

Whether Exposures to Ambient Air Pollution and Secondhand Smoking is associated with Human Depression: A Meta-analysis

Yinsu Wang

4/25/2021

```
## Loading required package: Matrix
## Loading required package: metadat
##
## Loading the 'metafor' package (version 3.4-0). For an
## introduction to the package please type: help(metafor)
## Extensive documentation for the dmetar package can be found at:
## www.bookdown.org/MathiasHarrer/Doing_Meta_Analysis_in_R/
## Loading 'meta' package (version 5.5-0).
## Type 'help(meta)' for a brief overview.
## Readers of 'Meta-Analysis with R (Use R!)' should install
## older version of 'meta' package: https://tinyurl.com/dt4y5drs
## Loading required package: grid
## Loading required package: magrittr
## Loading required package: checkmate
## tibble [27 x 10] (S3: tbl_df/tbl/data.frame)
## $ Author      : chr [1:27] "Lee et al. (2021)" "Kim et al. (2021)" "Shi et al.(2020)" "Wei et al. (2020)"
## $ OR          : num [1:27] 1.09 1.02 1.92 2.59 3.22 0.11 0.19 0.41 0.52 1.63 ...
## $ LB          : num [1:27] 0.88 1.01 1.19 0.72 1.16 0.08 0.11 0.05 0.03 1.44 ...
## $ UB          : num [1:27] 1.36 1.03 3.12 4.49 5.32 0.14 0.2 0.78 1.01 1.86 ...
## $ pollutant   : Factor w/ 3 levels "PM10","PM2.5",...: 3 1 2 2 1 1 2 1 2 3 ...
## $ year        : num [1:27] 2021 2021 2020 2020 2020 2020 ...
## $ continent   : Factor w/ 6 levels "america","asia",...: 2 2 2 2 2 2 2 2 2 3 ...
## $ studydesign : Factor w/ 3 levels "cohort","cross-sectional",...: 2 1 2 3 3 3 3 3 3 2 ...
## $ duration    : Factor w/ 4 levels "both","longterm",...: 1 1 2 4 4 4 4 4 4 4 ...
## $ sd          : num [1:27] 0.1378 0.0051 0.6122 0.9694 1.0714 ...
## [1] Lee et al. (2021)      Kim et al. (2021)
## [3] Shi et al.(2020)        Wei et al. (2020)
## [5] Wei et al. (2020)       Zhang et al. (2020)
## [7] Zhang et al. (2020)     Gu et al. (2020)
## [9] Gu et al. (2020)       Jacob, L et al. (2020)
## [11] Kim, B et al. (2020)    \r\nJiang, B et al. (2020)
## [13] Li et al.(2020)        Li et al.(2020)
## [15] Roberts et al (2019)    Erdsiek & Brzoska (2019)
## [17] Niedzwiecki et al (2020) Latham et al (2020)\r\n
## [19] Hendryx et al (2020)   Khorasanchi(2019)
## [21] Zhao, T Y et al. (2019) Zhang, ZY et al. (2019)
```

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## [23] Zhang, ZY et al. (2019)      Xue, T et al. (2019)
## [25] Wang, R Y et al. (2019)     Klompmaker et al.(2019)
## [27] Klompmaker et al.(2019)
## 21 Levels: \r\nJiang, B et al. (2020) ... Zhao, T Y et al. (2019)

## [1] SHS   PM10  PM2.5 PM2.5 PM10  PM10  PM2.5 PM10  PM2.5 SHS   SHS   SHS
## [13] PM10  PM2.5 PM2.5 SHS   PM2.5 PM2.5 PM2.5 SHS   PM10  PM10  PM2.5 PM2.5
## [25] PM2.5 PM10  PM2.5
## Levels: PM10 PM2.5 SHS

## Number of studies combined: k = 27
##
##
##              OR              95%-CI      z  p-value
## Common effect model  2.5782 [2.5599; 2.5966] 260.34      0
## Random effects model 2.9752 [2.3705; 3.7343]  9.40 < 0.0001
##
## Quantifying heterogeneity:
## tau^2 = 0.3084 [0.1462; 0.6132]; tau = 0.5553 [0.3823; 0.7831]
## I^2 = 99.5% [99.4%; 99.5%]; H = 13.72 [12.97; 14.51]
##
## Test of heterogeneity:
##      Q d.f. p-value
## 4892.66  26      0
##
## Details on meta-analytical method:
## - Inverse variance method
## - Sidik-Jonkman estimator for tau^2
## - Q-Profile method for confidence interval of tau^2 and tau

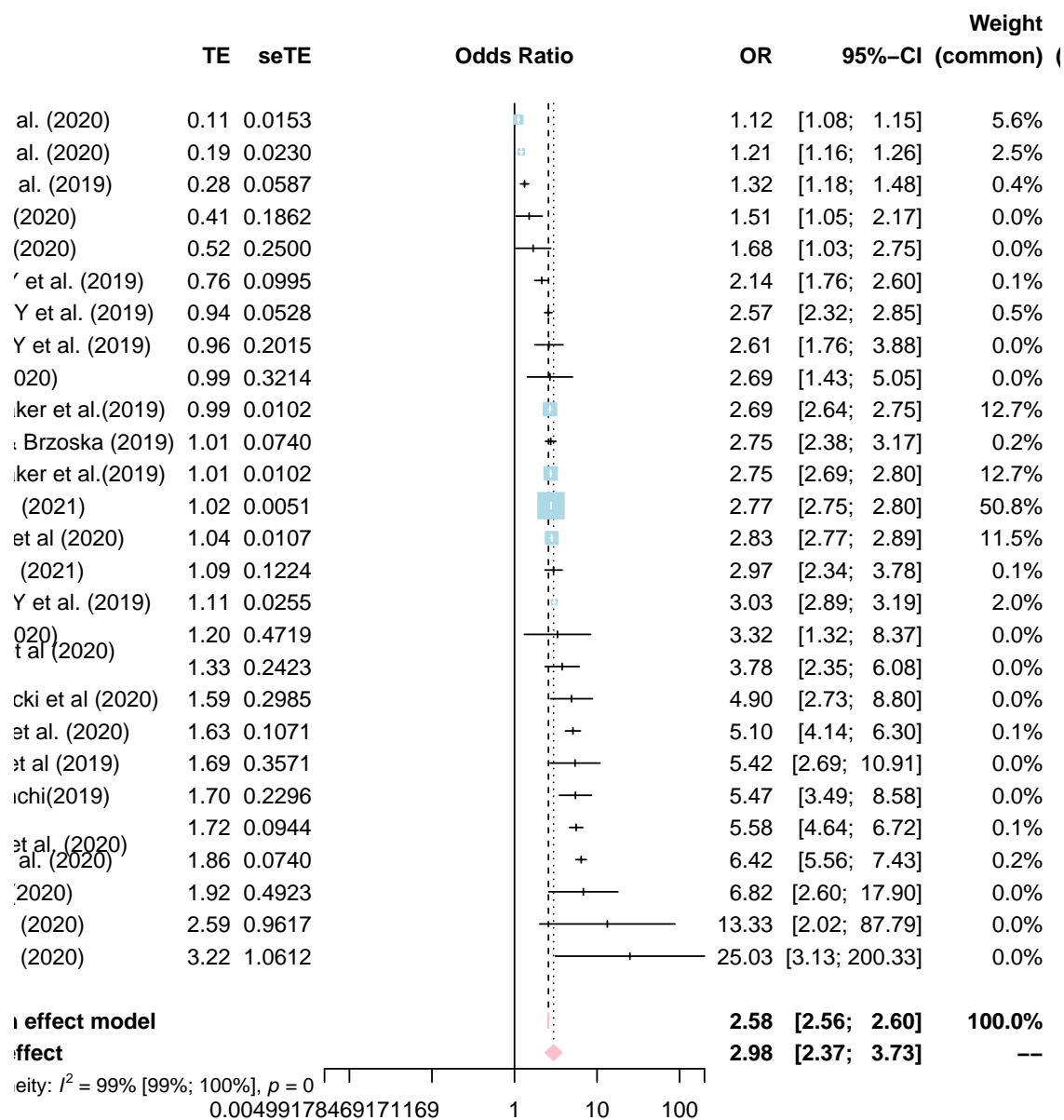
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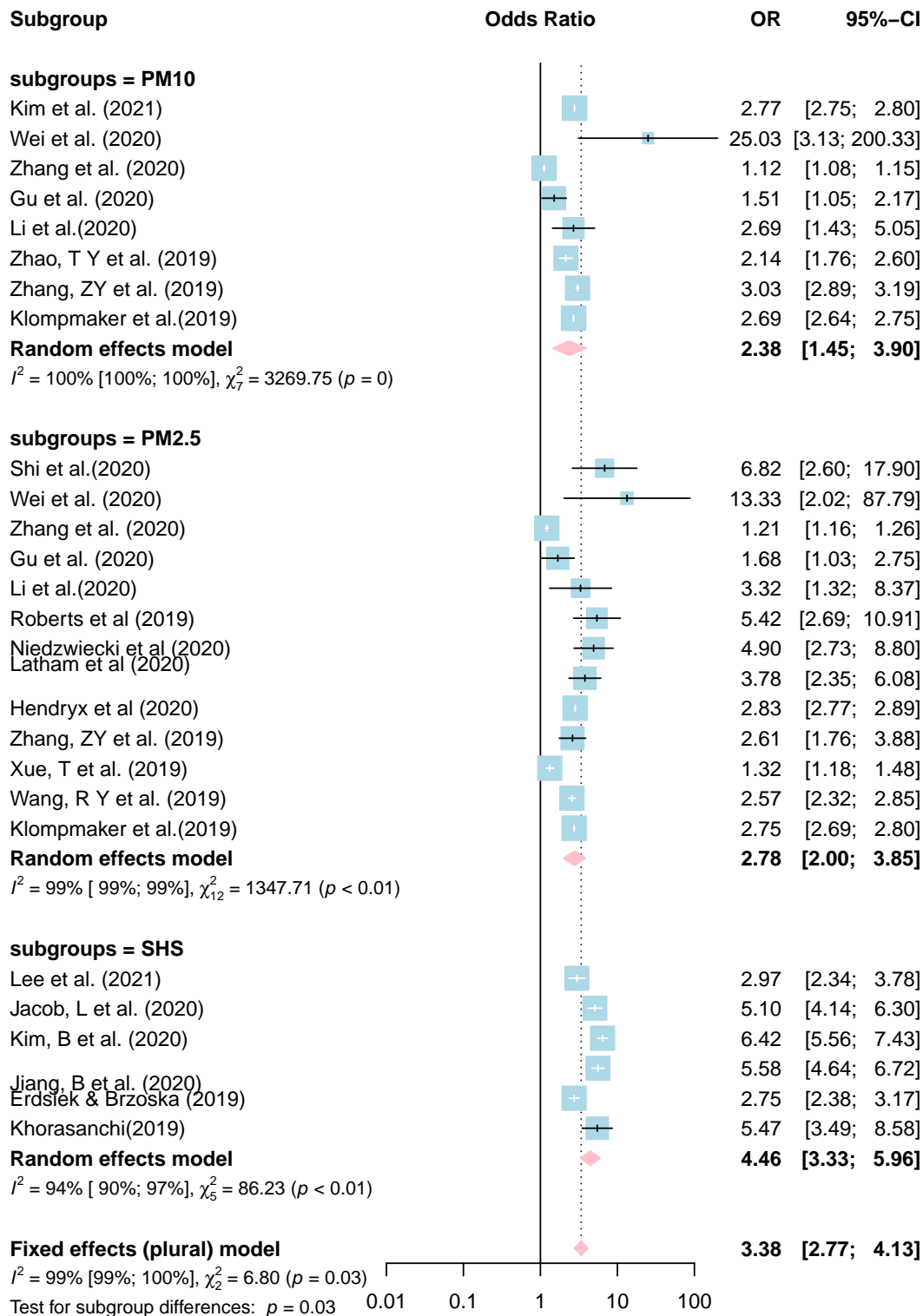
```



