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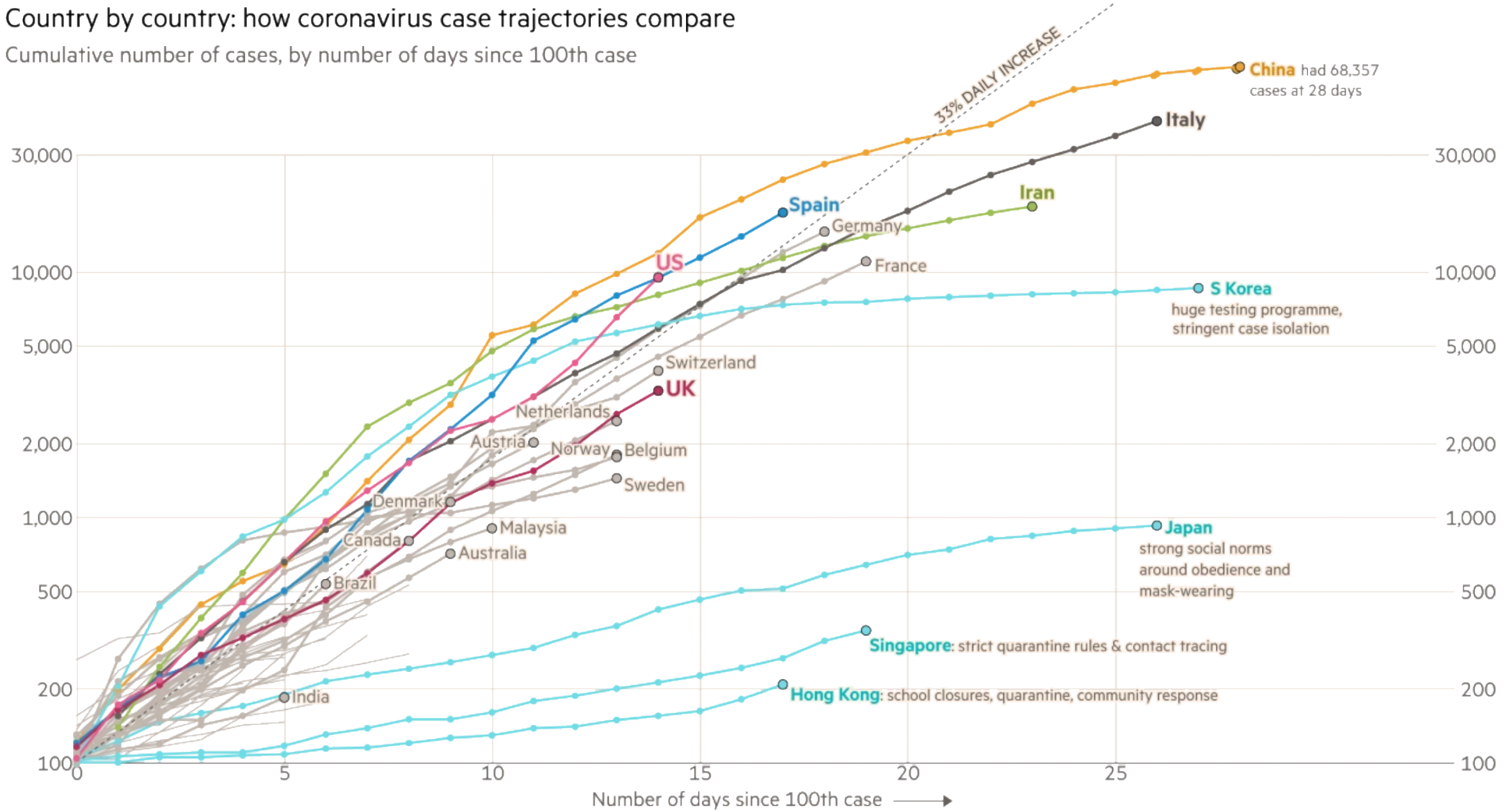
HKUMed WHO Collaborating Centre for Infectious Disease Epidemiology and Control releases real-time situation report by the instantaneous effective reproductive number *(R_t)* of COVID-19

