

# MACodingTransparency\_Code

ANONYMIZED FOR REVIEW

8/8/2018

Code corresponding to analysis and figures in MA transparency paper

## Preprocessing & data formatting

## Create subsets for analysis

## Overall descriptives and stats reported in results/discussion section

This script corresponds chronologically to results as reported in manuscript.

```
##Results, paragraph 1
```

```
#type of MA
```

```
table(ma_data_ana$MA_Type)
```

```
##
```

```
##      correlation      experimental group differences
```

```
##              57              54              44
```

```
#pubYear
```

```
summary(ma_data_long$DoP)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
```

```
##      1990   1996   2004   2004   2011   2017
```

```
#revSize
```

```
summary(as.numeric(as.character(ma_sum_all$Review_Size)))
```

```
## Warning in summary(as.numeric(as.character(ma_sum_all$Review_Size))): NAs
```

```
## introduced by coercion
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
```

```
##      12.0   47.0   76.5   125.3   130.2  1753.0      1
```

```
##Results, paragraph 2
```

```
#mean reported, overall & by MA type
```

```
mean(ma_sum_all$pc)
```

```
## [1] 55.33799
```

```
sd(ma_sum_all$pc)
```

```
## [1] 13.59114
```

```
mean(ma_sum_corr$pc)
```

```
## [1] 56.23327
```

```
sd(ma_sum_corr$pc)
```

```
## [1] 13.74812
```

```

mean(ma_sum_exp$pc)

## [1] 54.09035
sd(ma_sum_exp$pc)

## [1] 14.09611
mean(ma_sum_group$pc)

## [1] 55.67108
sd(ma_sum_group$pc)

## [1] 13.27985
#regression model 1: MA type x Publication date x Review Size

lm.all <- lm(pc ~ MA_Type*DoP*as.numeric(as.character(Review_Size)), data = ma_all_predictors)
summary(lm.all)

##
## Call:
## lm(formula = pc ~ MA_Type * DoP * as.numeric(as.character(Review_Size)),
##     data = ma_all_predictors)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -34.843  -6.405   1.047   6.724  21.231
##
## Coefficients:
##                                     Estimate
## (Intercept)                        -2.051e+03
## MA_TypeExperimental                  5.545e+02
## MA_TypeGroup                        -3.551e+02
## DoP                                1.052e+00
## as.numeric(as.character(Review_Size)) 1.747e+00
## MA_TypeExperimental:DoP             -2.802e-01
## MA_TypeGroup:DoP                   1.765e-01
## MA_TypeExperimental:as.numeric(as.character(Review_Size)) -2.817e+00
## MA_TypeGroup:as.numeric(as.character(Review_Size))        3.235e+00
## DoP:as.numeric(as.character(Review_Size))                 -8.754e-04
## MA_TypeExperimental:DoP:as.numeric(as.character(Review_Size)) 1.433e-03
## MA_TypeGroup:DoP:as.numeric(as.character(Review_Size))     -1.603e-03
##                                     Std. Error
## (Intercept)                        4.836e+02
## MA_TypeExperimental                  7.619e+02
## MA_TypeGroup                        7.869e+02
## DoP                                2.414e-01
## as.numeric(as.character(Review_Size)) 2.797e+00
## MA_TypeExperimental:DoP             3.802e-01
## MA_TypeGroup:DoP                   3.928e-01
## MA_TypeExperimental:as.numeric(as.character(Review_Size)) 8.109e+00
## MA_TypeGroup:as.numeric(as.character(Review_Size))        5.681e+00
## DoP:as.numeric(as.character(Review_Size))                 1.396e-03
## MA_TypeExperimental:DoP:as.numeric(as.character(Review_Size)) 4.040e-03
## MA_TypeGroup:DoP:as.numeric(as.character(Review_Size))     2.830e-03

