

## When Bayes Comes to Town

Armando Teixeira-Pinto, PhD

We are excited to announce a new line-up of articles for a new series called Novel Statistical Methods. These articles will focus on several topics, including, Bayesian statistics, causal inference, machine learning, and data visualization, in the context of cardiovascular research. There are recent developments on statistical methods in these areas, and they are being increasingly applied in medical research. We have selected specific themes that may be of relevance to the readers of *Circulation: Cardiovascular Quality and Outcomes*. These articles will provide an overview of the methodologies and also emphasize practical aspects of implementation and interpretation of the analyses.

In this issue, we present the first article of this set. Bittl and He<sup>1</sup> discuss the application of Bayesian methods in different settings of clinical and health services research. The availability of software and computer power for Bayesian analyses, as well as growing complexity of statistical models required in many settings, make Bayesian statistics a good alternative to classical statistical methods. Although many excellent texts can be found in the literature introducing the principles of Bayesian statistics and its comparison with the more familiar frequentist methods (for example, Greenland<sup>2</sup> and Diamond and Kaul<sup>3</sup>), it is not as easy to find intermediate level descriptions of Bayesian methods, written for nonstatisticians and with real-world examples of their application. This article fills this gap.

The authors start by giving a brief overview of the main ideas of Bayesian statistics. Then they proceed with a simple example to illustrate how Bayesian analysis combines

information from various sources. They continue with gradually more complex examples that use hierarchical, network, and cross-design analyses. An important highlight of the article is the software code provided by the authors that reproduce the analyses in the examples. This constitutes a valuable source for researchers wanting to implement similar approaches.

The following articles appearing in this series will discuss tree-based methods for classification and prediction, the design and analysis of studies using Mendelian randomization, modern methods for data visualization, and methods for drawing causal inference from observational studies. We are confident that these will constitute interesting and useful readings for investigators and consumers of cardiovascular research.

### Disclosures

None.

### References

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KEY WORDS: biostatistics ■ methods ■ software ■ statistics and numerical data

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From the School of Public Health, Faculty of Medicine, The University of Sydney, Australia.

Correspondence to Armando Teixeira-Pinto, PhD, School of Public Health, Faculty of Medicine, The University of Sydney, Sydney, NSW 2010, Australia. E-mail armando.teixeira-pinto@sydney.edu.au

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