# Comparison of chosen covariance structure tests with regards to sensitivity to outliers and violation of normality assumption in high-dimensional regime

**Jolanta Pielaszkiewicz and Jiawei Wu**

*Linköping University, Sweden*

**Abstract**

Presentation is aimed to introduce listener to the results published in [1]. Jiawei Wu is an author of results, Jolanta Pielaszkiewicz contributed to work in role of supervisor.

We consider classical tests on structure of covariance matrices under the high-dimensional scenario in which dimensionality exceeds the sample size. We are particularly interested in identity structure, sphericity structure and diagonal structure of covariance matrix. Performance of test statistics for each structure is investigated under given assumptions and when the distributional assumption is violated. We compare test's sensitivity to outliers discussing attained significance level, power of test, and goodness of fit of considered tests. Simulation studies indicate that the test statistics testing hypothesis about identity structure of covariance matrix seems to be more sensitive to the changes of distribution assumptions and outliers compared with other considered tests. The opposite conclusion can be given for test considering the diagonal structure instead.

## Keywords

Covariance matrix, Structure, Outliers, High-dimension, Normality assumption.

## References

[1] Wu, J. (2020). Testing Structure of Covariance Matrix under High-dimensional Regime (Dissertation). Retrieved from http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-166227.