```

## Subgroup Results:
## -----
##          k          TE          seTE          OR  LLCI  ULCI          p          Q  I2
## PM10    8 0.8670043 0.2522652 2.379771 1.451 3.902 5.884644e-04 3269.75022 1.00
## PM2.5  13 1.0224537 0.1667452 2.780008 2.005 3.855 8.687284e-10 1347.70665 0.99
## SHS     6 1.4949523 0.1483033 4.459124 3.334 5.963 6.746929e-24   86.22927 0.94
##          I2.lower I2.upper
## PM10          1.00      1.00
## PM2.5          0.99      0.99
## SHS           0.90      0.97
##
## Test for subgroup differences (mixed/fixed-effects (plural) model):
## -----
##                      Q df          p
## Between groups 6.798646  2 0.03339588
##
## - Total number of studies included in subgroup analysis: 27
## - Tau estimator used for within-group pooling: SJ
##
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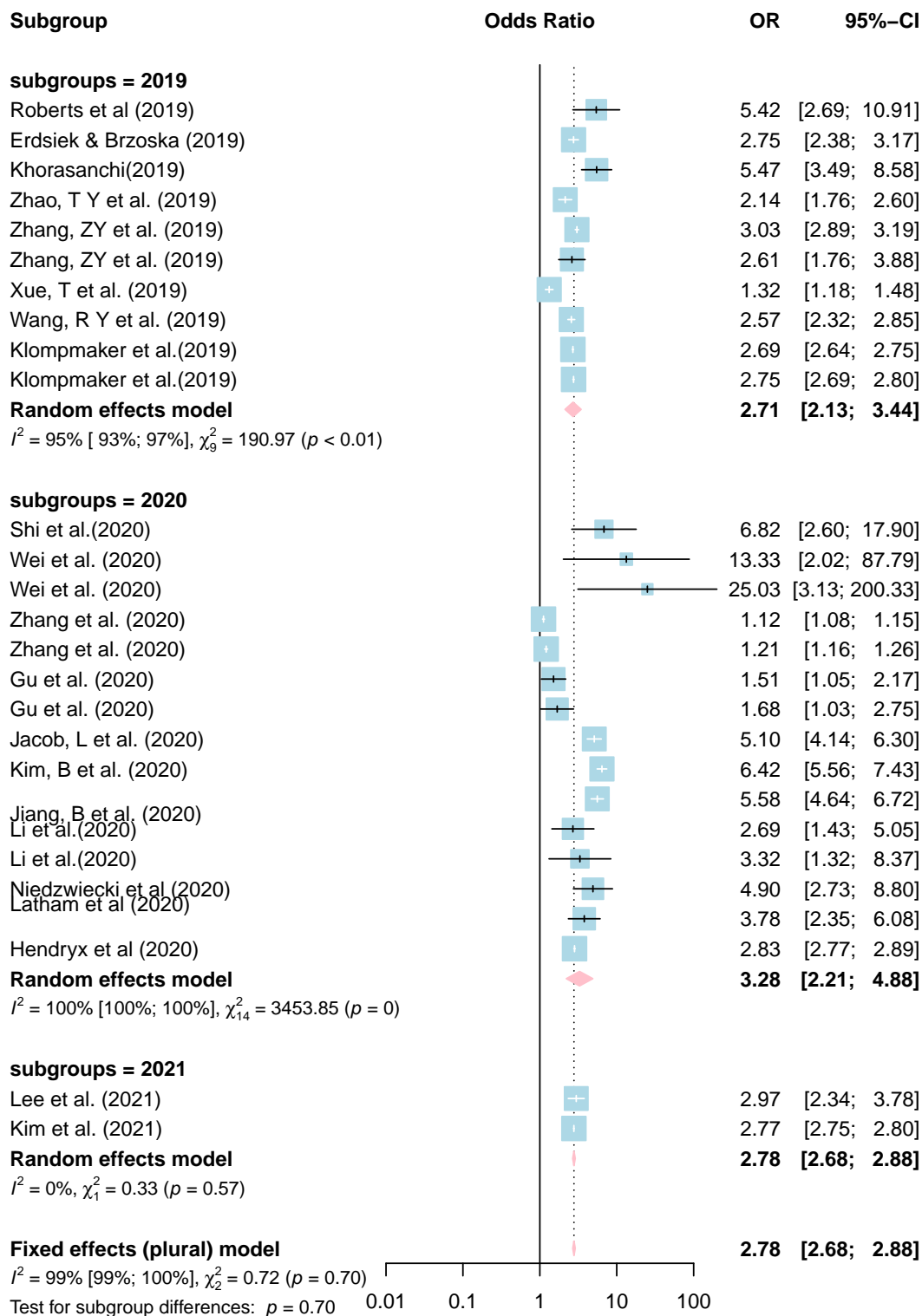
```



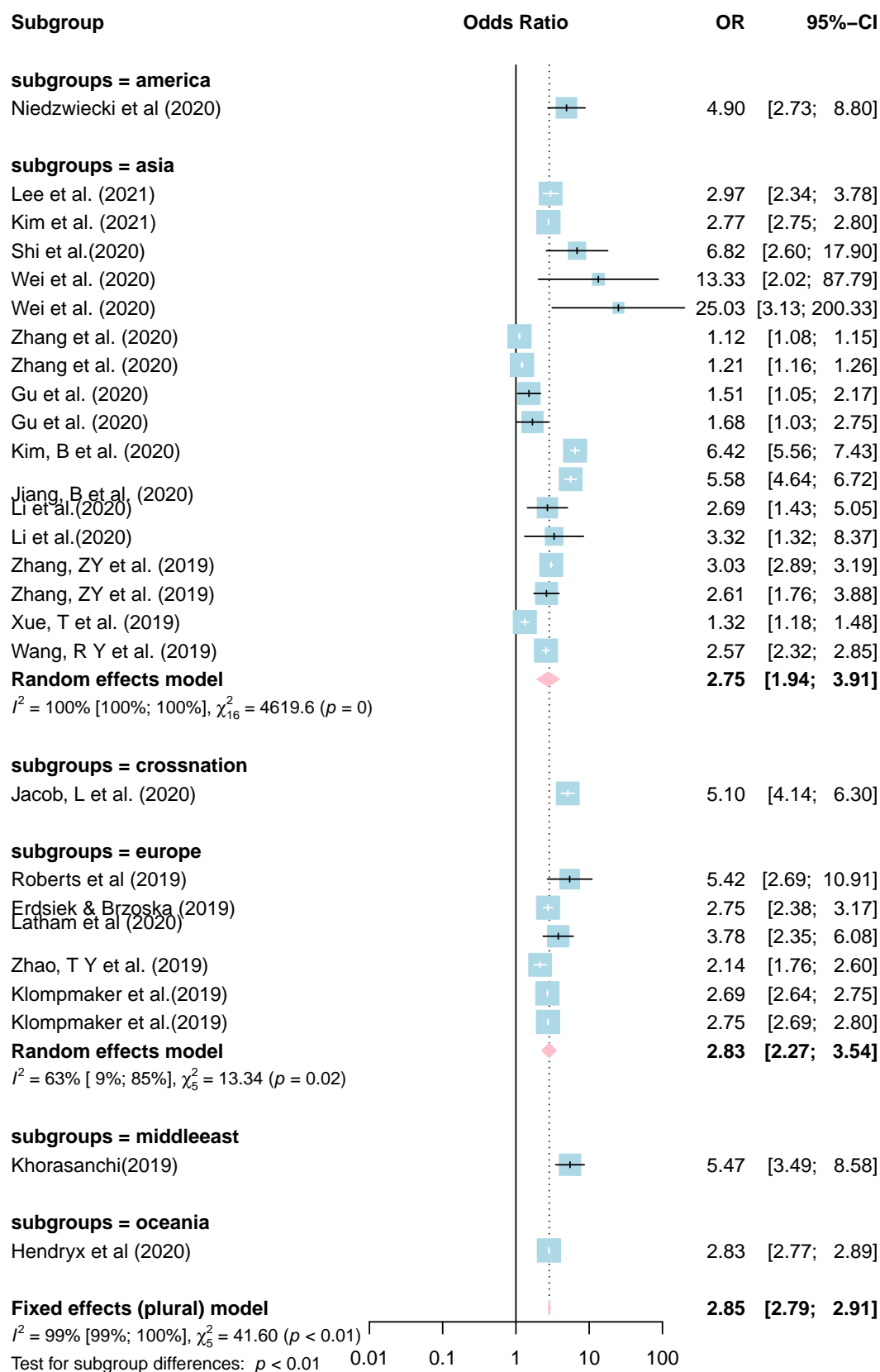
```

