

# Replication validation based on reviewer comments

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## Load data

We load all previously generated data, including the collected priors and the model fits for KORA and LOLIPOP.

- Number of sentinels to be processed: 551

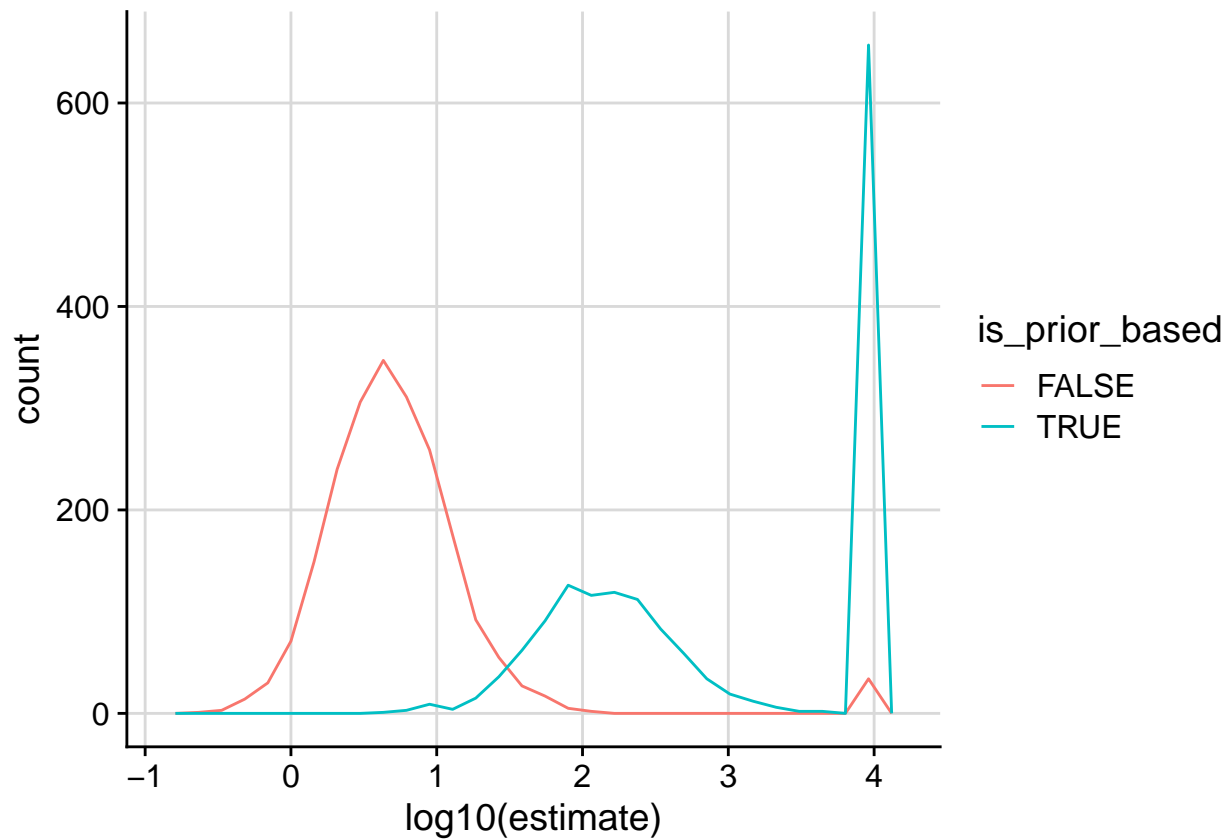
## Prior importance for replication

We investigate whether available prior information largely drives replication performance. In brief, we create a contingency table from all sentinels, where we check 1) whether an edge is replicated or not and 2) whether the edge has a prior assigned it or not.

```
## # A tibble: 4,408 x 13
##   sentinel graph_model estimate p.value conf.low conf.high method alternative
##   <chr>      <chr>          <dbl>   <dbl>   <dbl>      <dbl> <chr>   <chr>
## 1 rs10103~ bdgraph      58.8 1.79e- 8    19.5      Inf Fishe~ greater
## 2 rs10103~ bdgraph_no~      0 1.00e+ 0      0      Inf Fishe~ greater
## 3 rs10103~ bdgraph_no~      0 1.00e+ 0      0      Inf Fishe~ greater
## 4 rs10103~ irafnet       0 1.00e+ 0      0      Inf Fishe~ greater
## 5 rs10103~ genenet       0 1.00e+ 0      0      Inf Fishe~ greater
## 6 rs10103~ glasso      307. 6.46e-25   113.      Inf Fishe~ greater
## 7 rs10103~ glasso_no~      0 1.00e+ 0      0      Inf Fishe~ greater
## 8 rs10103~ genie3       0 1.00e+ 0      0      Inf Fishe~ greater
## 9 rs10120~ bdgraph      85.6 2.27e-29   44.4      Inf Fishe~ greater
## 10 rs10120~ bdgraph_no~    10.1 2.47e- 6     4.63      Inf Fishe~ greater
## # ... with 4,398 more rows, and 5 more variables: prior_and_replicated <dbl>,
## #   prior_not_replicated <dbl>, not_prior_and_replicated <dbl>,
## #   not_prior_not_replicated <dbl>, is_prior_based <lgl>

## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.

## Warning: Removed 702 rows containing non-finite values (stat_bin).
```

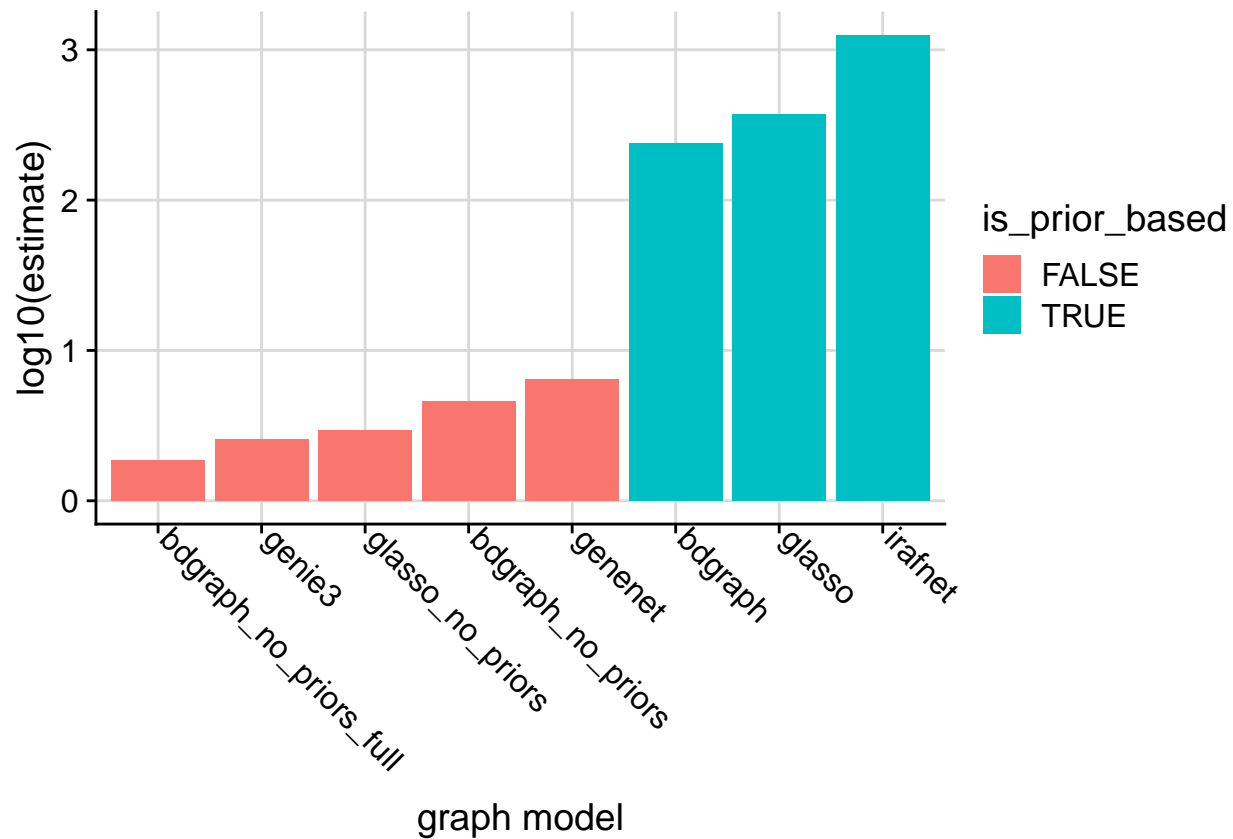


Above are the initial ‘full’ results, i.e. for each graph model and sentinel, we see the evaluation by use of the fisher test.

