

Real-time nowcast and forecast on the extent of the Wuhan CoV outbreak, domestic and international spread

Professors Gabriel Leung and Joseph Wu

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**HKU
Med**

LKS Faculty of Medicine
The University of Hong Kong
香港大學李嘉誠醫學院

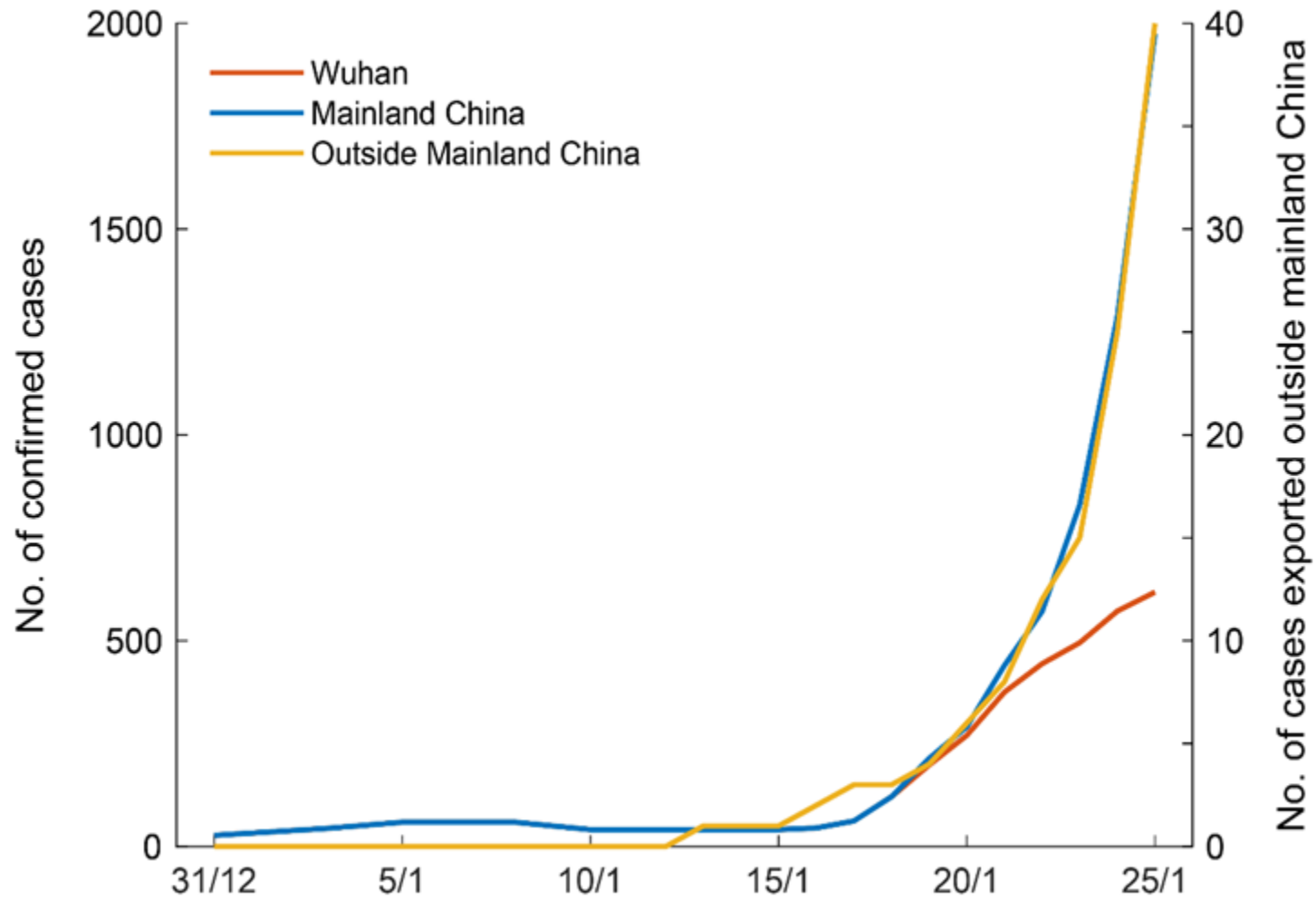


**WHO Collaborating Centre
for Infectious Disease Epidemiology and Control**

Nowcasting

No. of confirmed cases

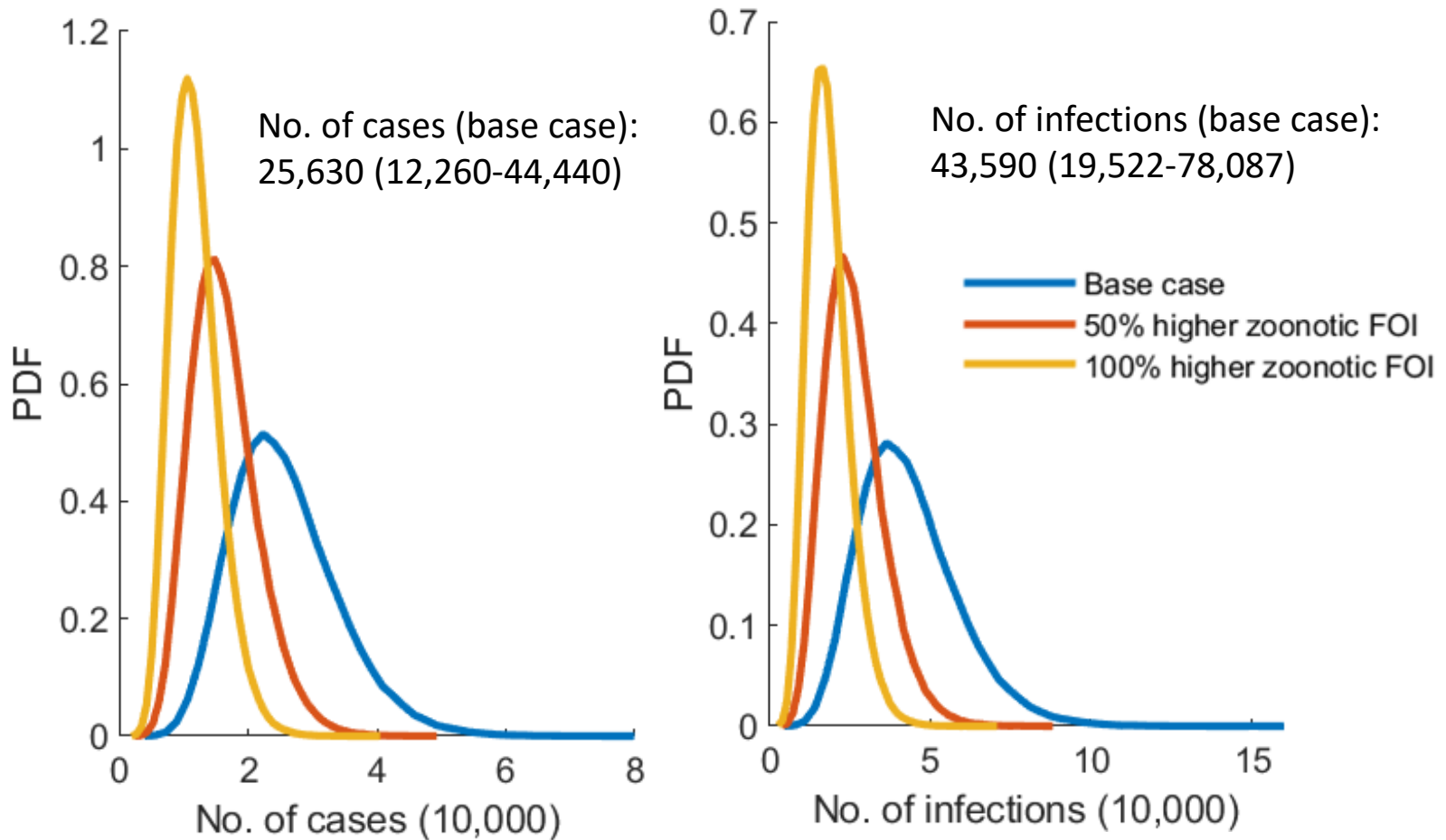
