

**Effect of policy-relevant factors on COVID-19 patient survival probability:
An information-theoretic analysis**

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Abstract

The possibility of reoccurring waves of the novel coronavirus that triggered the 2020 pandemic makes it critical to identify underlying policy-relevant factors that could be leveraged to decrease future COVID-19, and other SARS-related, death rates. We examine variation in several underlying, policy-relevant, country-level factors and COVID-19 patients death rates across twenty countries. We find three such factors that significantly impact the survival probability of patients infected with COVID-19. These include universal TB (BCG) vaccination policies, air pollution and health-related expenditure. We quantify each probability change by age and sex. To deal with the small and extremely complex sample that was available in April-May 2020, and with the problem of inference at the tails of the distribution, we use an information-theoretic inferential method. That approach also allows us to introduce priors, for each patient, into our estimation. These priors are constructed from an older SARS data, collected in 2003.

In this talk I will demonstrate the advantage of the info-metrics approach for analyzing such a small and complex dataset. My talk is based on the working paper:

<https://ideas.repec.org/p/hka/wpaper/2020-041.html>

Key Words: Covid-19, Entropy, Info-Metrics, Information-Theoretic Discrete Choice Marginal Effects, Policy, Survival Probability