CRC FEWS Paper review

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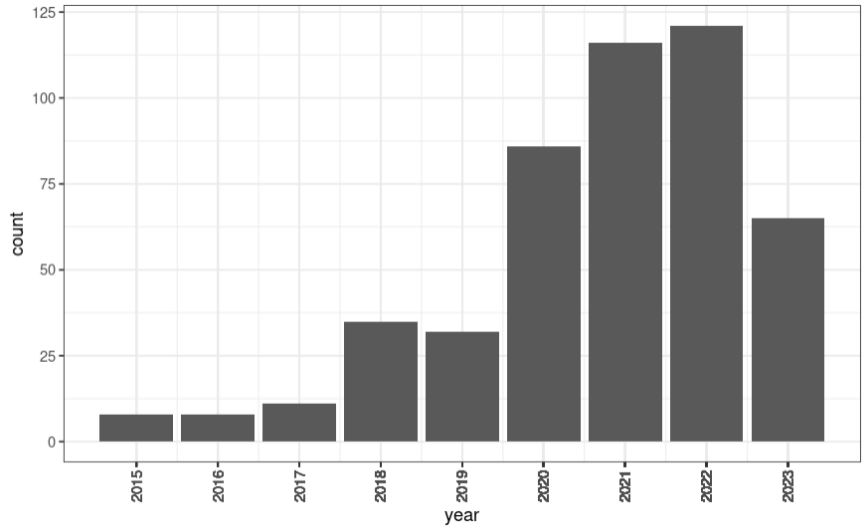