As of 25 Jan



Estimation of 2019-nCoV epidemic size in Wuhan

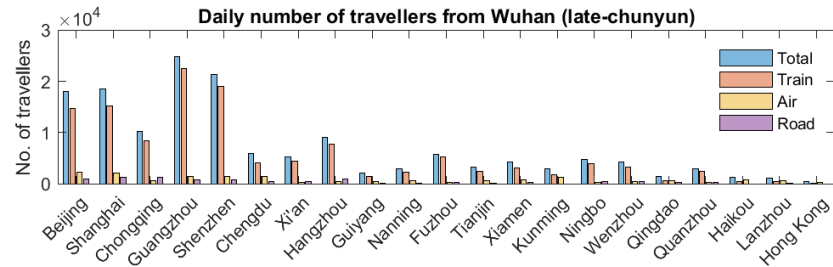
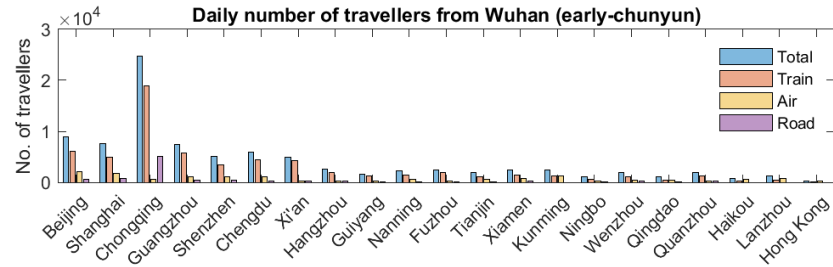
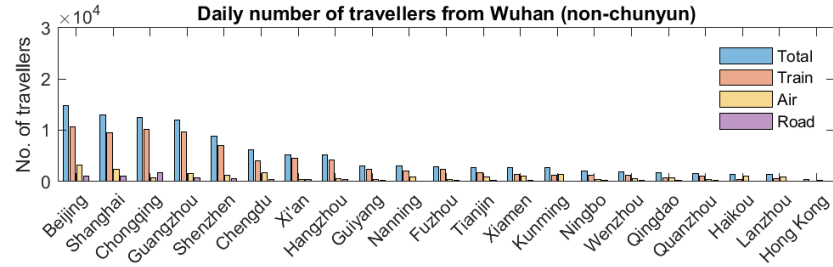
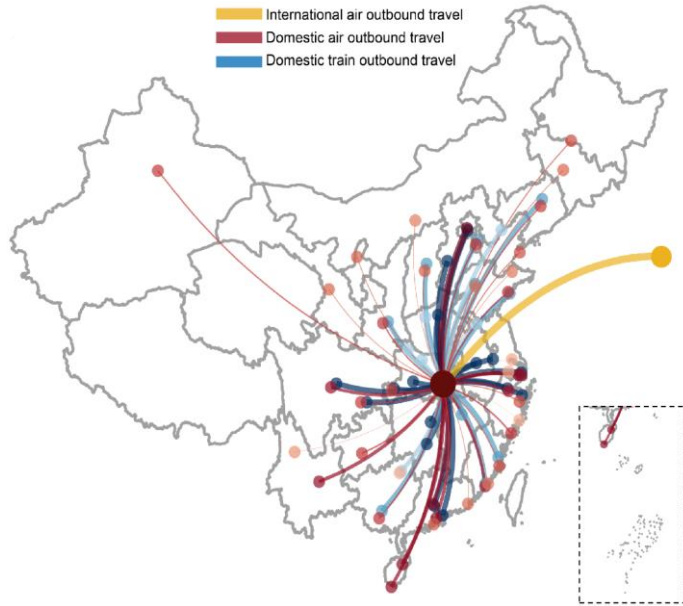
As of 25 Jan

