



Journal of Applied Statistics >

Volume 45, 2018 - [Issue 8](#)

226 | 9 | 0  
Views | CrossRef citations to date | Altmetric

Original Articles

# Analysis of means approach for random factor analysis

Kalanka P. Jayalath & Hon Keung Tony Ng  

Pages 1426-1446 | Received 11 Nov 2016, Accepted 24 Aug 2017, Published online: 14 Sep 2017

 Cite this article  <https://doi.org/10.1080/02664763.2017.1375083>



 Full Article

 Figures & data

 References

 Citations

 Metrics

 Reprints & Permissions

Read this article

 Share

## ABSTRACT

Analysis of means (ANOM) is a powerful tool for comparing means and variances in fixed-effects models. The graphical exhibit of ANOM is considered as a great advantage because of its interpretability and its ability to evaluate the practical significance of the mean effects. However, the presence of random factors may be problematic for the ANOM method. In this paper, we propose an ANOM approach that can be applied to test random effects in many different balanced statistical models including fixed-, random- and mixed-effects models. The proposed approach utilizes the range of the treatment averages for identifying the dispersions of the underlying populations. The power performance of the proposed procedure is compared to the analysis of variance (ANOVA) approach in a wide range of situations via a Monte Carlo simulation study. Illustrative examples are used to demonstrate the usefulness of the proposed approach

and its graphical exhibits, provide meaningful interpretations, and discuss the statistical and practical significance of factor effects.

KEYWORDS:

- Analysis of means
- analysis of variance
- multiple comparison
- random effect
- Tukey test

Acknowledgements

The authors thank the two anonymous referees and the associate editor for their useful comments and suggestions on an earlier version of this manuscript which resulted in this improved version.

Disclosure statement

No potential conflict of interest was reported by the authors.



Related research ⓘ

- People also read
- Recommended articles
- Cited by 9

Analysis of means: a generalized approach using R >

Philip Pallmann et al.  
Journal of Applied Statistics  
Published online: 12 Feb 2016

## Information for

Authors

R&D professionals

Editors

Librarians

Societies

## Opportunities

Reprints and e-prints

Advertising solutions

Accelerated publication

Corporate access solutions

## Open access

Overview

Open journals

Open Select

Dove Medical Press

F1000Research

## Help and information

Help and contact

Newsroom

All journals

Books

## Keep up to date

Register to receive personalised research and resources by email



Sign me up



Copyright © 2025 Informa UK Limited [Privacy policy](#) [Cookies](#) [Terms & conditions](#)

[Accessibility](#)

 Taylor and Francis Group

Registered in England & Wales No. 01072954  
5 Howick Place | London | SW1P 1WG