## Subgroup Results:
## -----
##      k      TE      seTE      OR  LLCI  ULCI      p      Q
## 2019 10 0.9957388 0.12300955 2.706723 2.127 3.445 5.735433e-16 190.9733738
## 2020 15 1.1889115 0.20254253 3.283505 2.208 4.884 4.359665e-09 3453.8509809
## 2021  2 1.0216473 0.01899805 2.777767 2.676 2.883 0.000000e+00   0.3262364
##      I2 I2.lower I2.upper
## 2019 0.95      0.93      0.97
## 2020 1.00      1.00      1.00
## 2021 0.00      NA      NA
##
## Test for subgroup differences (mixed/fixed-effects (plural) model):
## -----
##      Q df      p
## Between groups 0.7243893  2 0.6961468
##
## - Total number of studies included in subgroup analysis: 27
## - Tau estimator used for within-group pooling: SJ
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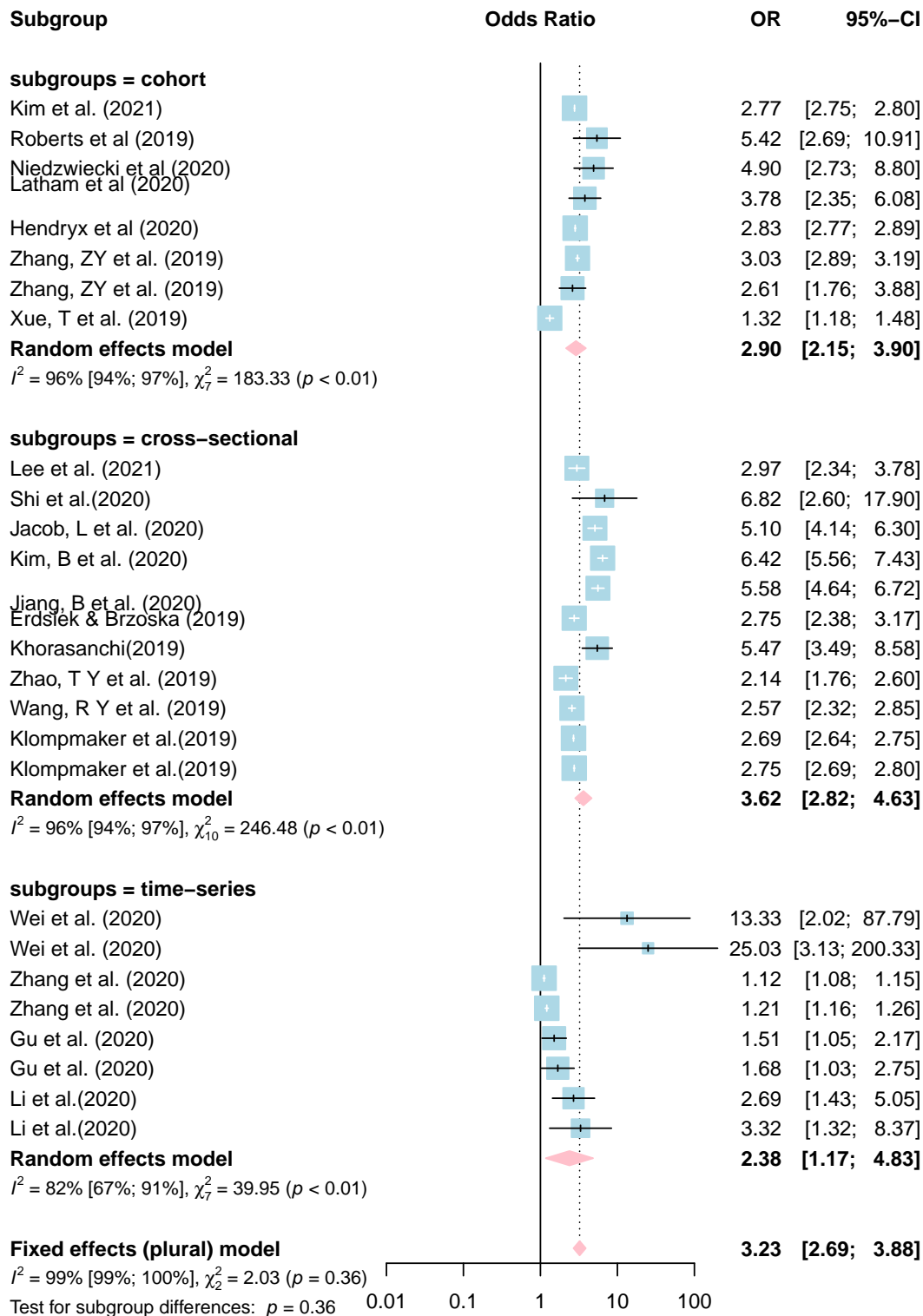
```
## Subgroup Results:
## -----
##           k      TE      seTE      OR  LLCI  ULCI      p      Q
## america      1 1.590000 0.29846939 4.903749 2.732 8.802 9.974958e-08 0.00000
## asia        17 1.013417 0.17838077 2.754998 1.942 3.908 1.337531e-08 4619.59650
## crossnation  1 1.630000 0.10714286 5.103875 4.137 6.297 2.884728e-52 0.00000
## europe       6 1.041329 0.11406297 2.832981 2.265 3.543 6.886377e-20 13.33846
## middleeast   1 1.700000 0.22959184 5.473947 3.490 8.585 1.317006e-13 0.00000
## oceania      1 1.039000 0.01071429 2.826389 2.768 2.886 0.000000e+00 0.00000
##           I2 I2.lower I2.upper
## america      NA      NA      NA
## asia          1.00      1.00      1.00
## crossnation   NA      NA      NA
## europe        0.63      0.09      0.85
## middleeast    NA      NA      NA
## oceania        NA      NA      NA
##
## Test for subgroup differences (mixed/fixed-effects (plural) model):
## -----
##           Q df      p
## Between groups 41.60226  5 7.089306e-08
##
## - Total number of studies included in subgroup analysis: 27
## - Tau estimator used for within-group pooling: SJ
##
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## Subgroup Results:
## -----
##           k           TE       seTE       OR  LLCI  ULCI           p
## cohort           8 1.0630783 0.1515146 2.895270 2.151 3.896 2.277531e-12
## cross-sectional 11 1.2853602 0.1260816 3.615970 2.824 4.630 2.094506e-24
## time-series      8 0.8682693 0.3610199 2.382783 1.174 4.835 1.617045e-02
##           Q      I2 I2.lower I2.upper
## cohort           183.32784 0.96      0.94      0.97
## cross-sectional 246.48144 0.96      0.94      0.97
## time-series      39.94756 0.82      0.67      0.91
##
## Test for subgroup differences (mixed/fixed-effects (plural) model):
## -----
##           Q df           p
## Between groups 2.032961  2 0.3618663
##
## - Total number of studies included in subgroup analysis: 27
## - Tau estimator used for within-group pooling: SJ
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
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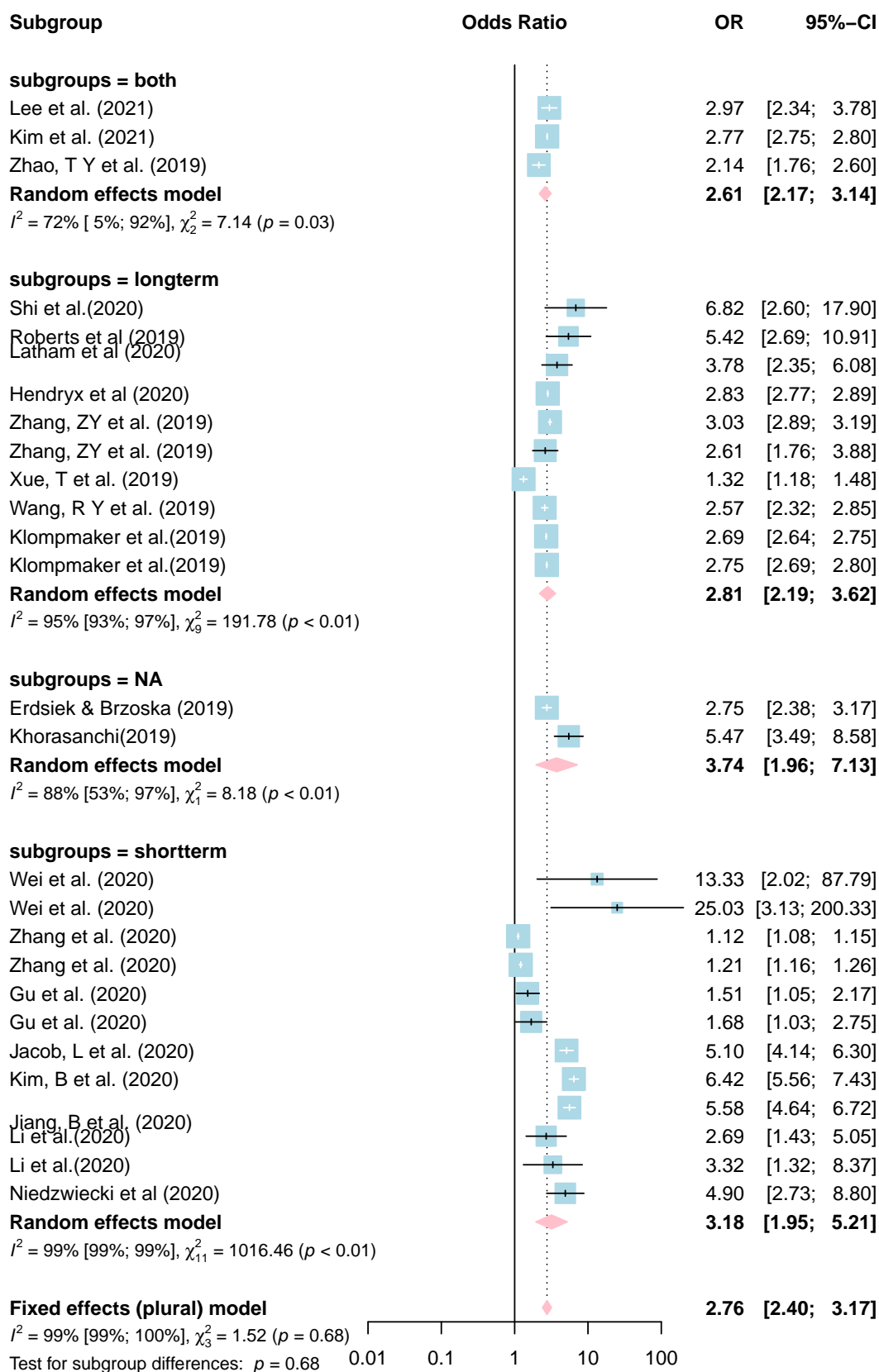
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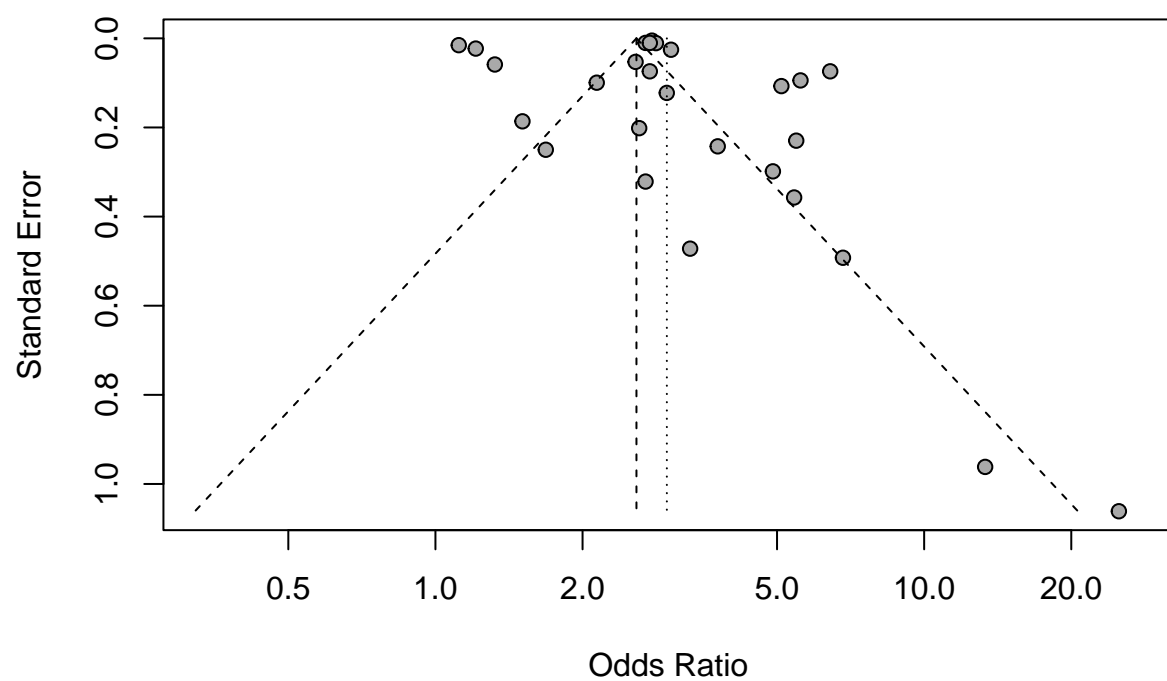


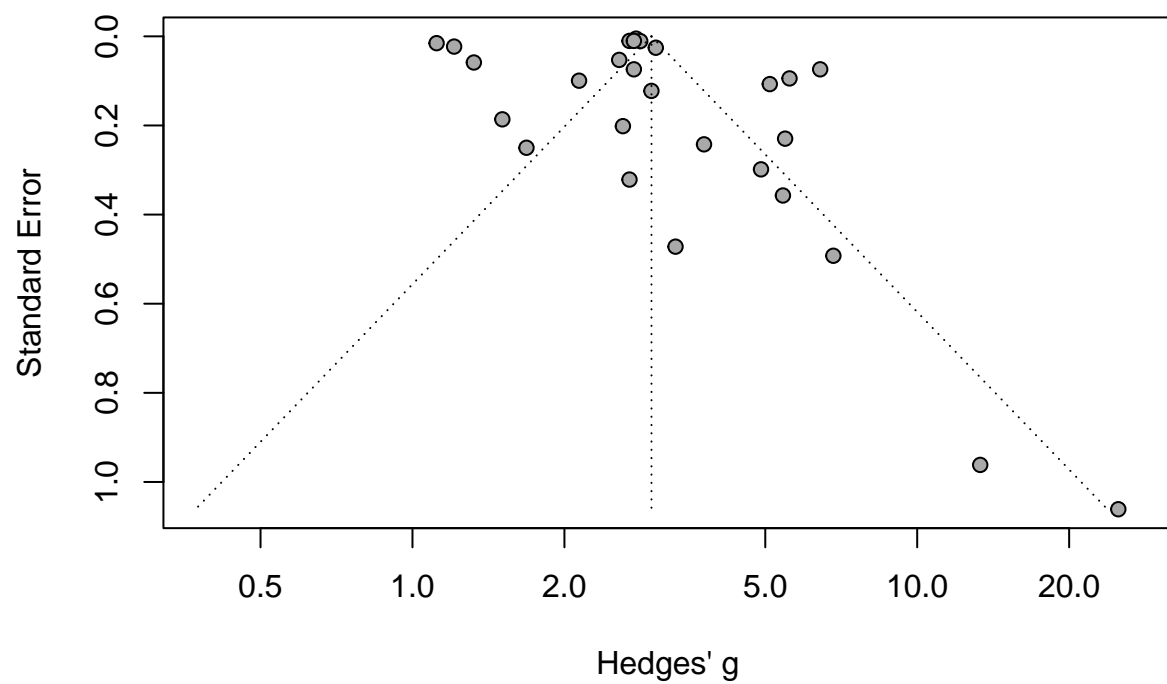
```

