

**Ceci n'est pas de l'archéologie? A Bayesian approach to understand consumption dynamics in Ancient Rome**

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The aim of this study is to analyze under what extent consumption dynamics can help us to understand trade networks in the Ancient World. Theoretically the archaeological records preserve distributions of materials culture by which a researcher can detect patterns of change in consumption dynamics. However, one of the main issues of archaeological research is the high levels of uncertainty associated to their dataset. This problem is combined with low samples to generate several issues to classical frequentist statistical approaches.

To deal with these challenges the discipline is increasing its use of Bayesian methods because they are better suited to deal with this type of datasets. At the same time, they allow to perform model selection to compare the plausability of different hypothesis considering the evidence.

This work presents a case study where Bayesian methods have been applied to understand complex dynamics of consumption. In particular, we analyze the frequency distribution of olive oil producers identified from data found in Monte Testaccio, in Rome. Two proxies have been used: a) amphorae stamps, which indicate the producer's name and b) *tituli picti*, an inscription that allows us to date the archaeological materials with a yearly precision.

The analysis explores how different hypotheses on the structure of the existing trade network can explain the collected evidence. Finally, the method has allowed us to compare the observed distribution against different theoretical models using computer simulation. Ultimately, the results show that the Bayesian approach is capable of embracing uncertainty and compare even with the low samples found in archaeological datasets.