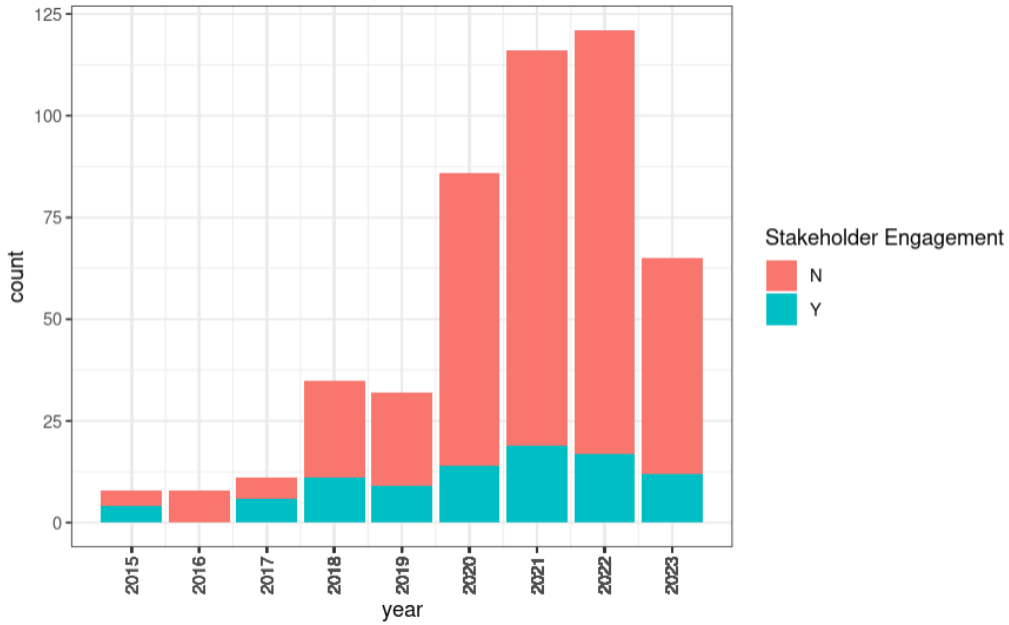
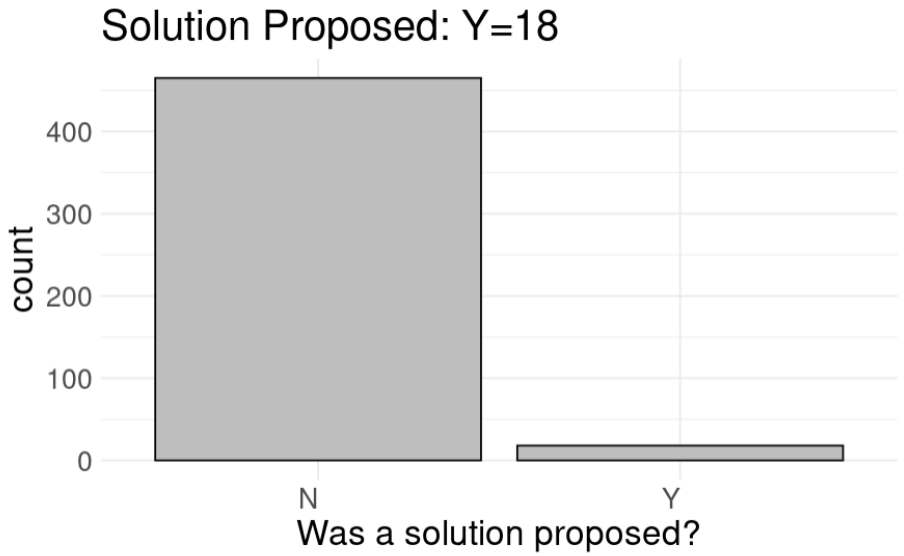
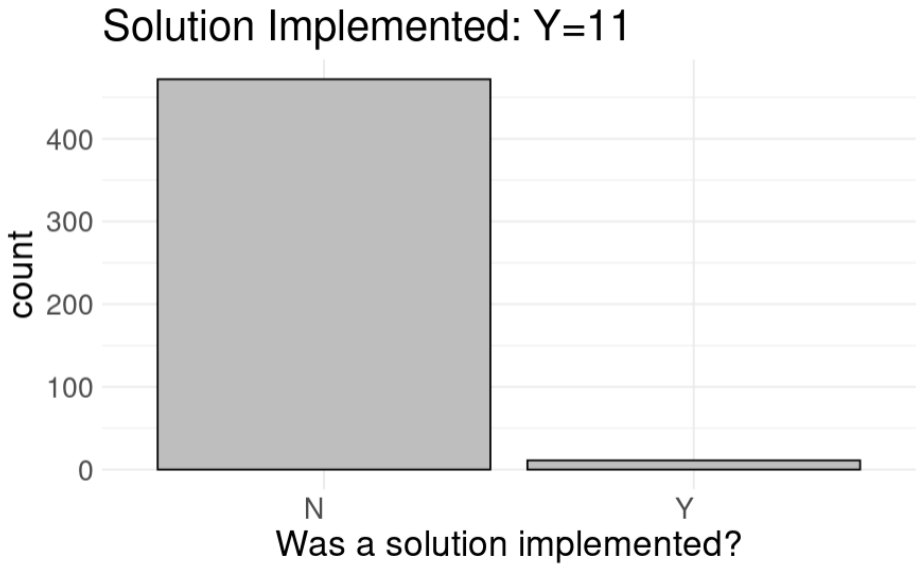
483 Publications
2015 - 2023





