

# Package ‘RegressionCalibration’

November 16, 2022

**Type** Package

**Title** an R-package to perform three-sample Mendelian Randomisation (MR) analyses using the Regression Calibration framework

**Version** 0.1.0

**Description** to be added... to be added... to be added...

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**Encoding** UTF-8

**LazyData** true

**Imports** magrittr,  
dplyr,  
rlang,  
TwoSampleMR,

**Remotes** MRCIEU/TwoSampleMR,

**RoxygenNote** 7.2.1

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RC	<i>Perform Regression Calibration for all estimators (IVW, simple/weighted median, simple/weighted mode)</i>
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### Description

Perform Regression Calibration for all estimators (IVW, simple/weighted median, simple/weighted mode)

### Usage

```
RC(dat)
```

### Arguments

**dat** Harmonised exposure (discovery and replication) and outcome data. Output from `TwoSampleMR::harmonise_data`. Note that one extra column is needed (sample) and that only the following columns are used: `SNP`, `beta.exposure`, `beta.outcome`, `se.exposure`, `se.outcome` and `mr_keep`

### Value

data.frame with Regression Calibration results For each method (IVW, simple/weighted median, simple/weighted mode)

**nsnps** Number of instruments used

**b** Causal effect estimate

**se** Causal effect standard error

**pval** Causal effect p-value

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RC_ivw	<i>IVW Regression Calibration</i>
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### Description

IVW Regression Calibration

### Usage

```
RC_ivw(b_disc, b_rep, b_out, se_disc, se_rep, se_out)
```

### Arguments

**b\_disc** SNP-exposure association estimate in discovery sample

**b\_rep** SNP-exposure association estimate in replication sample

**b\_out** SNP-outcome association estimate

**se\_disc** SNP-exposure association standard error in discovery sample

**se\_rep** SNP-exposure association standard error in replication sample

**se\_out** SNP-outcome association standard error

**Value**

List with the following elements:

- b** Causal effect estimate
- se** Causal effect standard error
- pval** Causal effect p-value
- nsnps** Number of instruments used

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RC_simple_median	<i>Simple Median Regression Calibration</i>
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**Description**

Simple Median Regression Calibration

**Usage**

```
RC_simple_median(b_disc, b_rep, b_out, se_disc, se_rep, se_out)
```

**Arguments**

- |         |   |
|---------|---|
| b_disc  | SNP-exposure association estimate in discovery sample         |
| b_rep   | SNP-exposure association estimate in replication sample       |
| b_out   | SNP-outcome association estimate                              |
| se_disc | SNP-exposure association standard error in discovery sample   |
| se_rep  | SNP-exposure association standard error in replication sample |
| se_out  | SNP-outcome association standard error                        |

**Value**

List with the following elements:

- b** Causal effect estimate
- se** Causal effect standard error
- pval** Causal effect p-value
- nsnps** Number of instruments used

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RC_simple_mode	<i>Simple Mode Regression Calibration</i>
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**Description**

Simple Mode Regression Calibration

**Usage**

```
RC_simple_mode(b_disc, b_rep, b_out, se_disc, se_rep, se_out)
```

**Arguments**

b_disc	SNP-exposure association estimate in discovery sample
b_rep	SNP-exposure association estimate in replication sample
b_out	SNP-outcome association estimate
se_disc	SNP-exposure association standard error in discovery sample
se_rep	SNP-exposure association standard error in replication sample
se_out	SNP-outcome association standard error

**Value**

List with the following elements:

**b** Causal effect estimate  
**se** Causal effect standard error  
**pval** Causal effect p-value  
**nsnps** Number of instruments used

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RC_weighted_median	<i>Weighted Median Regression Calibration</i>
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**Description**

Weighted Median Regression Calibration

**Usage**

```
RC_weighted_median(b_disc, b_rep, b_out, se_disc, se_rep, se_out)
```

**Arguments**

b_disc	SNP-exposure association estimate in discovery sample
b_rep	SNP-exposure association estimate in replication sample
b_out	SNP-outcome association estimate
se_disc	SNP-exposure association standard error in discovery sample
se_rep	SNP-exposure association standard error in replication sample
se_out	SNP-outcome association standard error

**Value**

List with the following elements:

- b** Causal effect estimate
- se** Causal effect standard error
- pval** Causal effect p-value
- nsnps** Number of instruments used

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RC_weighted_mode	<i>Weihtged Mode Regression Calibration</i>
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**Description**

Weihtged Mode Regression Calibration

**Usage**

```
RC_weighted_mode(b_disc, b_rep, b_out, se_disc, se_rep, se_out)
```

**Arguments**

- |         |   |
|---------|---|
| b_disc  | SNP-exposure association estimate in discovery sample         |
| b_rep   | SNP-exposure association estimate in replication sample       |
| b_out   | SNP-outcome association estimate                              |
| se_disc | SNP-exposure association standard error in discovery sample   |
| se_rep  | SNP-exposure association standard error in replication sample |
| se_out  | SNP-outome association standard error                         |

**Value**

List with the following elements:

- b** Causal effect estimate
- se** Causal effect standard error
- pval** Causal effect p-value
- nsnps** Number of instruments used

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