CRC Engage

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Contents

CRC Engage Summary

We conducted two literature searches: an initial search in 2020 and a follow-up search in 2023 to capture literature published between 2020 and 2023. We conducted the searches in two different online databases, ScienceDirect and WorldCat, to ensure a comprehensive identification of relevant literature. We identified 177 publications from our initial search and 540 publications in our follow up search, resulting in a total of 717 publications. We then manually screened the papers and removed additional papers that did not meet the criteria above on reading the manuscript, resulting in 489 total papers for analysis.

Chi-Square Testing

Chi Square Testing: Solution vs. Stakeholder Engagement

Chi Square and Fishers Exact Test on contingency table with Solution/No Solution as the explanatory, and engaged stakeholder/did not engage stakeholder as the response.

ChiSquare = 26: Fishers Exact Test Odds Ratio: 10: Not Independent

Both chi square and fishers exact test were significant, with a chi square approximation of ~26, which is well above the critical value (3.84 for one degree of freedom). Fishers Exact Test returned an odds ratio of ~10. The alternative hypothesis: true odds ratio is not equal to 1. Null is rejected. The groups are not independent. The Fishers Exact Test defaults to associating the odds ratio (which can represent effect size) with the first cell. In this instance "The odds of having a solution is 10 times that for an engaged stakeholder". You could flip the response and explanatory, but the odds ratio would stay the same.

For more info on this topic see: Kim HY. Statistical notes for clinical researchers: Chi-squared test and Fisher's exact test. Restor Dent Endod. 2017 May;42(2):152-155. doi: 10.5395/rde.2017.42.2.152. Epub 2017 Mar 30. PMID: 28503482; PMCID: PMC5426219.

```
##          stakeholder
## solution  M  NM
##     [1,] 13   5
##     [2,] 95 370
```

```
## Number of cases in table: 483
## Number of factors: 2
## Test for independence of all factors:
##  Chisq = 26.776, df = 1, p-value = 2.285e-07
##  Chi-squared approximation may be incorrect
```

```
##
##  Fisher's Exact Test for Count Data
##
## data:  solution_stakeholder
## p-value = 5.864e-06
## alternative hypothesis: true odds ratio is not equal to 1
## 95 percent confidence interval:
##   3.266331 36.933516
## sample estimates:
## odds ratio
##   10.06035
```

```
##
## Barnard's Unconditional Test
##
##            Treatment I Treatment II
## Outcome I           13            5
## Outcome II          95          370
##
## Null hypothesis: Treatments have no effect on the outcomes
## Score statistic = -5.17455
## Nuisance parameter = 0.022 (One sided), 0.022 (Two sided)
## P-value = 2.48239e-06 (One sided), 2.48239e-06 (Two sided)
```

Chi Square Testing: Solution Proposed or not vs. Computational Model Used or not?

Chi Square and Fishers Exact Test on contingency table with Solution/No Solution as the explanatory, and Model/No Model as the response.

ChiSquare = .57: Fishers Exact Test Odds Ratio = .668: Independent

Both chi square and fishers exact test were insignificant/borderline, with a chi square approximation of ~.57, which is well below to the critical value (3.84 for one degree of freedom). Fishers exact test returned an odds ratio of under 1. Null is accepted. The groups are independent.

The FET defaults to associating the odds ratio (which can represent effect size) with the first cell. In this instance "The odds of having a solution is .67 times that for having a model". You could flip the response and explanatory, but the odds ratio would stay the same.

```
##          model
## solution   M NM
##     [1,]  13  5
##     [2,] 370 95
```

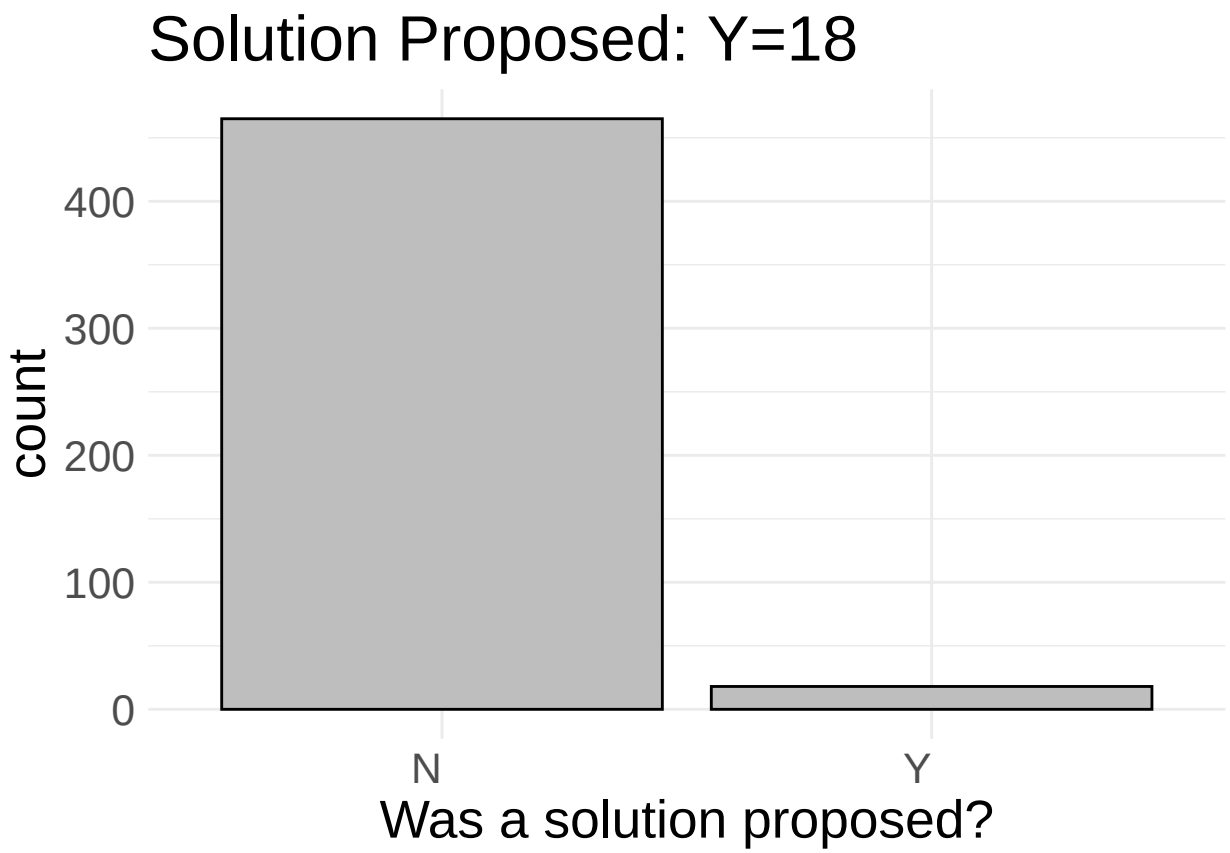
```
## Number of cases in table: 483
## Number of factors: 2
## Test for independence of all factors:
##  Chisq = 0.5699, df = 1, p-value = 0.4503
##  Chi-squared approximation may be incorrect
```

```
##
##  Fisher's Exact Test for Count Data
##
## data:  solution_model
## p-value = 0.5512
## alternative hypothesis: true odds ratio is not equal to 1
## 95 percent confidence interval:
##  0.2167592 2.4540598
## sample estimates:
## odds ratio
##  0.6681878
```

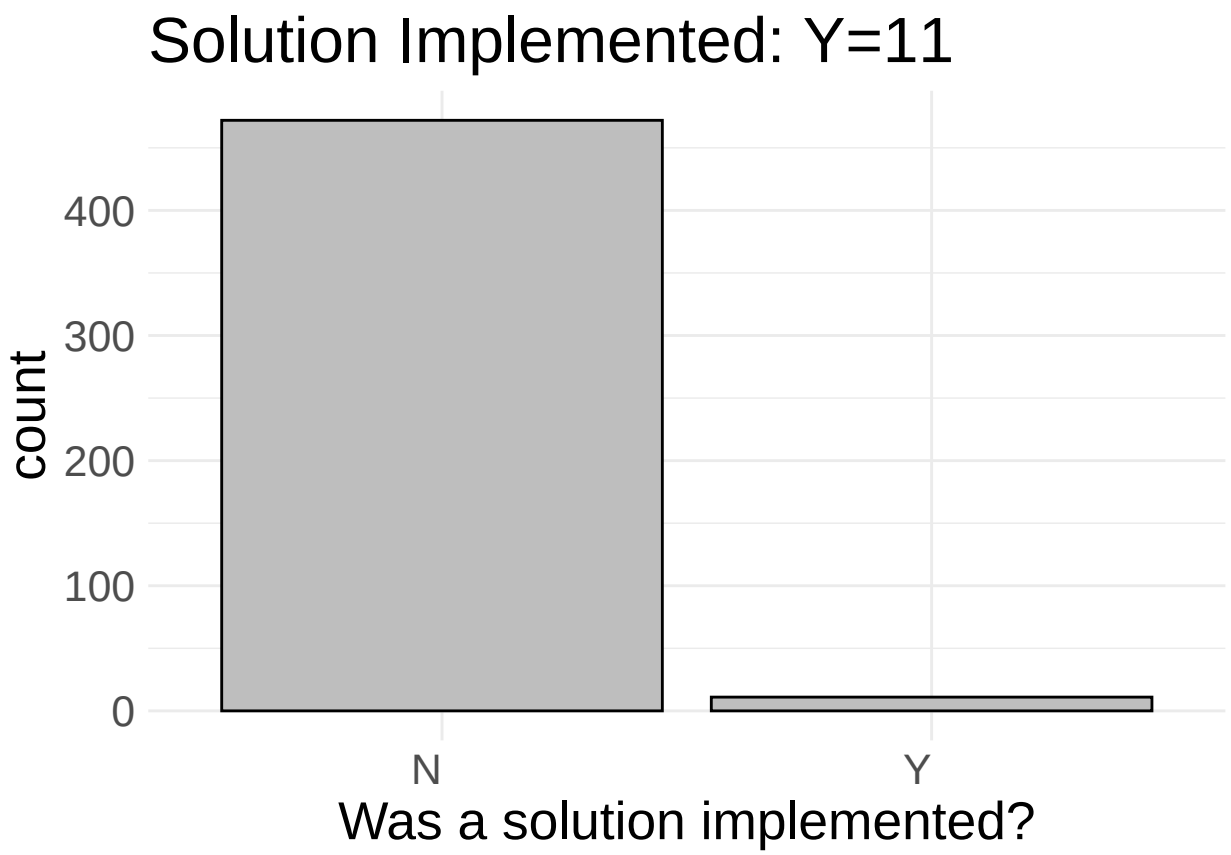
```
##
## Barnard's Unconditional Test
##
##            Treatment I Treatment II
## Outcome I           13            5
## Outcome II         370           95
##
## Null hypothesis: Treatments have no effect on the outcomes
## Score statistic = 0.754895
## Nuisance parameter = 0.99 (One sided), 0.01 (Two sided)
## P-value = 0.275902 (One sided), 0.510281 (Two sided)
```

Graphs

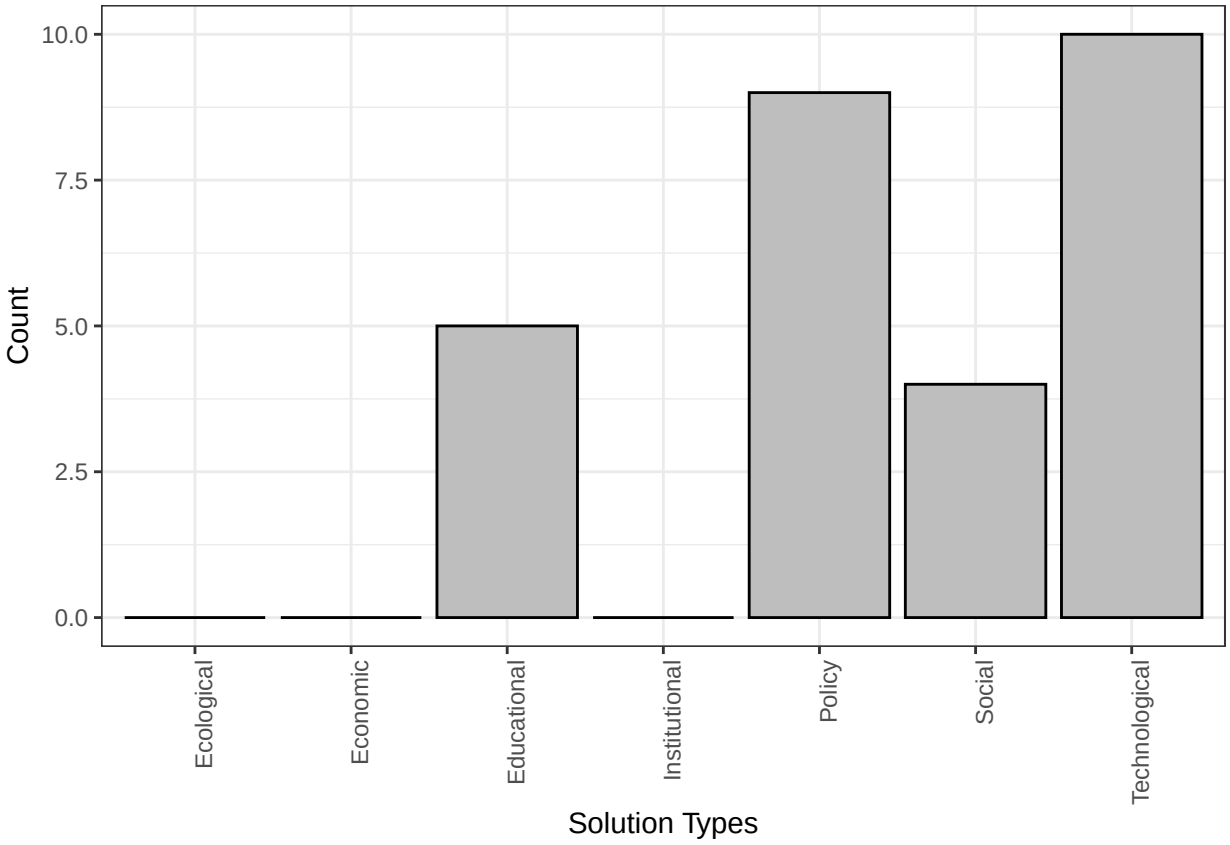
Were Solutions Proposed in the metaset of papers?



