Replication Report

Primary Replicator[1],   Co-pilot [2]

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Abstract

<a summary of the replication effort>

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1 Introduction

This replication report documents the replication attempt of the simulation study `<insert reference of replicated study>`. Following the definition of Rougier et al. (2017) we understand the replication of a published study as writing and running new code based on the description provided in the original publication with the aim of obtaining the same results.

2 Method

2.1 Information basis

`<What sources were used to obtain information? The original article, some appendix, online supplements, other articles from the same authors, code available from the authors personal website?>`

2.2 Data Generating Mechanism

Information provided in the above mentioned sources indicated that the following simulation factors were systematically varied in generating the artificial data.

Simulation factor	No. levels	Levels
Varied		
Fixed		

2.2.1 Simulation Factor 1

`<More detail of how factor 1 was varied and implemented>`

2.2.2 Simulation Factor 2

`<More detail of how factor 2 was varied and implemented>`

2.2.3 Simulation Factor 3

`<More detail of how factor 3 was varied and implemented>`
`<If the design was not full-factorial describe the simulation scenarios by other means>`
`<You can add pseudocode or a flowchart to illustrate the data generation or the entire simulation design>`

Data generation can be summarized with the following pseudo code:

```
For 1000 repetitions of each of 400 unique scenarios:

- Set unique seed based on scenario id and number of repetition.

- ...

-  While some condition < some other condition

    * Sample ... from the given distribution.

    * Sample a sample size from the given distribution.

    * Compute ... based on these random elements.

    * Determine ... based on mechanism of current scenario.

- If some condition is > x:

    * Determine ... & resample from corresponding ... model.

- Apply ...
```

2.3 Investigated Methods

The study investigates ... `<Describe the methods that are investigated and how they are implemented>`

2.3.1 Method 1

`<Describe how the first method is defined and implemented. You can include equations and or R code. If applicable, mention specialized R packages, their version as well as, parameters of specific functions.>`

2.3.2 Method 2

`<Describe how the second method is defined and implemented. You can include equations and or R code. If applicable, mention specialized R packages, their version as well as, parameters of specific functions.>`

2.4 Performance measures

`<Describe which performance measures are compared, if applicable mention specialized R packages, their versions, as well as parameter settings of functions.>`
The following flowchart describes the simulation design

2.5 Technical implementation

While the original simulation study was carried out in `<computational environment of original study>` our replication was implemented using the R programming environment (details regarding software versions can be obtained from the section Reproducibility Information). The corresponding R code can be obtained from https://github.com/replisims/your_repo.
The following table provides an overview of replicator degrees of freedom, i.e. decisions that had to be made by the replicators because of insufficient or contradicting information. Issues were resolved by discussion among the replicators. Decisions were based on what the replicators perceived to be the most likely implementation with likeliness estimated by common practice and/or guideline recommendations. Wherever feasible multiple interpretations where implemented.

Issue	Replicator decision	Justification
Data dependence	each scenario is implemented in independently generated data	Best practice (Burton et al. 2006)

2.6 Some issue

`<More details on how the information provided was insufficient, unclear or vague>` *"Some weird quote from the original article that you could not make any sense of"* (p.XY)