```

```
## t value
## (Intercept) -4.242
## MA_TypeExperimental 0.728
## MA_TypeGroup -0.451
## DoP 4.359
## as.numeric(as.character(Review_Size)) 0.624
## MA_TypeExperimental:DoP -0.737
## MA_TypeGroup:DoP 0.449
## MA_TypeExperimental:as.numeric(as.character(Review_Size)) -0.347
## MA_TypeGroup:as.numeric(as.character(Review_Size)) 0.569
## DoP:as.numeric(as.character(Review_Size)) -0.627
## MA_TypeExperimental:DoP:as.numeric(as.character(Review_Size)) 0.355
## MA_TypeGroup:DoP:as.numeric(as.character(Review_Size)) -0.566
## Pr(>|t|)
## (Intercept) 3.98e-05 ***
## MA_TypeExperimental 0.468
## MA_TypeGroup 0.653
## DoP 2.49e-05 ***
## as.numeric(as.character(Review_Size)) 0.533
## MA_TypeExperimental:DoP 0.462
## MA_TypeGroup:DoP 0.654
## MA_TypeExperimental:as.numeric(as.character(Review_Size)) 0.729
## MA_TypeGroup:as.numeric(as.character(Review_Size)) 0.570
## DoP:as.numeric(as.character(Review_Size)) 0.532
## MA_TypeExperimental:DoP:as.numeric(as.character(Review_Size)) 0.723
## MA_TypeGroup:DoP:as.numeric(as.character(Review_Size)) 0.572
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 10.91 on 142 degrees of freedom
## Multiple R-squared:  0.4043, Adjusted R-squared:  0.3581
## F-statistic: 8.76 on 11 and 142 DF, p-value: 9.68e-12
```

```
anova(lm.all)
```

```
## Analysis of Variance Table
##
## Response: pc
##
## Df Sum Sq Mean Sq
## MA_Type 2 108.3 54.1
## DoP 1 10413.8 10413.8
## as.numeric(as.character(Review_Size)) 1 150.6 150.6
## MA_Type:DoP 2 19.5 9.8
## MA_Type:as.numeric(as.character(Review_Size)) 2 605.4 302.7
## DoP:as.numeric(as.character(Review_Size)) 1 106.9 106.9
## MA_Type:DoP:as.numeric(as.character(Review_Size)) 2 63.1 31.6
## Residuals 142 16899.3 119.0
## F value Pr(>F)
## MA_Type 0.4549 0.63541
## DoP 87.5038 < 2e-16 ***
## as.numeric(as.character(Review_Size)) 1.2652 0.26256
## MA_Type:DoP 0.0820 0.92131
## MA_Type:as.numeric(as.character(Review_Size)) 2.5433 0.08218 .
## DoP:as.numeric(as.character(Review_Size)) 0.8980 0.34492
## MA_Type:DoP:as.numeric(as.character(Review_Size)) 0.2653 0.76738
```

```

## Residuals
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##Results, paragraph 3
#regression model 2:
lm.bygroup<- lm(pc ~ MA_Type*DoP*as.numeric(as.character(Review_Size)) + DoP*groups, data = ma_all_group)
summary(lm.bygroup)

##
## Call:
## lm(formula = pc ~ MA_Type * DoP * as.numeric(as.character(Review_Size)) +
##     DoP * groups, data = ma_all_group)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -88.16 -18.36   0.17  19.94  74.54
##
## Coefficients:
##                                     Estimate
## (Intercept)                        -3.446e+02
## MA_TypeExperimental                 9.014e+02
## MA_TypeGroup                       -1.418e+02
## DoP                                1.871e-01
## as.numeric(as.character(Review_Size)) 3.434e+00
## groupsBias                         -4.903e+03
## groupsEligibility                  -1.724e+03
## groupsMA methods                   -1.239e+03
## groupsReproducibility              -1.454e+03
## groupsScreening/Coding             -3.566e+03
## groupsSearchProcedure              -2.061e+03
## groupsSearchResults                -1.864e+03
## groupsSumStats                     -3.018e+03
## MA_TypeExperimental:DoP            -4.522e-01
## MA_TypeGroup:DoP                   7.043e-02
## MA_TypeExperimental:as.numeric(as.character(Review_Size)) -2.616e+00
## MA_TypeGroup:as.numeric(as.character(Review_Size))        3.967e+00
## DoP:as.numeric(as.character(Review_Size))                 -1.717e-03
## DoP:groupsBias                                              2.461e+00
## DoP:groupsEligibility                                       8.852e-01
## DoP:groupsMA methods                                       6.428e-01
## DoP:groupsReproducibility                                  7.137e-01
## DoP:groupsScreening/Coding                                1.781e+00
## DoP:groupsSearchProcedure                                  1.046e+00
## DoP:groupsSearchResults                                    9.481e-01
## DoP:groupsSumStats                                         1.512e+00
## MA_TypeExperimental:DoP:as.numeric(as.character(Review_Size)) 1.334e-03
## MA_TypeGroup:DoP:as.numeric(as.character(Review_Size))       -1.962e-03
##                                     Std. Error
## (Intercept)                        6.277e+02
## MA_TypeExperimental                 6.395e+02
## MA_TypeGroup                       6.606e+02
## DoP                                3.133e-01
## as.numeric(as.character(Review_Size)) 2.348e+00
## groupsBias                         7.181e+02

