

# **TWO IMPORTANT FINDINGS IN THE CORONAVIRUS DISEASE 2019 (COVID-19) SPREAD IN KOREA**

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## **ABSTRACT**

We present two important findings about coronavirus disease 2019 (COVID-19) transmission in Korea. The first finding is rapid transmission of COVID-19 observed in the Shincheonji Church of Jesus, a religious sect in South Korea. The index case was confirmed on Feb 18, 2020 in Daegu City, and within two weeks, 3,081 connected cases were identified. A stochastic model fitted to the time series of confirmed cases suggests that the basic reproduction number ( $R_0$ ) of COVID-19 was 9.0 [95% credible interval (CrI): 7.5, 12.2] among the church members, whereas  $R_0=2.7$  [95% CrI: 0.6, 7.6] in the rest of the population of Daegu City. The Shincheonji Church cluster is likely to be emblematic of other outbreak-prone populations where  $R_0$  of COVID-19 is higher. Understanding and subsequently limiting the risk of transmission in such high-risk places is key to effective control. The second finding is reduced incidence of acute respiratory tract infections (ARTI). For the first half of 2020 when the COVID-19 is spreading, incidence of eight major ARTIs including influenza dropped substantially in Korea. The change points in the time series data of the weekly incidence were almost identical to those detected in human mobility patterns extracted from mobile phone data, a potential proxy for social distancing. Unlike COVID-19, historic incidence records are available for ARTIs and this makes the ARTIs better examples in which the impact of social distancing on their transmissions can be evaluated. Insights from analyses of ARTIs will help evaluate the impact of social distancing and design better strategies.