## Subgroup Results:
## -----
##           k           TE           seTE           OR   LLCI   ULCI           p           Q
## both          3 0.9601781 0.0946135 2.612162 2.170 3.144 3.367479e-24    7.144223
## longterm     10 1.0336487 0.1283933 2.811305 2.186 3.616 8.236158e-16   191.784775
## NA           2 1.3180248 0.3300412 3.736035 1.956 7.134 6.510075e-05    8.182466
## shortterm    12 1.1579058 0.2509667 3.183260 1.946 5.206 3.954044e-06  1016.456484
##           I2 I2.lower I2.upper
## both          0.72     0.05     0.92
## longterm       0.95     0.93     0.97
## NA             0.88     0.53     0.97
## shortterm      0.99     0.99     0.99
##
## Test for subgroup differences (mixed/fixed-effects (plural) model):
## -----
##                               Q df           p
## Between groups 1.524045   3 0.6767321
##
## - Total number of studies included in subgroup analysis: 27
## - Tau estimator used for within-group pooling: SJ
##
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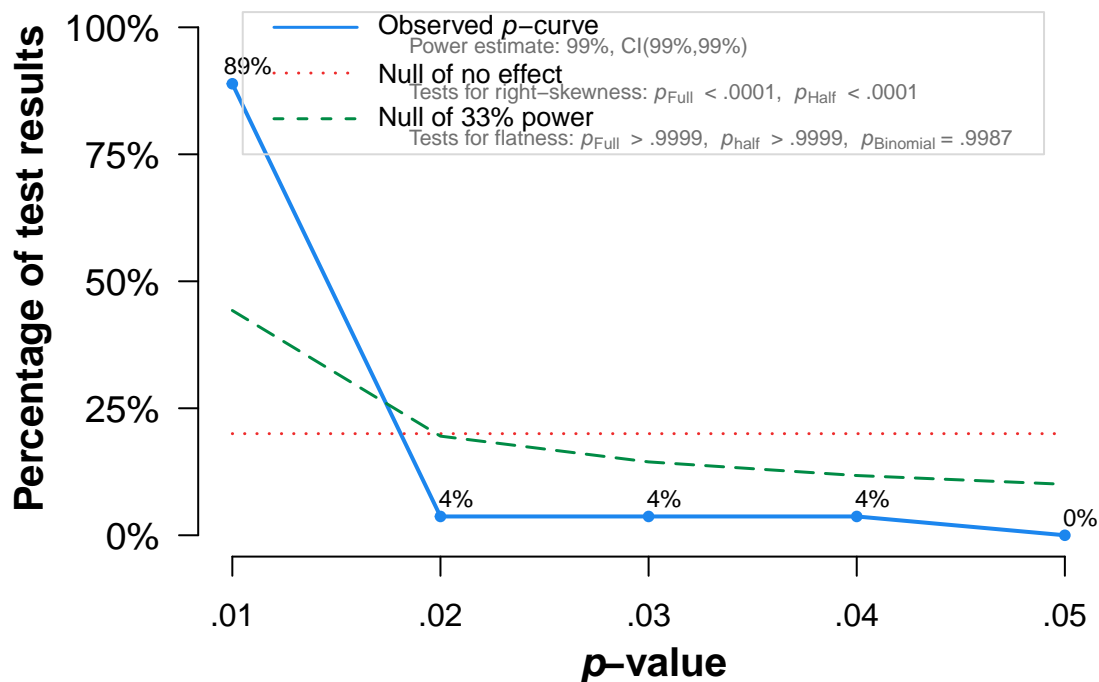
```