$R_0 = 2.13$ (1.92-2.31), Doubling time = 6.2 (5.4-7.4) days



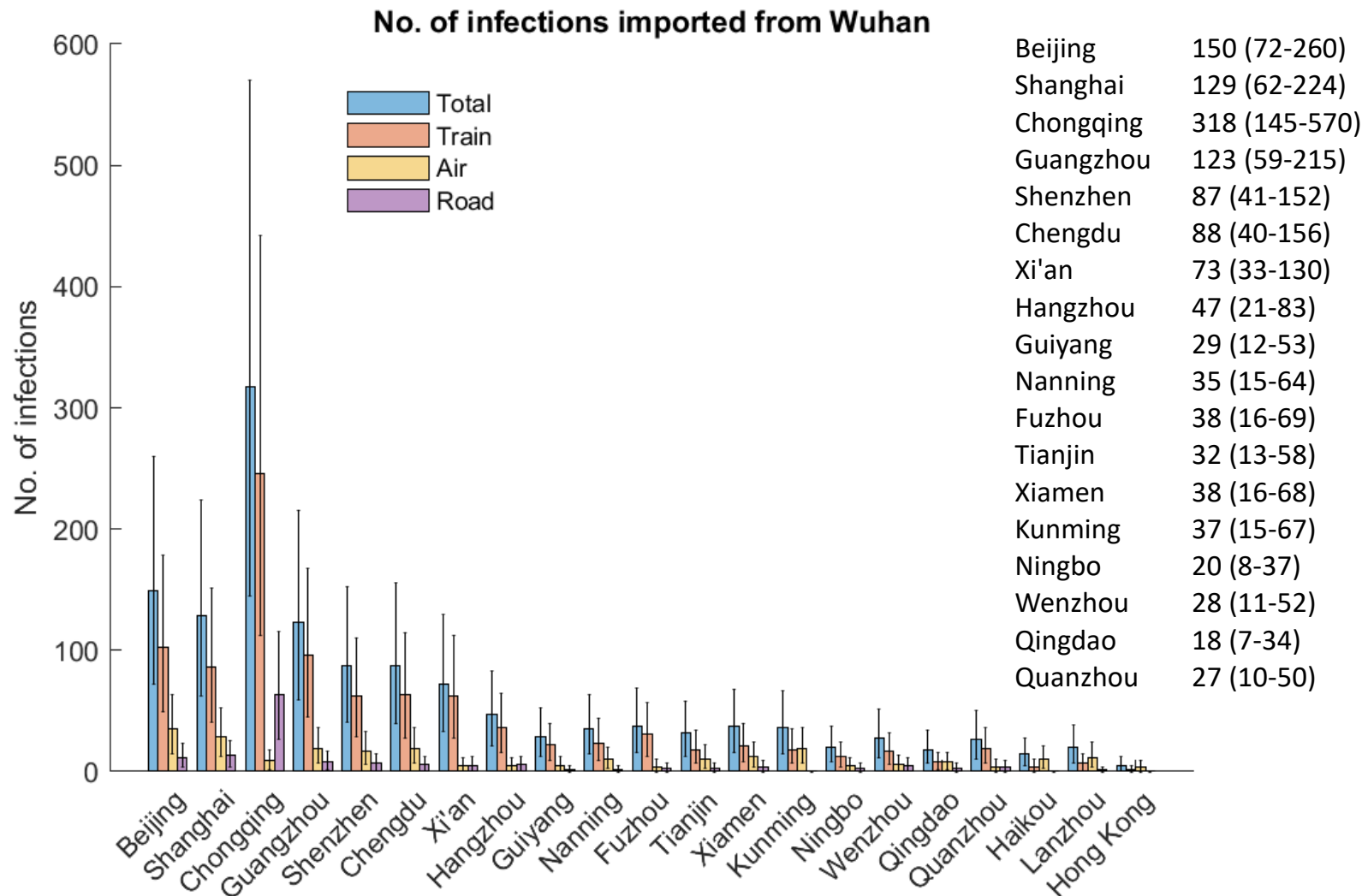
The number of cases was smaller than the number of infections because some infected individuals were still in their incubation period.