- Was a solution 1) proposed and/or 2) implemented
- Solution Types
- Computational Modeling usage
- Researcher type
- Stakeholder engagement,
- Comparative Scaling,
- Location





- Was a solution 1) proposed and/or 2) implemented
- Solution Types
- Computational Modeling usage
- Researcher type
- Stakeholder engagement,
- Comparative Scaling,
- Location

Stakeholder Engagement

Solution Proposed?	YES	NO
YES		
NO		

$\chi^2 = 44$

Fishers Exact Test = ~18

Not independent

Was a computational Model used?

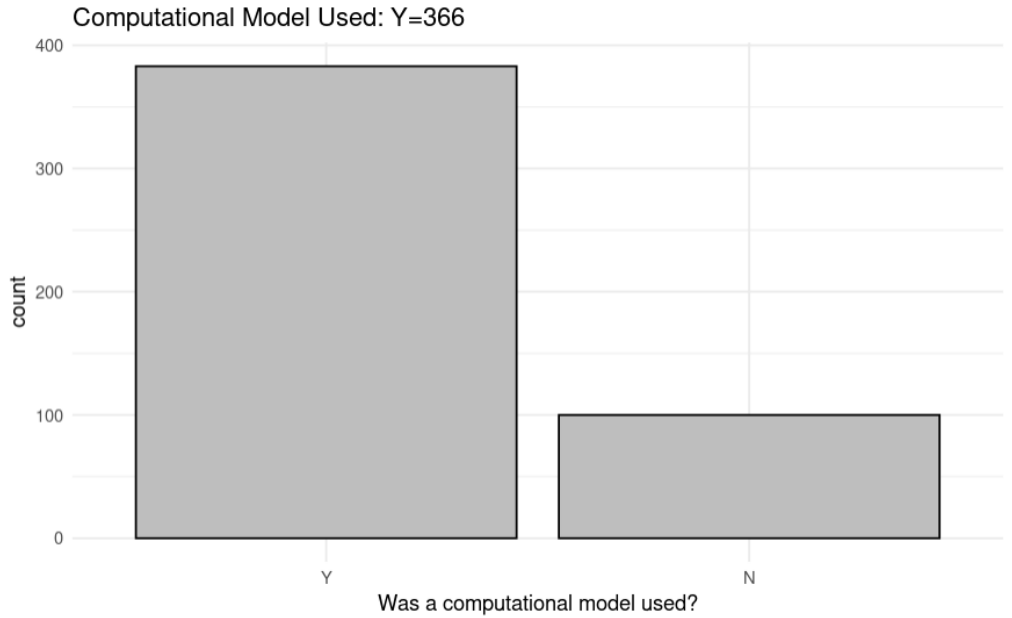
Solution Proposed?	YES	NO
YES		
NO		

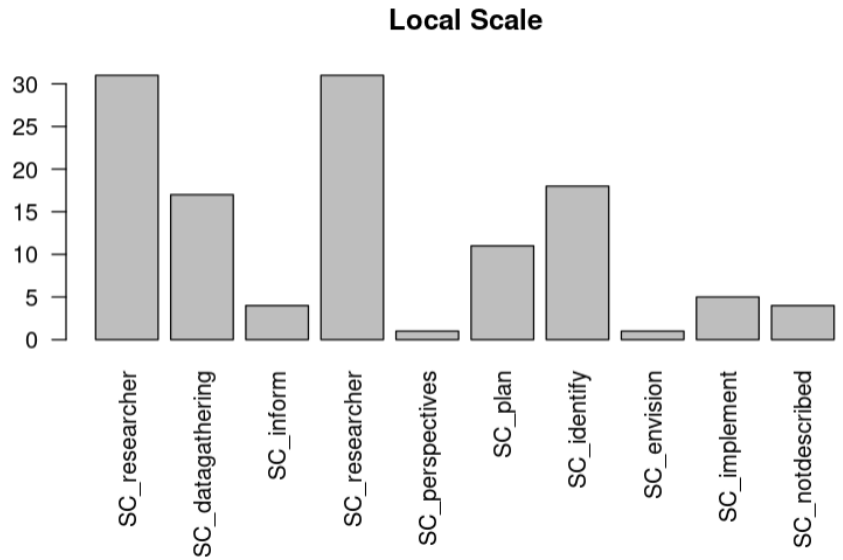
$\chi^2 = 3.7$