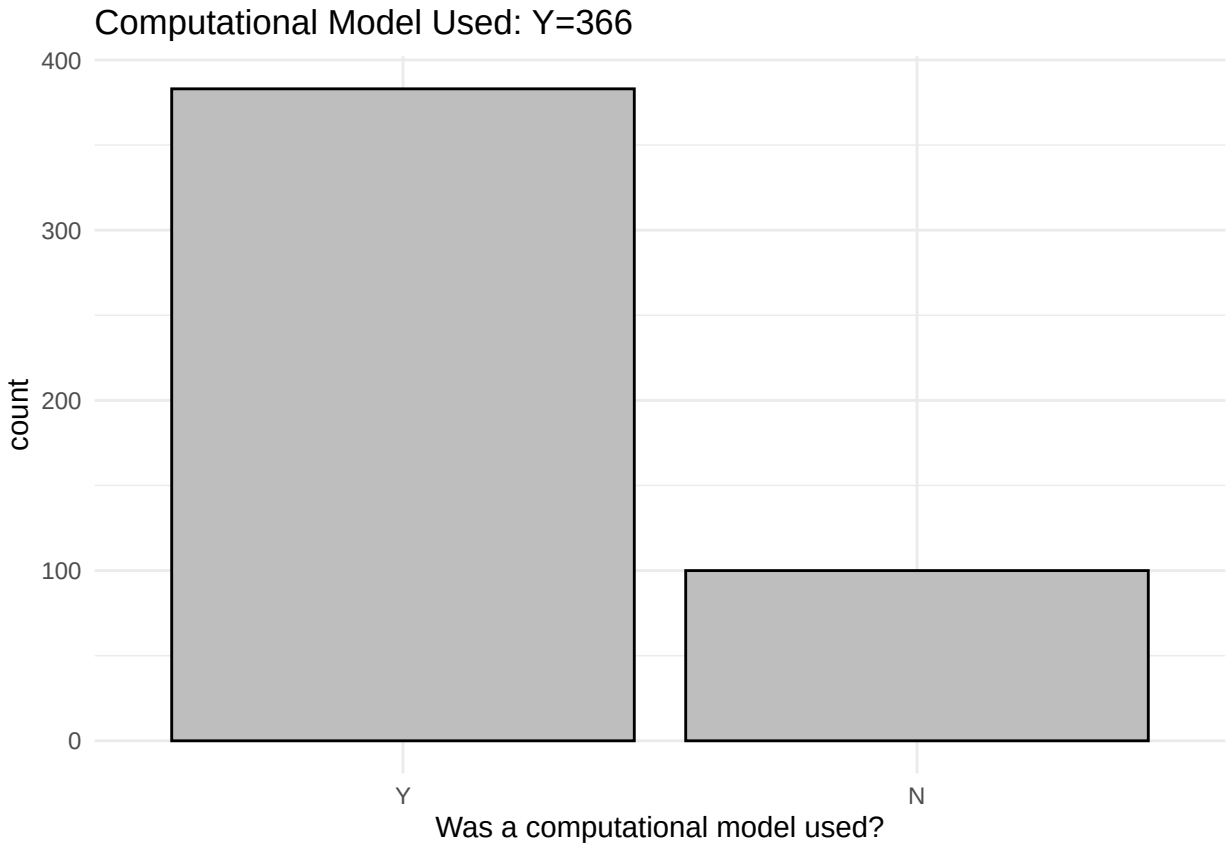
Were Solutions Implemented in the metaset of papers?



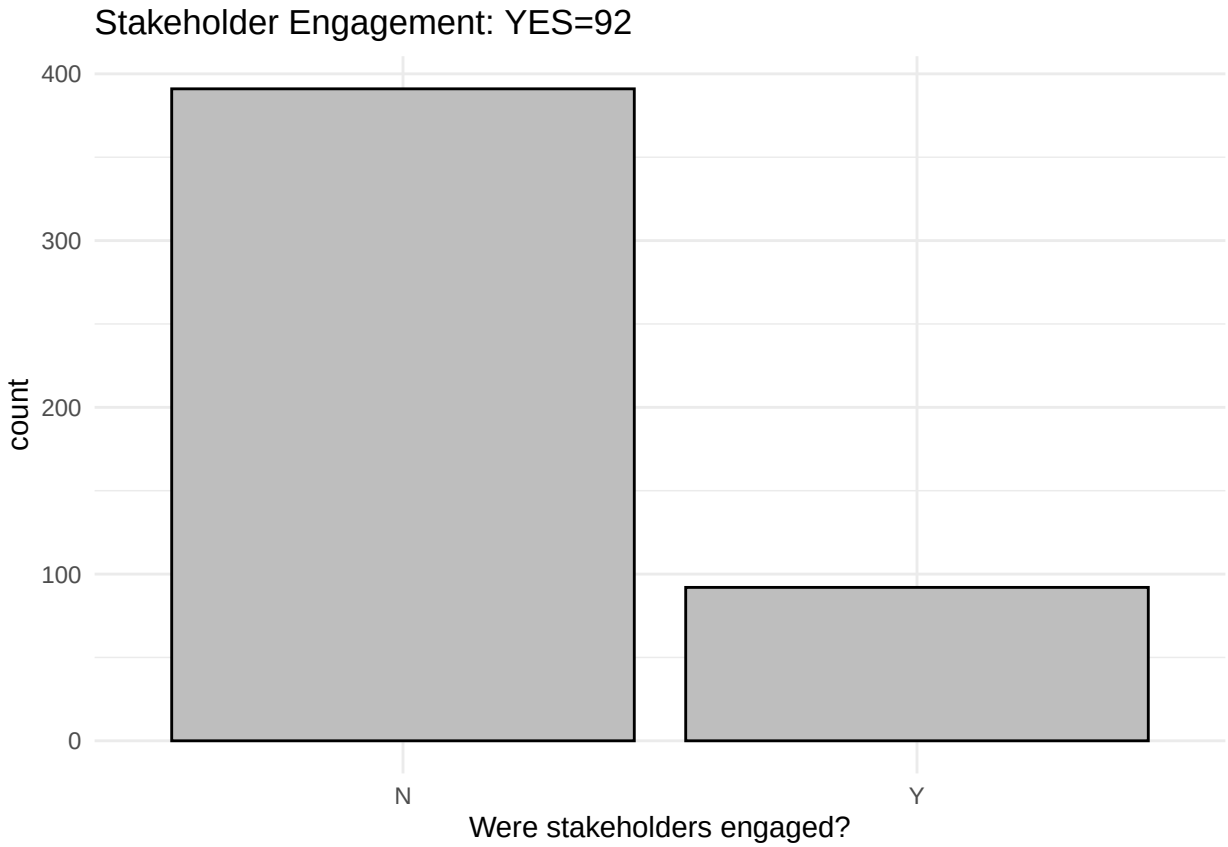
What were the solution types?



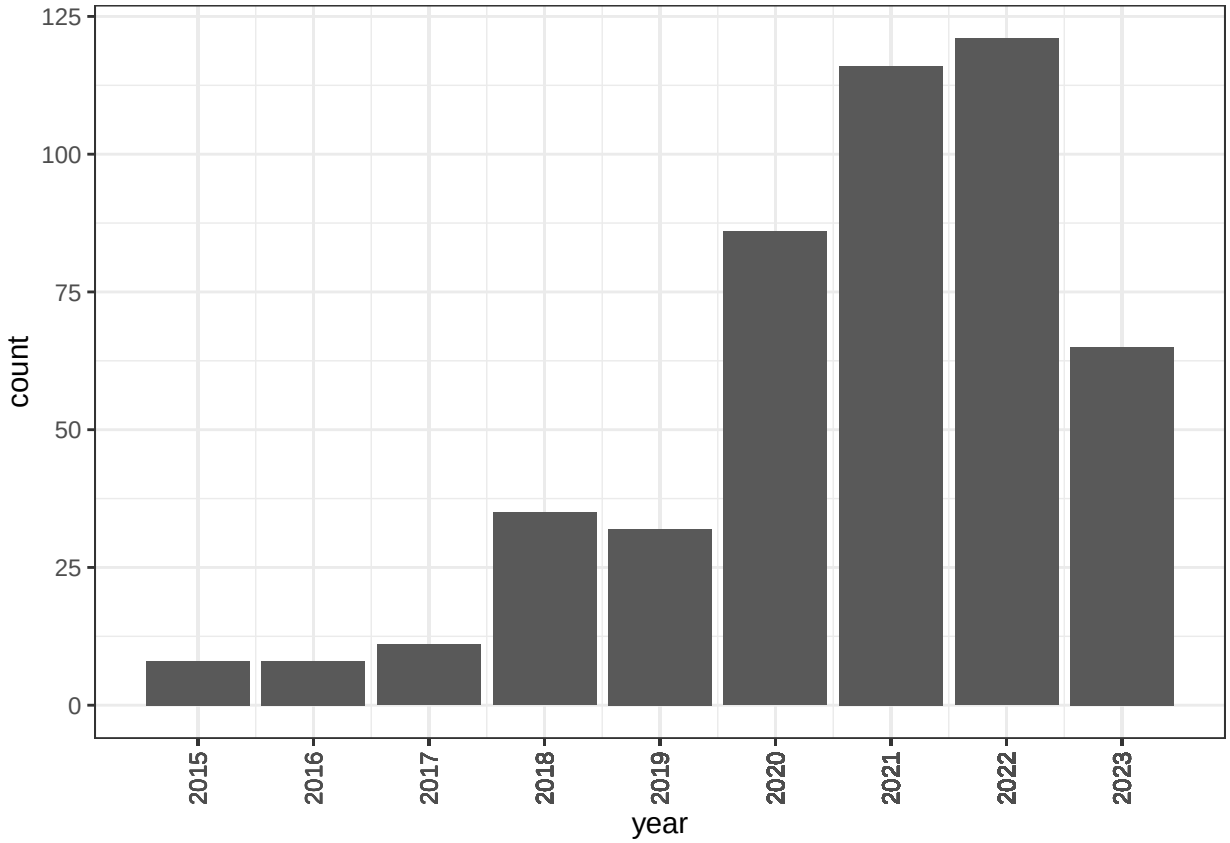
Was a computational model used?



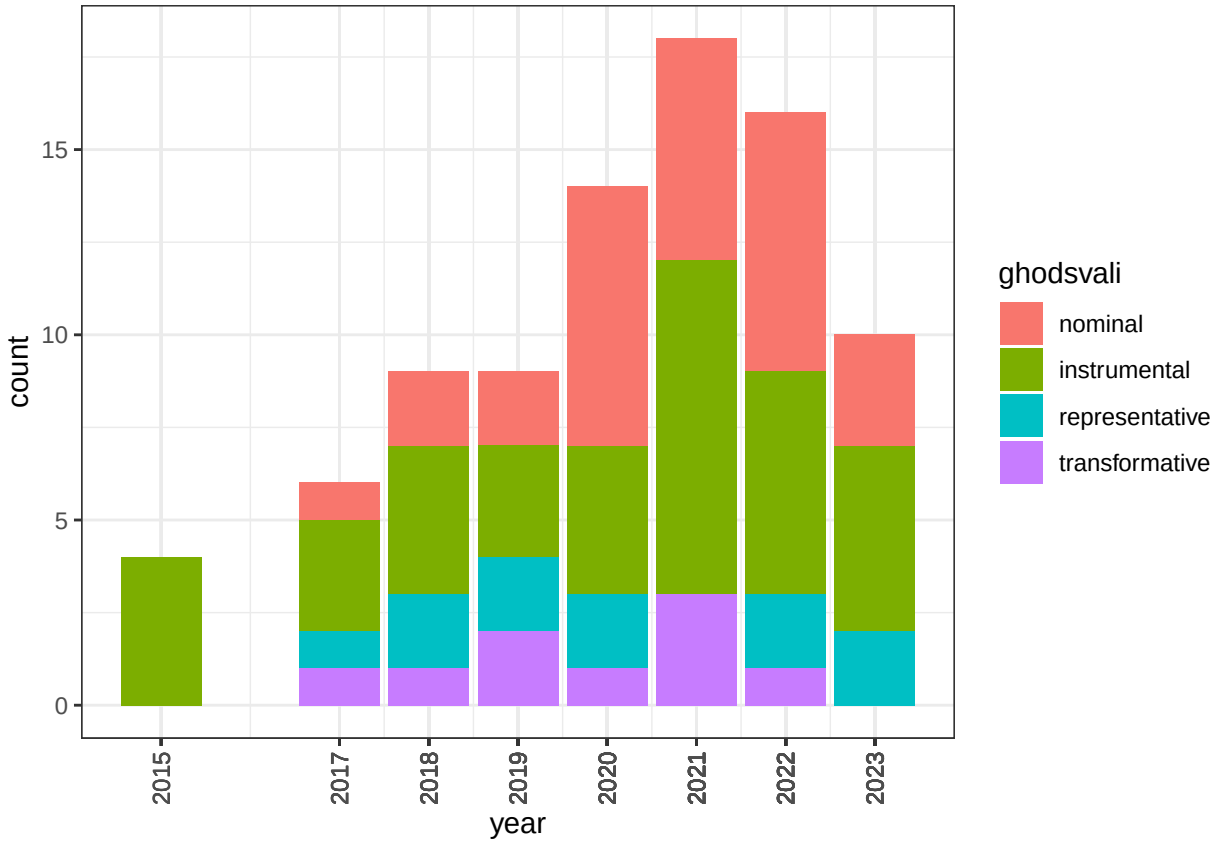
Were Stakeholders engaged?