Wuhan is Central China's transportation hub



Estimation of domestic exports by train, air and road

As of 25 Jan



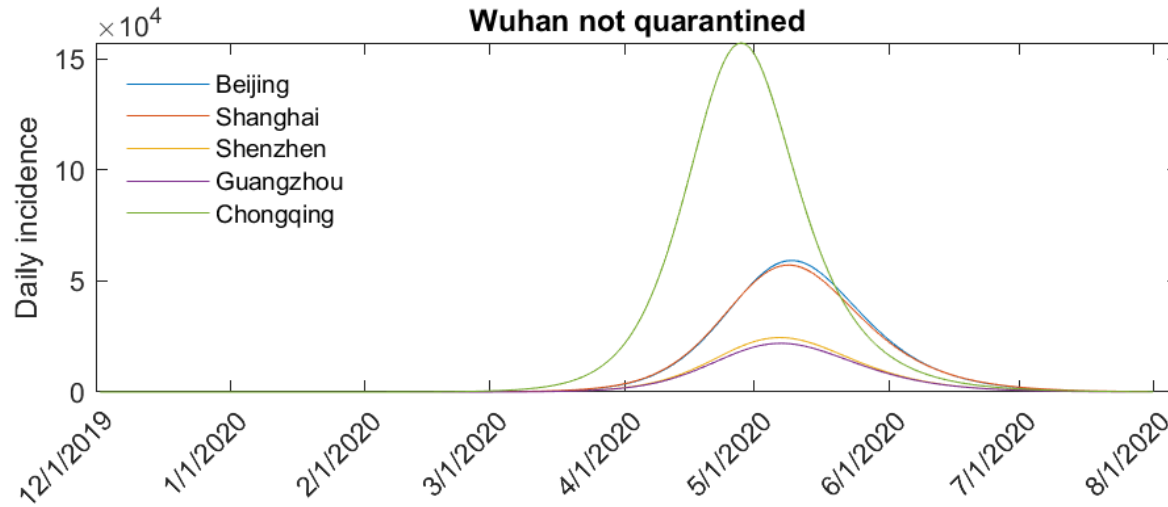
This calculation underestimated the number of cases exported to Hong Kong and Macau because a substantial proportion of travellers from mainland China transited at Shenzhen, Guangzhou and Zhuhai and hence not tractable in our aggregated mobility data.

Forecasting

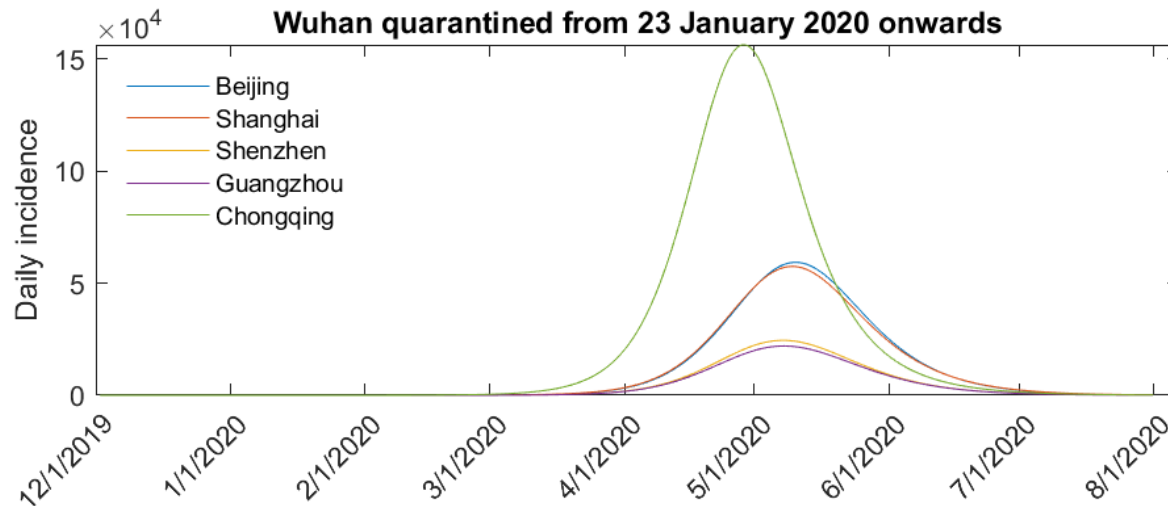
Quarantine of movement would have limited effects