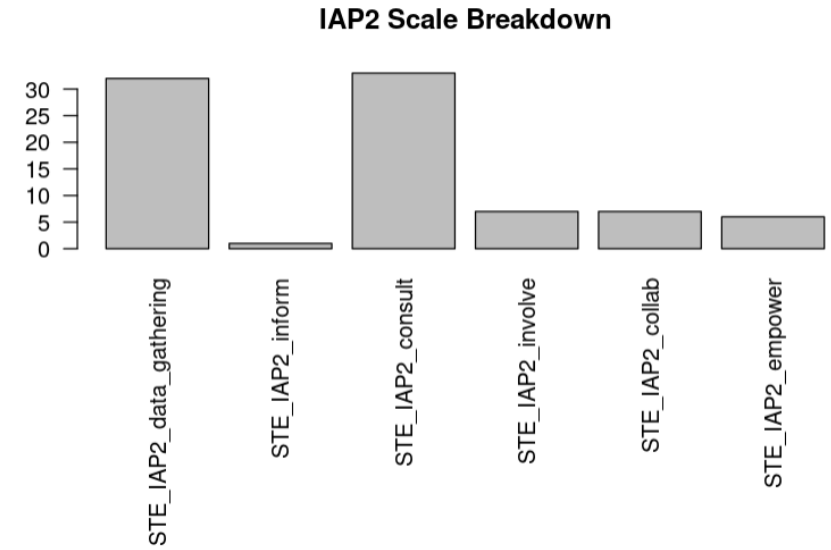
Fishers Exact Test = ~Under 1

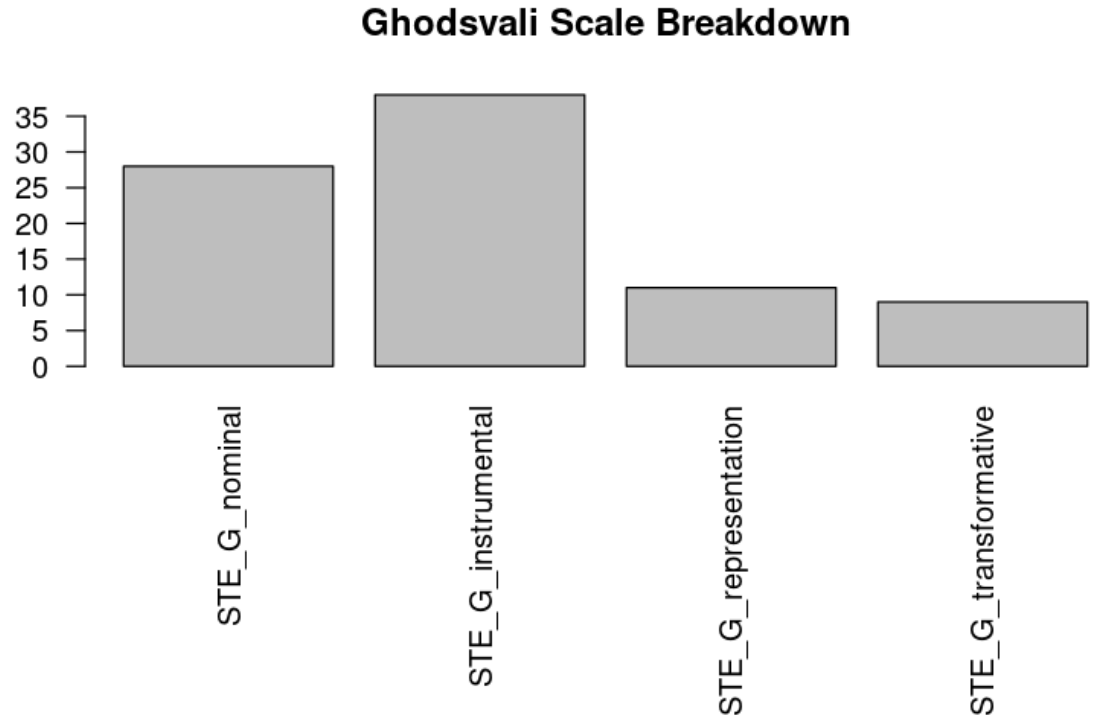
Independent

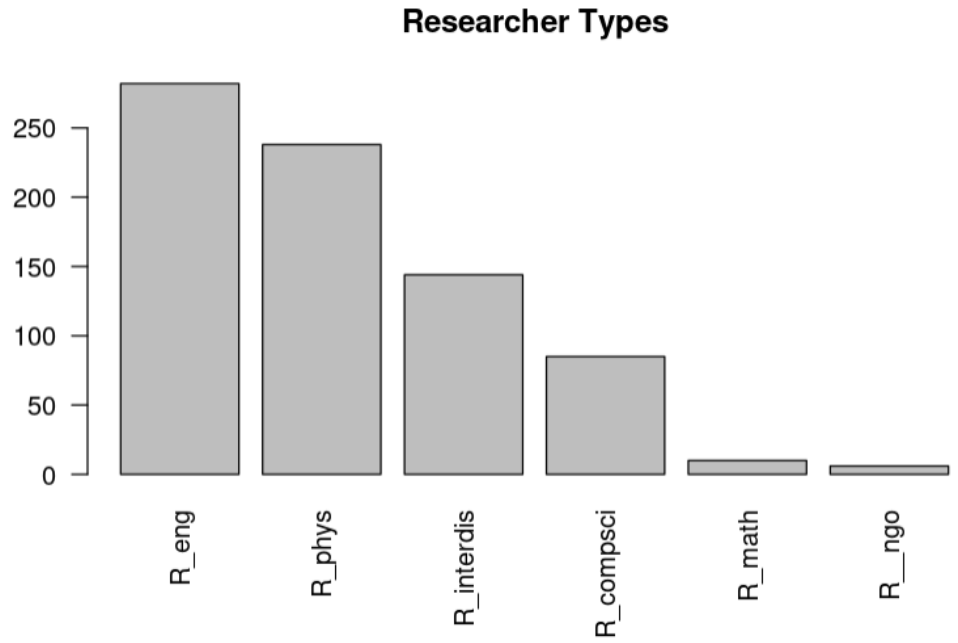

Stakeholder Engagment: N=92
0
100
200
300
N
Y

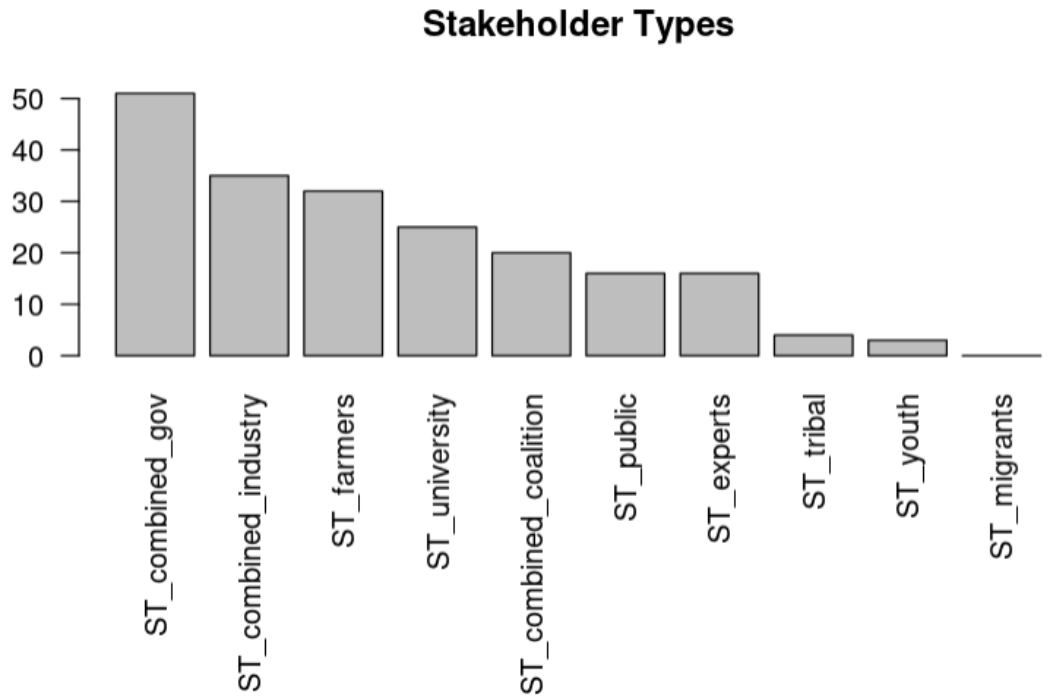

Computational Model Used: Y=366
400
300
200
100
0
count
Y
N
Was a computational model used?