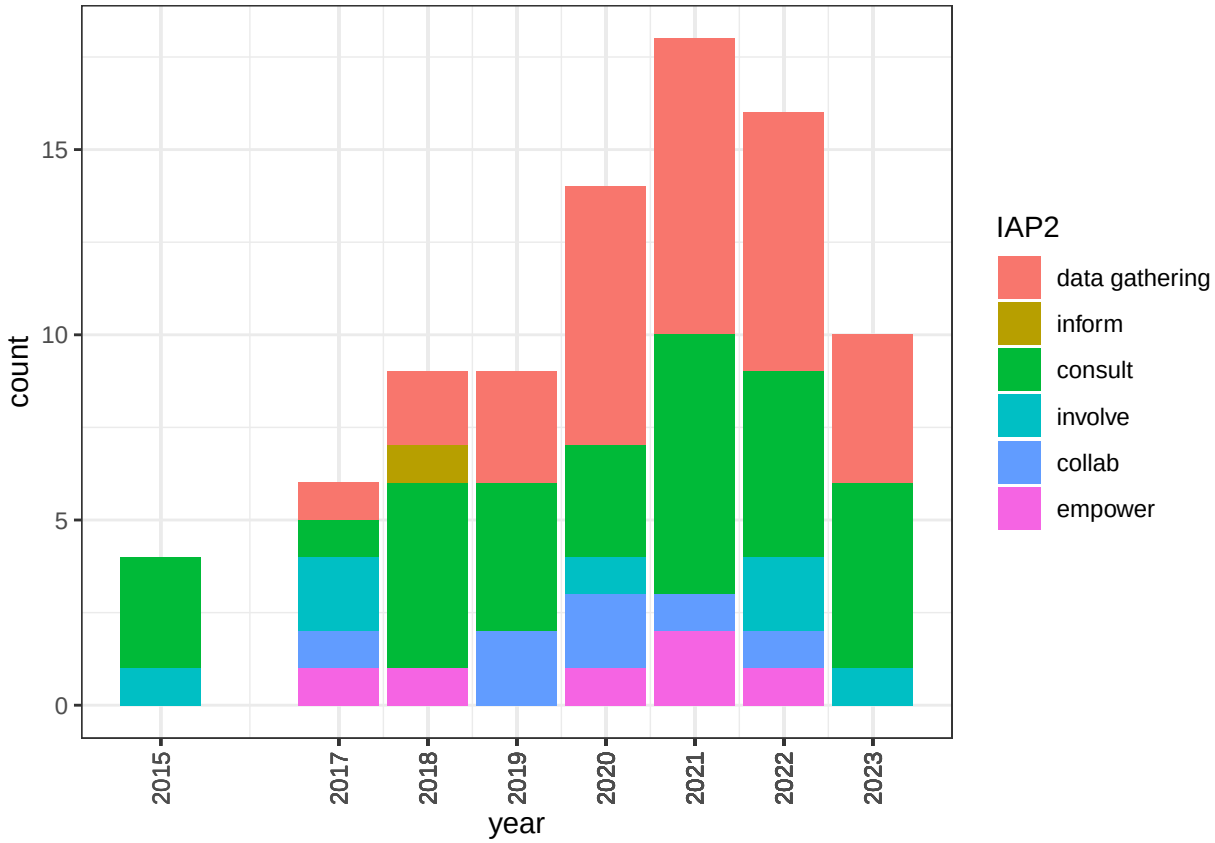
All FEWS Papers by Year



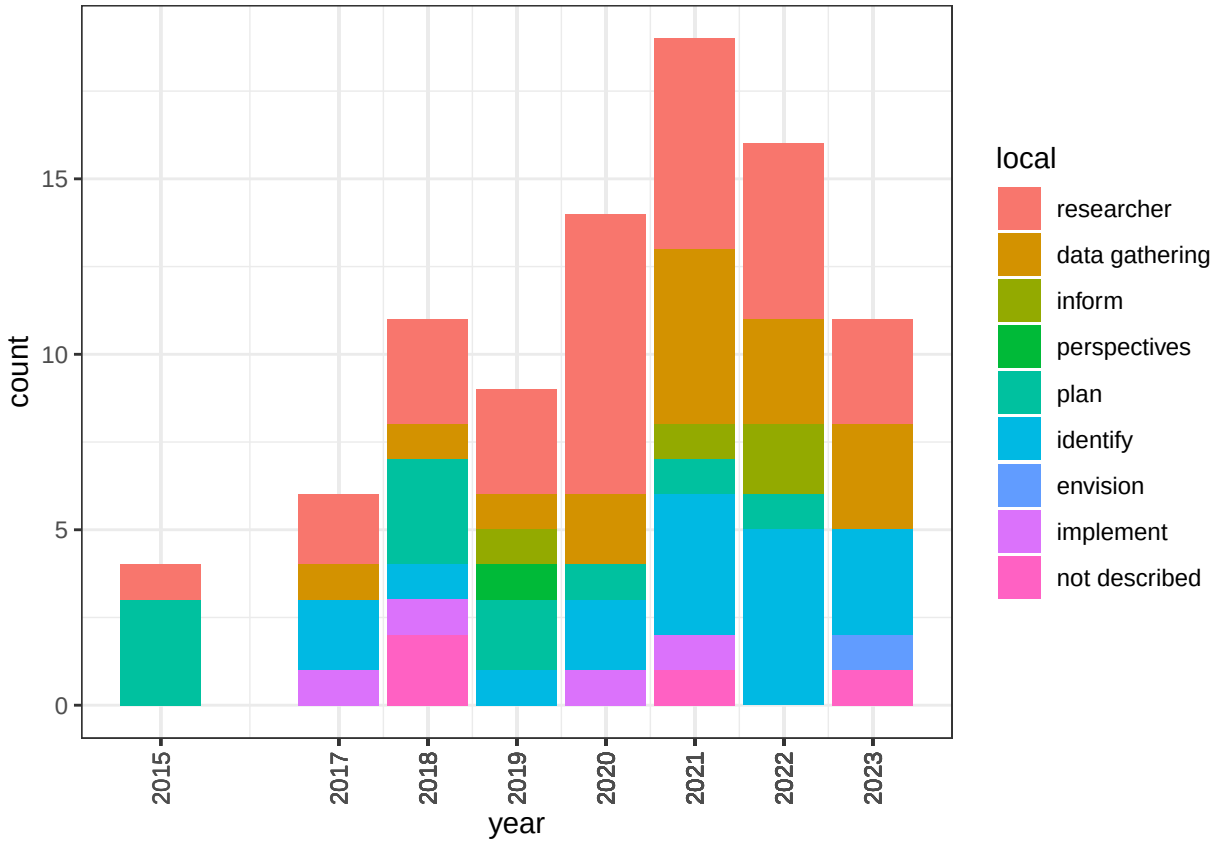
Level of Stakeholder Engagement by Year - Ghodsvali



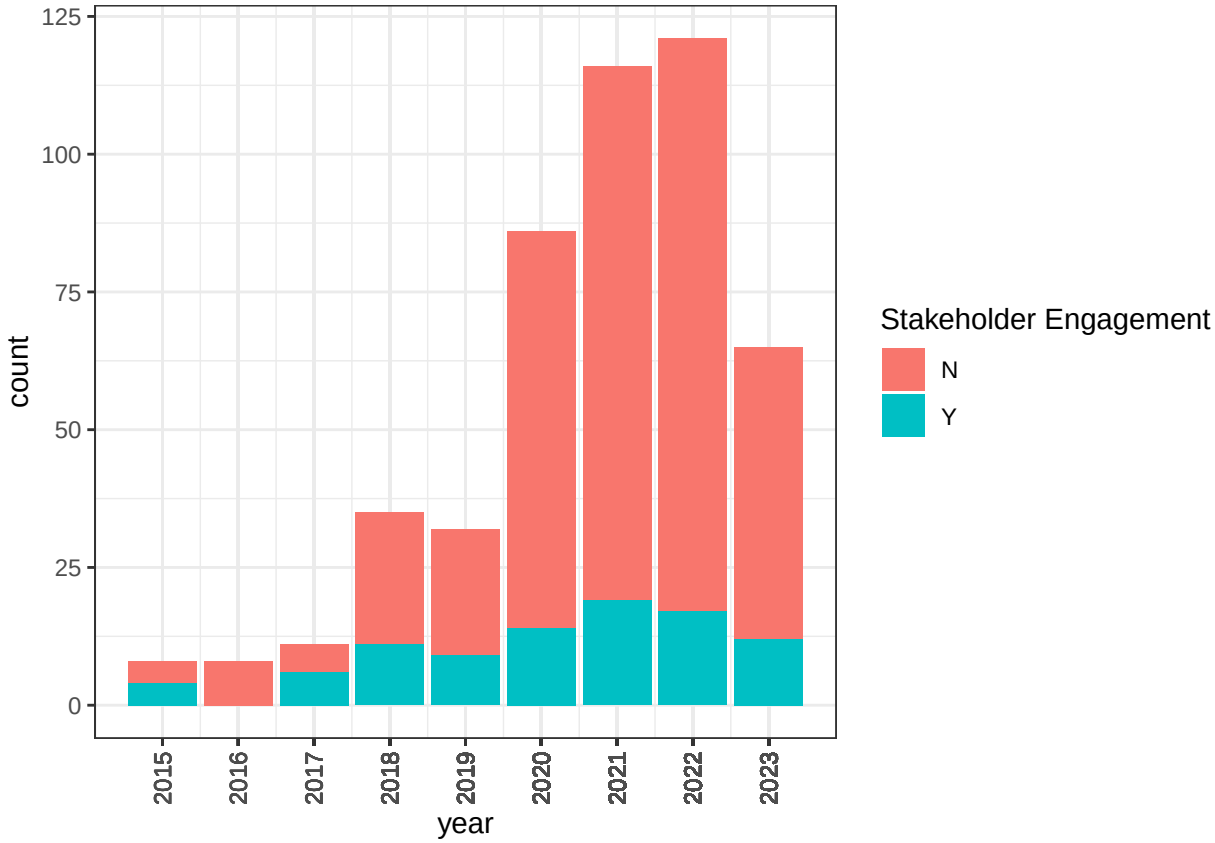
Level of Stakeholder Engagement by Year - IAP2



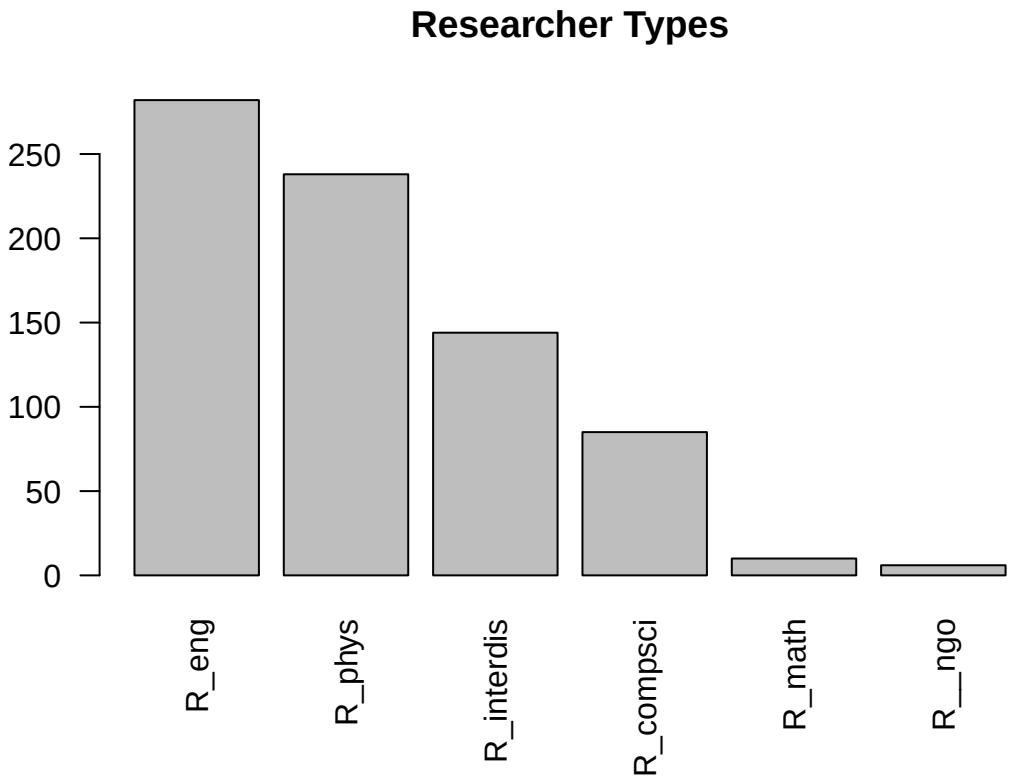
Level of Stakeholder Engagement by Year - Local