```

## groupsEligibility	7.181e+02
## groupsMA methods	7.181e+02
## groupsReproducibility	7.181e+02
## groupsScreening/Coding	7.181e+02
## groupsSearchProcedure	7.191e+02
## groupsSearchResults	7.181e+02
## groupsSumStats	7.181e+02
## MA_TypeExperimental:DoP	3.192e-01
## MA_TypeGroup:DoP	3.297e-01
## MA_TypeExperimental:as.numeric(as.character(Review_Size))	6.806e+00
## MA_TypeGroup:as.numeric(as.character(Review_Size))	4.768e+00
## DoP:as.numeric(as.character(Review_Size))	1.172e-03
## DoP:groupsBias	3.584e-01
## DoP:groupsEligibility	3.584e-01
## DoP:groupsMA methods	3.584e-01
## DoP:groupsReproducibility	3.584e-01
## DoP:groupsScreening/Coding	3.584e-01
## DoP:groupsSearchProcedure	3.589e-01
## DoP:groupsSearchResults	3.584e-01
## DoP:groupsSumStats	3.584e-01
## MA_TypeExperimental:DoP:as.numeric(as.character(Review_Size))	3.391e-03
## MA_TypeGroup:DoP:as.numeric(as.character(Review_Size))	2.375e-03
##	t value
## (Intercept)	-0.549
## MA_TypeExperimental	1.410
## MA_TypeGroup	-0.215
## DoP	0.597
## as.numeric(as.character(Review_Size))	1.462
## groupsBias	-6.828
## groupsEligibility	-2.400
## groupsMA methods	-1.725
## groupsReproducibility	-2.024
## groupsScreening/Coding	-4.966
## groupsSearchProcedure	-2.866
## groupsSearchResults	-2.596
## groupsSumStats	-4.203
## MA_TypeExperimental:DoP	-1.417
## MA_TypeGroup:DoP	0.214
## MA_TypeExperimental:as.numeric(as.character(Review_Size))	-0.384
## MA_TypeGroup:as.numeric(as.character(Review_Size))	0.832
## DoP:as.numeric(as.character(Review_Size))	-1.466
## DoP:groupsBias	6.866
## DoP:groupsEligibility	2.470
## DoP:groupsMA methods	1.794
## DoP:groupsReproducibility	1.991
## DoP:groupsScreening/Coding	4.970
## DoP:groupsSearchProcedure	2.916
## DoP:groupsSearchResults	2.645
## DoP:groupsSumStats	4.220
## MA_TypeExperimental:DoP:as.numeric(as.character(Review_Size))	0.393
## MA_TypeGroup:DoP:as.numeric(as.character(Review_Size))	-0.826
##	Pr(> t )
## (Intercept)	0.58310
## MA_TypeExperimental	0.15890

```
## MA_TypeGroup                                0.83005
## DoP                                          0.55045
## as.numeric(as.character(Review_Size))      0.14384
## groupsBias                                 1.30e-11 ***
## groupsEligibility                         0.01652 *
## groupsMA methods                          0.08478 .
## groupsReproducibility                     0.04313 *
## groupsScreening/Coding                    7.71e-07 ***
## groupsSearchProcedure                     0.00423 **
## groupsSearchResults                       0.00953 **
## groupsSumStats                            2.81e-05 ***
## MA_TypeExperimental:DoP                   0.15672
## MA_TypeGroup:DoP                          0.83089
## MA_TypeExperimental:as.numeric(as.character(Review_Size)) 0.70072
## MA_TypeGroup:as.numeric(as.character(Review_Size))         0.40562
## DoP:as.numeric(as.character(Review_Size)) 0.14298
## DoP:groupsBias                            1.00e-11 ***
## DoP:groupsEligibility                     0.01364 *
## DoP:groupsMA methods                      0.07309 .
## DoP:groupsReproducibility                 0.04664 *
## DoP:groupsScreening/Coding                7.56e-07 ***
## DoP:groupsSearchProcedure                 0.00361 **
## DoP:groupsSearchResults                   0.00825 **
## DoP:groupsSumStats                        2.61e-05 ***
## MA_TypeExperimental:DoP:as.numeric(as.character(Review_Size)) 0.69421
## MA_TypeGroup:DoP:as.numeric(as.character(Review_Size))     0.40902
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 27.47 on 1357 degrees of freedom
## (1 observation deleted due to missingness)
## Multiple R-squared:  0.4769, Adjusted R-squared:  0.4665
## F-statistic: 45.82 on 27 and 1357 DF,  p-value: < 2.2e-16
```

```
anova(lm.bygroup)
```

```
## Analysis of Variance Table
##
## Response: pc
##
##              Df Sum Sq Mean Sq
## MA_Type        2    314     157
## DoP             1 107303 107303
## as.numeric(as.character(Review_Size)) 1    1248    1248
## groups         8  766285  95786
## MA_Type:DoP     2    547     273
## MA_Type:as.numeric(as.character(Review_Size)) 2    5478    2739
## DoP:as.numeric(as.character(Review_Size)) 1    3288    3288
## DoP:groups      8  48464    6058
## MA_Type:DoP:as.numeric(as.character(Review_Size)) 2    736     368
## Residuals     1357 1024011    755
##
##              F value    Pr(>F)
## MA_Type        0.2083  0.81195
## DoP          142.1958 < 2.2e-16 ***
## as.numeric(as.character(Review_Size))    1.6536  0.19869
## groups        126.9332 < 2.2e-16 ***
```

```
## MA_Type:DoP 0.3624 0.69605
## MA_Type:as.numeric(as.character(Review_Size)) 3.6297 0.02678 *
## DoP:as.numeric(as.character(Review_Size)) 4.3578 0.03703 *
## DoP:groups 8.0279 1.261e-10 ***
## MA_Type:DoP:as.numeric(as.character(Review_Size)) 0.4879 0.61403
## Residuals
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

*#follow-up descriptives 1: review size x ma type*

```
ma_all_group %>%
  group_by(MA_Type)%>%
  summarise(RS_m = mean(as.numeric(as.character(Review_Size),na.rm=T)),
            RS_sd = sd(as.numeric(as.character(Review_Size),na.rm=T)))
```

```
## # A tibble: 3 x 3
##   MA_Type      RS_m RS_sd
##   <fct>      <dbl> <dbl>
## 1 Correlation 177.  312.
## 2 Experimental 83.9  62.9
## 3 Group       108.  86.5
```

*#follow-up descriptives 2: review size x publication year*

```
ma_all_group %>%
  group_by(year)%>%
  summarise(RS_m = mean(as.numeric(as.character(Review_Size),na.rm=T)),
            RS_sd = sd(as.numeric(as.character(Review_Size),na.rm=T)))
```

```
## # A tibble: 3 x 3
##   year RS_m RS_sd
##   <dbl> <dbl> <dbl>
## 1 1990 79.5  53.3
## 2 2000 174.  332.
## 3 2010 126.  95.2
```

##Results, paragraph 4 onwards

*#Descriptives for each criterion are directly obtained from dataframe ma\_bycolumn\_all*

```
ma_bycolumn_all = ma_bycolumn_all %>%
  arrange(groups)
ma_bycolumn_all
```

```
## # A tibble: 28 x 7
## # Groups:   criterion, groups [28]
##   criterion      groups      x      pc nrow criterion_f      sd
##   <chr>          <chr>    <chr>    <dbl> <dbl> <chr>      <dbl>
## 1 Funding      Background Overall  58.1    90 Funding      5.20
## 2 Protocol      Background Overall  1.94     3 Protocol      7.95
## 3 Publication_Bias Bias      Overall  56.8    88 Publication_Bias 5.28
## 4 Indep_Var     Eligibility Overall  88.4   137 Indep_Var      2.74
## 5 Outcomes      Eligibility Overall  94.2   146 Outcomes      1.94
## 6 Population     Eligibility Overall  64.3    99 Population     4.82
## 7 Published      Eligibility Overall  72.9   113 Published      4.18
## 8 Data_Handling  MA methods Overall  75.5   117 Data_Handling   3.98
## 9 Dependent_Data MA methods Overall  74.8   116 Dependent_Data  4.03
## 10 Effect_Size_Type MA methods Overall  95.5   148 Effect_Size_Type 1.71
## # ... with 18 more rows
```

