   0.56331    0.80667   0.698 0.485468
## treatmentDefKno:retireEffDEfficient   0.49712    0.82241   0.604 0.545947
##
## (Intercept)                         ***
## treatmentRecNos
## treatmentDefNos
## treatmentRecNap
## treatmentDefNap
## treatmentRecPol
## treatmentDefPol
## treatmentRecPar
## treatmentDefPar
## treatmentRecKno
## treatmentDefKno
## retireEffDEfficient
## treatmentRecNos:retireEffDEfficient
## treatmentDefNos:retireEffDEfficient
## treatmentRecNap:retireEffDEfficient
## treatmentDefNap:retireEffDEfficient
## treatmentRecPol:retireEffDEfficient
## treatmentDefPol:retireEffDEfficient *
## treatmentRecPar:retireEffDEfficient
## treatmentDefPar:retireEffDEfficient
## treatmentRecKno:retireEffDEfficient
```

```
## treatmentDefKno:retireEffDEfficient
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.547 on 332 degrees of freedom
## Multiple R-squared:  0.05624,    Adjusted R-squared:  -0.003453
## F-statistic: 0.9422 on 21 and 332 DF,  p-value: 0.5364
```

... moral duty protect the climate

```
##
## No moral duty    Moral duty
##           136           218


##
##               Control RecNos DefNos RecNap DefNap RecPol DefPol RecPar
##    No moral duty     11     13     14     19     16      5      7     12
##    Moral duty        20     18     20     14     17     27     22     18
##
##               DefPar RecKno DefKno
##    No moral duty    10     17     12
##    Moral duty       24     16     22


##
##   Pearson's Chi-squared test
##
## data:  table(df$moralD, df$treatment)
## X-squared = 20.174, df = 10, p-value = 0.02765


##
## Call:
## glm(formula = moralD ~ treatment, family = "binomial", data = df)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.9268  -1.2033   0.7433   1.0108   1.3095
##
## Coefficients:
##                 Estimate Std. Error z value Pr(>|z|)
## (Intercept)     0.597837   0.375379   1.593   0.1112
## treatmentRecNos -0.272415   0.522865  -0.521   0.6024
## treatmentDefNos -0.241162   0.512189  -0.471   0.6378
## treatmentRecNap -0.903219   0.514752  -1.755   0.0793 .
## treatmentDefNap -0.537212   0.512087  -1.049   0.2941
## treatmentRecPol  1.088562   0.614773   1.771   0.0766 .
## treatmentDefPol  0.547295   0.573777   0.954   0.3402
## treatmentRecPar -0.192372   0.528959  -0.364   0.7161
## treatmentDefPar  0.277632   0.531578   0.522   0.6015
## treatmentRecKno -0.658462   0.512087  -1.286   0.1985
## treatmentDefKno  0.008299   0.519324   0.016   0.9873
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 471.58  on 353  degrees of freedom
## Residual deviance: 450.50  on 343  degrees of freedom
## AIC: 472.5
## 
## Number of Fisher Scoring iterations: 4
```

Moral duty to protect climate is significantly different in treatments.

Average donation efficiency-judgment differences (by treatment)

```
## group: No moral duty
##   vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 136  0.9 1.07    0.5    0.77 0.74   0   5     5 1.27     1.74 0.09
## -------------------------------------------------------
## group: Moral duty
##   vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## 1    1 218 1.78 1.69    1.5    1.54 1.48   0   7     7 1.15     1.12 0.11
```