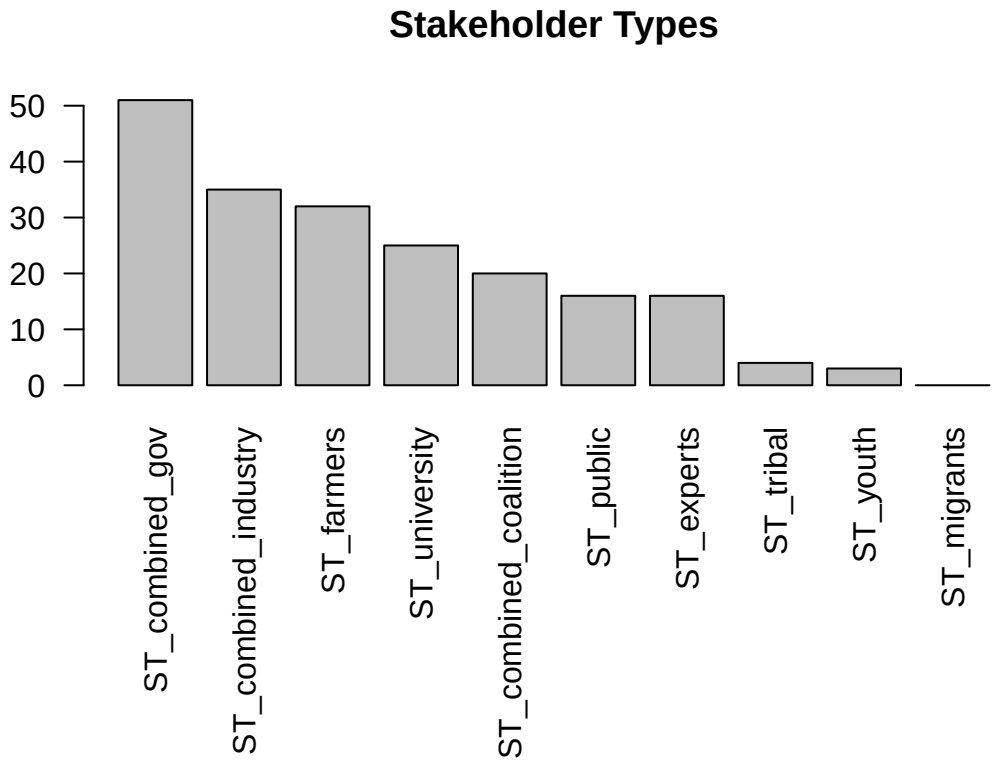
Stakeholder Engagement by Year



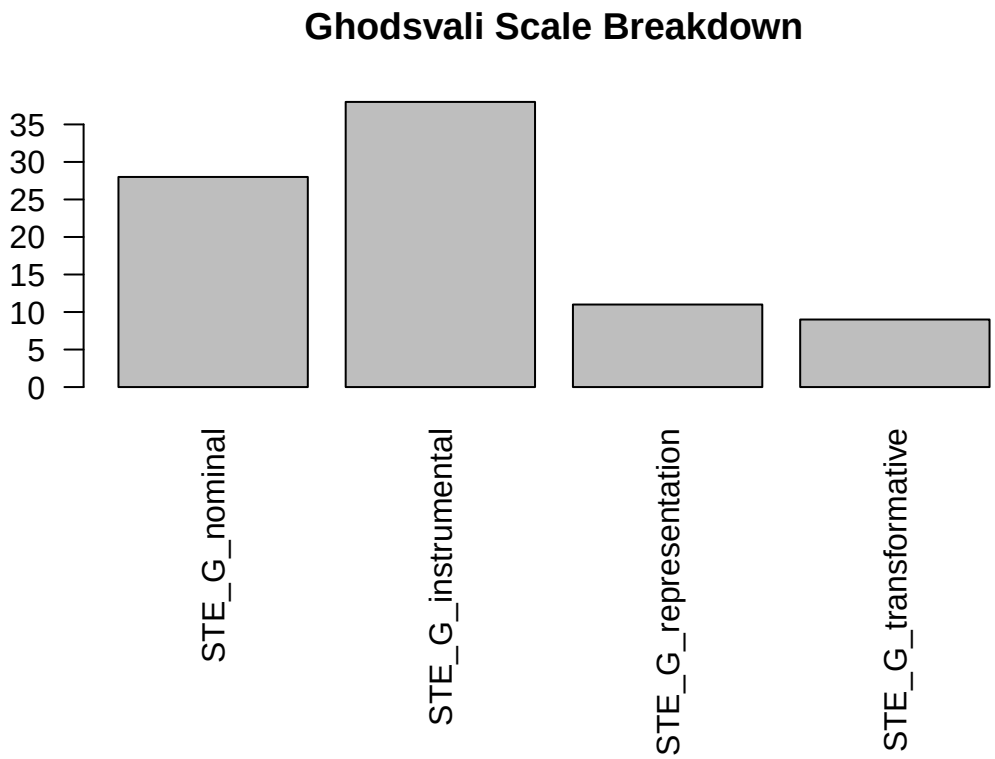
Researcher Types



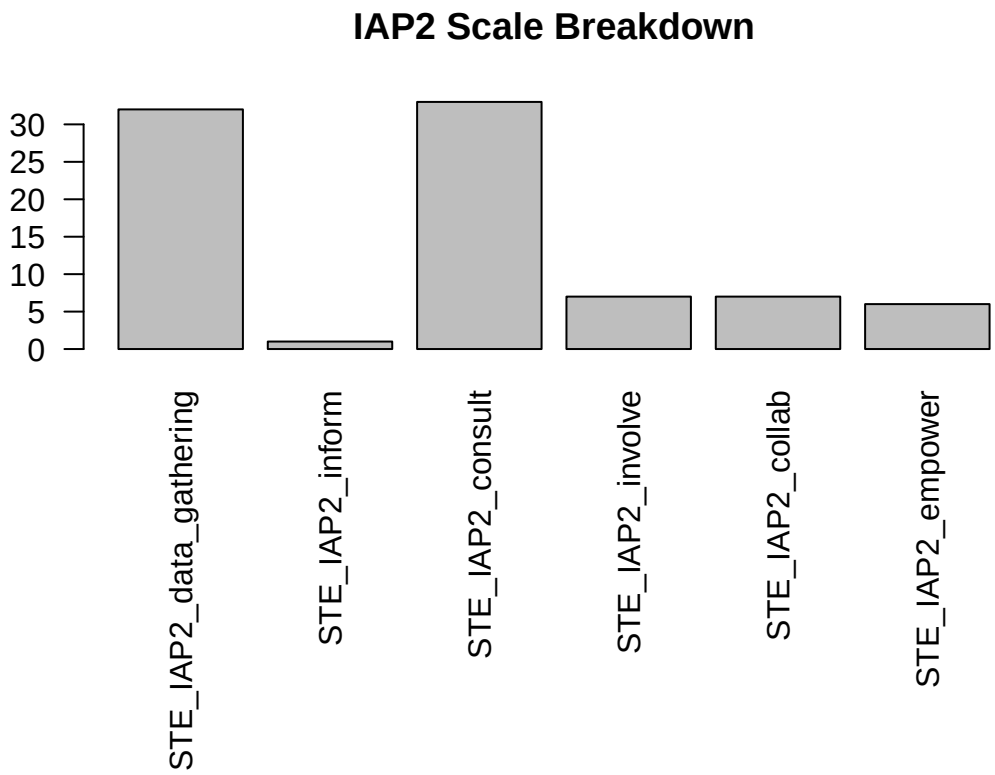
Stakeholder Types



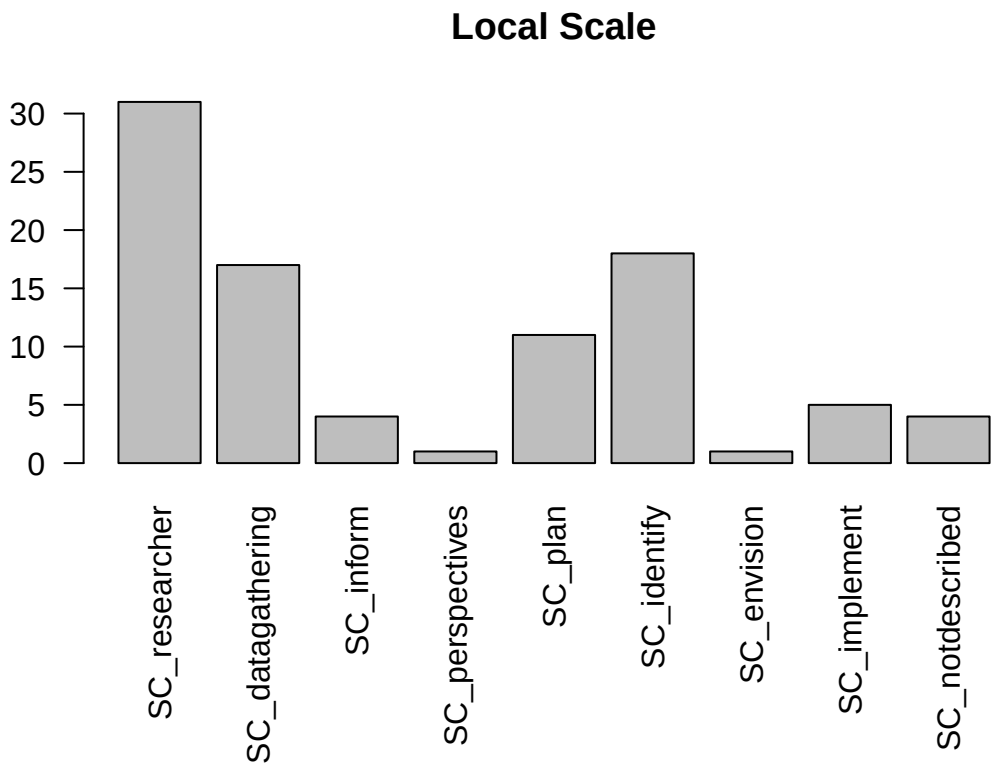
Ghodsvali Scale Breakdown



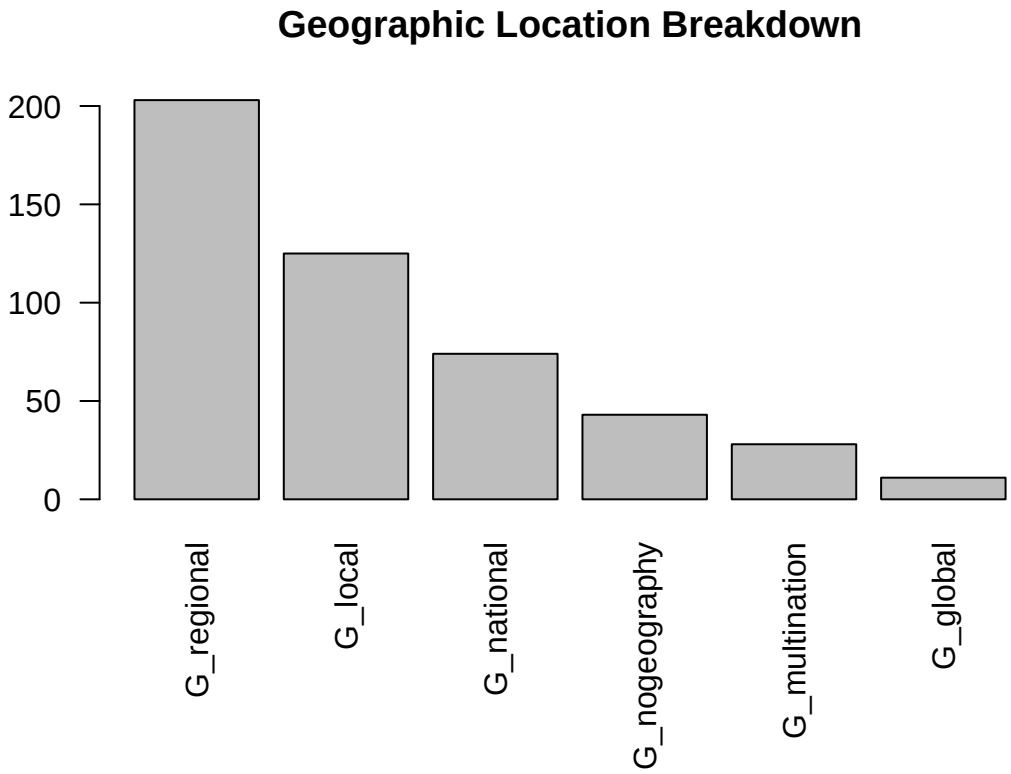
IAP2 Scale Breakdown



Local Scale Breakdown



Geographic Location Breakdown



Regression Testing

Ghodsvali

Odds of stakeholder scale predicting whether a solution was proposed or not

```
##
## Call:
## glm(formula = solution_proposed_YN ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, family = binomial,
##     data = crcdata)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.7344  -0.1423  -0.1423  -0.1423   3.0324
##
## Coefficients:
##                       Estimate Std. Error z value Pr(>|z|)
## (Intercept)           -4.5875     0.5025  -9.129  < 2e-16 ***
## STE_G_nominal          1.2917     1.1356   1.137  0.25535
## STE_G_instrumental     2.1308     0.7839   2.718  0.00656 **
## STE_G_representation   3.6067     0.8431   4.278 1.89e-05 ***
## STE_G_transformative   5.8403     0.9463   6.172 6.74e-10 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 153.748  on 482  degrees of freedom
## Residual deviance:  96.785  on 478  degrees of freedom
## AIC: 106.79
##
## Number of Fisher Scoring iterations: 7
```

```
##
## Logistic regression predicting solution_proposed_YN : Y vs N
##
##                               crude OR(95%CI)        adj. OR(95%CI)
## STE_G_nominal: 1 vs 0         0.95 (0.12,7.44)       3.64 (0.39,33.7)
##
## STE_G_instrumental: 1 vs 0    2.46 (0.68,8.9)        8.42 (1.81,39.14)
##
## STE_G_representation: 1 vs 0  11.42 (2.75,47.41)     36.84 (7.06,192.33)
##
## STE_G_transformative: 1 vs 0  147.32 (27.42,791.53)  343.87 (53.82,2197.12)
##
##                               P(Wald's test) P(LR-test)
## STE_G_nominal: 1 vs 0         0.255          0.318
##
## STE_G_instrumental: 1 vs 0    0.007          0.015
##
## STE_G_representation: 1 vs 0  < 0.001        < 0.001
##
```

```
## STE_G_transformative: 1 vs 0  < 0.001        < 0.001
##
## Log-likelihood = -48.3926
## No. of observations = 483
## AIC value = 106.7851
```

IAP2

Odds of stakeholder scale predicting whether a solution was proposed or not

```
##
## Call:
## glm(formula = solution_proposed_YN ~ STE_IAP2_data_gathering +
##     STE_IAP2_inform + STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab +
##     STE_IAP2_empower, family = binomial, data = crcdata)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.0579  -0.1423  -0.1423  -0.1423   3.0324
##
## Coefficients:
##                           Estimate Std. Error z value Pr(>|z|)
## (Intercept)               -4.5875     0.5025  -9.129  < 2e-16 ***
## STE_IAP2_data_gathering    1.1535     1.1335   1.018  0.30883
## STE_IAP2_inform          -12.9786  3956.1804  -0.003  0.99738
## STE_IAP2_consult           2.2849     0.7869   2.904  0.00369 **
## STE_IAP2_involve           2.7958     1.1913   2.347  0.01894 *
## STE_IAP2_collab            4.2998     0.9143   4.703 2.56e-06 ***
## STE_IAP2_empower          22.1536  1615.1039   0.014  0.98906
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 153.748  on 482  degrees of freedom
## Residual deviance:  89.049  on 476  degrees of freedom
## AIC: 103.05
##
## Number of Fisher Scoring iterations: 16
```

```
##
## Logistic regression predicting solution_proposed_YN : Y vs N
##
##                                  crude OR(95%CI)       adj. OR(95%CI)
## STE_IAP2_data_gathering: 1 vs 0  0.82 (0.11,6.39)      3.17 (0.34,29.23)
##
## STE_IAP2_inform: 1 vs 0          0 (0,Inf)             0 (0,Inf)
##
## STE_IAP2_consult: 1 vs 0         2.9 (0.8,10.57)       9.82 (2.1,45.93)
##
## STE_IAP2_involve: 1 vs 0         4.5 (0.51,39.48)      16.37 (1.59,169.13)
##
## STE_IAP2_collab: 1 vs 0          23.05 (4.73,112.22)   73.69 (12.28,442.2)
##
## STE_IAP2_empower: 1 vs 0         1648611478.8 (0,Inf)  4180027810.8 (0,Inf)
##
##                                  P(Wald's test) P(LR-test)
## STE_IAP2_data_gathering: 1 vs 0  0.309          0.365
##
## STE_IAP2_inform: 1 vs 0          0.997          0.887
```

```
##
## STE_IAP2_consult: 1 vs 0         0.004          0.01
##
## STE_IAP2_involve: 1 vs 0         0.019          0.066
##
## STE_IAP2_collab: 1 vs 0          < 0.001        < 0.001
##
## STE_IAP2_empower: 1 vs 0         0.989          < 0.001
##
## Log-likelihood = -44.5245
## No. of observations = 483
## AIC value = 103.0489
```

Local

Odds of stakeholder scale predicting whether a solution was proposed or not

```
##
## Call:
## glm(formula = solution_proposed_YN ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
##     SC_implement + SC_notdescribed, family = binomial, data = crcdata)
##
## Deviance Residuals:
##    Min      1Q  Median      3Q     Max
## -1.671  -0.156  -0.156  -0.156   3.086
##
## Coefficients:
##                    Estimate Std. Error z value Pr(>|z|)
## (Intercept)         -4.4030     0.4571  -9.632  < 2e-16 ***
## SC_researcher       -0.3514     1.6306  -0.216    0.829
## SC_datagathering   -15.1448  2607.2909  -0.006    0.995
## SC_inform            4.4030     1.0995   4.004 6.22e-05 ***
## SC_perspectives    -15.1631 10754.0130  -0.001    0.999
## SC_plan            -15.1631  3242.4569  -0.005    0.996
## SC_identify          3.7099     0.6775   5.476 4.35e-08 ***
## SC_envision         23.9691 10754.0130   0.002    0.998
## SC_implement         5.8655     1.2437   4.716 2.41e-06 ***
## SC_notdescribed    -15.1631  5377.0065  -0.003    0.998
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 153.748  on 482  degrees of freedom
## Residual deviance:  87.711  on 473  degrees of freedom
## AIC: 107.71
##
## Number of Fisher Scoring iterations: 18

##
## Logistic regression predicting solution_proposed_YN : Y vs N
##
##                            crude OR(95%CI)        adj. OR(95%CI)
## SC_researcher: 1 vs 0      0.85 (0.11,6.63)       0.7 (0.03,17.19)
##
## SC_datagathering: 1 vs 0   0 (0,Inf)              0 (0,Inf)
##
## SC_inform: 1 vs 0          28.94 (3.83,218.65)    81.7 (9.47,704.9)
##
## SC_perspectives: 1 vs 0    0 (0,Inf)              0 (0,Inf)
##
## SC_plan: 1 vs 0            0 (0,Inf)              0 (0,Inf)
##
## SC_identify: 1 vs 0        18.87 (6.06,58.74)     40.85 (10.83,154.11)
##
## SC_envision: 1 vs 0        157493116.45 (0,Inf)   25682498418.86 (0,Inf)
```

```
##
## SC_implement: 1 vs 0      132.57 (13.9,1263.96)  352.66 (30.81,4036.85)
##
## SC_notdescribed: 1 vs 0   0 (0,Inf)              0 (0,Inf)
##
##                           P(Wald's test) P(LR-test)
## SC_researcher: 1 vs 0     0.829          0.825
##
## SC_datagathering: 1 vs 0  0.995          0.528
##
## SC_inform: 1 vs 0         < 0.001        < 0.001
##
## SC_perspectives: 1 vs 0   0.999          0.876
##
## SC_plan: 1 vs 0           0.996          0.607
##
## SC_identify: 1 vs 0       < 0.001        < 0.001
##
## SC_envision: 1 vs 0       0.998          0.003
##
## SC_implement: 1 vs 0      < 0.001        < 0.001
##
## SC_notdescribed: 1 vs 0   0.998          0.756
##
## Log-likelihood = -43.8554
## No. of observations = 483
## AIC value = 107.7108
```