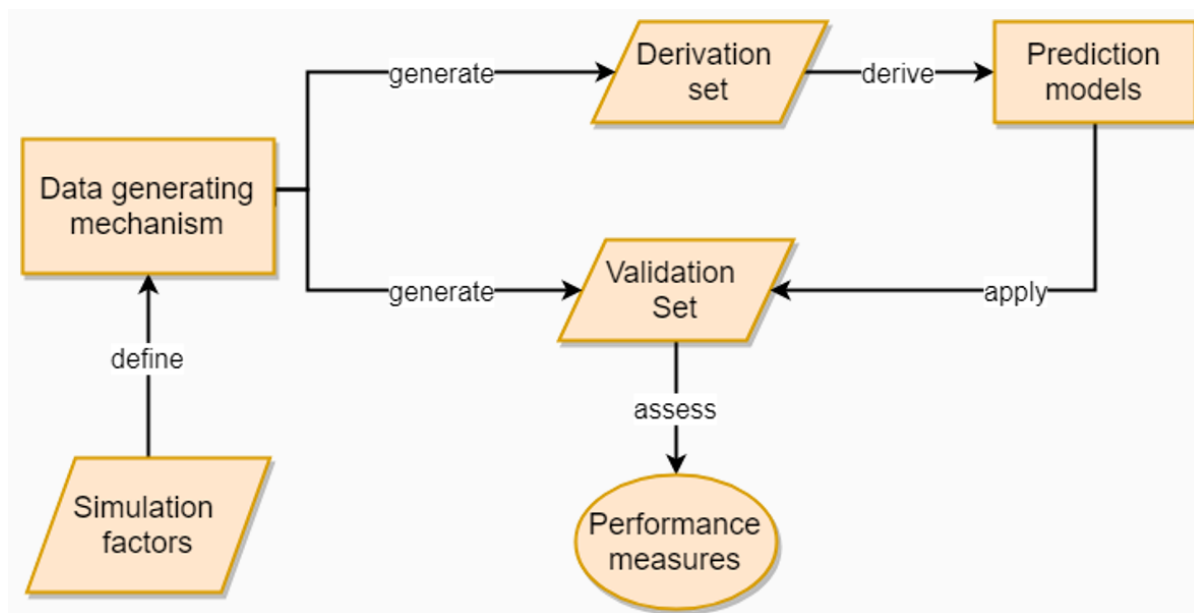Figure 1: Flow chart of data generating mechanism

2.7 Another issue

<More details on how the information provided was insufficient, unclear or vague> *"Some weird quote from the original article that you could not make any sense of"* (p.XY)

3 Results

3.1 Simulation descriptives

<Describe the sampling distribution if any of the simulation parameters were sampled>

3.2 Replication of result figures

3.2.1 Outcome 1

<Provide the information that were presented in figure form in the original>

3.3 Replication of result tables

<Compare any tabulated data to the original>

3.4 Replication of results presented in text form

<If the text describes any results using words describe how that relates to your findings.>

4   Discussion

4.1   Replicability

```
<Provide a general statement of how you experienced the replication process. Was it easy? What made it
easy or difficult?>
```

4.2   Replicator degrees of freedom

```
<Here you can discuss the replicator degrees of freedom. What could the authors have done to make it
more clear? Do you think the replicator degrees of freedom are so extensive that they could influence
the results?>
```

4.3   Equivalence of results

```
<How would you judge the overall equivalence of results? Are the orders of magnitude comparable? Are
trends in the same direction? Would you draw the same conclusions as the authors based on your
replication? Were some results not comparable because of insufficient figure resolution or labeling? Did
the authors ommit some results which consequently cannot be compared?>
```

5   Acknowledgments

```
<Acknowledge the help of anyone who assisted you in the process>
```

6   Contributions

Authors made the following contributions according to the CRediT framework https://casrai.org/credit/
Primary Replicator:

- Data Curation
- Formal Analysis (lead)
- Investigation
- Software
- Visualization (lead)
- Writing - Original Draft Preparation
- Writing - Review & Editing

Co-Pilot:

- Formal Analysis (supporting)

- Investigation
- Software (supporting)
- Visualization (supporting)
- Validation
- Writing - Review & Editing

References

10 Burton, Andrea, Douglas G. Altman, Patrick Royston, and Roger L. Holder. 2006. "The Design of Simulation Studies in Medical Statistics." *Statistics in Medicine* 25 (24): 4279–92. https://doi.org/10.1002/sim.2673.

Rougier, Nicolas P., Konrad Hinsen, Frédéric Alexandre, Thomas Arildsen, Lorena A. Barba, Fabien C. Y. Benureau, C. Titus Brown, et al. 2017. "Sustainable Computational Science: The ReScience Initiative." *PeerJ Computer Science* 3 (December): e142. https://doi.org/10.7717/peerj-cs.142.

Appendix

Additional result

```
<insert additional results not reported in the original article or results presented in an alternative
way>
```

6.1   Code organization

The code and the files associated are organized in the form of a research compendium which can be found in the following git repository `https://github.com/replisims/your_repo`

```
## .
## +-- defs.tex
## +-- flowchart.PNG
## +-- Lato-Black.ttf
## +-- Lato-BlackItalic.ttf
## +-- Lato-Bold.ttf
## +-- Lato-BoldItalic.ttf
## +-- Lato-Italic.ttf
## +-- Lato-Regular.ttf
## +-- references.bib
## +-- UbuntuMono-Bold.ttf
## +-- UbuntuMono-BoldItalic.ttf
## +-- UbuntuMono-Italic.ttf
## +-- UbuntuMono-Regular.ttf
## \-- Untitled.Rmd
```