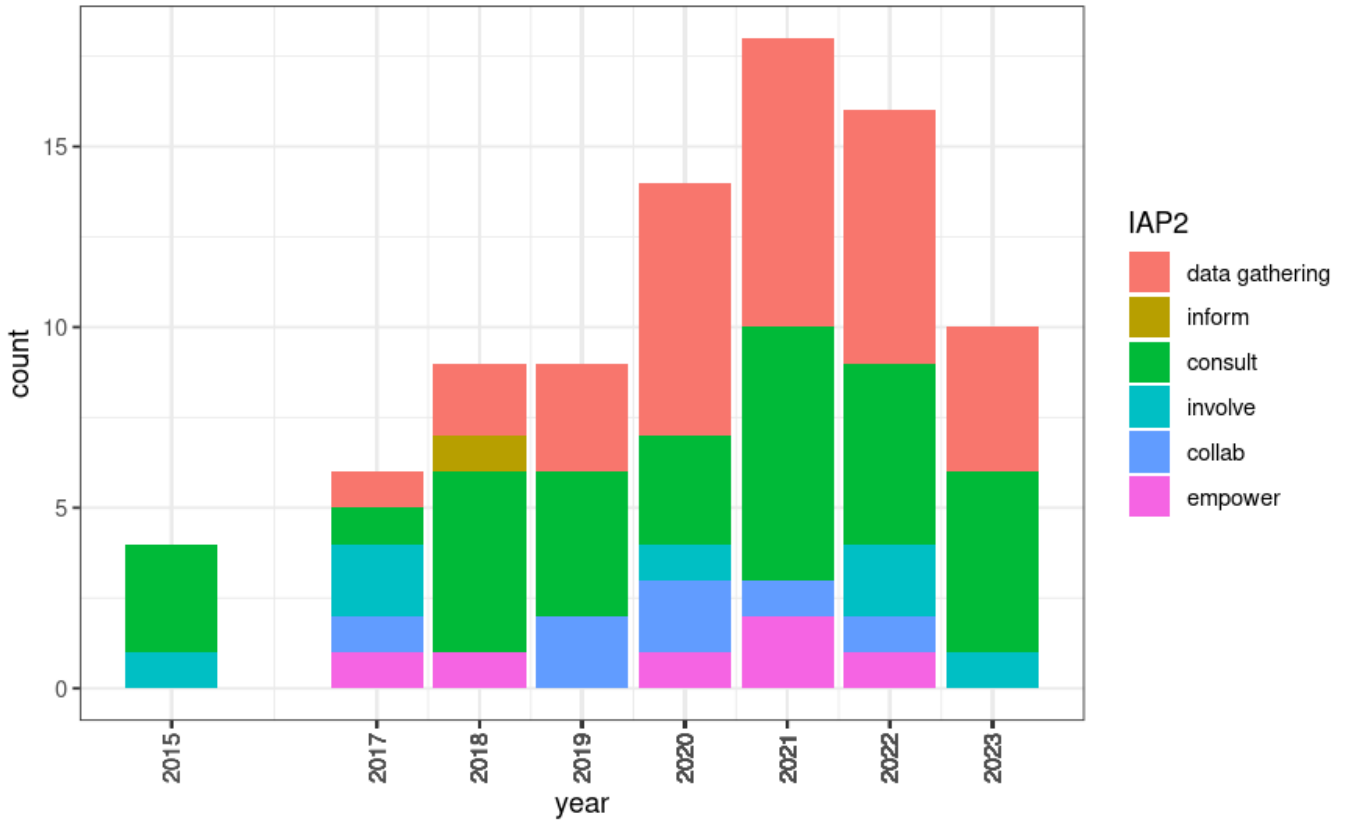

Local Scale
30
25
20
15
10
5
0
SC_researcher
SC_datagathering
SC_inform
SC_researcher
SC_perspectives
SC_plan
SC_identify
SC_envision
SC_implement
SC_notdescribed

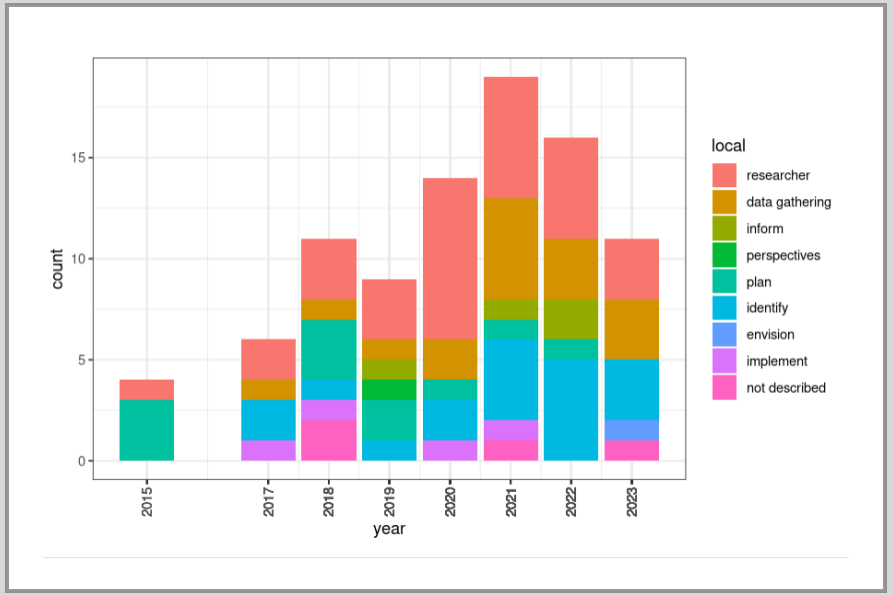

IAP2 Scale Breakdown
30
25
20
15
10
5
0
STE_IAP2_data_gathering
STE_IAP2_inform
STE_IAP2_consult
STE_IAP2_involve
STE_IAP2_collab
STE_IAP2_empower

