Monitoring the spread of COVID-19 by estimating reproduction numbers over time

Thomas Hotz¹, Matthias Glock¹, Stefan Heyder¹, Sebastian Semper¹, Alexander Krämer², Anne Böhle²

¹ Institut für Mathematik, Technische Universität Ilmenau {thomas.hotz,matthias.glock,stefan.heyder,sebastian.semper}@tu-ilmenau.de

² School of Public Health, Bielefeld University
{alexander.kraemer,anne.boehle}@uni-bielefeld.de

04/04/20 - 20:10 GMT

Abstract

We

Contents

1	Introduction	1
2	Derivation of the estimator	2
3	Specifics of COVID-19	2
4	Testing on simulated data	2
5	Application to real data	2
6	Sensitivity analysis	2
7	Comparison with other estimators	2
8	Discussion and Outlook	2
A	Derivation of confidence intervals	2
В	Derivation of the infectivity profile for the SEIR-model	2

1 Introduction

Fraser (2007)

- 2 Derivation of the estimator
- 3 Specifics of COVID-19
- 4 Testing on simulated data
- 5 Application to real data
- 6 Sensitivity analysis
- 7 Comparison with other estimators
- 8 Discussion and Outlook

Acknowledgements. The authors thank Dr. med. Luise Prüfer-Krämer, Steering Committee Member, German Society of Tropical Medicine and Global Health and practising physician, for many fruitful discussions and insights into the care of COVID-19 patients.

A Derivation of confidence intervals

B Derivation of the infectivity profile for the SEIR-model

References

Fraser, C. (2007). Estimating individual and household reproduction numbers in an emerging epidemic, $PLOS\ ONE\ \mathbf{2}(8)$: 1–12.

URL: https://doi.org/10.1371/journal.pone.0000758