```
## Eggers' test of the intercept
## =====
##
## intercept      95% CI      t      p
##      -1.12 -7.38 - 5.14 -0.351 0.7287542
##
## Eggers' test does not indicate the presence of funnel plot asymmetry.
```



Note: The observed p -curve includes 27 statistically significant ($p < .05$) results, of which 25 are $p < .025$. There were no non-significant results entered.

```
## P-curve analysis
## -----
## - Total number of provided studies: k = 27
## - Total number of p<0.05 studies included into the analysis: k = 27 (100%)
## - Total number of studies with p<0.025: k = 25 (92.59%)
##
## Results
## -----
##               pBinomial   zFull pFull   zHalf pHalf
## Right-skewness test      0.000 -27.395    0 -27.790    0
## Flatness test            0.999  25.088    1  27.284    1
## Note: p-values of 0 or 1 correspond to p<0.001 and p>0.999, respectively.
## Power Estimate: 99% (99%-99%)
##
## Evidential value
## -----
## - Evidential value present: yes
## - Evidential value absent/inadequate: no
## [=====] DONE
## Leave-One-Out Analysis (Sorted by I2)
## -----
##               Effect LLCI  ULCI   I2
## Omitting Zhang et al. (2020)      3.096 2.483 3.859 0.985
## Omitting Zhang et al. (2020).1    3.088 2.470 3.860 0.993
## Omitting Kim et al. (2021)        2.991 2.360 3.792 0.994
```


## Omitting Lee et al. (2021)	2.982	2.352	3.780	0.995
## Omitting Shi et al.(2020)	2.912	2.318	3.658	0.995
## Omitting Wei et al. (2020)	2.918	2.342	3.636	0.995
## Omitting Wei et al. (2020).1	2.898	2.351	3.572	0.995
## Omitting Gu et al. (2020)	3.055	2.430	3.842	0.995
## Omitting Gu et al. (2020).1	3.039	2.412	3.830	0.995
## Omitting Jacob, L et al. (2020)	2.907	2.302	3.671	0.995
## Omitting Kim, B et al. (2020)	2.869	2.283	3.607	0.995
## Omitting \r\nJiang, B et al. (2020)	2.893	2.295	3.647	0.995
## Omitting Li et al.(2020)	2.992	2.363	3.787	0.995
## Omitting Li et al.(2020).1	2.973	2.350	3.761	0.995
## Omitting Roberts et al (2019)	2.920	2.316	3.682	0.995
## Omitting Erdsiek & Brzoska (2019)	2.992	2.361	3.793	0.995
## Omitting Niedzwiecki et al (2020)	2.926	2.317	3.695	0.995
## Omitting Latham et al (2020)\r\n	2.954	2.333	3.740	0.995
## Omitting Hendryx et al (2020)	2.989	2.357	3.789	0.995
## Omitting Khorasanchi(2019)	2.906	2.305	3.664	0.995
## Omitting Zhao, T Y et al. (2019)	3.023	2.389	3.824	0.995
## Omitting Zhang, ZY et al. (2019)	2.979	2.350	3.777	0.995
## Omitting Zhang, ZY et al. (2019).1	2.997	2.366	3.796	0.995
## Omitting Xue, T et al. (2019)	3.077	2.455	3.857	0.995
## Omitting Wang, R Y et al. (2019)	3.001	2.368	3.803	0.995
## Omitting Klompmaker et al.(2019)	2.995	2.363	3.796	0.995
## Omitting Klompmaker et al.(2019).1	2.993	2.361	3.793	0.995

##

##

Influence Diagnostics

##

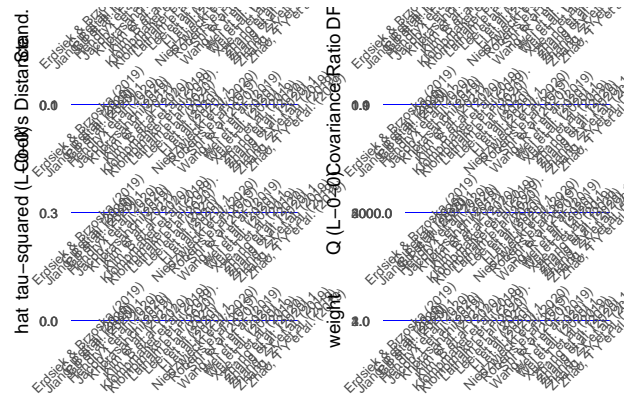
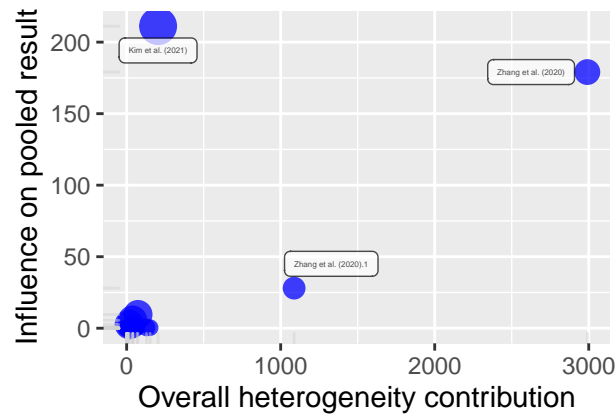
	rstudent	dffits	cook.d	cov.r	QE.del	hat
## Omitting Lee et al. (2021)	-0.004	-0.019	0.000	1.089	4891.301	0.042
## Omitting Kim et al. (2021)	-0.130	-0.045	0.002	1.090	4477.258	0.044
## Omitting Shi et al.(2020)	1.139	0.186	0.034	1.008	4888.759	0.024
## Omitting Wei et al. (2020)	1.375	0.169	0.028	0.938	4889.746	0.011
## Omitting Wei et al. (2020).1	1.827	0.232	0.052	0.848	4888.077	0.009
## Omitting Zhang et al. (2020)	-1.903	-0.362	0.117	0.942	1722.614	0.044
## Omitting Zhang et al. (2020).1	-1.725	-0.334	0.102	0.965	3777.281	0.044
## Omitting Gu et al. (2020)	-1.197	-0.231	0.052	1.017	4884.343	0.039
## Omitting Gu et al. (2020).1	-0.955	-0.184	0.034	1.036	4889.745	0.036
## Omitting Jacob, L et al. (2020)	0.969	0.199	0.040	1.053	4851.992	0.042
## Omitting Kim, B et al. (2020)	1.432	0.318	0.097	1.012	4740.019	0.043
## Omitting \r\nJiang, B et al. (2020)	1.146	0.243	0.059	1.039	4825.510	0.042
## Omitting Li et al.(2020)	-0.159	-0.047	0.002	1.077	4892.646	0.033
## Omitting Li et al.(2020).1	0.147	0.006	0.000	1.071	4892.377	0.025
## Omitting Roberts et al (2019)	0.919	0.161	0.026	1.040	4888.337	0.031
## Omitting Erdsiek & Brzoska (2019)	-0.147	-0.048	0.002	1.089	4891.939	0.043
## Omitting Niedzwiecki et al (2020)	0.799	0.142	0.020	1.054	4888.024	0.034
## Omitting Latham et al (2020)\r\n	0.393	0.061	0.004	1.078	4890.167	0.037
## Omitting Hendryx et al (2020)	-0.096	-0.038	0.002	1.090	4809.488	0.044
## Omitting Khorasanchi(2019)	1.033	0.202	0.041	1.041	4881.907	0.037
## Omitting Zhao, T Y et al. (2019)	-0.592	-0.135	0.019	1.071	4889.123	0.042
## Omitting Zhang, ZY et al. (2019)	0.031	-0.011	0.000	1.091	4851.035	0.043
## Omitting Zhang, ZY et al. (2019).1	-0.224	-0.062	0.004	1.082	4892.660	0.039
## Omitting Xue, T et al. (2019)	-1.525	-0.300	0.085	0.988	4762.899	0.043
## Omitting Wang, R Y et al. (2019)	-0.268	-0.073	0.006	1.086	4892.658	0.043