Engagement vs. solution

```
##
## Call:
## glm(formula = solution_proposed_YN ~ S_stakeholder_engagment_YN,
##     family = binomial, data = crcdata)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -0.5746  -0.1434  -0.1434  -0.1434   3.0274
##
## Coefficients:
##                             Estimate Std. Error z value Pr(>|z|)
## (Intercept)                  -4.5721     0.5026  -9.097  < 2e-16 ***
## S_stakeholder_engagment_YNY   2.8545     0.5804   4.918 8.73e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 153.75  on 482  degrees of freedom
## Residual deviance: 123.09  on 481  degrees of freedom
## AIC: 127.09
##
## Number of Fisher Scoring iterations: 7

##
## Logistic regression predicting solution_proposed_YN : Y vs N
##
##                                    OR(95%CI)           P(Wald's test)
## S_stakeholder_engagment_YN: Y vs N 17.37 (5.57,54.16)  < 0.001
##
##                                    P(LR-test)
## S_stakeholder_engagment_YN: Y vs N < 0.001
##
## Log-likelihood = -61.5436
## No. of observations = 483
## AIC value = 127.0872
```

Use of computational model vs. solution

```
##
## Call:
## glm(formula = solution_proposed_YN ~ S_model_YN, family = binomial,
##     data = crcdata)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -0.3203  -0.2628  -0.2628  -0.2628   2.6012
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -3.3486     0.2822  -11.87   <2e-16 ***
## S_model_YNN   0.4041     0.5387    0.75    0.453
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 153.75  on 482  degrees of freedom
## Residual deviance: 153.22  on 481  degrees of freedom
## AIC: 157.22
##
## Number of Fisher Scoring iterations: 6

##
## Logistic regression predicting solution_proposed_YN : Y vs N
##
##                     OR(95%CI)        P(Wald's test) P(LR-test)
## S_model_YN: N vs Y 1.5 (0.52,4.31)  0.453          0.466
##
## Log-likelihood = -76.6085
## No. of observations = 483
## AIC value = 157.2169
```

Diversity of stakeholders vs solution

```
##
## Call:
## glm(formula = solution_proposed_YN ~ ST_ratio, family = binomial,
##     data = crcdata)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.7942  -0.1825  -0.1825  -0.1825   2.8648
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -4.0868     0.3598 -11.360  < 2e-16 ***
## ST_ratio      7.8189     1.3777   5.675 1.38e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 153.75  on 482  degrees of freedom
## Residual deviance: 122.71  on 481  degrees of freedom
## AIC: 126.71
##
## Number of Fisher Scoring iterations: 6
```

```
##
## Logistic regression predicting solution_proposed_YN : Y vs N
##
##                       OR(95%CI)                  P(Wald's test) P(LR-test)
## ST_ratio (cont. var.) 2487.25 (167.12,37016.93)  < 0.001        < 0.001
##
## Log-likelihood = -61.3545
## No. of observations = 483
## AIC value = 126.7089
```

Interdisciplinary Researchers vs Solution

In order to accurately reflect diversity of researchers, we run a binomial logistic regression of the interdisciplinary researchers category to assess predictability on stakeholder solution (Y/N).

```
##
## Call:
## glm(formula = solution_proposed_YN ~ R_interdis, family = binomial,
##     data = crcdata)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -0.4172  -0.4172  -0.1890  -0.1890   2.8405
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -4.0164     0.4119  -9.752  < 2e-16 ***
## R_interdis    1.6185     0.5104   3.171  0.00152 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 153.75  on 482  degrees of freedom
## Residual deviance: 142.91  on 481  degrees of freedom
## AIC: 146.91
##
## Number of Fisher Scoring iterations: 6
```

```
##
## Logistic regression predicting solution_proposed_YN : Y vs N
##
##                     OR(95%CI)          P(Wald's test) P(LR-test)
## R_interdis: 1 vs 0  5.05 (1.86,13.72)  0.002          < 0.001
##
## Log-likelihood = -71.4564
## No. of observations = 483
## AIC value = 146.9128
```

Diversity of Researchers vs solution

```
##
## Call:
## glm(formula = solution_proposed_YN ~ R_ratio, family = binomial,
##     data = crcdata)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -0.2931  -0.2846  -0.2764  -0.2684   2.6296
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -3.1262     0.4876  -6.412 1.44e-10 ***
```

```
## R_ratio      -0.5981     2.0612  -0.290    0.772
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 153.75  on 482  degrees of freedom
## Residual deviance: 153.66  on 481  degrees of freedom
## AIC: 157.66
##
## Number of Fisher Scoring iterations: 6
```

```
##
## Logistic regression predicting solution_proposed_YN : Y vs N
##
##                       OR(95%CI)          P(Wald's test) P(LR-test)
## R_ratio (cont. var.) 0.55 (0.01,31.25)  0.772          0.769
##
## Log-likelihood = -76.8308
## No. of observations = 483
## AIC value = 157.6617
```

Stakeholder type vs level of engagement (Ghodsvali)

```
## Response ST_farmers :
##
## Call:
## lm(formula = ST_farmers ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.4444  0.0000  0.0000  0.0000  0.6786
##
## Coefficients:
##                        Estimate Std. Error t value Pr(>|t|)
## (Intercept)          1.389e-16  1.025e-02   0.000        1
## STE_G_nominal        3.214e-01  3.995e-02   8.046 6.83e-15 ***
## STE_G_instrumental   3.947e-01  3.469e-02  11.378  < 2e-16 ***
## STE_G_representation 3.636e-01  6.245e-02   5.823 1.06e-08 ***
## STE_G_transformative 4.444e-01  6.887e-02   6.453 2.69e-10 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2043 on 478 degrees of freedom
## Multiple R-squared:  0.3322, Adjusted R-squared:  0.3266
## F-statistic: 59.45 on 4 and 478 DF,  p-value: < 2.2e-16
##
##
## Response ST_combined_gov :
##
## Call:
## lm(formula = ST_combined_gov ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.9091  0.0000  0.0000  0.0000  0.7500
##
## Coefficients:
##                         Estimate Std. Error t value Pr(>|t|)
## (Intercept)          -5.153e-16  8.805e-03   0.000        1
## STE_G_nominal         2.500e-01  3.430e-02   7.288 1.31e-12 ***
## STE_G_instrumental    6.579e-01  2.979e-02  22.084  < 2e-16 ***
## STE_G_representation  9.091e-01  5.362e-02  16.953  < 2e-16 ***
## STE_G_transformative  1.000e+00  5.914e-02  16.910  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1754 on 478 degrees of freedom
## Multiple R-squared:  0.6775, Adjusted R-squared:  0.6748
## F-statistic:   251 on 4 and 478 DF,  p-value: < 2.2e-16
##
##
## Response ST_tribal :
##
```

```
## Call:
## lm(formula = ST_tribal ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.1071  0.0000  0.0000  0.0000  0.9737
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)           8.335e-17  4.387e-03   0.000   1.0000
## STE_G_nominal         1.071e-01  1.709e-02   6.269 8.14e-10 ***
## STE_G_instrumental    2.632e-02  1.484e-02   1.773   0.0769 .
## STE_G_representation -1.956e-17  2.672e-02   0.000   1.0000
## STE_G_transformative -1.957e-17  2.947e-02   0.000   1.0000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.08741 on 478 degrees of freedom
## Multiple R-squared:  0.07931,    Adjusted R-squared:  0.07161
## F-statistic: 10.29 on 4 and 478 DF,  p-value: 5.285e-08
##
##
## Response ST_combined_coalition :
##
## Call:
## lm(formula = ST_combined_coalition ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.5556  0.0000  0.0000  0.0000  0.9286
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)          -3.997e-16  8.475e-03   0.000    1.000
## STE_G_nominal         7.143e-02  3.302e-02   2.163    0.031 *
## STE_G_instrumental    2.632e-01  2.867e-02   9.178  < 2e-16 ***
## STE_G_representation  2.727e-01  5.161e-02   5.284 1.92e-07 ***
## STE_G_transformative  5.556e-01  5.692e-02   9.760  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1689 on 478 degrees of freedom
## Multiple R-squared:  0.2891, Adjusted R-squared:  0.2831
## F-statistic: 48.59 on 4 and 478 DF,  p-value: < 2.2e-16
##
##
## Response ST_combined_industry :
##
## Call:
## lm(formula = ST_combined_industry ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
```

```
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.63636 -0.00252 -0.00252 -0.00252  0.99748
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)           0.002519   0.009635   0.261  0.79387
## STE_G_nominal         0.104624   0.037537   2.787  0.00553 **
## STE_G_instrumental    0.550113   0.032599  16.875  < 2e-16 ***
## STE_G_representation 0.633845   0.058679  10.802  < 2e-16 ***
## STE_G_transformative 0.330814   0.064713   5.112 4.62e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.192 on 478 degrees of freedom
## Multiple R-squared:  0.4574, Adjusted R-squared:  0.4528
## F-statistic: 100.7 on 4 and 478 DF,  p-value: < 2.2e-16
##
##
## Response ST_migrants :
##
## Call:
## lm(formula = ST_migrants ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##    Min     1Q Median     3Q    Max
##      0      0      0      0      0
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  0          0     NaN      NaN
## STE_G_nominal                0          0     NaN      NaN
## STE_G_instrumental           0          0     NaN      NaN
## STE_G_representation         0          0     NaN      NaN
## STE_G_transformative         0          0     NaN      NaN
##
## Residual standard error: 0 on 478 degrees of freedom
## Multiple R-squared:    NaN,  Adjusted R-squared:    NaN
## F-statistic:   NaN on 4 and 478 DF,  p-value: NA
##
##
## Response ST_youth :
##
## Call:
## lm(formula = ST_youth ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.05263  0.00000  0.00000  0.00000  0.96429
##
## Coefficients:
##                         Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept)          -2.210e-17  3.881e-03   0.000   1.0000
## STE_G_nominal         3.571e-02  1.512e-02   2.362   0.0186 *
## STE_G_instrumental    5.263e-02  1.313e-02   4.008 7.11e-05 ***
## STE_G_representation -9.566e-22  2.364e-02   0.000   1.0000
## STE_G_transformative  3.849e-19  2.607e-02   0.000   1.0000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.07734 on 478 degrees of freedom
## Multiple R-squared:  0.04104,    Adjusted R-squared:  0.03301
## F-statistic: 5.114 on 4 and 478 DF,  p-value: 0.0004836
##
##
## Response ST_public :
##
## Call:
## lm(formula = ST_public ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.2857  0.0000  0.0000  0.0000  0.9091
##
## Coefficients:
##                        Estimate Std. Error t value Pr(>|t|)
## (Intercept)          1.743e-16  8.123e-03   0.000   1.0000
## STE_G_nominal        2.857e-01  3.165e-02   9.028  < 2e-16 ***
## STE_G_instrumental   1.316e-01  2.748e-02   4.788 2.25e-06 ***
## STE_G_representation 9.091e-02  4.947e-02   1.838   0.0667 .
## STE_G_transformative 2.222e-01  5.456e-02   4.073 5.43e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1618 on 478 degrees of freedom
## Multiple R-squared:  0.1906, Adjusted R-squared:  0.1839
## F-statistic: 28.14 on 4 and 478 DF,  p-value: < 2.2e-16
##
##
## Response ST_university :
##
## Call:
## lm(formula = ST_university ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.4444  0.0000  0.0000  0.0000  0.8929
##
## Coefficients:
##                         Estimate Std. Error t value Pr(>|t|)
## (Intercept)          -4.395e-16  9.265e-03   0.000  1.00000
## STE_G_nominal         1.071e-01  3.609e-02   2.968  0.00314 **
## STE_G_instrumental    3.684e-01  3.135e-02  11.753  < 2e-16 ***
## STE_G_representation  3.636e-01  5.642e-02   6.445 2.83e-10 ***
```

```
## STE_G_transformative  4.444e-01  6.223e-02   7.142 3.44e-12 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1846 on 478 degrees of freedom
## Multiple R-squared:  0.3129, Adjusted R-squared:  0.3072
## F-statistic: 54.42 on 4 and 478 DF,  p-value: < 2.2e-16
##
##
## Response ST_experts :
##
## Call:
## lm(formula = ST_experts ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.2368  0.0000  0.0000  0.0000  0.8889
##
## Coefficients:
##                        Estimate Std. Error t value Pr(>|t|)
## (Intercept)          -2.513e-16  8.220e-03   0.000 1.000000
## STE_G_nominal         1.429e-01  3.202e-02   4.461 1.02e-05 ***
## STE_G_instrumental    2.368e-01  2.781e-02   8.516  < 2e-16 ***
## STE_G_representation  1.818e-01  5.006e-02   3.632 0.000312 ***
## STE_G_transformative  1.111e-01  5.521e-02   2.013 0.044724 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1638 on 478 degrees of freedom
## Multiple R-squared:  0.1712, Adjusted R-squared:  0.1642
## F-statistic: 24.68 on 4 and 478 DF,  p-value: < 2.2e-16
```