```

#protocolyear (mentioned in paragraph 4)
ma_data_ana$DoP[ma_data_ana$Protocol == "y"]

## [1] 2017 2008 2000
##Discussion, paragraph 2

#1995/2015 percentage reported
mean(ma_byyear_cont_all$pc[ma_byyear_cont_all$DoP==1995])

## [1] 48.62637
mean(ma_byyear_cont_all$pc[ma_byyear_cont_all$DoP==2015])

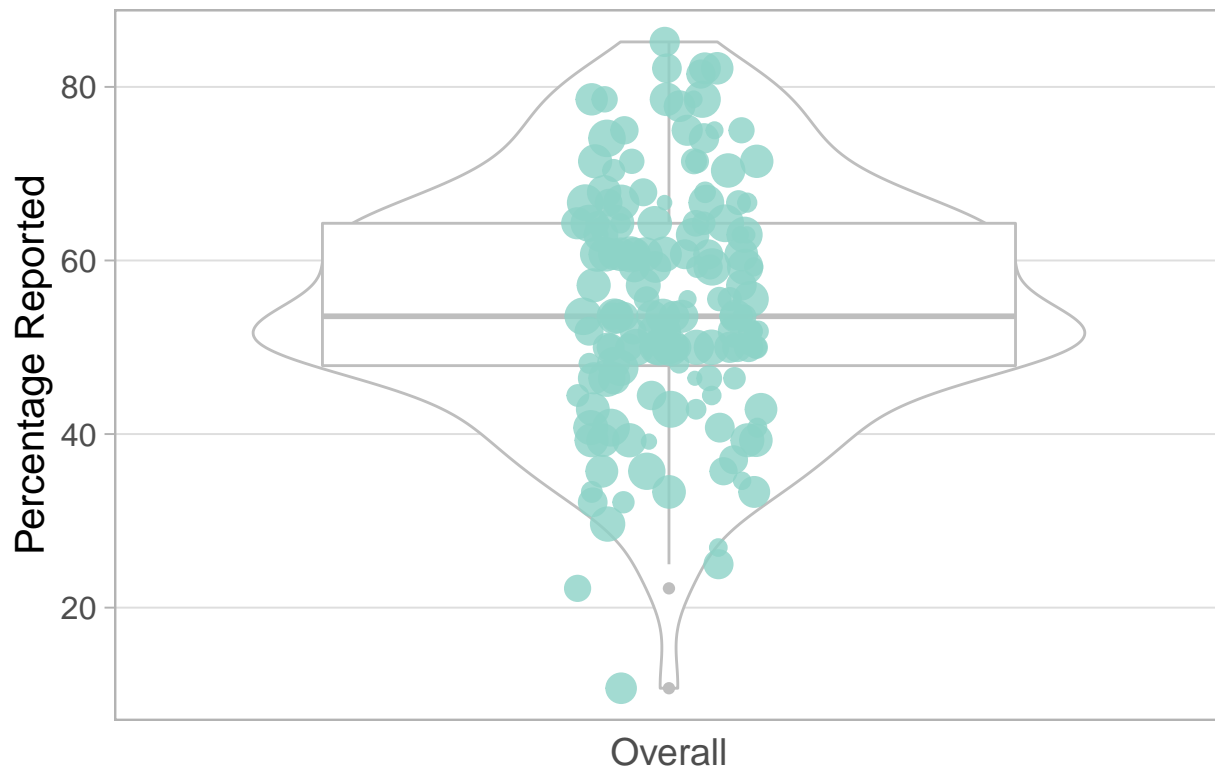
## [1] 63.09524

```

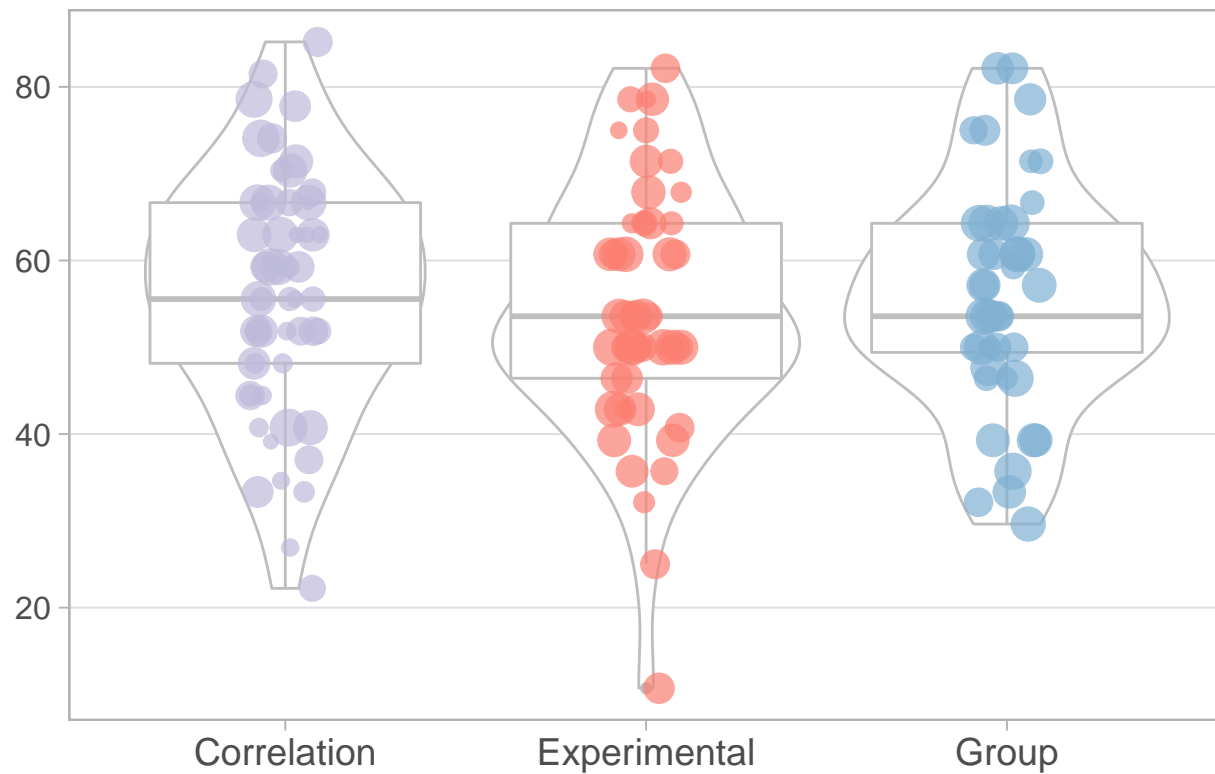


Figure 1

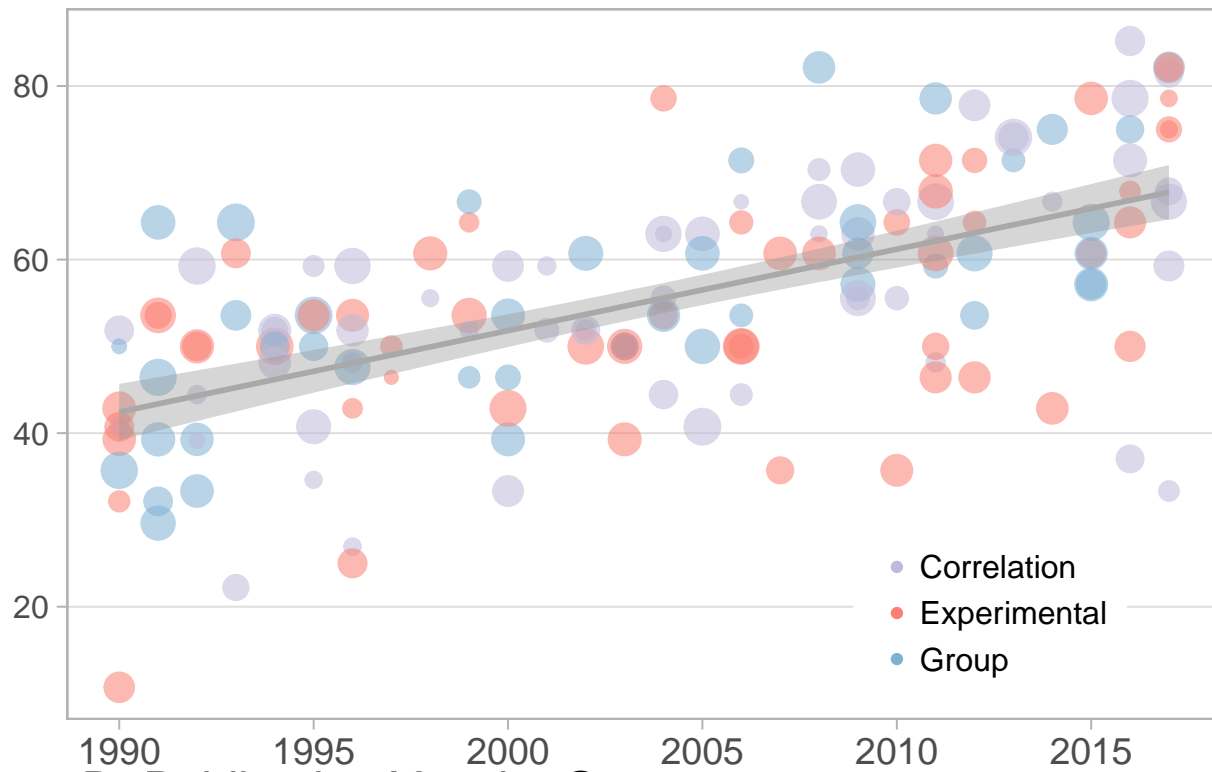
A. Overall



