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## **Nowcasting Fatal COVID-19 Infections on a Regional Level in Germany**

We analyse the temporal and regional structure in mortality rates related to COVID-19 infections. We relate the fatality date of each deceased patient to the corresponding day of registration of the infection, leading to a nowcasting model which allows us to estimate the number of present-day infections that will, at a later date, prove to be fatal. The numbers are broken down to the district level in Germany. Given that death counts generally provide more reliable information on the spread of the disease compared to infection counts, which inevitably depend on testing strategy and capacity, the proposed model and the presented results allow to obtain reliable insight into the current state of the pandemic in Germany.

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## **Surveillance of COVID-19 Infections through Now- and Forecasting on a Regional Level**

Governments around the world have mobilized and continue to act to contain and mitigate the spread of COVID-19. The rapidly evolving situation compels officials and executives to continuously adapt policies and modulate social distancing measures depending on the current state of the events. In this context, it is crucial for policymakers to have a firm grasp on what the current state of the pandemic is as well as to have an idea of how the infective situation is going to unfold in the next days. We provide a stable tool for monitoring current infection levels as well as predicting infectious behaviour in the immediate future at the regional level. We accomplish this through nowcasting of cases that have not yet been reported as well as through forecasting of future infections. This is done by means of statistical modelling. We apply our model to German data, for which our focus lies in explaining and predicting infectious behaviour by district, age-group and gender. We hope this tool will aid in shedding light on the dynamics of the pandemic, and help policymakers in taking informed decisions to contain the spread.