Stakeholder type vs level of engagement (IAP2)

```
## Response ST_farmers :
##
## Call:
## lm(formula = ST_farmers ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.5000  0.0000  0.0000  0.0000  0.8571
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)             1.819e-16  1.008e-02   0.000 1.000000
## STE_IAP2_data_gathering 3.437e-01  3.689e-02   9.317  < 2e-16 ***
## STE_IAP2_inform         5.557e-17  2.010e-01   0.000 1.000000
## STE_IAP2_consult        4.545e-01  3.637e-02  12.497  < 2e-16 ***
## STE_IAP2_involve        1.429e-01  7.655e-02   1.866 0.062625 .
## STE_IAP2_collab         2.857e-01  7.655e-02   3.732 0.000213 ***
## STE_IAP2_empower        5.000e-01  8.258e-02   6.055 2.86e-09 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2008 on 476 degrees of freedom
## Multiple R-squared:  0.3579, Adjusted R-squared:  0.3498
## F-statistic: 44.22 on 6 and 476 DF,  p-value: < 2.2e-16
##
##
## Response ST_combined_gov :
##
## Call:
## lm(formula = ST_combined_gov ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.8571  0.0000  0.0000  0.0000  0.7188
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)             2.652e-16  8.808e-03   0.000        1
## STE_IAP2_data_gathering 2.812e-01  3.225e-02   8.721  < 2e-16 ***
## STE_IAP2_inform         1.000e+00  1.757e-01   5.691 2.21e-08 ***
## STE_IAP2_consult        6.667e-01  3.179e-02  20.969  < 2e-16 ***
## STE_IAP2_involve        8.571e-01  6.691e-02  12.810  < 2e-16 ***
## STE_IAP2_collab         1.000e+00  6.691e-02  14.945  < 2e-16 ***
## STE_IAP2_empower        1.000e+00  7.218e-02  13.854  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1755 on 476 degrees of freedom
```

```
## Multiple R-squared:  0.6786, Adjusted R-squared:  0.6746
## F-statistic: 167.5 on 6 and 476 DF,  p-value: < 2.2e-16
##
##
## Response ST_tribal :
##
## Call:
## lm(formula = ST_tribal ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.09375  0.00000  0.00000  0.00000  0.96970
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)               5.809e-17  4.418e-03   0.000    1.000
## STE_IAP2_data_gathering  9.375e-02  1.618e-02   5.796 1.24e-08 ***
## STE_IAP2_inform         -9.986e-18  8.814e-02   0.000    1.000
## STE_IAP2_consult         3.030e-02  1.595e-02   1.900    0.058 .
## STE_IAP2_involve        -1.244e-17  3.356e-02   0.000    1.000
## STE_IAP2_collab         -2.114e-17  3.356e-02   0.000    1.000
## STE_IAP2_empower         1.784e-18  3.621e-02   0.000    1.000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.08803 on 476 degrees of freedom
## Multiple R-squared:  0.07019,    Adjusted R-squared:  0.05847
## F-statistic: 5.989 on 6 and 476 DF,  p-value: 4.745e-06
##
##
## Response ST_combined_coalition :
##
## Call:
## lm(formula = ST_combined_coalition ~ STE_IAP2_data_gathering +
##     STE_IAP2_inform + STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab +
##     STE_IAP2_empower, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.5714  0.0000  0.0000  0.0000  0.9375
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              2.027e-16  8.352e-03   0.000   1.0000
## STE_IAP2_data_gathering 6.250e-02  3.058e-02   2.044   0.0415 *
## STE_IAP2_inform         1.250e-16  1.666e-01   0.000   1.0000
## STE_IAP2_consult        2.727e-01  3.015e-02   9.046  < 2e-16 ***
## STE_IAP2_involve        4.286e-01  6.345e-02   6.754 4.20e-11 ***
## STE_IAP2_collab         5.714e-01  6.345e-02   9.006  < 2e-16 ***
## STE_IAP2_empower        3.333e-01  6.845e-02   4.870 1.52e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Residual standard error: 0.1664 on 476 degrees of freedom
## Multiple R-squared:  0.3124, Adjusted R-squared:  0.3037
## F-statistic: 36.05 on 6 and 476 DF,  p-value: < 2.2e-16
##
##
## Response ST_combined_industry :
##
## Call:
## lm(formula = ST_combined_industry ~ STE_IAP2_data_gathering +
##     STE_IAP2_inform + STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab +
##     STE_IAP2_empower, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.71429 -0.00252 -0.00252 -0.00252  0.99748
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.002519   0.009660   0.261  0.79439
## STE_IAP2_data_gathering   0.153731   0.035370   4.346 1.69e-05 ***
## STE_IAP2_inform          -0.002519   0.192716  -0.013  0.98958
## STE_IAP2_consult          0.573239   0.034870  16.439  < 2e-16 ***
## STE_IAP2_involve          0.711767   0.073387   9.699  < 2e-16 ***
## STE_IAP2_collab           0.283195   0.073387   3.859  0.00013 ***
## STE_IAP2_empower          0.497481   0.079169   6.284 7.47e-10 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1925 on 476 degrees of freedom
## Multiple R-squared:  0.4568, Adjusted R-squared:   0.45
## F-statistic: 66.72 on 6 and 476 DF,  p-value: < 2.2e-16
##
##
## Response ST_migrants :
##
## Call:
## lm(formula = ST_migrants ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##    Min     1Q Median     3Q    Max
##      0      0      0      0      0
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     0          0     NaN      NaN
## STE_IAP2_data_gathering         0          0     NaN      NaN
## STE_IAP2_inform                 0          0     NaN      NaN
## STE_IAP2_consult                0          0     NaN      NaN
## STE_IAP2_involve                0          0     NaN      NaN
## STE_IAP2_collab                 0          0     NaN      NaN
## STE_IAP2_empower                0          0     NaN      NaN
```

```
##
## Residual standard error: 0 on 476 degrees of freedom
## Multiple R-squared:    NaN,  Adjusted R-squared:    NaN
## F-statistic:   NaN on 6 and 476 DF,  p-value: NA
##
##
## Response ST_youth :
##
## Call:
## lm(formula = ST_youth ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.06061  0.00000  0.00000  0.00000  0.96875
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -7.893e-18  3.882e-03   0.000   1.0000
## STE_IAP2_data_gathering  3.125e-02  1.421e-02   2.199   0.0284 *
## STE_IAP2_inform           1.216e-17  7.744e-02   0.000   1.0000
## STE_IAP2_consult          6.061e-02  1.401e-02   4.325 1.86e-05 ***
## STE_IAP2_involve          1.487e-18  2.949e-02   0.000   1.0000
## STE_IAP2_collab          -3.033e-17  2.949e-02   0.000   1.0000
## STE_IAP2_empower          5.797e-18  3.181e-02   0.000   1.0000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.07734 on 476 degrees of freedom
## Multiple R-squared:  0.04489,    Adjusted R-squared:  0.03285
## F-statistic: 3.729 on 6 and 476 DF,  p-value: 0.001235
##
##
## Response ST_public :
##
## Call:
## lm(formula = ST_public ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.3333  0.0000  0.0000  0.0000  0.8788
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              1.162e-16  8.026e-03   0.000   1.0000
## STE_IAP2_data_gathering  2.812e-01  2.939e-02   9.570  < 2e-16 ***
## STE_IAP2_inform           2.084e-17  1.601e-01   0.000   1.0000
## STE_IAP2_consult          1.212e-01  2.897e-02   4.184 3.42e-05 ***
## STE_IAP2_involve          1.429e-01  6.098e-02   2.343   0.0196 *
## STE_IAP2_collab          -2.322e-15  6.098e-02   0.000   1.0000
## STE_IAP2_empower          3.333e-01  6.578e-02   5.067 5.78e-07 ***
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1599 on 476 degrees of freedom
## Multiple R-squared:  0.213,  Adjusted R-squared:  0.2031
## F-statistic: 21.48 on 6 and 476 DF,  p-value: < 2.2e-16
##
##
## Response ST_university :
##
## Call:
## lm(formula = ST_university ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.4286  0.0000  0.0000  0.0000  0.8750
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)             -6.441e-17  9.242e-03   0.000 1.000000
## STE_IAP2_data_gathering  1.250e-01  3.384e-02   3.694 0.000246 ***
## STE_IAP2_inform          1.389e-16  1.844e-01   0.000 1.000000
## STE_IAP2_consult         3.939e-01  3.336e-02  11.808  < 2e-16 ***
## STE_IAP2_involve         4.286e-01  7.021e-02   6.104 2.15e-09 ***
## STE_IAP2_collab          4.286e-01  7.021e-02   6.104 2.15e-09 ***
## STE_IAP2_empower         3.333e-01  7.574e-02   4.401 1.33e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1841 on 476 degrees of freedom
## Multiple R-squared:  0.3191, Adjusted R-squared:  0.3105
## F-statistic: 37.18 on 6 and 476 DF,  p-value: < 2.2e-16
##
##
## Response ST_experts :
##
## Call:
## lm(formula = ST_experts ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.2857  0.0000  0.0000  0.0000  0.8750
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)             -3.031e-17  8.078e-03   0.000   1.0000
## STE_IAP2_data_gathering  1.250e-01  2.958e-02   4.226 2.85e-05 ***
## STE_IAP2_inform         -3.821e-17  1.612e-01   0.000   1.0000
## STE_IAP2_consult         2.727e-01  2.916e-02   9.353  < 2e-16 ***
## STE_IAP2_involve         1.429e-01  6.137e-02   2.328   0.0203 *
```

```
## STE_IAP2_collab          2.857e-01  6.137e-02   4.656 4.19e-06 ***
## STE_IAP2_empower         2.252e-17  6.620e-02   0.000   1.0000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.161 on 476 degrees of freedom
## Multiple R-squared:  0.2029, Adjusted R-squared:  0.1928
## F-statistic: 20.19 on 6 and 476 DF,  p-value: < 2.2e-16
```

Stakeholder type vs level of engagement (local)

```
## Response ST_farmers :
##
## Call:
## lm(formula = ST_farmers ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
##     SC_implement + SC_notdescribed, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.71648 -0.00337 -0.00337 -0.00337  0.73536
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.003373   0.010064   0.335 0.737681
## SC_researcher     0.261265   0.037289   7.007 8.45e-12 ***
## SC_datagathering  0.451847   0.049459   9.136  < 2e-16 ***
## SC_inform        -0.003373   0.100472  -0.034 0.973235
## SC_perspectives   0.996627   0.200186   4.979 8.99e-07 ***
## SC_plan           0.269355   0.061116   4.407 1.30e-05 ***
## SC_identify       0.441072   0.048187   9.153  < 2e-16 ***
## SC_envision       0.996627   0.200186   4.979 8.99e-07 ***
## SC_implement      0.344374   0.090074   3.823 0.000149 ***
## SC_notdescribed  -0.003373   0.100472  -0.034 0.973235
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1999 on 473 degrees of freedom
## Multiple R-squared:  0.3672, Adjusted R-squared:  0.3552
## F-statistic:  30.5 on 9 and 473 DF,  p-value: < 2.2e-16
##
##
## Response ST_combined_gov :
##
## Call:
## lm(formula = ST_combined_gov ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
##     SC_implement + SC_notdescribed, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.83333 -0.00257 -0.00257 -0.00257  0.66920
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.002566   0.009405   0.273    0.785
## SC_researcher     0.376454   0.034847  10.803  < 2e-16 ***
## SC_datagathering  0.328231   0.046221   7.101 4.56e-12 ***
## SC_inform         0.997434   0.093893  10.623  < 2e-16 ***
## SC_perspectives   0.997434   0.187079   5.332 1.51e-07 ***
## SC_plan           0.633798   0.057115  11.097  < 2e-16 ***
## SC_identify       0.830767   0.045032  18.448  < 2e-16 ***
## SC_envision       0.997434   0.187079   5.332 1.51e-07 ***
```

```
## SC_implement      0.922143   0.084176  10.955  < 2e-16 ***
## SC_notdescribed  -0.002566   0.093893  -0.027    0.978
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1868 on 473 degrees of freedom
## Multiple R-squared:  0.638,  Adjusted R-squared:  0.6311
## F-statistic: 92.63 on 9 and 473 DF,  p-value: < 2.2e-16
##
##
## Response ST_tribal :
##
## Call:
## lm(formula = ST_tribal ~ SC_researcher + SC_datagathering + SC_inform +
##     SC_perspectives + SC_plan + SC_identify + SC_envision + SC_implement +
##     SC_notdescribed, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.17477 -0.00057 -0.00057 -0.00057  0.93874
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.0005683  0.0044215   0.129 0.897790
## SC_researcher     0.0606962  0.0163821   3.705 0.000236 ***
## SC_datagathering  0.1135084  0.0217290   5.224 2.63e-07 ***
## SC_inform        -0.0005683  0.0441403  -0.013 0.989734
## SC_perspectives  -0.0005683  0.0879478  -0.006 0.994847
## SC_plan          -0.0005683  0.0268503  -0.021 0.983123
## SC_identify      -0.0005683  0.0211702  -0.027 0.978596
## SC_envision      -0.0005683  0.0879478  -0.006 0.994847
## SC_implement     -0.0127075  0.0395722  -0.321 0.748260
## SC_notdescribed  -0.0005683  0.0441403  -0.013 0.989734
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.08784 on 473 degrees of freedom
## Multiple R-squared:  0.08005,    Adjusted R-squared:  0.06255
## F-statistic: 4.573 on 9 and 473 DF,  p-value: 8.413e-06
##
##
## Response ST_combined_coalition :
##
## Call:
## lm(formula = ST_combined_coalition ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
##     SC_implement + SC_notdescribed, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.38889 -0.00148 -0.00148 -0.00148  0.95208
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept)       0.001480   0.008622   0.172  0.86380
## SC_researcher     0.185363   0.031946   5.802 1.20e-08 ***
## SC_datagathering  0.046440   0.042373   1.096  0.27365
## SC_inform         0.248520   0.086077   2.887  0.00407 **
## SC_perspectives   0.998520   0.171505   5.822 1.07e-08 ***
## SC_plan           0.271247   0.052360   5.180 3.28e-07 ***
## SC_identify       0.387409   0.041284   9.384  < 2e-16 ***
## SC_envision      -0.001480   0.171505  -0.009  0.99312
## SC_implement      0.161448   0.077169   2.092  0.03696 *
## SC_notdescribed  -0.001480   0.086077  -0.017  0.98629
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1713 on 473 degrees of freedom
## Multiple R-squared:  0.2761, Adjusted R-squared:  0.2624
## F-statistic: 20.05 on 9 and 473 DF,  p-value: < 2.2e-16
##
##
## Response ST_combined_industry :
##
## Call:
## lm(formula = ST_combined_industry ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
##     SC_implement + SC_notdescribed, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.72222 -0.00252 -0.00252 -0.00252  0.79282
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.002523   0.009827   0.257    0.797
## SC_researcher     0.204661   0.036410   5.621 3.25e-08 ***
## SC_datagathering  0.220732   0.048294   4.571 6.22e-06 ***
## SC_inform         0.497477   0.098105   5.071 5.70e-07 ***
## SC_perspectives  -0.002523   0.195470  -0.013    0.990
## SC_plan           0.452022   0.059677   7.575 1.91e-13 ***
## SC_identify       0.719699   0.047052  15.296  < 2e-16 ***
## SC_envision       0.997477   0.195470   5.103 4.85e-07 ***
## SC_implement      0.356544   0.087952   4.054 5.89e-05 ***
## SC_notdescribed   0.247477   0.098105   2.523    0.012 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1952 on 473 degrees of freedom
## Multiple R-squared:  0.4447, Adjusted R-squared:  0.4341
## F-statistic: 42.09 on 9 and 473 DF,  p-value: < 2.2e-16
##
##
## Response ST_migrants :
##
## Call:
## lm(formula = ST_migrants ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
```

```
##     SC_implement + SC_notdescribed, data = crcdata)
##
## Residuals:
##    Min     1Q Median     3Q    Max
##      0      0      0      0      0
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)             0          0     NaN      NaN
## SC_researcher           0          0     NaN      NaN
## SC_datagathering        0          0     NaN      NaN
## SC_inform               0          0     NaN      NaN
## SC_perspectives         0          0     NaN      NaN
## SC_plan                 0          0     NaN      NaN
## SC_identify             0          0     NaN      NaN
## SC_envision             0          0     NaN      NaN
## SC_implement            0          0     NaN      NaN
## SC_notdescribed         0          0     NaN      NaN
##
## Residual standard error: 0 on 473 degrees of freedom
## Multiple R-squared:    NaN,  Adjusted R-squared:    NaN
## F-statistic:   NaN on 9 and 473 DF,  p-value: NA
##
##
## Response ST_youth :
##
## Call:
## lm(formula = ST_youth ~ SC_researcher + SC_datagathering + SC_inform +
##     SC_perspectives + SC_plan + SC_identify + SC_envision + SC_implement +
##     SC_notdescribed, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.09091 -0.00014 -0.00014 -0.00014  0.96746
##
## Coefficients:
##                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.0001435  0.0038875   0.037 0.970565
## SC_researcher     0.0323943  0.0144034   2.249 0.024967 *
## SC_datagathering -0.0020491  0.0191044  -0.107 0.914631
## SC_inform        -0.0001435  0.0388088  -0.004 0.997051
## SC_perspectives  -0.0001435  0.0773251  -0.002 0.998520
## SC_plan           0.0907656  0.0236072   3.845 0.000137 ***
## SC_identify       0.0554120  0.0186131   2.977 0.003060 **
## SC_envision      -0.0001435  0.0773251  -0.002 0.998520
## SC_implement     -0.0066224  0.0347925  -0.190 0.849125
## SC_notdescribed  -0.0001435  0.0388088  -0.004 0.997051
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.07723 on 473 degrees of freedom
## Multiple R-squared:  0.05379,    Adjusted R-squared:  0.03579
## F-statistic: 2.988 on 9 and 473 DF,  p-value: 0.001794
##
```

```
##
## Response ST_public :
##
## Call:
## lm(formula = ST_public ~ SC_researcher + SC_datagathering + SC_inform +
##     SC_perspectives + SC_plan + SC_identify + SC_envision + SC_implement +
##     SC_notdescribed, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.59292 -0.00239 -0.00239 -0.00239  0.90909
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.002386   0.008209   0.291  0.77147
## SC_researcher     0.241148   0.030414   7.929 1.61e-14 ***
## SC_datagathering  0.101076   0.040340   2.506  0.01256 *
## SC_inform         0.247614   0.081948   3.022  0.00265 **
## SC_perspectives  -0.002386   0.163278  -0.015  0.98835
## SC_plan           0.088524   0.049848   1.776  0.07640 .
## SC_identify       0.108726   0.039303   2.766  0.00589 **
## SC_envision      -0.002386   0.163278  -0.015  0.98835
## SC_implement      0.349385   0.073467   4.756 2.63e-06 ***
## SC_notdescribed  -0.002386   0.081948  -0.029  0.97679
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1631 on 473 degrees of freedom
## Multiple R-squared:  0.1869, Adjusted R-squared:  0.1715
## F-statistic: 12.08 on 9 and 473 DF,  p-value: < 2.2e-16
##
##
## Response ST_university :
##
## Call:
## lm(formula = ST_university ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
##     SC_implement + SC_notdescribed, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.5135 -0.0021 -0.0021 -0.0021  0.8560
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.002096   0.009265   0.226 0.821148
## SC_researcher     0.141919   0.034326   4.134 4.21e-05 ***
## SC_datagathering  0.166027   0.045530   3.647 0.000295 ***
## SC_inform         0.497904   0.092489   5.383 1.15e-07 ***
## SC_perspectives  -0.002096   0.184281  -0.011 0.990932
## SC_plan           0.361541   0.056261   6.426 3.20e-10 ***
## SC_identify       0.442349   0.044359   9.972  < 2e-16 ***
## SC_envision       0.997904   0.184281   5.415 9.76e-08 ***
## SC_implement      0.369521   0.082917   4.456 1.04e-05 ***
```

```
## SC_notdescribed  -0.002096   0.092489  -0.023 0.981933
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.184 on 473 degrees of freedom
## Multiple R-squared:  0.3241, Adjusted R-squared:  0.3113
## F-statistic:  25.2 on 9 and 473 DF,  p-value: < 2.2e-16
##
##
## Response ST_experts :
##
## Call:
## lm(formula = ST_experts ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
##     SC_implement + SC_notdescribed, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.5000 -0.0010 -0.0010 -0.0010  0.8916
##
## Coefficients:
##                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.0009988  0.0078470   0.127  0.89877
## SC_researcher     0.1578790  0.0290735   5.430 9.01e-08 ***
## SC_datagathering  0.1073612  0.0385627   2.784  0.00558 **
## SC_inform         0.4990012  0.0783364   6.370 4.49e-10 ***
## SC_perspectives  -0.0009988  0.1560822  -0.006  0.99490
## SC_plan           0.4535466  0.0476516   9.518  < 2e-16 ***
## SC_identify       0.1101123  0.0375710   2.931  0.00354 **
## SC_envision      -0.0009988  0.1560822  -0.006  0.99490
## SC_implement     -0.0325746  0.0702294  -0.464  0.64298
## SC_notdescribed  -0.0009988  0.0783364  -0.013  0.98983
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1559 on 473 degrees of freedom
## Multiple R-squared:  0.257,  Adjusted R-squared:  0.2429
## F-statistic: 18.18 on 9 and 473 DF,  p-value: < 2.2e-16
```