```
## 
##  Welch Two Sample t-test
## 
```
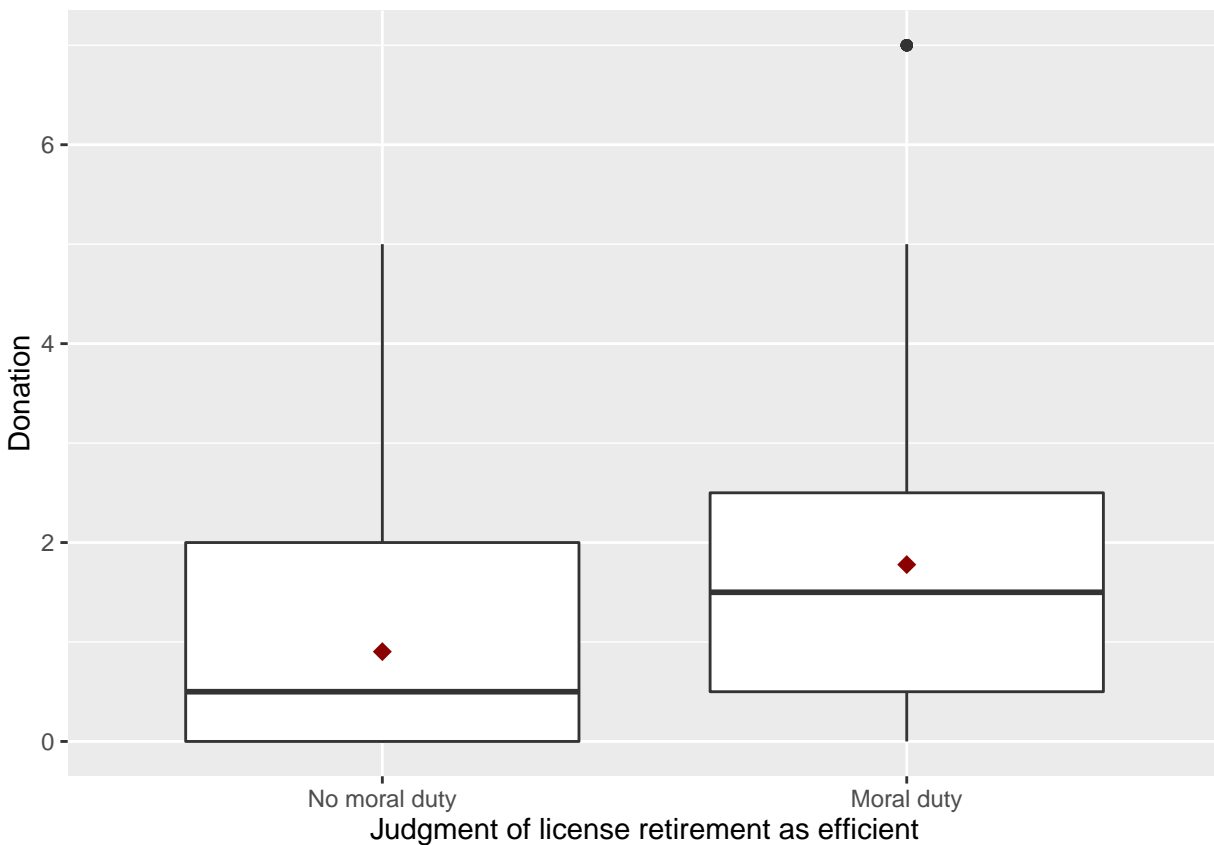
```
## data:  df$Donation by df$moralD
## t = -5.9481, df = 351.88, p-value = 6.548e-09
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -1.1643716 -0.5857093
## sample estimates:
## mean in group No moral duty    mean in group Moral duty
##                    0.9029412                   1.7779817


