

# Package ‘asymptor’

July 22, 2025

**Title** Estimate Asymptomatic Cases via Capture/Recapture Methods

**Version** 1.1.0

**Description** Estimate the lower and upper bound of asymptomatic cases in an epidemic using the capture/recapture methods from Böhning et al. (2020) <[doi:10.1016/j.ijid.2020.06.009](https://doi.org/10.1016/j.ijid.2020.06.009)> and Rocchetti et al. (2020) <[doi:10.1101/2020.07.14.20153445](https://doi.org/10.1101/2020.07.14.20153445)>. Note there is currently some discussion about the validity of the methods implemented in this package. You should read carefully the original articles, alongside this answer from Li et al. (2022) <[doi:10.48550/arXiv.2209.11334](https://doi.org/10.48550/arXiv.2209.11334)> before using this package in your project.

**License** GPL-3

**URL** <https://hugogruson.fr/asymptor/>,  
<https://github.com/bisaloo/asymptor>

**BugReports** <https://github.com/bisaloo/asymptor/issues>

**Depends** R (>= 3.5)

**Suggests** covr, dplyr, ggplot2, knitr, rmarkdown, spelling, testthat(>= 3.0.0)

**VignetteBuilder** knitr

**Encoding** UTF-8

**Language** en-GB

**RoxygenNote** 7.2.0

**Config/testthat/edition** 3

**NeedsCompilation** no

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**Repository** CRAN

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|------------------|---------------------------------------------------------------------------|

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### Description

Estimate the proportion of asymptomatic cases by capture/recapture

### Usage

```
estimate_asympto(date, cases, deaths, bounds = c("lower", "upper"))
```

### Arguments

|        |                                                                                                                                                                                                                                                                               |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| date   | A vector containing the dates                                                                                                                                                                                                                                                 |
| cases  | A numeric vector containing the number of new cases at each date ( <b>not</b> the cumulative number of cases).                                                                                                                                                                |
| deaths | A numeric vector containing the number of new deaths at each date ( <b>not</b> the cumulative number of cases).                                                                                                                                                               |
| bounds | "lower", "upper", or both c("lower", "upper") (the default), telling which bounds of the number of asymptomatic cases are computed. associated with the lower and upper bounds. estimation. FALSE is never the recommended setting excepted for testing or debugging purpose. |

### Value

A data.frame with two or three columns (depending on the value of the bounds argument):

- date: the original date column
- lower: the lower bound of asymptomatic cases
- upper: the upper bound of asymptomatic cases

### Note

Please note there is currently some discussion about the validity of the methods implemented in this package. You should read carefully the original articles, alongside this answer from Li et al. (2022) before using this package in your project.

## References

Böhning D., Rocchetti I., Maruotti A., Holling H. (2020), Estimating the undetected infections in the Covid-19 outbreak by harnessing capture–recapture methods, *International Journal of Infectious Diseases*, 97, p197-201, [doi:10.1016/j.ijid.2020.06.009](https://doi.org/10.1016/j.ijid.2020.06.009).

Rocchetti I., Böhning D., Holling H., Maruotti A., (2020), Estimating the size of undetected cases of the SARS-CoV-2 outbreak in Europe: An upperbound estimator, *medRxiv*, [doi:10.1101/2020.07.14.20153445](https://doi.org/10.1101/2020.07.14.20153445).

Li M., Dushoff J., Earn D.J.D., Bolker B.M. (2022), Evaluating undercounts in epidemics: responsi to Maruotti et al. 2022, *arXiv*, [doi:10.48550/ARXIV.2209.11334](https://doi.org/10.48550/ARXIV.2209.11334).

## Examples

```
d <- readRDS(system.file("extdata", "covid19_italy.rds", package = "asymptor"))
head(d)

estimate_asympto(d$date, d$new_cases, d$new_deaths)
```

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