Stakeholder type vs solution

```
##
## Call:
## glm(formula = solution_proposed_YN ~ ST_farmers + ST_combined_gov +
##     ST_tribal + ST_combined_coalition + ST_combined_industry +
##     ST_migrants + ST_youth + ST_public + ST_university + ST_experts,
##     family = binomial, data = crcdata)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.2308  -0.1333  -0.1333  -0.1333   3.0748
##
## Coefficients: (1 not defined because of singularities)
##                         Estimate Std. Error z value Pr(>|z|)
## (Intercept)              -4.7183     0.5068  -9.310  < 2e-16 ***
## ST_farmers                0.7904     0.7745   1.020    0.308
## ST_combined_gov           3.5784     0.7733   4.627  3.7e-06 ***
## ST_tribal               -14.4256  1810.3784  -0.008    0.994
## ST_combined_coalition    -0.2779     0.7639  -0.364    0.716
## ST_combined_industry     -0.6386     0.7963  -0.802    0.423
## ST_migrants                   NA         NA      NA       NA
## ST_youth                -15.6653  1939.1448  -0.008    0.994
## ST_public                 0.7992     0.7884   1.014    0.311
## ST_university             0.2918     0.7387   0.395    0.693
## ST_experts                0.4654     0.8261   0.563    0.573
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 153.75  on 482  degrees of freedom
## Residual deviance: 101.16  on 473  degrees of freedom
## AIC: 121.16
##
## Number of Fisher Scoring iterations: 16
```

Geographic area vs solution

```
##
## Call:
## glm(formula = solution_proposed_YN ~ G_local + G_regional + G_national +
##     G_multination + G_global, family = binomial, data = crcdata)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -0.5010  -0.3118  -0.2450  -0.2450   2.7017
##
## Coefficients:
##                Estimate Std. Error z value Pr(>|z|)
## (Intercept)     -3.6234     0.9172  -3.951  7.8e-05 ***
## G_local          0.6236     0.9934   0.628    0.530
## G_regional       0.1319     1.0065   0.131    0.896
## G_national       0.9877     1.0097   0.978    0.328
## G_multination  -14.9427  1232.6632  -0.012    0.990
## G_global       -14.9427  1966.6497  -0.008    0.994
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 153.75  on 482  degrees of freedom
## Residual deviance: 148.35  on 477  degrees of freedom
## AIC: 160.35
##
## Number of Fisher Scoring iterations: 17

##
## Logistic regression predicting solution_proposed_YN : Y vs N
##
##                         crude OR(95%CI)   adj. OR(95%CI)     P(Wald's test)
## G_local: 1 vs 0         1.45 (0.53,3.96)  1.87 (0.27,13.07)  0.53
##
## G_regional: 1 vs 0      0.68 (0.25,1.84)  1.14 (0.16,8.2)    0.896
##
## G_national: 1 vs 0      2.21 (0.76,6.39)  2.69 (0.37,19.43)  0.328
##
## G_multination: 1 vs 0   0 (0,Inf)         0 (0,Inf)          0.99
##
## G_global: 1 vs 0        0 (0,Inf)         0 (0,Inf)          0.994
##
##                         P(LR-test)
## G_local: 1 vs 0         0.509
##
## G_regional: 1 vs 0      0.894
##
## G_national: 1 vs 0      0.295
##
## G_multination: 1 vs 0   0.282
##
## G_global: 1 vs 0        0.471
```

```
##
## Log-likelihood = -74.1769
## No. of observations = 483
## AIC value = 160.3537
```

stakeholder type vs geographic area

```
## Response ST_farmers :
##
## Call:
## lm(formula = ST_farmers ~ G_local + G_regional + G_national +
##     G_multination + G_global, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.13965 -0.07389 -0.07389 -0.03918  0.96429
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.003248   0.037430   0.087   0.9309
## G_local        0.100465   0.043266   2.322   0.0207 *
## G_regional     0.070644   0.041286   1.711   0.0877 .
## G_national     0.035935   0.046866   0.767   0.4436
## G_multination  0.032467   0.060013   0.541   0.5888
## G_global      -0.003248   0.083680  -0.039   0.9691
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2482 on 477 degrees of freedom
## Multiple R-squared:  0.01639,    Adjusted R-squared:  0.006083
## F-statistic:  1.59 on 5 and 477 DF,  p-value: 0.1613
##
##
## Response ST_combined_gov :
##
## Call:
## lm(formula = ST_combined_gov ~ G_local + G_regional + G_national +
##     G_multination + G_global, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.18923 -0.11944 -0.11330 -0.07143  0.94909
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.05091    0.04645   1.096    0.274
## G_local        0.06853    0.05370   1.276    0.203
## G_regional     0.06239    0.05124   1.218    0.224
## G_national     0.06978    0.05817   1.200    0.231
## G_multination  0.02052    0.07448   0.275    0.783
## G_global      -0.05091    0.10386  -0.490    0.624
##
## Residual standard error: 0.3081 on 477 degrees of freedom
## Multiple R-squared:  0.007528,   Adjusted R-squared:  -0.002875
## F-statistic: 0.7236 on 5 and 477 DF,  p-value: 0.606
##
##
## Response ST_tribal :
##
```

```
## Call:
## lm(formula = ST_tribal ~ G_local + G_regional + G_national +
##     G_multination + G_global, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.02401 -0.02358 -0.00493 -0.00054  0.99507
##
## Coefficients:
##                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.0005384  0.0136751   0.039    0.969
## G_local        0.0234684  0.0158073   1.485    0.138
## G_regional     0.0043877  0.0150839   0.291    0.771
## G_national    -0.0008555  0.0171225  -0.050    0.960
## G_multination -0.0005384  0.0219258  -0.025    0.980
## G_global      -0.0005384  0.0305726  -0.018    0.986
##
## Residual standard error: 0.09069 on 477 degrees of freedom
## Multiple R-squared:  0.01105,    Adjusted R-squared:  0.0006802
## F-statistic: 1.066 on 5 and 477 DF,  p-value: 0.3786
##
##
## Response ST_combined_coalition :
##
## Call:
## lm(formula = ST_combined_coalition ~ G_local + G_regional + G_national +
##     G_multination + G_global, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.09641 -0.04926 -0.04926 -0.03148  0.96852
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.002242   0.030103   0.074   0.9407
## G_local        0.029238   0.034797   0.840   0.4012
## G_regional     0.047019   0.033204   1.416   0.1574
## G_national     0.064930   0.037692   1.723   0.0856 .
## G_multination  0.033472   0.048265   0.694   0.4883
## G_global      -0.002242   0.067299  -0.033   0.9734
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1996 on 477 degrees of freedom
## Multiple R-squared:  0.008447,   Adjusted R-squared:  -0.001946
## F-statistic: 0.8127 on 5 and 477 DF,  p-value: 0.5409
##
##
## Response ST_combined_industry :
##
## Call:
## lm(formula = ST_combined_industry ~ G_local + G_regional + G_national +
##     G_multination + G_global, data = crcdata)
##
```

```
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.14668 -0.08374 -0.08374 -0.07946  0.97333
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.02667    0.03912   0.682    0.496
## G_local        0.05280    0.04522   1.168    0.244
## G_regional     0.05708    0.04315   1.323    0.187
## G_national     0.06721    0.04898   1.372    0.171
## G_multination -0.02667    0.06272  -0.425    0.671
## G_global      -0.02667    0.08745  -0.305    0.761
##
## Residual standard error: 0.2594 on 477 degrees of freedom
## Multiple R-squared:  0.01127,    Adjusted R-squared:  0.0009061
## F-statistic: 1.087 on 5 and 477 DF,  p-value: 0.3664
##
##
## Response ST_migrants :
##
## Call:
## lm(formula = ST_migrants ~ G_local + G_regional + G_national +
##     G_multination + G_global, data = crcdata)
##
## Residuals:
##    Min     1Q Median     3Q    Max
##      0      0      0      0      0
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)          0          0     NaN      NaN
## G_local              0          0     NaN      NaN
## G_regional           0          0     NaN      NaN
## G_national           0          0     NaN      NaN
## G_multination        0          0     NaN      NaN
## G_global             0          0     NaN      NaN
##
## Residual standard error: 0 on 477 degrees of freedom
## Multiple R-squared:    NaN,  Adjusted R-squared:    NaN
## F-statistic:   NaN on 5 and 477 DF,  p-value: NA
##
##
## Response ST_youth :
##
## Call:
## lm(formula = ST_youth ~ G_local + G_regional + G_national + G_multination +
##     G_global, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.01600 -0.01600 -0.00493 -0.00036  0.99507
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept)    0.0003589  0.0118848   0.030    0.976
## G_local        0.0156456  0.0137378   1.139    0.255
## G_regional     0.0045672  0.0131091   0.348    0.728
## G_national    -0.0005704  0.0148808  -0.038    0.969
## G_multination -0.0003589  0.0190552  -0.019    0.985
## G_global      -0.0003589  0.0265700  -0.014    0.989
##
## Residual standard error: 0.07882 on 477 degrees of freedom
## Multiple R-squared:  0.006139,   Adjusted R-squared:  -0.004279
## F-statistic: 0.5892 on 5 and 477 DF,  p-value: 0.7082
##
##
## Response ST_public :
##
## Call:
## lm(formula = ST_public ~ G_local + G_regional + G_national +
##     G_multination + G_global, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.06427 -0.04722 -0.02463 -0.01328  0.98672
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.04722    0.02697   1.751   0.0806 .
## G_local        0.01705    0.03117   0.547   0.5846
## G_regional    -0.02259    0.02974  -0.759   0.4480
## G_national    -0.03393    0.03376  -1.005   0.3154
## G_multination -0.04722    0.04324  -1.092   0.2754
## G_global      -0.04722    0.06029  -0.783   0.4339
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1788 on 477 degrees of freedom
## Multiple R-squared:  0.0139, Adjusted R-squared:  0.003563
## F-statistic: 1.345 on 5 and 477 DF,  p-value: 0.2441
##
##
## Response ST_university :
##
## Call:
## lm(formula = ST_university ~ G_local + G_regional + G_national +
##     G_multination + G_global, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.10037 -0.05911 -0.05911 -0.03145  0.97441
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.025590   0.033428   0.766    0.444
## G_local        0.005859   0.038641   0.152    0.880
## G_regional     0.033523   0.036872   0.909    0.364
## G_national     0.068925   0.041856   1.647    0.100
```

```
## G_multination  0.010124   0.053597   0.189    0.850
## G_global      -0.025590   0.074734  -0.342    0.732
##
## Residual standard error: 0.2217 on 477 degrees of freedom
## Multiple R-squared:  0.01114,    Adjusted R-squared:  0.000774
## F-statistic: 1.075 on 5 and 477 DF,  p-value: 0.3735
##
##
## Response ST_experts :
##
## Call:
## lm(formula = ST_experts ~ G_local + G_regional + G_national +
##     G_multination + G_global, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.05476 -0.04926 -0.04035 -0.01569  0.98431
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.001273   0.027023   0.047    0.962
## G_local        0.014414   0.031237   0.461    0.645
## G_regional     0.047988   0.029807   1.610    0.108
## G_national     0.039072   0.033836   1.155    0.249
## G_multination  0.034441   0.043327   0.795    0.427
## G_global      -0.001273   0.060414  -0.021    0.983
##
## Residual standard error: 0.1792 on 477 degrees of freedom
## Multiple R-squared:  0.009743,   Adjusted R-squared:  -0.0006375
## F-statistic: 0.9386 on 5 and 477 DF,  p-value: 0.4556
```

