

Hotspot prediction of Covid-19 in Region Uppsala

Project in Scientific Computing - 15 credits

Robin Eriksson & Jonas Evaeus

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Data availability is usually a mixed bag when it comes to real scenarios such as pandemic outbreaks. In Uppsala, the interdisciplinary research project CRUSH COVID-19 (CC19) [3, 4] gathered researchers from several faculties from Uppsala University and the local authorities. A mission CC19 set out to do was to inform the public and make data available, which resulted partly via a web application [5]. Another collaboration project, COVID Symptom Study Sverige [2], administers a self-reporting symptom app in Sweden [6, 7] and reports data on test positivity on a post-code granular level [7].

This project aims to leverage the available data in [1] by (i) Creating compelling and engaging visualizations of publication-ready quality. (ii) Applying non-linear spatial regression techniques for hotspot predictions, and if time permits, (iii) Infer an explainable spatio-temporal mechanistic model on said data via state-of-the-art approximate Bayesian inference techniques [8].

After completion, the students will have gained practical knowledge of a data science project with actual data, reviewed recently published research on the topic, developed statistical analysis and epidemiological simulation code using recent industry-standard libraries.

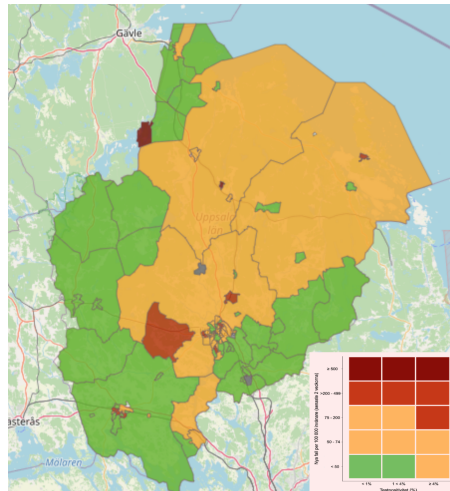


Figure 1: Test positivity and new cases of SARS-Cov-2 in the Uppsala region per districts and municipalities for week 37, 2021. Green to yellow to red indicates more new cases and a high positivity. Image is derivative from the visualization in [5].

References

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- [3] Crush covid. <https://www.uu.se/forskning/projekt/crush-covid/>.
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