A Quality Concept for the Use of Machine Learning in Official Statistics

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Abstract

Building on the Quality Framework for Statistical Algorithms (QF4SA), German official statistics has thought about a quality concept for the use of machine learning (ML). The main question was how the use of ML affects the quality dimensions from the European Code of Practice, which relate to the institution, the processes and the products. It was necessary to derive what has to be considered or checked when using ML in order to be in line with the European Code of Practice. Six quality dimensions were identified (cost effectiveness, reproducibility, timeliness, accuracy, robustness, explainability), for each of which concrete quality guidelines are proposed. The presentation discusses the dimensions and guidelines with a view to future practice in the German statistical offices. Since the concretisations do not presuppose or use any specifics of German official statistics, they can be used as a basis for comparable considerations in other statistical offices.