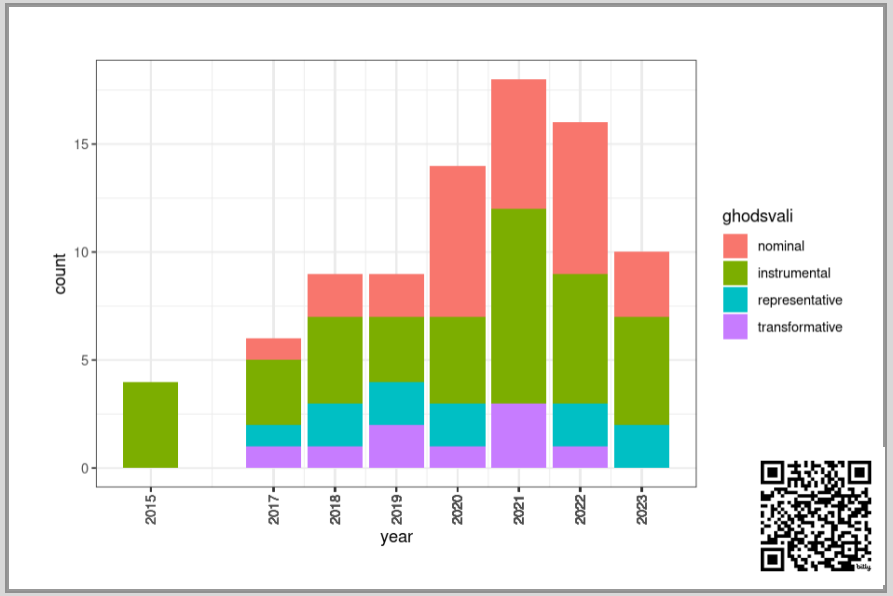

Ghodsvali Scale Breakdown
35
30
25
20
15
10
5
0
STE_G_nominal
STE_G_instrumental
STE_G_representation
STE_G_transformative


Researcher Types
250
200
150
100
50
0
R_eng
R_phys
R_interdis
R_compsci
R_math
R__ngo


Stakeholder Types
50
40
30
20
10
0
ST_combined_gov
ST_combined_industry
ST_farmers
ST_university
ST_combined_coalition
ST_public
ST_experts
ST_tribal
ST_youth
ST_migrants


count
15
10
5
0
2015
2017
2018
2019
2020
2021
2022
2023
year
IAP2
data gathering
inform
consult
involve
collab
empower


count
15
10
5
0
2015
2017
2018
2019
2020
2021
2022
2023
year
local
researcher
data gathering
inform
perspectives
plan
identify
envision
implement
not described


count
15
10
5
0
2015
2017
2018
2019
2020
2021
2022
2023
year
ghodsvali
nominal
instrumental
representative
transformative

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

Ghodsvali

```
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
```

```
                                  crude OR(95%CI)
STE_G_nominal: 1 vs 0             0.95 (0.12,7.44)

STE_G_instrumental: 1 vs 0        2.46 (0.68,8.9)

STE_G_representation: 1 vs 0      11.42 (2.75,47.41)

STE_G_transformative: 1 vs 0      147.32 (27.42,791.53)

Log-likelihood = -48.3926
No. of observations = 483
AIC value = 106.7851
```

Odds stakeholder scale predicting whether a solution was proposed or not

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

IAP2

```
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
```

```
                                  crude OR(95%CI)
STE_IAP2_data_gathering: 1 vs 0   0.82 (0.11,6.39)

STE_IAP2_inform: 1 vs 0           0 (0,Inf)

STE_IAP2_consult: 1 vs 0          2.9 (0.8,10.57)

STE_IAP2_involve: 1 vs 0          4.5 (0.51,39.48)

STE_IAP2_collab: 1 vs 0           23.05 (4.73,112.22)

STE_IAP2_empower: 1 vs 0          1648611478.8 (0,Inf)

Log-likelihood = -44.5245
No. of observations = 483
AIC value = 103.0489
```