The plot indicates the distribution (log10) of estimates over all models and sentinels. **estimates** amounting to **Inf** were substituted by **10e4** and result in the peaks located at the far right of the plot.

Now we look at a simple summary, where we sum up all contingency tables and calculate a single fisher test for each of the graph models.

```
## # A tibble: 8 x 12
##   graph_model estimate p.value conf.low conf.high method alternative
##   <chr>          <dbl>   <dbl>   <dbl>    <dbl> <chr>   <chr>
## 1 bdgraph        238.     0     230.     Inf Fishe~ greater
## 2 bdgraph_no~    4.62     0     4.51     Inf Fishe~ greater
## 3 bdgraph_no~    1.87     0     1.85     Inf Fishe~ greater
## 4 genenet        6.38     0     6.04     Inf Fishe~ greater
## 5 genie3         2.58     0     2.54     Inf Fishe~ greater
## 6 glasso         373.     0    365.     Inf Fishe~ greater
## 7 glasso_no~     2.94     0     2.87     Inf Fishe~ greater
## 8 irafnet       1257.     0   1078.     Inf Fishe~ greater
## # ... with 5 more variables: prior_and_replicated <dbl>,
## #   prior_not_replicated <dbl>, not_prior_and_replicated <dbl>,
## #   not_prior_not_replicated <dbl>, is_prior_based <lgl>
```



