Nonparametric comparison of epidemic time trends:

the case of COVID-19

Marina Khismatullina[[1]](#footnote-1)

Erasmus School of Economics

Erasmus University Rotterdam

and

Michael Vogt

Department of Mathematics and Economics

Ulm University

**Abstract**

The COVID-19 pandemic has been one of the most pressing issues for the past two years. A question which was particularly important for governments and policymakers is the following: Does the virus spread in the same way in different countries? Or are there significant differences in the development of the epidemic? We devise a new inference method for detecting differences in the development of the epidemic time trends across countries. Specifically, it allows making simultaneous confidence statements about the regions where the trends differ. In the theoretical part, we prove that the method controls the familywise error rate, that is, the probability of wrongly rejecting at least one null hypothesis. In our empirical study, we use the method to compare the outbreak patterns of the epidemic in a number of European countries.

1. Presenting author [↑](#footnote-ref-1)