Background

As many countries in Europe are seeing surging case numbers of Covid-19 infections[12] and German author-ities are aiming at preventing a second nationwide lockdown[3] and to rely on local measures instead, re-gional prediction of infections gains ever more importance. Researchers of the University of Osnabrück[4] and the Forschungszentrum Jülich[5] have developed a mathematical model to assess and predict infections for every German district.

Features

The model provides up-to-date estimates for new infections as well as a five-day forecast for each German district. For this purpose, data from the Robert Koch- Institute (RKI) are statistically analyzed on high-per-formance computers. The model not only considers the most likely de-velopment but also estimates the probability for different scenarios that are compatible with the current data[67]. In addition, the spatial-temporal component of the infections with Covid-19 is estimated and presented as a so-called "interaction kernel"[8]. This method has already been used in 2019 to describe the course of infections with rotavirus, Lyme disease, and Campylobacter bacteria[9].

Potentials

The model can help to predict local infection trends and contribute to a comprehensive local risk assessment. The tool is accessible online for everybody[10] and can therefore serve as a source of information for the general public as well as for local authorities.

State of information: 25/09/2020

Launch: September 2020

Country: Germany

Focus area: Prediction

Developers:

- Osnabrück University
- Forschungszentrum Jülich
- In Cooperation with Robert Koch- Institute (RKI)

Beneficiaries: general population, local au-thorities and decision makers

Points to consider

Since the model has not been used to predict Coronavirus infections before, a comprehensive validation of the results is possible only after analyzing the predictions in the upcoming months. Furthermore, one has to keep in mind, that the prognosis is highly dependent on the data provided by the local health au-thorities and therefore susceptible to delays[11].

Conclusion

The model can be a helpful tool in assessing and predicting local outbreaks and case numbers but is highly dependent on the underlying data of course.

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[11] Pipa, Gordon. "Covid-19-Interaktionsmodell." Bayessches räumlich-zeitliches Interaktionsmodell für Covid-19. Ac-cessed September 25, 2020. https://covid19-bayesian.fz-juelich.de/#.

Background on Innovation Sheet Series

As part of a real-time evaluation of the SARS CoV 2 pandemic (with focus on epidemiological, medical, economical, societal, technical, and cultural developments in Germany and Armenia) the CoronaSys research team, under the leadership of Prof. Dr. Martin Voss, is conducting a continuous monitoring of developments and medical, technical, and social innovations concerning Covid-19.

Multiple national and international media outlets, research platforms, and scientific and organizational guidelines, briefs, and updates are screened to feed into this outlet. The rationale behind this is to support the projects' network partners in Armenia and Germany with short summaries of key developments and promising innovations that are shaping the global, German, and Armenian outbreak response and recovery.

The aim of these short briefs is to give condensed and structured information on selected innovations emerging out of the conducted horizon scanning. This could be mainstream big-ticket items or fringe subjects that are easily overlooked in the global flood of information. Some innovations will be followed through their evolution in time while others may only appear once. While subjectively selected, the briefs are descriptive in nature and leave analysis and critical interpretation to the reader. Network partners in both countries are invited to provide feedback on their interest areas and suggest particularly relevant topics for the CoronaSys Workshop series.

The CoronaSys Innovation Sheet Series is published by the Academy of the Disaster Research Unit, which is, as a non-profit limited liability company, a spin-off of the Disaster Research Unit at the Free University of Berlin. The series is part of the research project "CoronaSys: Addressing the corona pandemic in Armenia through systemic risk management", sponsored by the German Federal Ministry of Education and Research.

If you have any questions, suggestions, or if you wish to be taken on (or off) the project mailing list for CoronaSys updates, innovation sheets, and workshop invitations, please send a message to Janina Schäfer (schaefer@a-kfs.de). For general project inquiries, you may contact the team lead Sara Merkes (merkes@a-kfs.de) or the project lead Martin Voss (voss@a-kfs.de).

Previous CoronaSys Innovation Sheets

1   "New" Antiviral Face Masks
2   "Dyphox" Surface Coating
3   MOVES SLC Portable ICU
4   Portable TRI- KLEEN 500UV
5   Convalescent Plasma Therapy
6   ASIC- App
7   BinaxNOW Antigen Test
8   Corona Traffic Light
9   Aproof at Home Antibody Test
10 IVAT Hygiene Tower
11 LY-CoV555 Antibody Treatment
12 4C Mortality Score

All previous CoronaSys Innovation Sheets are available online:
http://coronasys.a-kfs.de/category/innovation-stream/

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