APRU Global Health Conference 2021
GLOBAL URBAN HEALTH
16-18 November 2021
The University of Hong Kong, Pokfulam, Hong Kong

Abstract No.	Abstract Title
094	**A comparison of effectiveness of non-pharmaceutical interventions against COVID-19 in Hong Kong and Seoul**
Theme	B. Infectious Disease

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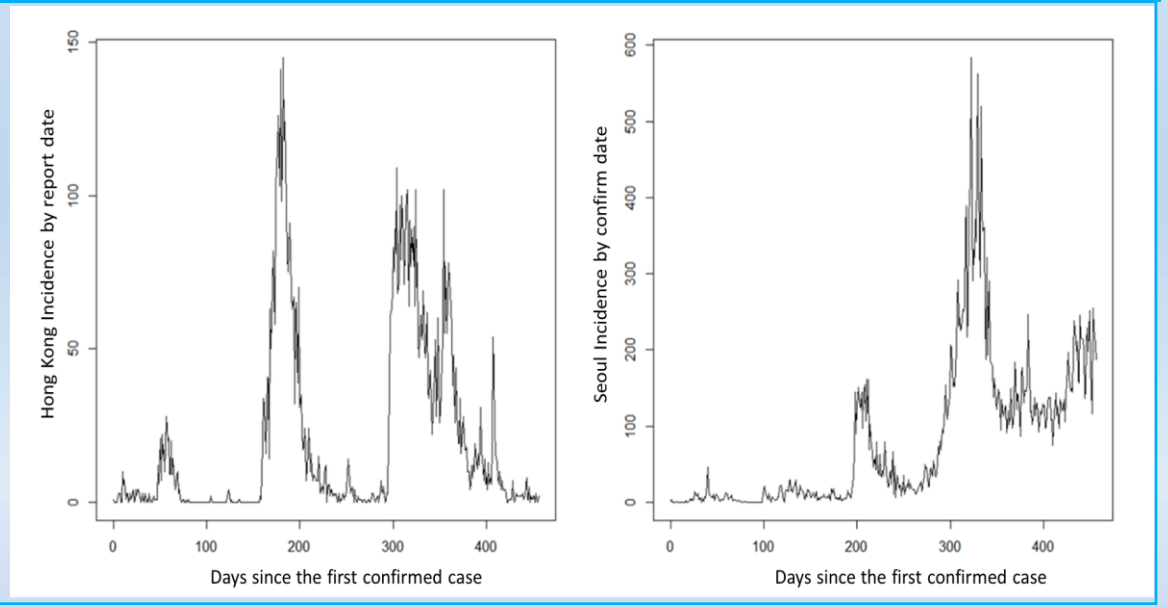
Purpose / Background:

- Hong Kong and Seoul, two densely populated Asian metropolises, have restricted the spread of the coronavirus disease 2019 (COVID-19) using nonpharmaceutical interventions (NPIs).
- Unlike pharmaceutical interventions, where results are assumed to be the same across all populations, NPIs can become more applicable by comparing their effectiveness in different populations and settings.
- As the highly contagious variants of COVID-19 spread rapidly around the world, this study aims to observe the evolvement of Hong Kong and Seoul governments' NPIs and evaluate their contributions to local outbreaks over 15-months period, considering public compliance trends.



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Methods:

Data	Government incidence data Non-pharmaceutical intervention (NPI) timelines Google mobility report
Main effectiveness estimator	Time-varying effective reproduction number (Rt)
Analysis	Observation changes in Rt with government NPIs and public compliance into consideration

- First, the characteristics of local epidemic curves and packages of NPI implementations in Hong Kong and Seoul were categorized into phases.
- Second, moving averages of Rt in two cities were calculated using:
  - EpiEstim package in Rstudio
  - Daily incidence data available from 30/01/20 to 30/04/21
  - 7-day sliding windows
  - Serial interval distribution parameters from existing studies
- Third, public compliance levels were interpreted using various types of activity levels in two cities as proxies:
  - Using real-time location data from Google account users
  - Each day value refers to % change from the baseline (a median day value from the five weeks of January 3rd to February 6th)
- Finally, considering incidence, Rt, and public mobility trends, the effectiveness of NPIs in Hong Kong and Seoul were evaluated.

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Results & Conclusions:

Results:

- Apparent upward trends in all non-residential outdoor activities in Hong Kong and Seoul, even with tightened NPIs from the start of 2021, suggesting decreasing public compliance (shown in the graphs to the right).

- However, Rt remained relatively stable during the study period when both governments established a package of NPIs containing social distancing with mandatory testing on high-risk groups.

Conclusion:

- Both governments have optimized their COVID-19 management strategies as decreasing public compliance can undermine the effects of NPIs.

- Prevailing lessons from Hong Kong and Seoul's responses to the COVID-19 imply that public health officials are recommended to reassess the best practice of NPIs as the epidemic progresses with increasing variants and decreasing public compliance.