##
##  Wilcoxon rank sum test with continuity correction
##
## data:  df$Donation by df$moralD
## W = 10152, p-value = 3.236e-07
## alternative hypothesis: true location shift is not equal to 0
```
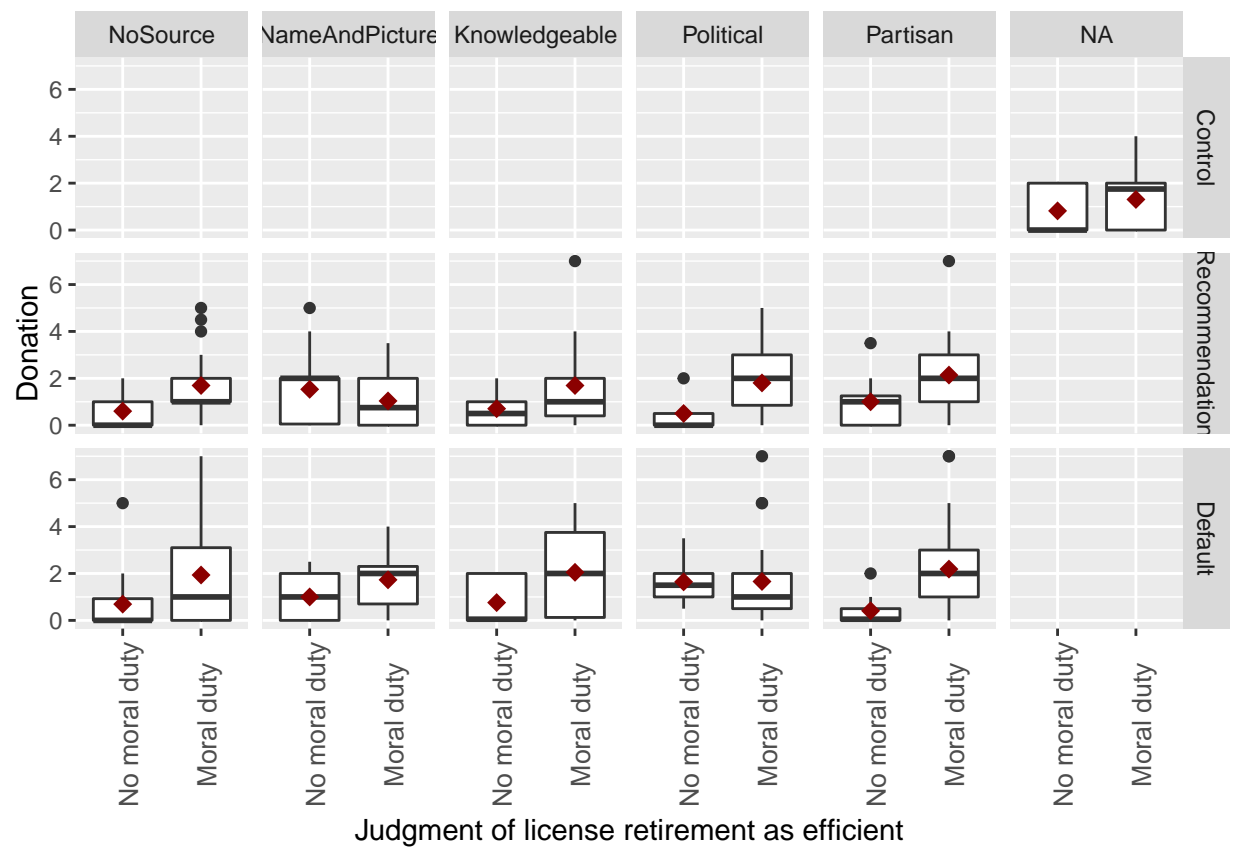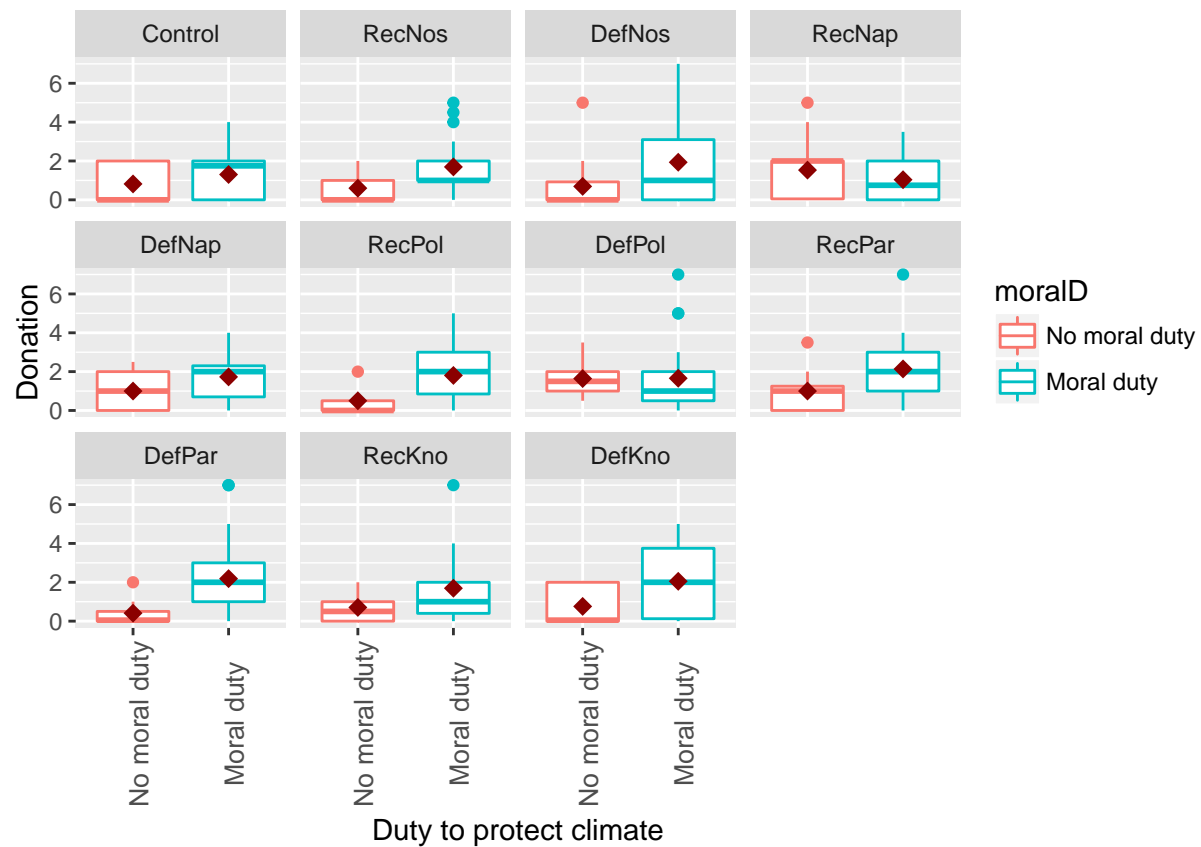
```
##
## Call:
## lm(formula = Donation ~ treatment * moralD, data = df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.1875 -1.0000 -0.2059  0.8079  5.3409
##
## Coefficients:
##                                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)                            0.81818    0.44983   1.819   0.0698 .
## treatmentRecNos                       -0.21818    0.61119  -0.357   0.7213
## treatmentDefNos                       -0.12532    0.60111  -0.208   0.8350
## treatmentRecNap                        0.71340    0.56523   1.262   0.2078
## treatmentDefNap                        0.18182    0.58434   0.311   0.7559
## treatmentRecPol                       -0.31818    0.80467  -0.395   0.6928
## treatmentDefPol                        0.82468    0.72133   1.143   0.2537
## treatmentRecPar                        0.18182    0.62276   0.292   0.7705
## treatmentDefPar                       -0.40818    0.65186  -0.626   0.5316
## treatmentRecKno                       -0.11230    0.57730  -0.195   0.8459
## treatmentDefKno                       -0.05985    0.62276  -0.096   0.9235
## moralDMoral duty                       0.48682    0.56003   0.869   0.3853
## treatmentRecNos:moralDMoral duty  0.60763    0.78006   0.779   0.4366
## treatmentDefNos:moralDMoral duty  0.75532    0.76414   0.988   0.3236
## treatmentRecNap:moralDMoral duty -0.98268    0.76796  -1.280   0.2016
## treatmentDefNap:moralDMoral duty  0.24259    0.76398   0.318   0.7510
## treatmentRecPol:moralDMoral duty  0.81689    0.91718   0.891   0.3738
## treatmentDefPol:moralDMoral duty -0.47058    0.85602  -0.550   0.5829
## treatmentRecPar:moralDMoral duty  0.65207    0.78916   0.826   0.4092
## treatmentDefPar:moralDMoral duty  1.29068    0.79306   1.627   0.1046
## treatmentRecKno:moralDMoral duty  0.50105    0.76398   0.656   0.5124
## treatmentDefKno:moralDMoral duty  0.80485    0.77478   1.039   0.2997
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.492 on 332 degrees of freedom
## Multiple R-squared:  0.1224, Adjusted R-squared:  0.06689
## F-statistic: 2.205 on 21 and 332 DF,  p-value: 0.001974
```

... income

