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Check your outliers! An accessible introduction to identifying

statistical outliers in R with easystats

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Abstract Beyond the challenge of keeping up-to-date with current best practices regarding the diagnosis and treatment of outliers, an

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univariate, multivariate, and model-based statistical outlier (/user/manuscripts/status)

detection methods, their recommended threshold, standard output, Display Coand plotting methods. We conclude with recommendations on the

handling of outliers: the different theoretical types of outliers. Authored whether to exclude or winsorize them, and the importance of

transparency. (/user/manuscripts/co-

authored) Keywords univariate outliers; multivariate outliers; robust detection methods;

R; easystats

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Submission to 29

First Decision

(Days)

Submission to

Publication

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Page Count 11

#### **Editor Decision**

Decision Reject and encourage resubmission

Comments Less convinced as a scientific research is the major concern. I

cannot find a solid contribution for the statistical methodologies, new packages, or sound applications in this study. Almost all the obtained conclusions are known. The readers would be happy to see more convincing results from good real examples from the real world if only the well known statistical methods and packages are used in this study. The tutorial-like results using the examples in R are too weak for an academic paper. It is contributive if the authors can include real examples in different areas to show the power of the used package and present the insight findings, not just show how to use the packages. Then, resubmit the revision as a new

paper for review.

Decision Date 22 March 2023

#### Review Report

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Reviewer 2 Review Report (Round 1) (/user/manuscripts/review/36645867?report=27515065)

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Journal APC: 2,100.00 CHF

IOAP McGill University

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provide an overview of current recommandations and best

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Beyond the challenge of keeping up-to-date with current best

practices regarding the diagnosis and treatment of outliers, an

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practices and demonstrate how they can easily and conveniently

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	the introduction provide sufficient d include all relevant references?	(x)	( )	( )	( )			
Are all th	ne cited references relevant to the research?	(x)	( )	( )	( )			
Is	the research design appropriate?	(x)	( )	( )	( )			

Are the methods adequately described?

Are the conclusions supported by the results?

Are the results clearly presented?

Comments and Suggestions for Authors In this paper, the authors have shown how to search for outliers using the check\_outliers() function of the {performance} package while following current good practices. This contribution will help researchers engage in good search practices while providing an outlier detection experience. They cover univariate, multivariate,



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and model-based statistical outlier detection methods, their recommended threshold, standard output, and plotting methods. The present paper represents the subject of check the outliers, An accessible introduction to identifying statistical outliers in R with easystats. The study design and methods appropriate for the research question. The results presented clearly and accurately. The authors logically explain the findings. I highly recommend the publication of this paper in Mathematics Journal.

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Quality of English Language	<ul> <li>( ) English very difficult to understand/incomprehensible</li> <li>( ) Extensive editing of English language and style required</li> <li>( ) Moderate English changes required</li> <li>(x) English language and style are fine/minor spell check required</li> <li>( ) I am not qualified to assess the quality of English in this paper</li> </ul>							
		Yes	Can be improved	Must be improved	Not applicable			
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Are all th	e cited references relevant to the research?	( )	( )	(x)	( )			
ls ·	the research design appropriate?	(x)	( )	( )	( )			
Are the	e methods adequately described?	( )	(x)	( )	( )			
A	Are the results clearly presented?	( )	(x)	( )	( )			
Are the conc	lusions supported by the results?	(x)	( )	( )	( )			
Comments and Suggestions for Authors	The authors propose the illustration outliers. The paper is quite clear, lare provided to improve the articles.	howeve	•		·			

- The word accessible in the title should be removed.

- The authors should clarify whether the functions implemented in the library were implemented only for continuous variables or other types of variables are also considered.
- The author's reference to the Normal distribution on page 2, line 31 is unclear. They should clarify or delete this sentence.
- The reference to the mathematical score is unclear on page 2, line 36. I think this reference should be removed.

A critical review on the analysis of outliers is proposed in this article which must be cited

Riani, M., & Atkinson, A. C. (2020). Robust regression methods in machine learning. Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery, 10(2), e1359.

- Page 3, lines 101-102: It is unclear what the authors mean when referring to BCA, a technique used in non-parametric bootstrapping, but the paper does not mention this.
- It is necessary to change the x-axis labels of all the figures as the numbers overlap; they should be written in a smaller font or otherwise eliminate some of them since they are not readable. I am talking about the figures referring to the histogram of the outliers.
- Page seven, line 146, it is better to write association instead of relationship.
- Page 7, line 154, the authors should specify what they mean by compatible regression models.
- Page 7, code of the first chunk, the authors use the iqr method, but this is not discussed above. They must add details of all the methods they show in the output.
- Page 9, line 247, it is difficult to follow the discussion for those unfamiliar with the R datawizard package. What does it do? How does the proposed function tie in with those in the package?
- Page 10, line 272, what does "Registration "mean?
- Check the reference style because it is not uniform



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practices regarding the diagnosis and treatment of outliers, an additional difficulty arises concerning the mathematical

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Are all th	ne cited references relevant to the research?	( )	( )	( )	(x)			
Is	the research design appropriate?	( )	( )	( )	(x)			
Are the	e methods adequately described?	( )	( )	( )	(x)			
	Are the results clearly presented?	( )	( )	( )	(x)			
Are the cond	clusions supported by the results?	( )	( )	( )	(x)			

Comments and Suggestions for Authors The paper outlines techniques for processing data with inhomogeneities, such as outliers. However, the style of the article does not correspond to scientific research. The work is educational and auxiliary in nature and is more in line with educational publications, including popular scientific ones.



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