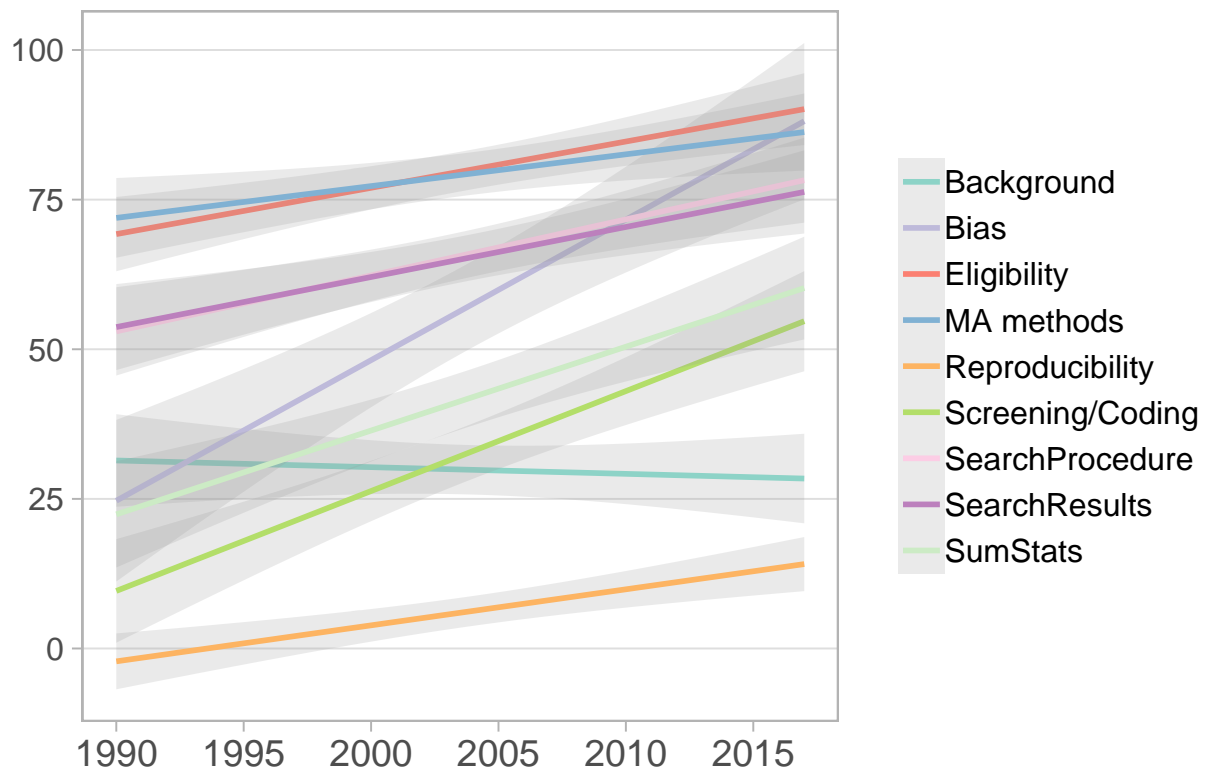
B. Meta-Analysis Type



## C. Publication Year

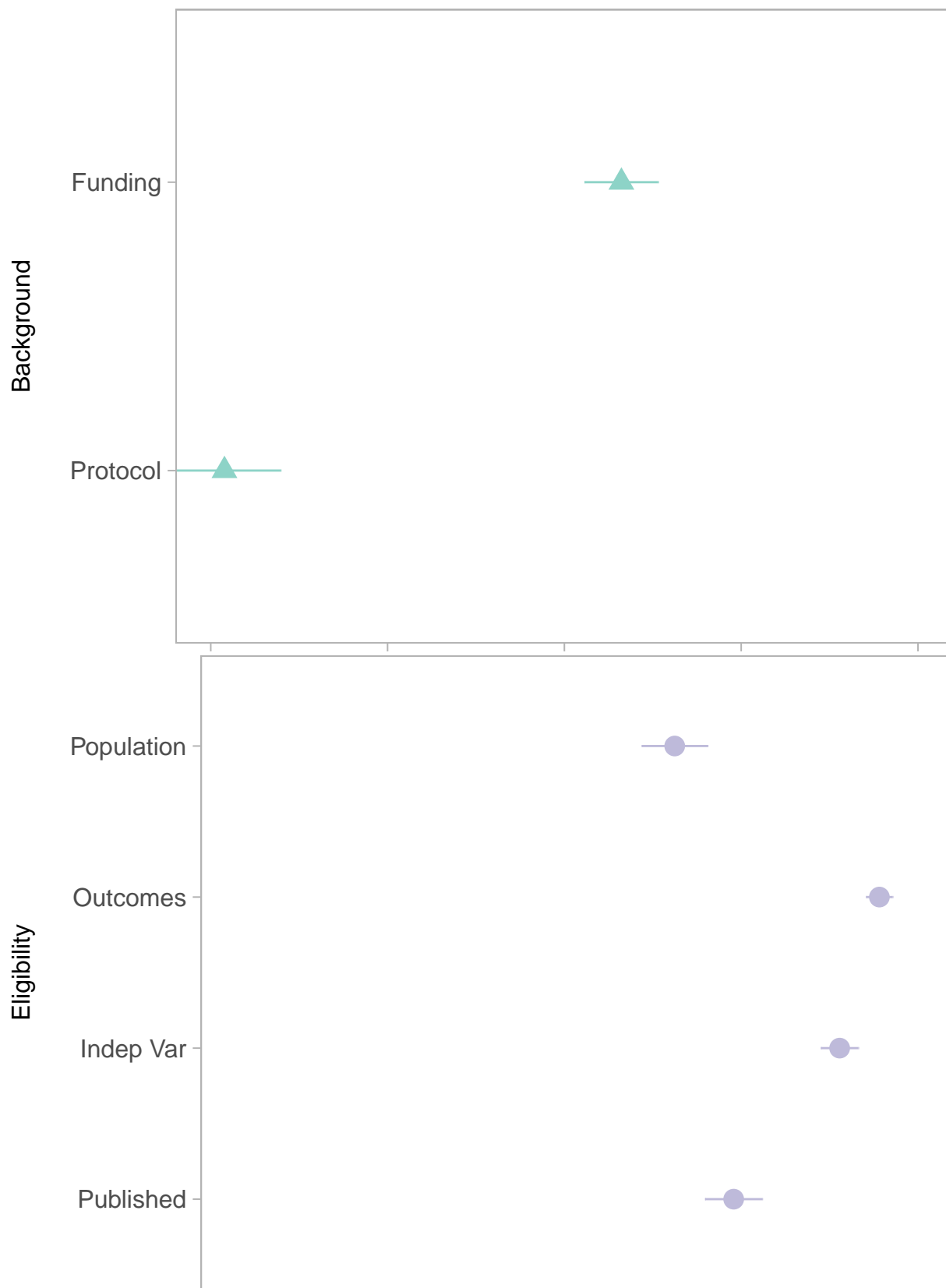


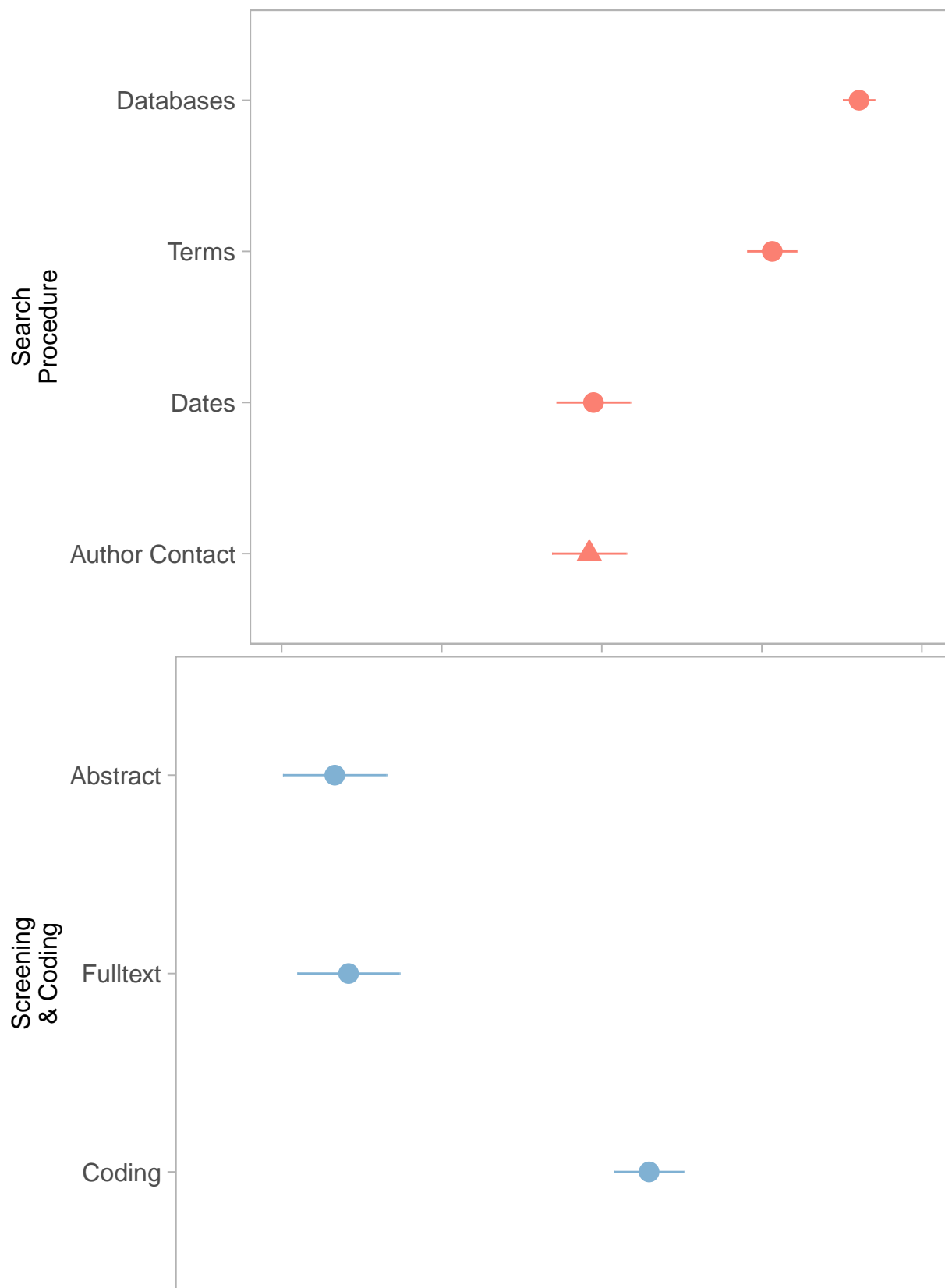