```
##
## Call:
## lm(formula = Donation ~ treatment * income, data = df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1.9136 -1.1355 -0.3559  0.7200  5.5824
##
## Coefficients:
##                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)        1.130e+00  3.653e-01   3.092  0.00216 **
## treatmentRecNos    2.397e-01  6.184e-01   0.388  0.69852
```

```
## treatmentDefNos         9.711e-02  6.959e-01    0.140  0.88910
## treatmentRecNap         5.332e-01  6.581e-01    0.810  0.41846
## treatmentDefNap        -3.022e-01  6.734e-01   -0.449  0.65387
## treatmentRecPol         5.554e-01  8.110e-01    0.685  0.49398
## treatmentDefPol        -1.132e-01  5.255e-01   -0.215  0.82966
## treatmentRecPar         8.258e-01  5.680e-01    1.454  0.14701
## treatmentDefPar         4.283e-01  6.612e-01    0.648  0.51760
## treatmentRecKno        -6.748e-01  6.906e-01   -0.977  0.32922
## treatmentDefKno        -2.334e-01  6.660e-01   -0.350  0.72623
## income                  3.608e-06  3.283e-04    0.011  0.99124
## treatmentRecNos:income -2.077e-04  7.164e-04   -0.290  0.77210
## treatmentDefNos:income  3.146e-04  9.204e-04    0.342  0.73271
## treatmentRecNap:income -5.697e-04  7.981e-04   -0.714  0.47589
## treatmentDefNap:income  7.689e-04  7.978e-04    0.964  0.33586
## treatmentRecPol:income -9.690e-05  1.009e-03   -0.096  0.92352
## treatmentDefPol:income  7.540e-04  4.433e-04    1.701  0.08992 .
## treatmentRecPar:income -4.215e-04  6.210e-04   -0.679  0.49785
## treatmentDefPar:income  1.956e-04  7.530e-04    0.260  0.79520
## treatmentRecKno:income  8.774e-04  8.953e-04    0.980  0.32786
## treatmentDefKno:income  6.503e-04  7.407e-04    0.878  0.38063
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.52 on 320 degrees of freedom
##   (12 observations deleted due to missingness)
## Multiple R-squared:  0.05521,    Adjusted R-squared:  -0.00679
## F-statistic: 0.8905 on 21 and 320 DF,  p-value: 0.6039
```

... assessment of sources knowledge and interest w.r.t. climate protection