

# Accepted Manuscript

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PII: S0169-7439(17)30337-4

DOI: [10.1016/j.chemolab.2017.11.016](https://doi.org/10.1016/j.chemolab.2017.11.016)

Reference: CHEMOM 3549

To appear in: *Chemometrics and Intelligent Laboratory Systems*

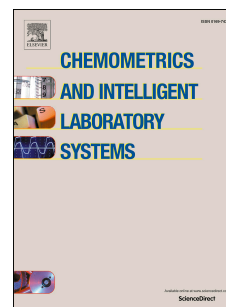
Received Date: 31 May 2017

Revised Date: 26 September 2017

Accepted Date: 28 November 2017

Please cite this article as: B. Deng, H. Lu, C. Tan, J. Deng, Y. Yin, Model population analysis in model evaluation, *Chemometrics and Intelligent Laboratory Systems* (2017), doi: 10.1016/j.chemolab.2017.11.016.

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# Model population analysis in model evaluation

Baichuan Deng<sup>a</sup>, Hongmei Lu<sup>b</sup>, Chengquan Tan<sup>a</sup>, Jinping Deng<sup>a,\*</sup>, Yulong Yin<sup>a,\*\*</sup>

<sup>a</sup> Guangdong Provincial Key Laboratory of Animal Nutrition Control, Institute of Subtropical  
Animal Nutrition and Feed, College of Animal Science, South China Agricultural University,  
Guangzhou 510642, PR China

<sup>b</sup> College of Chemistry and Chemical Engineering, Central South University, Changsha 410083,  
PR China

\*Corresponding authors: E-mail address: dengjinpingscau.edu.cn, yinyulong@isa.ac.cn.

## ABSTRACT

Model evaluation plays a central role in chemical modeling. Model population analysis (MPA), a general framework for designing new types of chemometrics algorithms, has shown its advantage in the field of model evaluation. The core idea of MPA is to statistically analyze the outputs of randomly generated sub-models to extract interesting information from the data. One of the most obvious characteristics of MPA-based methods is that they use multiple models instead of a single model for model evaluation. In this review, we first described the concept of MPA, and then discussed the application of MPA in model evaluation, including the relationship between MPA and cross-validation, model comparison, randomization tests, model stability, variable importance and sum of rank differences. Finally, we prospected the potential application of MPA in model evaluation.

Keywords: Model population analysis; Model evaluation; Model comparison; Model selection.

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