## Modeling the lifetime of popes via survival analysis

Daniel Valentins de Lima<sup>1</sup>, Fabio Douglas Soares Bezerra<sup>2</sup>, Evandro Mariano Barros<sup>3</sup>, Marcelino Alves Rosa de Pascoa<sup>4</sup>, José Nilton da Cruz<sup>5</sup>, Graziela Dutra Rocha Gouvêa <sup>6</sup>

## **Abstract**

The present study seeks to understand the behavior regarding the beginning of the pontificate of a pope and its end. Since it is a lifetime charge, it is directly linked to the time of the popes' life. With time as an important variable in this study, there is the possibility of applying survival analysis methods. Therefore, a bibliographic study was made on the distributions that provide the support to describe the data. For the analysis, the following tools were used: total time under test (TTT curve), AIC (Akaike Information Criteria), BIC (Bayesian Information Criteria) and CAIC (Consistent Akaike Information Criteria) statistics, likelihood ratio and the Kaplan-Meier graph.

Keywords: survival analysis; Kaplan-Meier; pope; Weibull.

<sup>&</sup>lt;sup>1</sup> Universidade Federal de Mato Grosso. email: dvalentins@outlook.com.

<sup>&</sup>lt;sup>2</sup> Universidade Federal de Mato Grosso. email: fabiodouglas.soares@gmail.com.

<sup>&</sup>lt;sup>3</sup> Universidade Federal de Mato Grosso. email: evandromariano barros@live.com.

<sup>&</sup>lt;sup>4</sup> Universidade Federal de Mato Grosso. email: marcelino.pascoa@gmail.com.

<sup>&</sup>lt;sup>5</sup> Universidade Federal de Mato Grosso. email: marcelino.pascoa@gmail.com.

<sup>&</sup>lt;sup>6</sup>Universidade Federal de Ouro Preto. e-mail: gragouvea@gmail.com.