## D. Publication Year by Group



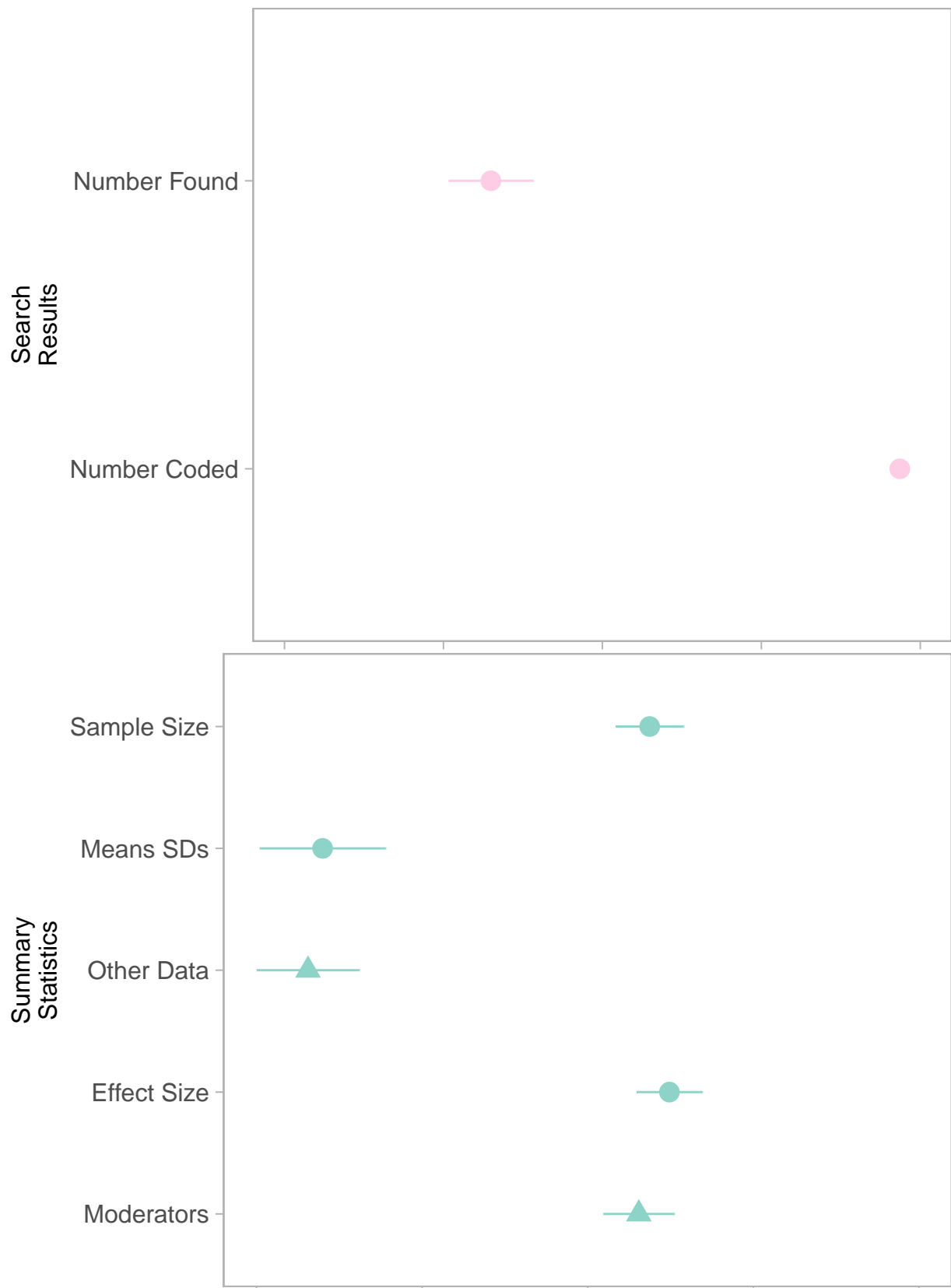
## pdf  
## 2

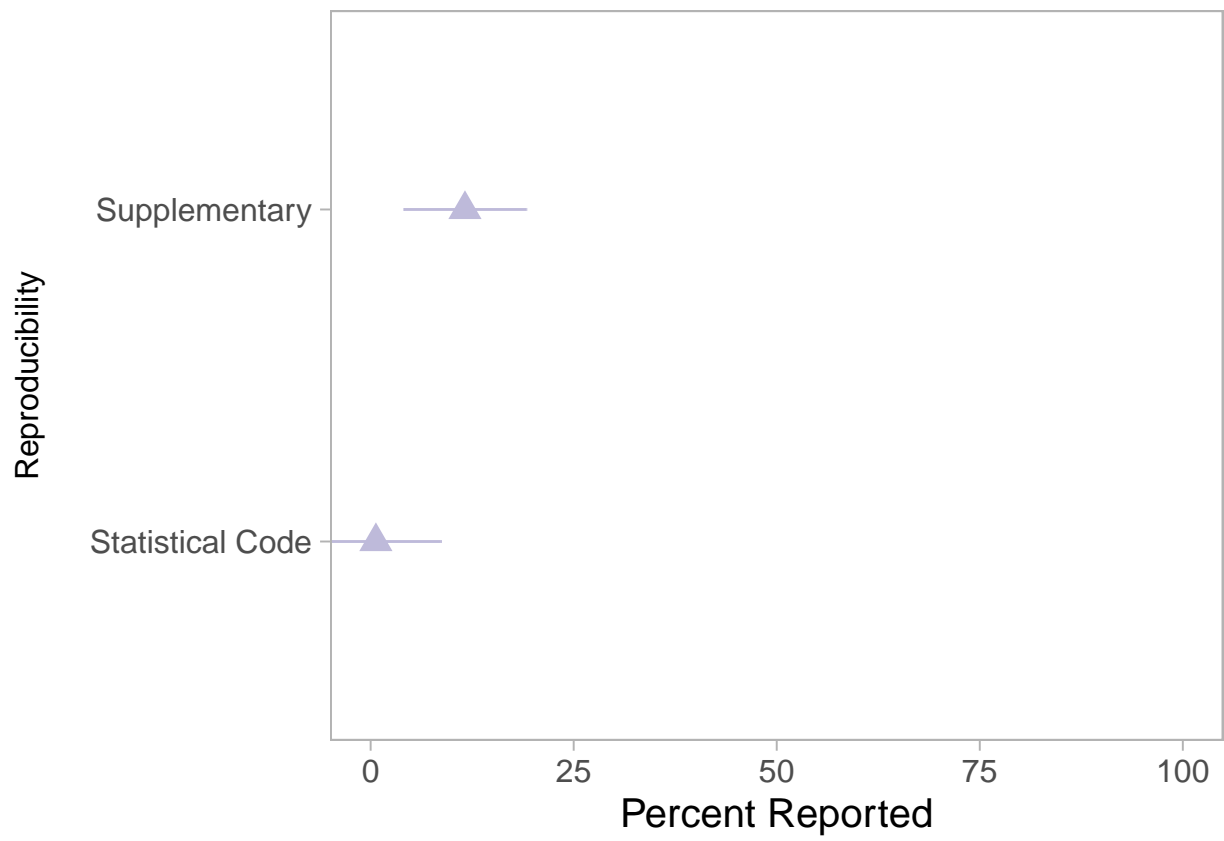
Figure 2











## pdf  
## 2