- `foldername:` contains `<insert description>`

- `filename:` contains `<insert description>`

- …

Reproducibility Information

This report was last updated on 2022-03-05 09:45:32. The simulation replication was conducted using the following computational environment and dependencies:

```
## - Session info ----------------------------------------------------------
##   setting  value
##   version  R version 4.0.3 (2020-10-10)
##   os       Windows 10 x64
##   system   x86_64, mingw32
##   ui       RTerm
##   language (EN)
##   collate  Spanish_Spain.1252
##   ctype    Spanish_Spain.1252
##   tz       Europe/Berlin
##   date     2022-03-05
##
```

```
## - Packages ---------------------------------------------------------------
## package          * version    date        lib
## cachem             1.0.5       2021-05-15 [1]
## callr              3.7.0       2021-04-20 [1]
## cli                3.0.0       2021-06-30 [1]
## crayon             1.4.1       2021-02-08 [1]
## desc               1.3.0       2021-03-05 [1]
## devtools           2.4.2       2021-06-07 [1]
## digest             0.6.27      2020-10-24 [1]
## dplyr            * 1.0.2       2020-08-18 [1]
## ellipsis           0.3.2       2021-04-29 [1]
## evaluate           0.14        2019-05-28 [1]
## fansi              0.5.0       2021-05-25 [1]
## fastmap            1.1.0       2021-01-25 [1]
## fs                 1.5.0       2020-07-31 [1]
## generics           0.1.0       2020-10-31 [1]
## glue               1.4.2       2020-08-27 [1]
## htmltools          0.5.1.1     2021-01-22 [1]
## knitr            * 1.36        2021-09-29 [1]
## lifecycle          1.0.0       2021-02-15 [1]
## magrittr           2.0.1       2020-11-17 [1]
## memoise            2.0.0       2021-01-26 [1]
## pillar             1.6.1       2021-05-16 [1]
## pkgbuild           1.2.0       2020-12-15 [1]
## pkgconfig          2.0.3       2019-09-22 [1]
## pkgload            1.2.1       2021-04-06 [1]
## prettyunits        1.1.1       2020-01-24 [1]
## processx           3.5.2       2021-04-30 [1]
## ps                 1.6.0       2021-02-28 [1]
## purrr              0.3.4       2020-04-17 [1]
## R6                 2.5.0       2020-10-28 [1]
## remotes            2.4.0       2021-06-02 [1]
## RepliSimReport     0.0.0.9000  2022-03-05 [1]
## rlang              0.4.11      2021-04-30 [1]
## rmarkdown          2.11        2021-09-14 [1]
## rprojroot          2.0.2       2020-11-15 [1]
## sessioninfo        1.1.1       2018-11-05 [1]
## stringi            1.6.2       2021-05-17 [1]
## stringr            1.4.0       2019-02-10 [1]
## testthat           3.0.4       2021-07-01 [1]
## tibble             3.1.2       2021-05-16 [1]
## tidyselect         1.1.1       2021-04-30 [1]
## usethis            2.0.1       2021-02-10 [1]
## utf8               1.2.1       2021-03-12 [1]
## vctrs              0.3.8       2021-04-29 [1]
## withr              2.4.2       2021-04-18 [1]
## xfun               0.26        2021-09-14 [1]
## xtable           * 1.8-4       2019-04-21 [1]
## yaml               2.2.1       2020-02-01 [1]
## source
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
```

```
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.2)
## CRAN (R 4.0.5)
## CRAN (R 4.0.0)
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## CRAN (R 4.0.0)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## Github (replisims/RepliSimReport@5f14003)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.0)
## CRAN (R 4.0.3)
## CRAN (R 4.0.0)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.5)
## CRAN (R 4.0.2)
## CRAN (R 4.0.0)
##
## [1] C:/Users/jclaramunt/Documents/R/win-library/4.0
## [2] C:/Program Files/R/R-4.0.3/library
```

The current Git commit details are:

```
## Local:    master C:/Users/jclaramunt/surfdrive/replicationFelix
## Remote:   master @ origin (https://github.com/jclaramunt/replicationFandJ)
## Head:     [32b0e4a] 2021-03-18: Sorry Felix. I forgot to push :(
```