Odds stakeholder scale predicting whether a solution was proposed or not

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

Local

```
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
```

```
                              crude OR(95%CI)
SC_researcher: 1 vs 0         0.85 (0.11,6.63)

SC_datagathering: 1 vs 0      0 (0,Inf)

SC_inform: 1 vs 0             28.94 (3.83,218.65)

SC_perspectives: 1 vs 0       0 (0,Inf)

SC_plan: 1 vs 0               0 (0,Inf)

SC_identify: 1 vs 0           18.87 (6.06,58.74)

SC_envision: 1 vs 0           157493116.45 (0,Inf)

SC_implement: 1 vs 0          132.57 (13.9,1263.96)

SC_notdescribed: 1 vs 0       0 (0,Inf)

Log-likelihood = -43.8554
No. of observations = 483
AIC value = 107.7108
```

Odds stakeholder scale predicting whether a solution was proposed or not

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
```

```
                                                OR(95%CI)
S_stakeholder_engagment_YN: Y vs N 17.37 (5.57,54.16)

Log-likelihood = -61.5436
No. of observations = 483
AIC value = 127.0872
```

Odds stakeholder scale predicting whether a solution was proposed or not

Engagement vs. proposed solution, GLM

Computational Model Usage 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
```

```
                          OR(95%CI)
S_model_YN: N vs Y 1.5 (0.52,4.31)

Log-likelihood = -76.6085
No. of observations = 483
AIC value = 157.2169
```

Odds stakeholder scale predicting whether a solution was proposed or not

Engagement vs. proposed solution, GLM

Computational Model usage vs solution

Diversity of Stakeholders

```
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
```

```
                                OR(95%CI
ST_ratio (cont. var.) 2487.25

Log-likelihood = -61.3545
No. of observations = 483
AIC value = 126.7089
```

Odds stakeholder scale predicting whether a solution was proposed or not

Engagement vs. proposed solution, GLM

Computational Model usage vs solution

Diversity of Stakeholders

Interdisciplinary Researcher vs Solution

```
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
```

```
                      OR(95%CI)
R_interdis: 1 vs 0  5.05 (1.86,13.72)

Log-likelihood = -71.4564
No. of observations = 483
AIC value = 146.9128
```

Odds stakeholder scale predicting whether a solution was proposed or not

Engagement vs. proposed solution, GLM

Computational Model usage vs solution

Diversity of Stakeholders

- Stakeholder type vs level of engagement (page 33)

Ghodsvali

- R2 ranges from .7-.45
- Most stakeholder types indicated all predictors were significant
- Tribal stakeholders – only NOMINAL was significant

Odds stakeholder scale predicting whether a solution was proposed or not

Engagement vs. proposed solution, GLM

Computational Model usage vs solution

Diversity of Stakeholders

Stakeholder vs Engagement scales

- Stakeholder type vs level of engagement (page 33)

IAP2

- R2 ranges from .5-.50
- Combined Industry had largest R2
- Tribal stakeholders – only IAP2 data gathering was significant

Odds stakeholder scale predicting whether a solution was proposed or not

Engagement vs. proposed solution, GLM

Computational Model usage vs solution

Diversity of Stakeholders

Stakeholder vs Engagement scales

- Stakeholder type vs level of engagement (page 33)

Local

- R2 ranges from .5-.65
- Tribal stakeholders – only Local data gathering and researcher was significant
- Tribal model was also highest R2

Odds stakeholder scale predicting whether a solution was proposed or not

Engagement vs. proposed solution, GLM

Computational Model usage vs solution

Diversity of Stakeholders

Stakeholder vs Engagement scales

- Geography

Geography 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
```

	crude OR(95%CI)
G_local: 1 vs 0	1.45 (0.53,3.96)
G_regional: 1 vs 0	0.68 (0.25,1.84)
G_national: 1 vs 0	2.21 (0.76,6.39)
G_multination: 1 vs 0	0 (0,Inf)
G_global: 1 vs 0	0 (0,Inf)

Odds stakeholder scale predicting whether a solution was proposed or not

Engagement vs. proposed solution, GLM

Computational Model usage vs solution

Diversity of Stakeholders

Stakeholder vs Engagement scales

Geography

- Geography

Stakeholder type vs geography

- No significance, poor model performance

Odds stakeholder scale predicting whether a solution was proposed or not

Engagement vs. proposed solution, GLM

Computational Model usage vs solution

Diversity of Stakeholders

Stakeholder vs Engagement scales

Geography

- Geography

Engagement level vs geography

- Most predictors NOT significant
- Poor model R2

Odds stakeholder scale predicting whether a solution was proposed or not

Engagement vs. proposed solution, GLM

Computational Model usage vs solution

Diversity of Stakeholders

Stakeholder vs Engagement scales

Geography