Replicable Privacy: Enabling Replicable Research on Sensitive Internet Data

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Abstract

The mass adoption of the Information and Communication Technologies (ICT) is increasing the demand for quantitative social science analysis to understand the effects, and the causes, of digitalisation. For example, while some see the ICT as a ‘liberation technology’ capable to empower citizens against autocrats, others have shown how the digital technologies can be used to consolidate the authoritarian rule as well (King et al, 2017).

In order to discern this questions, the quantitative approach requires an accurate description of the Internet, because this infrastructure is increasingly turning into the backbone of digitalisation. The limitations of the official statistics on Internet have hampered the capacity of social science to develop empirical analysis, because the provided precision is limited to country-year observations, and because the methodology used to estimate the statistics is subject to different bias sources. Those limitations have been recently solved using a remote-sensing method, recently featured in SCIENCE (Benitez-Baleato et al., 2015; Weidmann et al., 2016) which is capable to observe variations on Internet adoption inside countries, and with temporal precision below the monthly frequency. Instead of relying on the reports provided by telecommunication regulators, the remote-sensing approach relies on direct observation of the global Internet data flow. This allows measuring digitalisation also in areas where official statistics are not available and data cannot be retrieved in the field, such as authoritarian regimes or territories experiencing long-term political violence.

While this new method can enable highly disaggregated analysis, the achieved precision can break the privacy and data protection law. The regulation of most developed countries could introduce...
potential objections at the Institutional Review Boards level that would avoid the use of the data, or even the release for replication purposes. This paper introduces the method and illustrates the utility of this data to a political methodology audience, presents the privacy and data protection challenges, and shares the ongoing efforts to make this data available for the political science community building on the resources shared by the Harvard University Institute for Quantitative Social Science. The proposed approach includes an application of differential privacy, privacy-preserving method used by the US Census, and companies such as Apple or Google, to allow access and analysis based on sensitive data; and Datatags, a formalization of privacy levels to be implemented in the Dataverse repository project.

1 References for panel Discussion


2 Acknowledgments

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