```

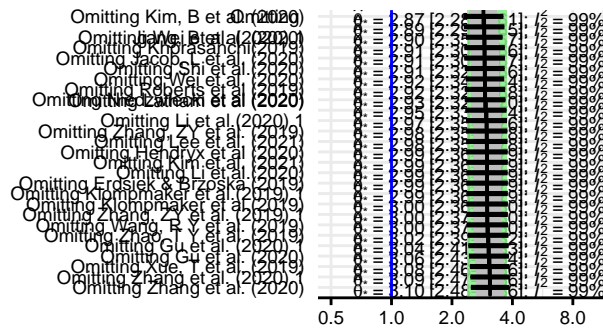
## Omitting Klompmaker et al.(2019)      -0.184 -0.056  0.003 1.089 4872.405 0.044
## Omitting Klompmaker et al.(2019).1    -0.148 -0.049  0.003 1.089 4849.120 0.044
##                                         weight infl
## Omitting Lee et al. (2021)              4.156
## Omitting Kim et al. (2021)              4.358
## Omitting Shi et al.(2020)                2.440
## Omitting Wei et al. (2020)              1.090
## Omitting Wei et al. (2020).1            0.937
## Omitting Zhang et al. (2020)            4.355
## Omitting Zhang et al. (2020).1          4.351
## Omitting Gu et al. (2020)               3.918
## Omitting Gu et al. (2020).1             3.624
## Omitting Jacob, L et al. (2020)         4.202
## Omitting Kim, B et al. (2020)           4.282
## Omitting \r\nJiang, B et al. (2020)    4.236
## Omitting Li et al.(2020)                3.265
## Omitting Li et al.(2020).1              2.531
## Omitting Roberts et al (2019)           3.083
## Omitting Erdsiek & Brzoska (2019)       4.282
## Omitting Niedzwiecki et al (2020)       3.382
## Omitting Latham et al (2020)\r\n        3.661
## Omitting Hendryx et al (2020)           4.357
## Omitting Khorasanchi(2019)              3.722
## Omitting Zhao, T Y et al. (2019)        4.223
## Omitting Zhang, ZY et al. (2019)        4.349
## Omitting Zhang, ZY et al. (2019).1      3.851
## Omitting Xue, T et al. (2019)           4.310
## Omitting Wang, R Y et al. (2019)        4.319
## Omitting Klompmaker et al.(2019)        4.357
## Omitting Klompmaker et al.(2019).1      4.357
##
##
## Baujat Diagnostics (sorted by Heterogeneity Contribution)
## -----
##                                         HetContrib InfluenceEffectSize
## Omitting Zhang et al. (2020)              2990.980              179.070
## Omitting Zhang et al. (2020).1             1087.381              28.003
## Omitting Kim et