BSGS: 53% of all international air travel

70% of all international air travel outside Asia

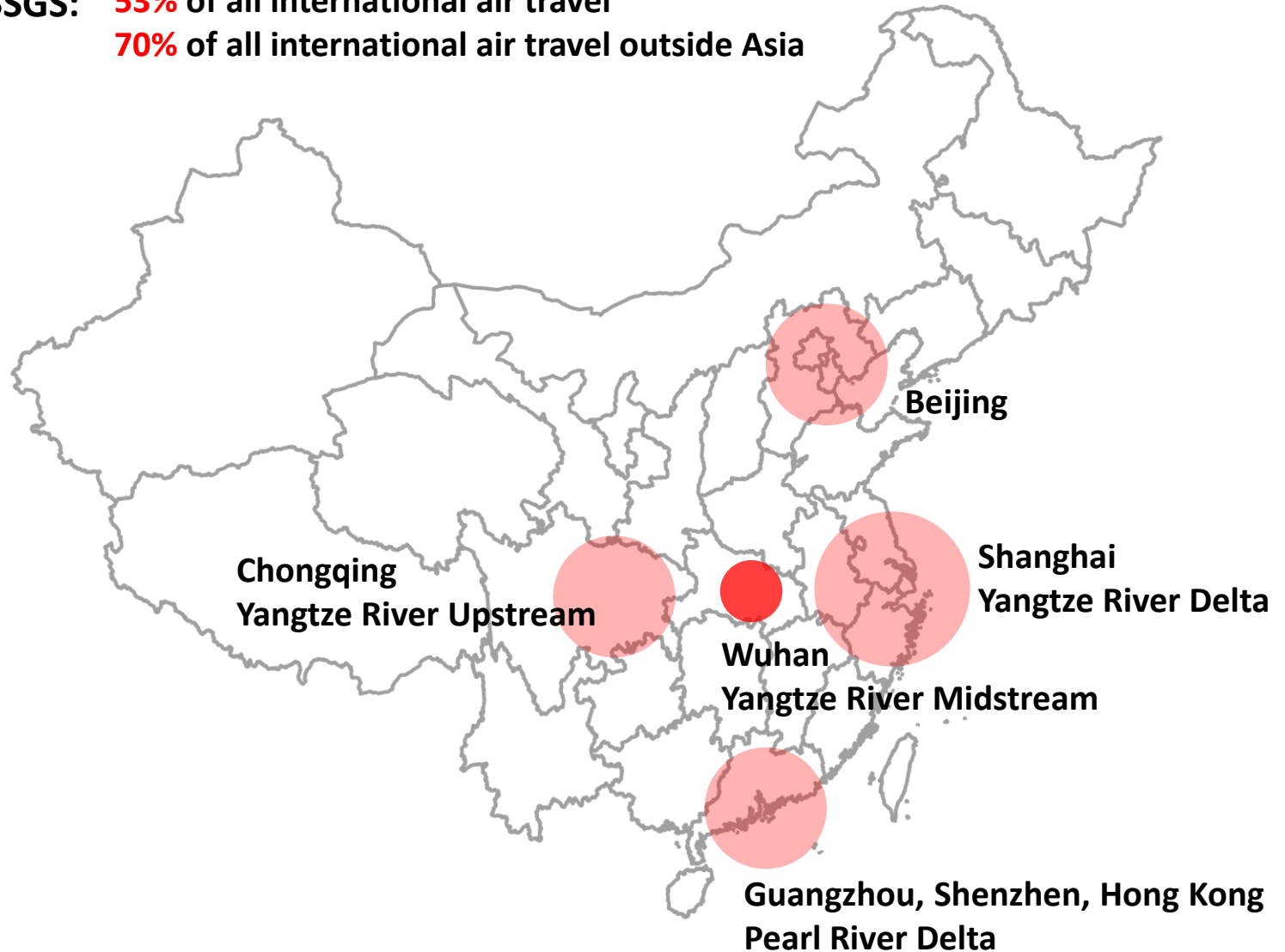


Megapolis
Beijing
Shanghai
Guangzhou
Shenzhen
Chongqing



Quarantine of movement would have limited effects

BSGS: **53%** of all international air travel
70% of all international air travel outside Asia



Preparedness of the 2019-nCoV outbreak

- **2019-nCoV may be about to become a global epidemic**
- **Self-sustaining human-to-human spread is already present in all major Chinese cities**
 - Seeding outside mainland China and subsequent local establishment may become inevitable, unless some or all of the following interventions are deployed quickly
- **Substantial, draconian measures limiting population mobility should be taken immediately**
 - Cancellation of mass gatherings, school closures and instituting work-from-home arrangements
- **Should containment fail and local transmission is established, mitigation measures during previous major outbreaks, e.g. SARS, MERS or pandemic influenza could serve as a useful reference template**
- **Regions with the closest travel links with major Chinese ports, preparedness plans should be readied for deployment at short notice**