Geographic area vs engagment (Ghodsvali)

```
## Response G_local :
##
## Call:
## lm(formula = G_local ~ STE_G_nominal + STE_G_instrumental + STE_G_representation +
##     STE_G_transformative, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.5556 -0.2343 -0.2343  0.4444  0.8182
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)           0.23426    0.02176  10.763  < 2e-16 ***
## STE_G_nominal         0.26574    0.08479   3.134  0.00183 **
## STE_G_instrumental    0.05522    0.07364   0.750  0.45371
## STE_G_representation -0.05244    0.13255  -0.396  0.69256
## STE_G_transformative  0.32130    0.14618   2.198  0.02843 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4336 on 478 degrees of freedom
## Multiple R-squared:  0.02981,    Adjusted R-squared:  0.02169
## F-statistic: 3.671 on 4 and 478 DF,  p-value: 0.005873
##
##
## Response G_regional :
##
## Call:
## lm(formula = G_regional ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.5454 -0.4156 -0.4156  0.5844  0.8889
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)           0.41562    0.02477  16.782   <2e-16 ***
## STE_G_nominal         0.01295    0.09649   0.134   0.8933
## STE_G_instrumental    0.08438    0.08379   1.007   0.3144
## STE_G_representation  0.12984    0.15083   0.861   0.3898
## STE_G_transformative -0.30451    0.16634  -1.831   0.0678 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4935 on 478 degrees of freedom
## Multiple R-squared:  0.01092,    Adjusted R-squared:  0.00264
## F-statistic: 1.319 on 4 and 478 DF,  p-value: 0.2619
##
##
## Response G_national :
##
```

```
## Call:
## lm(formula = G_national ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.2727 -0.1587 -0.1587 -0.1579  0.8421
##
## Coefficients:
##                         Estimate Std. Error t value Pr(>|t|)
## (Intercept)           0.1586902  0.0180451   8.794   <2e-16 ***
## STE_G_nominal        -0.1586902  0.0703031  -2.257   0.0244 *
## STE_G_instrumental   -0.0007954  0.0610536  -0.013   0.9896
## STE_G_representation  0.1140371  0.1098987   1.038   0.3000
## STE_G_transformative  0.0635320  0.1211994   0.524   0.6004
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.3595 on 478 degrees of freedom
## Multiple R-squared:  0.01388,    Adjusted R-squared:  0.005632
## F-statistic: 1.682 on 4 and 478 DF,  p-value: 0.1528
##
##
## Response G_multination :
##
## Call:
## lm(formula = G_multination ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.11111 -0.06297 -0.06297 -0.06297  0.97368
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)           0.06297    0.01176   5.354 1.34e-07 ***
## STE_G_nominal        -0.02726    0.04582  -0.595    0.552
## STE_G_instrumental   -0.03666    0.03980  -0.921    0.357
## STE_G_representation -0.06297    0.07163  -0.879    0.380
## STE_G_transformative  0.04814    0.07900   0.609    0.543
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2344 on 478 degrees of freedom
## Multiple R-squared:  0.004711,   Adjusted R-squared:  -0.003618
## F-statistic: 0.5656 on 4 and 478 DF,  p-value: 0.6877
##
##
## Response G_global :
##
## Call:
## lm(formula = G_global ~ STE_G_nominal + STE_G_instrumental +
##     STE_G_representation + STE_G_transformative, data = crcdata)
##
```

```
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.02771 -0.02771 -0.02771 -0.02771  0.97229
##
## Coefficients:
##                         Estimate Std. Error t value Pr(>|t|)
## (Intercept)              0.027708   0.007507   3.691 0.000249 ***
## STE_G_nominal           -0.027708   0.029248  -0.947 0.343949
## STE_G_instrumental      -0.027708   0.025400  -1.091 0.275890
## STE_G_representation    -0.027708   0.045721  -0.606 0.544793
## STE_G_transformative    -0.027708   0.050423  -0.550 0.582913
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1496 on 478 degrees of freedom
## Multiple R-squared:  0.005048,   Adjusted R-squared:  -0.003277
## F-statistic: 0.6064 on 4 and 478 DF,  p-value: 0.6582
```

Geographic area vs engagment (IAP2)

```
## Response G_local :
##
## Call:
## lm(formula = G_local ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.8333 -0.2343 -0.2343  0.1667  0.7657
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.23426    0.02158  10.856  < 2e-16 ***
## STE_IAP2_data_gathering   0.23449    0.07901   2.968 0.003149 **
## STE_IAP2_inform           0.76574    0.43049   1.779 0.075913 .
## STE_IAP2_consult          0.03847    0.07789   0.494 0.621612
## STE_IAP2_involve          0.05146    0.16393   0.314 0.753737
## STE_IAP2_collab          -0.23426    0.16393  -1.429 0.153660
## STE_IAP2_empower          0.59908    0.17685   3.388 0.000764 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4299 on 476 degrees of freedom
## Multiple R-squared:  0.0503, Adjusted R-squared:  0.03832
## F-statistic: 4.201 on 6 and 476 DF,  p-value: 0.0003936
##
##
## Response G_regional :
##
## Call:
## lm(formula = G_regional ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.5714 -0.4156 -0.4156  0.5844  0.5938
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.415617   0.024749  16.793   <2e-16 ***
## STE_IAP2_data_gathering -0.009367   0.090619  -0.103    0.918
## STE_IAP2_inform         -0.415617   0.493751  -0.842    0.400
## STE_IAP2_consult          0.129837   0.089339   1.453    0.147
## STE_IAP2_involve          0.155811   0.188022   0.829    0.408
## STE_IAP2_collab           0.012954   0.188022   0.069    0.945
## STE_IAP2_empower         -0.415617   0.202835  -2.049    0.041 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4931 on 476 degrees of freedom
```

```
## Multiple R-squared:  0.01639,    Adjusted R-squared:  0.003992
## F-statistic: 1.322 on 6 and 476 DF,  p-value: 0.2456
##
##
## Response G_national :
##
## Call:
## lm(formula = G_national ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.4286 -0.1587 -0.1587 -0.1515  0.9688
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.158690   0.018057   8.788   <2e-16 ***
## STE_IAP2_data_gathering -0.127440   0.066117  -1.928   0.0545 .
## STE_IAP2_inform         -0.158690   0.360245  -0.441   0.6598
## STE_IAP2_consult        -0.007175   0.065183  -0.110   0.9124
## STE_IAP2_involve        -0.015833   0.137182  -0.115   0.9082
## STE_IAP2_collab          0.269881   0.137182   1.967   0.0497 *
## STE_IAP2_empower         0.007976   0.147990   0.054   0.9570
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.3598 on 476 degrees of freedom
## Multiple R-squared:  0.01666,    Adjusted R-squared:  0.004267
## F-statistic: 1.344 on 6 and 476 DF,  p-value: 0.2358
##
##
## Response G_multination :
##
## Call:
## lm(formula = G_multination ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.14286 -0.06297 -0.06297 -0.06297  0.93750
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.0629723  0.0117653   5.352 1.35e-07 ***
## STE_IAP2_data_gathering -0.0004723  0.0430780  -0.011    0.991
## STE_IAP2_inform         -0.0629723  0.2347165  -0.268    0.789
## STE_IAP2_consult        -0.0629723  0.0424697  -1.483    0.139
## STE_IAP2_involve        -0.0629723  0.0893807  -0.705    0.481
## STE_IAP2_collab          0.0798849  0.0893807   0.894    0.372
## STE_IAP2_empower        -0.0629723  0.0964227  -0.653    0.514
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Residual standard error: 0.2344 on 476 degrees of freedom
## Multiple R-squared:  0.008302,   Adjusted R-squared:  -0.004199
## F-statistic: 0.6641 on 6 and 476 DF,  p-value: 0.6787
##
##
## Response G_global :
##
## Call:
## lm(formula = G_global ~ STE_IAP2_data_gathering + STE_IAP2_inform +
##     STE_IAP2_consult + STE_IAP2_involve + STE_IAP2_collab + STE_IAP2_empower,
##     data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.02771 -0.02771 -0.02771 -0.02771  0.97229
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               0.027708   0.007523   3.683 0.000257 ***
## STE_IAP2_data_gathering -0.027708   0.027545  -1.006 0.314977
## STE_IAP2_inform         -0.027708   0.150085  -0.185 0.853610
## STE_IAP2_consult        -0.027708   0.027156  -1.020 0.308103
## STE_IAP2_involve        -0.027708   0.057153  -0.485 0.628040
## STE_IAP2_collab         -0.027708   0.057153  -0.485 0.628040
## STE_IAP2_empower        -0.027708   0.061656  -0.449 0.653351
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1499 on 476 degrees of freedom
## Multiple R-squared:  0.005048,   Adjusted R-squared:  -0.007493
## F-statistic: 0.4025 on 6 and 476 DF,  p-value: 0.8774
```

Geographic area vs engagment (local)

```
## Response G_local :
##
## Call:
## lm(formula = G_local ~ SC_researcher + SC_datagathering + SC_inform +
##     SC_perspectives + SC_plan + SC_identify + SC_envision + SC_implement +
##     SC_notdescribed, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.7623 -0.2349 -0.2349  0.5092  0.7651
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.23488    0.02196  10.698   <2e-16 ***
## SC_researcher     0.20284    0.08135   2.494   0.0130 *
## SC_datagathering  0.10613    0.10790   0.984   0.3258
## SC_inform        -0.23488    0.21918  -1.072   0.2845
## SC_perspectives  -0.23488    0.43672  -0.538   0.5910
## SC_plan           0.03785    0.13333   0.284   0.7766
## SC_identify       0.15401    0.10512   1.465   0.1436
## SC_envision      -0.23488    0.43672  -0.538   0.5910
## SC_implement      0.32456    0.19650   1.652   0.0993 .
## SC_notdescribed   0.01512    0.21918   0.069   0.9450
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4362 on 473 degrees of freedom
## Multiple R-squared:  0.02878,    Adjusted R-squared:  0.0103
## F-statistic: 1.557 on 9 and 473 DF,  p-value: 0.1254
##
##
## Response G_regional :
##
## Call:
## lm(formula = G_regional ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
##     SC_implement + SC_notdescribed, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.7500 -0.4166 -0.4166  0.5834  0.8502
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.41664    0.02485  16.763   <2e-16 ***
## SC_researcher    -0.06277    0.09209  -0.682   0.4958
## SC_datagathering  0.23412    0.12215   1.917   0.0559 .
## SC_inform         0.33336    0.24813   1.344   0.1797
## SC_perspectives   0.58336    0.49438   1.180   0.2386
## SC_plan          -0.05300    0.15093  -0.351   0.7256
## SC_identify       0.02781    0.11900   0.234   0.8153
## SC_envision      -0.41664    0.49438  -0.843   0.3998
```

```
## SC_implement     -0.20408    0.22245  -0.917   0.3594
## SC_notdescribed  -0.16664    0.24813  -0.672   0.5022
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4938 on 473 degrees of freedom
## Multiple R-squared:  0.02011,    Adjusted R-squared:  0.001462
## F-statistic: 1.078 on 9 and 473 DF,  p-value: 0.3771
##
##
## Response G_national :
##
## Call:
## lm(formula = G_national ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
##     SC_implement + SC_notdescribed, data = crcdata)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.2727 -0.1580 -0.1580 -0.1000  0.9000
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.158013   0.018096   8.732   <2e-16 ***
## SC_researcher    -0.057980   0.067045  -0.865   0.3876
## SC_datagathering -0.154602   0.088928  -1.739   0.0828 .
## SC_inform        -0.158013   0.180648  -0.875   0.3822
## SC_perspectives  -0.158013   0.359934  -0.439   0.6609
## SC_plan           0.114714   0.109887   1.044   0.2971
## SC_identify       0.008654   0.086641   0.100   0.9205
## SC_envision       0.841987   0.359934   2.339   0.0197 *
## SC_implement      0.053583   0.161953   0.331   0.7409
## SC_notdescribed   0.091987   0.180648   0.509   0.6108
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.3595 on 473 degrees of freedom
## Multiple R-squared:  0.02456,    Adjusted R-squared:  0.006003
## F-statistic: 1.323 on 9 and 473 DF,  p-value: 0.2219
##
##
## Response G_multination :
##
## Call:
## lm(formula = G_multination ~ SC_researcher + SC_datagathering +
##     SC_inform + SC_perspectives + SC_plan + SC_identify + SC_envision +
##     SC_implement + SC_notdescribed, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.09091 -0.06364 -0.06364 -0.06364  0.93636
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept)       0.063636   0.011843   5.373 1.22e-07 ***
## SC_researcher     0.005028   0.043879   0.115    0.909
## SC_datagathering -0.063931   0.058200  -1.098    0.273
## SC_inform        -0.063636   0.118228  -0.538    0.591
## SC_perspectives  -0.063636   0.235565  -0.270    0.787
## SC_plan           0.027274   0.071918   0.379    0.705
## SC_identify      -0.063636   0.056704  -1.122    0.262
## SC_envision      -0.063636   0.235565  -0.270    0.787
## SC_implement     -0.064641   0.105993  -0.610    0.542
## SC_notdescribed  -0.063636   0.118228  -0.538    0.591
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2353 on 473 degrees of freedom
## Multiple R-squared:  0.007428,   Adjusted R-squared:  -0.01146
## F-statistic: 0.3933 on 9 and 473 DF,  p-value: 0.9383
##
##
## Response G_global :
##
## Call:
## lm(formula = G_global ~ SC_researcher + SC_datagathering + SC_inform +
##     SC_perspectives + SC_plan + SC_identify + SC_envision + SC_implement +
##     SC_notdescribed, data = crcdata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.02787 -0.02787 -0.02787 -0.02787  0.97213
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       0.027873   0.007569   3.683 0.000257 ***
## SC_researcher    -0.026295   0.028043  -0.938 0.348898
## SC_datagathering -0.026327   0.037196  -0.708 0.479425
## SC_inform        -0.027873   0.075559  -0.369 0.712372
## SC_perspectives  -0.027873   0.150549  -0.185 0.853195
## SC_plan          -0.027873   0.045962  -0.606 0.544513
## SC_identify      -0.027873   0.036239  -0.769 0.442186
## SC_envision      -0.027873   0.150549  -0.185 0.853195
## SC_implement     -0.022614   0.067740  -0.334 0.738646
## SC_notdescribed  -0.027873   0.075559  -0.369 0.712372
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1504 on 473 degrees of freedom
## Multiple R-squared:  0.005218,   Adjusted R-squared:  -0.01371
## F-statistic: 0.2757 on 9 and 473 DF,  p-value: 0.9811
```