al. (2021)                  204.217             211.189
## Omitting Kim, B et al. (2020)               152.276              0.369
## Omitting Xue, T et al. (2019)              129.266              0.499
## Omitting Hendryx et al (2020)               73.587              9.589
## Omitting \r\nJiang, B et al. (2020)         67.054              0.100
## Omitting Zhang, ZY et al. (2019)            40.782              0.847
## Omitting Jacob, L et al. (2020)            40.626              0.047
## Omitting Klompmaker et al.(2019).1          38.010              5.534
## Omitting Klompmaker et al.(2019)           17.684              2.575
## Omitting Khorasanchi(2019)                 10.754              0.003
## Omitting Gu et al. (2020)                   8.318              0.003
## Omitting Niedzwiecki et al (2020)           4.640              0.001
## Omitting Wei et al. (2020).1               4.587              0.000
## Omitting Roberts et al (2019)               4.327              0.000
## Omitting Shi et al.(2020)                  3.905              0.000
## Omitting Zhao, T Y et al. (2019)           3.536              0.005
## Omitting Wei et al. (2020)                 2.918              0.000

```

## Omitting Gu et al. (2020).1	2.918	0.001
## Omitting Latham et al (2020)\r\n	2.496	0.001
## Omitting Lee et al. (2021)	1.362	0.001
## Omitting Erdsiek & Brzoska (2019)	0.723	0.002
## Omitting Li et al.(2020).1	0.287	0.000
## Omitting Li et al.(2020)	0.018	0.000
## Omitting Wang, R Y et al. (2019)	0.006	0.000
## Omitting Zhang, ZY et al. (2019).1	0.004	0.000

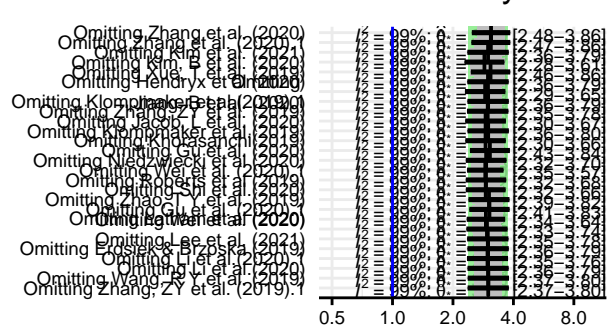


Sorted by Effect Size

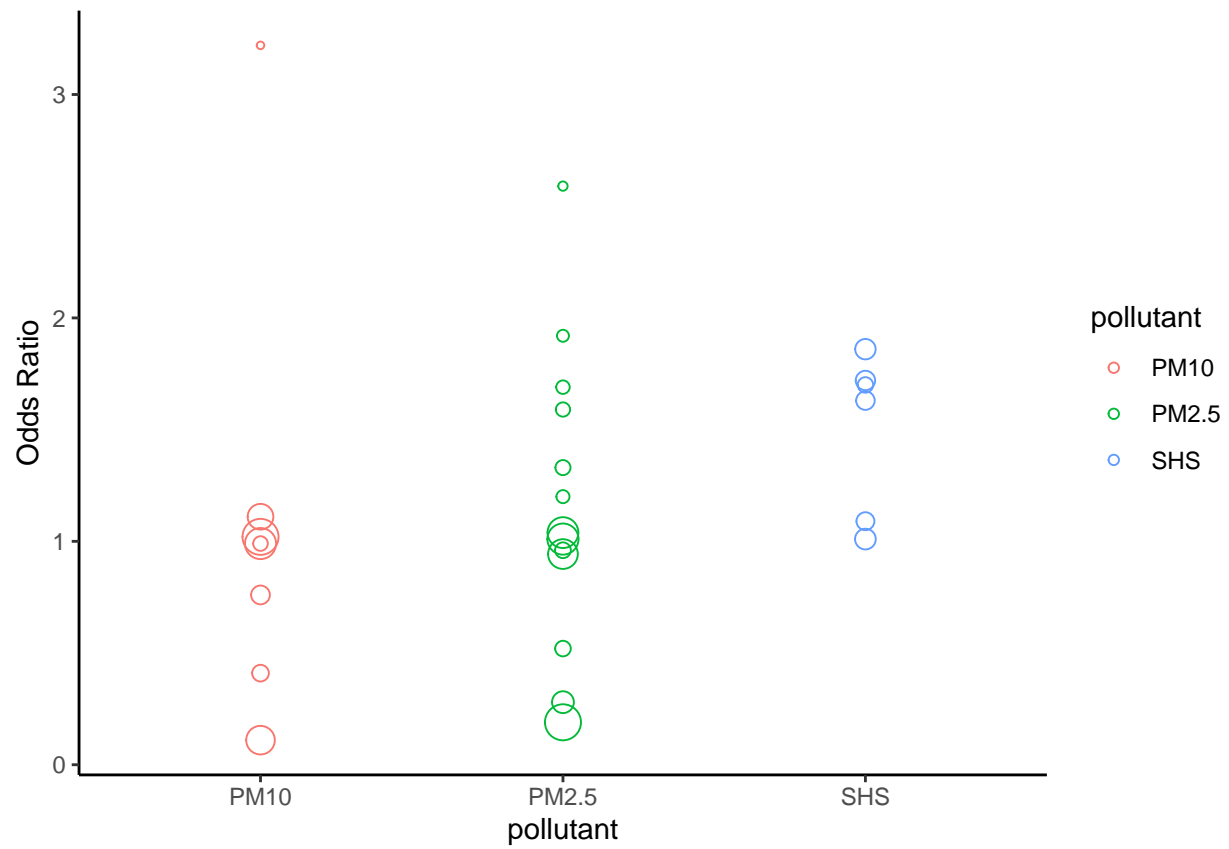


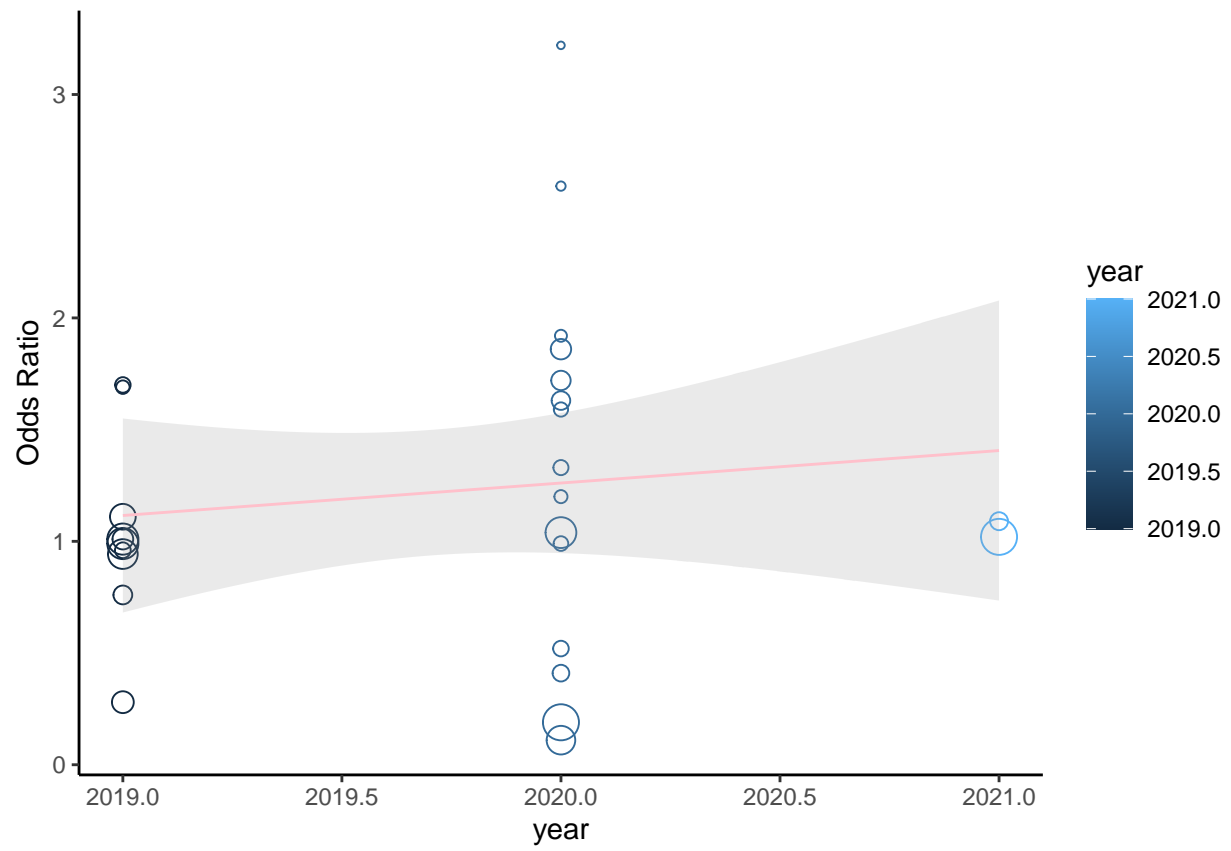
OR (Random-Effects Model)

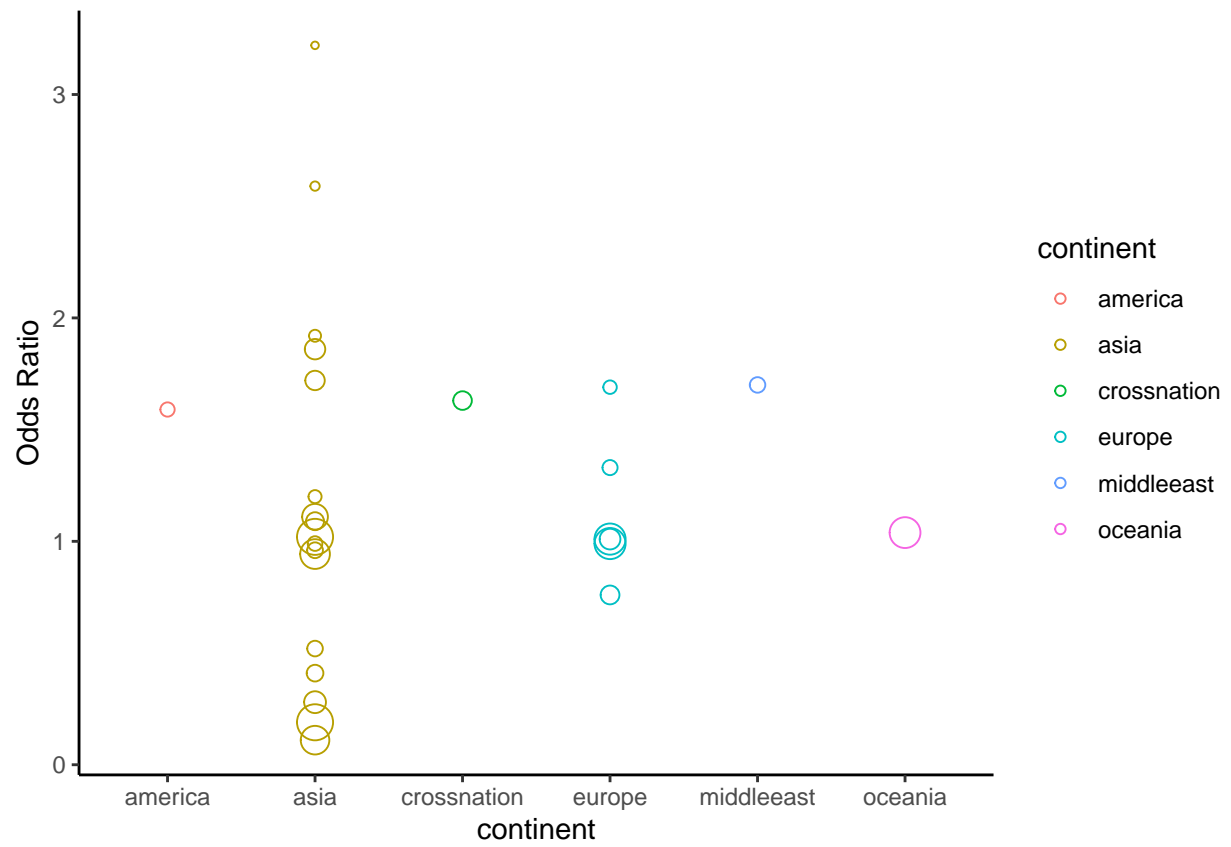
Sorted by I^2

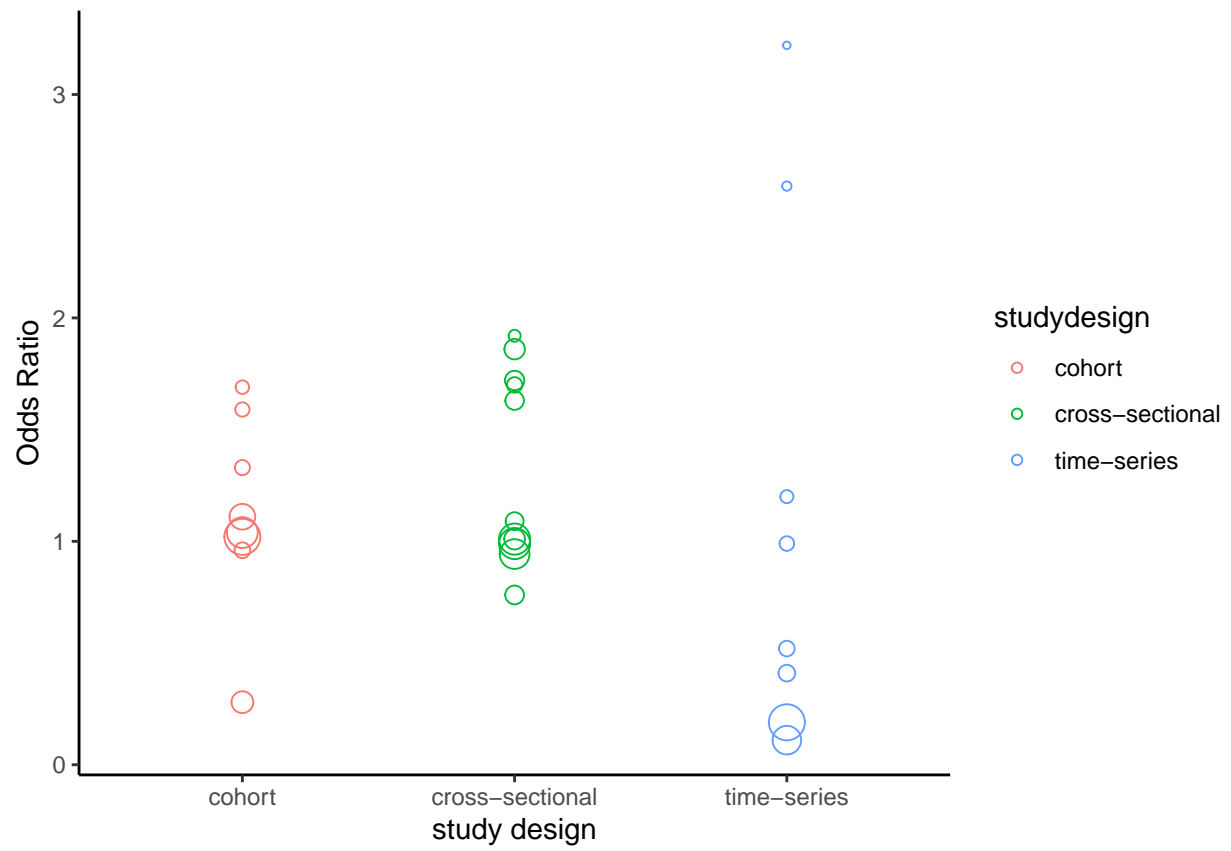


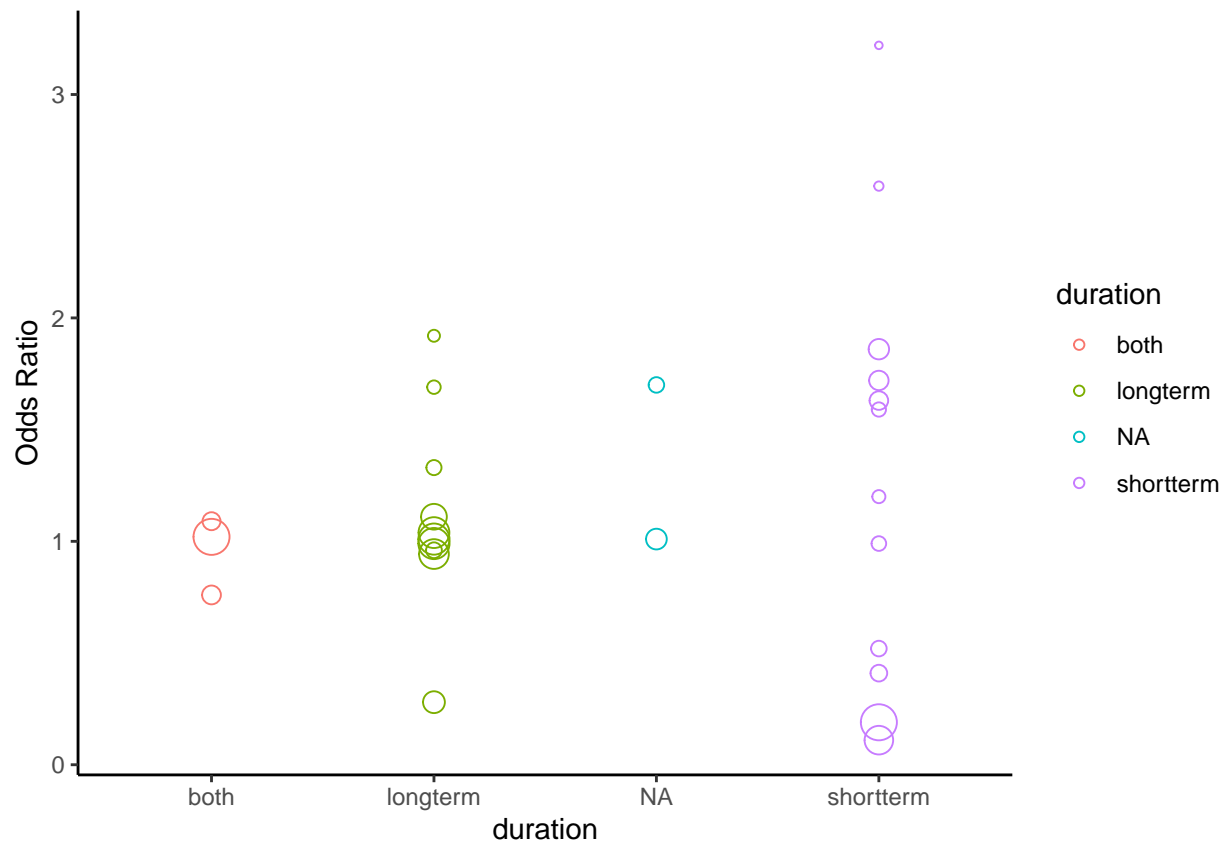
OR (Random-Effects Model)











