LSGI researchers develop effective way for controlling the spread of COVID-19 when borders reopen

A research study by the LSGI at PolyU has found that contact tracing is key to effectively controlling the spread of COVID-19 when borders reopen. The research team has also developed a mobile app with a contact tracing feature for use by inbound travellers. Present at the press conference were Professor Chen Wu (middle), Head of LSGI; Professor Charles Wong (left), Professor of LSGI and Dr Zhu Xiaolin (right), Assistant Professor of LSGI.

As some countries in the world begin to consider adjusting their pandemic control strategy from "zero COVID" to "living with COVID", a research study by the Department of Land Surveying and Geo-Informatics at The Hong Kong Polytechnic University (PolyU) has found that contact tracing is as vital as social distancing measures and vaccination in controlling the spread of COVID-19 when borders reopen. The research team has also developed a mobile app with a contact tracing feature, designed for use by inbound travellers, that would help fight the pandemic in this respect.

The pandemic situation in Hong Kong is presently under good control, thanks to the implementation of various measures, such as social distancing and vaccination, with strong support from the general public. In the past 14 days (17-30 August), only one local case with unknown sources was reported.

Nevertheless, the economy is facing severe challenges as the economic activity of many industries has been seriously affected as passenger traffic, in terms of both arrivals and departures, remains low.

With COVID-19 vaccinations being widely implemented in many countries, against the backdrop of needing to revive cross-border activities, there is a growing prospect of easing social distancing regulations and reopening borders in different countries and regions. As a more sustainable control strategy for the long term, focus is shifting towards living with the virus.

"Contact tracing is key to effectively controlling the spread of the virus when borders reopen and the mobile app we designed for use by inbound travellers would serve as a possible solution." Said Professor Chen Wu, Head and Professor of the Department of Land Surveying and Geo-Informatics at PolyU.

"We have conducted a study that employed a computational approach to investigate the contact tracing integrated policy in different border-reopening scenarios in Hong Kong. Built on an epidemic model with 50% vaccination coverage, the results suggest that scenarios with digital contact tracing can reduce the infectious population by 84.7% compared to those without contact tracing."

One of the key recommendations drawn from the study is that contact tracing is an effective measure for reducing local virus spread, especially when it is applied along with social distancing and vaccination measures. "Contact tracing is an influential factor in controlling the spread because all the necessary pandemic control measures would not be promptly carried out without effective tracing against confirmed cases and identifying their close contacts," Professor Chen explained.

Consequently, the research team has developed a mobile app with a contact tracing feature, targeting inbound travellers when borders reopen. Utilising the Global Navigation Satellite System, Bluetooth Low Energy and Data Analysis Technology, the mobile app is designed not only for users to record individual locations they have visited but more importantly to help users identify whether they have had close contact with those who have tested positive for COVID-19 within the last 14 days.

If any user is confirmed positive for COVID-19, they can share their record with all other users at their own discretion (or through a public health department that is acting as a central coordinator on the use of the mobile app). The app on other users' handsets will then automatically compare the individual users' record against the record received. If the record overlaps with that of the confirmed case, individual users will be immediately alerted to take appropriate actions.

All the information recorded by the mobile app is saved in the users' own handsets only. No personal data is required when users download or use the app, and only anonymous data will be shared with other users. The app will also provide convenience for users to access the COVID-19 pandemic information released by the Government.

Professor Chen remarked, “Contact tracing is key to effectively controlling the spread of the virus when borders reopen and the mobile app we designed for use by inbound travellers would serve as a possible solution. Furthermore, the app can be adapted for incorporating into other apps as an add-on feature.”

PolyU Press release in Chinese - https://polyu.me/3kI2JgV

Media coverage:

TVB - https://polyu.me/3gQ6ijR

RTHK
- https://polyu.me/3mTcI5L (English); https://polyu.me/38schqP (Chinese)

TMCNet - https://polyu.me/38yJDnK

The Standard - https://polyu.me/2WIlsRl

Hong Kong Economic Journal - https://polyu.me/3teFMFZ

Ming Pao Daily News - https://polyu.me/2YiHzP0

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