## Session Info

```
## - Session info -----
## setting      value
## version      R version 3.6.1 (2019-07-05)
## os           Debian GNU/Linux 9 (stretch)
## system       x86_64, linux-gnu
## ui           X11
## language     (EN)
## collate      en_US.UTF-8
## ctype        en_US.UTF-8
## tz           Etc/UTC
## date         2021-03-19
##
## - Packages -----
## package      * version date      lib source
## assertthat    0.2.1   2019-03-21 [1] CRAN (R 3.6.1)
## backports     1.1.5   2019-10-02 [1] CRAN (R 3.6.1)
## BDgraph       * 2.62    2019-12-05 [1] CRAN (R 3.6.1)
## BiocGenerics  * 0.32.0  2019-10-29 [1] Bioconductor
## broom         0.5.2   2019-04-07 [1] CRAN (R 3.6.1)
## callr        3.3.2   2019-09-22 [1] CRAN (R 3.6.1)
## cli          1.1.0   2019-03-19 [1] CRAN (R 3.6.1)
## colorspace    1.4-1   2019-03-18 [1] CRAN (R 3.6.1)
## cowplot       * 1.0.0   2019-07-11 [1] CRAN (R 3.6.1)
## crayon        1.3.4   2017-09-16 [1] CRAN (R 3.6.1)
```

```

## desc                1.2.0    2018-05-01 [1] CRAN (R 3.6.1)
## devtools            2.2.1    2019-09-24 [1] CRAN (R 3.6.1)
## digest              0.6.23   2019-11-23 [1] CRAN (R 3.6.1)
## dplyr               * 0.8.3    2019-07-04 [1] CRAN (R 3.6.1)
## ellipsis            0.3.0    2019-09-20 [1] CRAN (R 3.6.1)
## evaluate            0.14     2019-05-28 [1] CRAN (R 3.6.1)
## fansi               0.4.0    2018-10-05 [1] CRAN (R 3.6.1)
## farver              2.0.1    2019-11-13 [1] CRAN (R 3.6.1)
## fs                  1.3.1    2019-05-06 [1] CRAN (R 3.6.1)
## generics            0.0.2    2018-11-29 [1] CRAN (R 3.6.1)
## ggplot2             * 3.2.1    2019-08-10 [1] CRAN (R 3.6.1)
## glue                1.3.1    2019-03-12 [1] CRAN (R 3.6.1)
## graph               * 1.64.0   2019-10-29 [1] Bioconductor
## gtable              0.3.0    2019-03-25 [1] CRAN (R 3.6.1)
## hms                 0.5.2    2019-10-30 [1] CRAN (R 3.6.1)
## htmltools           0.4.0    2019-10-04 [1] CRAN (R 3.6.1)
## igraph              * 1.2.4.2  2019-11-27 [1] CRAN (R 3.6.1)
## knitr               1.26     2019-11-12 [1] CRAN (R 3.6.1)
## labeling            0.3       2014-08-23 [1] CRAN (R 3.6.1)
## lattice             0.20-38  2018-11-04 [2] CRAN (R 3.6.1)
## lazyeval            0.2.2    2019-03-15 [1] CRAN (R 3.6.1)
## lifecycle           0.1.0    2019-08-01 [1] CRAN (R 3.6.1)
## magrittr            1.5       2014-11-22 [1] CRAN (R 3.6.1)
## memoise             1.1.0    2017-04-21 [1] CRAN (R 3.6.1)
## munsell             0.5.0    2018-06-12 [1] CRAN (R 3.6.1)
## nlme                3.1-140  2019-05-12 [2] CRAN (R 3.6.1)
## pillar              1.4.2    2019-06-29 [1] CRAN (R 3.6.1)
## pkgbuild            1.0.6    2019-10-09 [1] CRAN (R 3.6.1)
## pkgconfig           2.0.3    2019-09-22 [1] CRAN (R 3.6.1)
## pkgload             1.0.2    2018-10-29 [1] CRAN (R 3.6.1)
## plyr                1.8.4    2016-06-08 [1] CRAN (R 3.6.1)
## prettyunits         1.0.2    2015-07-13 [1] CRAN (R 3.6.1)
## processx            3.4.1    2019-07-18 [1] CRAN (R 3.6.1)
## ps                  1.3.0    2018-12-21 [1] CRAN (R 3.6.1)
## purrr               0.3.3    2019-10-18 [1] CRAN (R 3.6.1)
## R6                   2.4.1    2019-11-12 [1] CRAN (R 3.6.1)
## Rcpp                1.0.3    2019-11-08 [1] CRAN (R 3.6.1)
## readr               * 1.3.1    2018-12-21 [1] CRAN (R 3.6.1)
## remotes             2.1.0    2019-06-24 [1] CRAN (R 3.6.1)
## reshape2            * 1.4.3    2017-12-11 [1] CRAN (R 3.6.1)
## rlang               0.4.2    2019-11-23 [1] CRAN (R 3.6.1)
## rmarkdown           1.17     2019-11-13 [1] CRAN (R 3.6.1)
## rprojroot           1.3-2    2018-01-03 [1] CRAN (R 3.6.1)
## scales              1.1.0    2019-11-18 [1] CRAN (R 3.6.1)
## sessioninfo         1.1.1    2018-11-05 [1] CRAN (R 3.6.1)
## stringi             1.4.3    2019-03-12 [1] CRAN (R 3.6.1)
## stringr             1.4.0    2019-02-10 [1] CRAN (R 3.6.1)
## testthat            2.3.0    2019-11-05 [1] CRAN (R 3.6.1)
## tibble              2.1.3    2019-06-06 [1] CRAN (R 3.6.1)
## tidyr               1.0.0    2019-09-11 [1] CRAN (R 3.6.1)
## tidyselect          0.2.5    2018-10-11 [1] CRAN (R 3.6.1)
## usethis              1.5.1    2019-07-04 [1] CRAN (R 3.6.1)
## utf8                1.1.4    2018-05-24 [1] CRAN (R 3.6.1)
## vctrs               0.2.0    2019-07-05 [1] CRAN (R 3.6.1)

```

```
## withr          2.1.2    2018-03-15 [1] CRAN (R 3.6.1)
## xfun           0.11     2019-11-12 [1] CRAN (R 3.6.1)
## yaml          2.2.0     2018-07-25 [1] CRAN (R 3.6.1)
## zeallot        0.1.0     2018-01-28 [1] CRAN (R 3.6.1)
##
## [1] /usr/local/lib/R/site-library
## [2] /usr/local/lib/R/library
```