```
##
## Mixed-Effects Model (k = 27; tau^2 estimator: ML)
##
## tau^2 (estimated amount of residual heterogeneity):      0.0280 (SE = 0.0111)
## tau (square root of estimated tau^2 value):            0.1672
## I^2 (residual heterogeneity / unaccounted variability): 95.42%
## H^2 (unaccounted variability / sampling variability):    21.83
## R^2 (amount of heterogeneity accounted for):            87.90%
##
## Test for Residual Heterogeneity:
## QE(df = 13) = 238.4542, p-val < .0001
##
## Test of Moderators (coefficients 2:14):
## F(df1 = 13, df2 = 13) = 2.8125, p-val = 0.0366
##
## Model Results:
##
##               estimate      se      tval   df    pval
## intrcpt       -646.8067  477.9273  -1.3534  13  0.1990
## pollutantPM2.5   -0.1039   0.2007  -0.5175  13  0.6135
## pollutantSHS     -0.0894   0.5514  -0.1621  13  0.8737
## year             0.3205   0.2365   1.3554  13  0.1984
## continentasia    0.0678   0.8588   0.0789  13  0.9383
## continentcrossnation -0.0957  0.8982  -0.1066  13  0.9168
## continenteuropa  0.2341   0.9006   0.2600  13  0.7990
## continentmiddleeast 0.9241   1.0842   0.8524  13  0.4094
```



```

## continenteoceania          0.0423    0.8870    0.0476   13  0.9627
## studydesigncross-sectional  0.1212    0.2906    0.4172   13  0.6834
## studydesigntime-series     -1.3492    0.5438   -2.4810   13  0.0276
## durationlongterm           0.4308    0.3843    1.1210   13  0.2826
## durationNA                 0.3947    0.7116    0.5547   13  0.5885
## durationshortterm          1.0240    0.4928    2.0781   13  0.0581
##                               ci.lb    ci.ub
## intrcpt                   -1679.3058  385.6925
## pollutantPM2.5             -0.5375    0.3297
## pollutantSHS                -1.2807    1.1019
## year                       -0.1904    0.8314
## continentasia              -1.7875    1.9230
## continentcrossnation       -2.0361    1.8447
## continenteurope            -1.7115    2.1798
## continentmiddleeast        -1.4181    3.2664
## continenteoceania          -1.8740    1.9585
## studydesigncross-sectional  -0.5066    0.7491
## studydesigntime-series     -2.5240   -0.1743  *
## durationlongterm           -0.3994    1.2609
## durationNA                 -1.1426    1.9320
## durationshortterm          -0.0405    2.0886  .
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## You entered 5 predictors. Interactions can only be modeled for four or less predictors. Therefore, no
## |
##
##
## Multimodel Inference: Final Results
## -----
##
## - Number of fitted models: 32
## - Full formula: ~ year + pollutant + continent + studydesign + duration
## - Coefficient significance test: knha
## - Interactions modeled: no
## - Evaluation criterion: AICc
##
##
## Best 5 Models
## -----
##
## Global model call: metafor::rma(yi = TE, sei = seTE, mods = form, data = glm.data,
##   method = method, test = test)
## ---
## Model selection table
##   (Intrc) durtn plltn stdyd   year df  logLik AICc delta weight
## 5      +          +          4 -18.944 47.7  0.00  0.270
## 9      +          +          4 -18.956 47.7  0.02  0.267
## 25     +          + 0.2104  5 -17.793 48.4  0.74  0.187
## 11     +      +      +          7 -14.363 48.6  0.91  0.171
## 13     +          +      +          6 -16.696 49.6  1.89  0.105
## Models ranked by AICc(x)

```

```

##
##
## Multimodel Inference Coefficients
## -----
##
##
##
##          Estimate   Std. Error   z value   Pr(>|z|)
## intrcpt          -95.27607947416 252.06167616 0.377987169 0.7054401
## pollutantPM2.5      0.04441403854  0.15111051 0.293917596 0.7688209
## pollutantSHS        0.24060613560  0.35445572 0.678804497 0.4972617
## studydesigncross-sectional 0.10041328430  0.21434807 0.468459016 0.6394564
## studydesigntime-series -0.44068914336  0.46324915 0.951300491 0.3414519
## year              0.04764114878  0.12479657 0.381750471 0.7026465
## durationlongterm    0.02569344568  0.14732914 0.174394862 0.8615552
## durationNA          0.07028089432  0.23308281 0.301527581 0.7630122
## durationshortterm   0.14539394371  0.32720359 0.444353147 0.6567873
## continentasia       -0.00075854783  0.03168914 0.023937156 0.9809027
## continentcrossnation -0.00007562628  0.03018210 0.002505667 0.9980008
## continenteuropa     -0.00064792886  0.03053915 0.021216336 0.9830731
## continentmiddleeast  0.00004129641  0.03160713 0.001306554 0.9989575
## continentoceania    -0.00067336051  0.03451180 0.019511023 0.9844334
##
##
## Predictor Importance
## -----
##
##
##          model  importance
## 1 studydesign 0.650892158
## 2 pollutant 0.377319036
## 3 year 0.291691902
## 4 duration 0.197560266
## 5 continent 0.001222632

```

