Learning Media Quality from Facebook Data

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The production, consumption, and dissemination of online news is of growing interest among scholars studying democracy, but significant challenges remain for the study of media quality in a comparative perspective, including varying political environments, language barriers, cultural contexts, and differing media regulation.

01 Summary

We leverage a novel comparative data set of links shared on Facebook, made accessible to the research community through the Social Science One research initiative, to study the prevalence of unreliable online news in 27 countries in Europe. We use a supervised model (trained on US data) to predict the credibility of a given news domain based on users' feedback and behavior.

02 Methodology

Data:

- Social Science One URL Shares
- 2017-01-01 - 2020-09-01
- US and 27 European countries
- ~ 15M URLs across 500K domains
- NewsGuard media ratings

Unit of analysis:

- Domain

Features:

- 4 moments of distributions of 14 user engagement metrics

Best performing model:

- Gradient boosting machine

03 Model

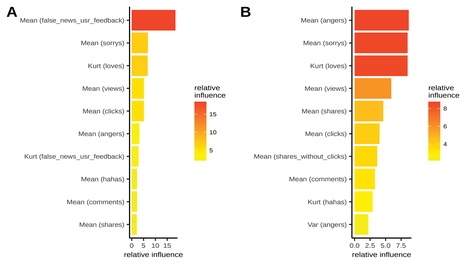

Fig.1 Relative importance of Facebook interaction features. The measure is calculated for gradient boosting models with (A) and without (B) false news feedback from users as one of the predictors. Loves, sorrys, angers, and hahas refer to engagement options (e.g., clicking on a heart, which is recorded as 'loves') offered by Facebook for users to respond to posts by other users. Only top 10 features are shown.

04 Validation

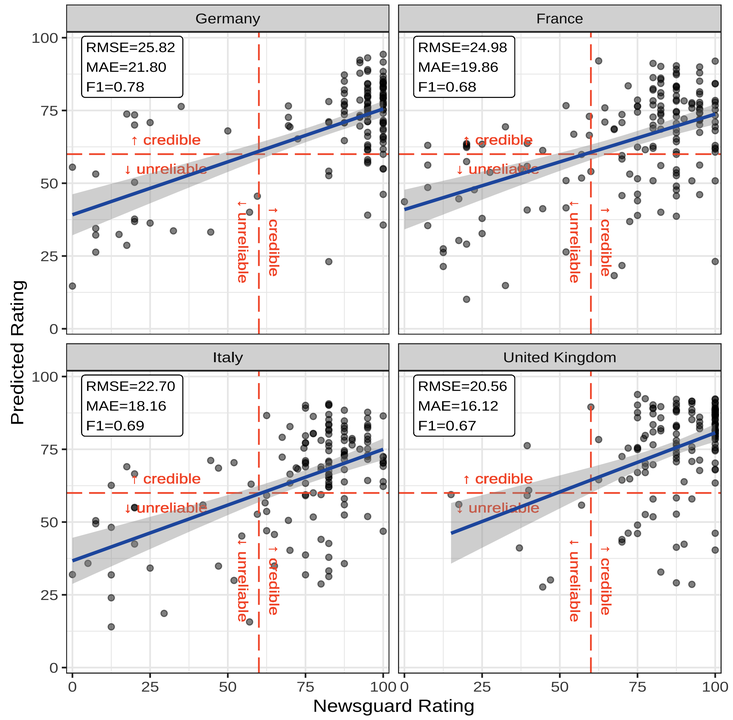

Fig.2 Validation of media credibility model on selected European countries. Predicted credibility ratings are estimated using Gradient Boosting model trained on the US data. Country-specific root mean square errors (RMSE), mean absolute errors (MAE) the average of harmonic means of the precision and recall for two classes (F1) are shown in panels.

Results 05

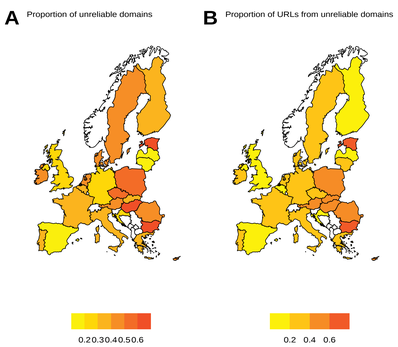

Fig.3 Overview of credibility across national online media environments in Europe. Estimates are based on predictions from the Gradient Boosting model trained on Facebook SS1 data for the US and NewsGuard domain rating. Only domains labelled as news by the majority of crowd source workers are included.

Conclusion 06

The approach to predicting media quality from behavioral data on social media presented here provides both highly accurate in-sample predictions within the US and, more importantly, is transferable to similar political and cultural contexts of advanced democratic societies in Europe. We find considerable variation in the prevalence of unreliable news in Europe. Particularly noteworthy, is the observed divide between Western/Central and Eastern European states. Our findings point to large-scale behavioral data on social media harboring important insights about seemingly unrelated societal phenomena and emphasize the indispensability of internal corporate data for academic research.

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