港大醫學院世衞傳染病流行病學及控制合作中心發表新型冠狀病毒(COVID-19)即時有效繁殖率(R_t) 實況報告

Country by country: how coronavirus case trajectories compare

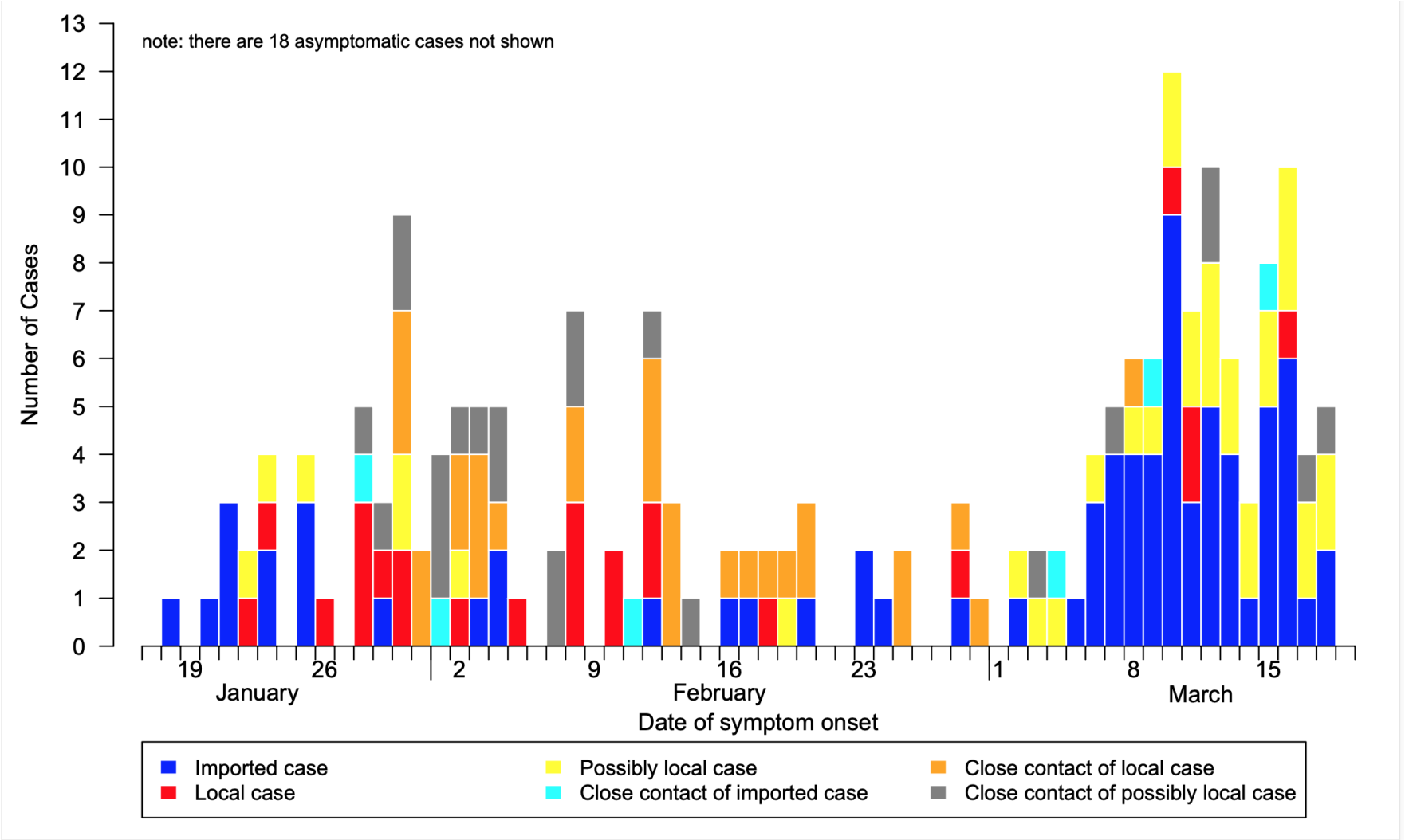
Cumulative number of cases, by number of days since 100th case



FT graphic: John Burn-Murdoch / @jburnmurdoch

Source: FT analysis of Johns Hopkins University, CSSE; Worldometers. Data updated March 19, 19:00 GMT

Current situation – epidemic curve

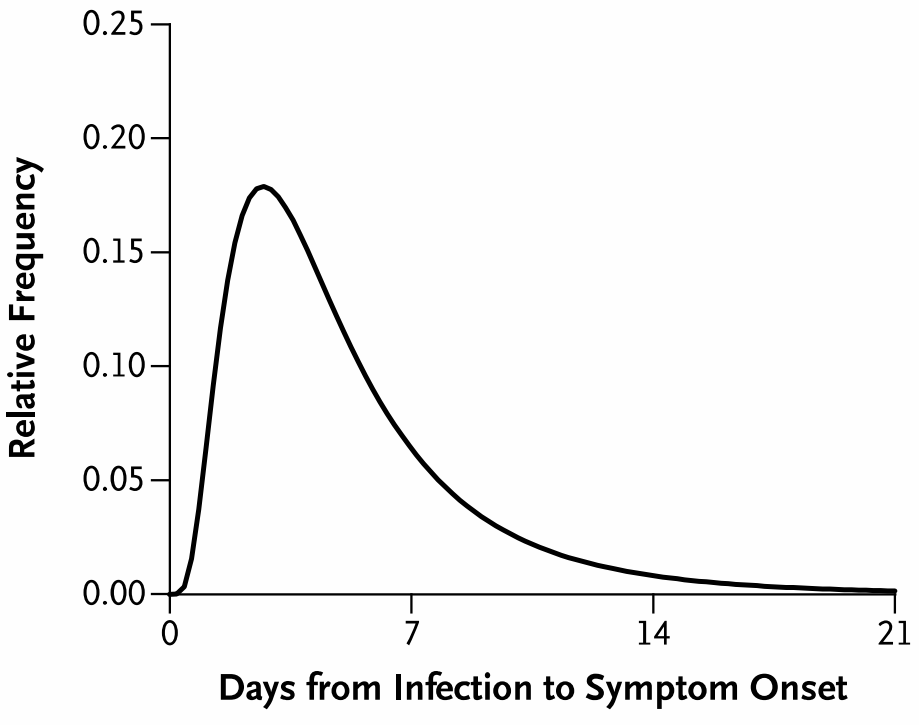


Source: https://www.chp.gov.hk/files/pdf/local_situation_covid19_en.pdf

“Possibly local” cases were more likely to have been infected overseas than locally

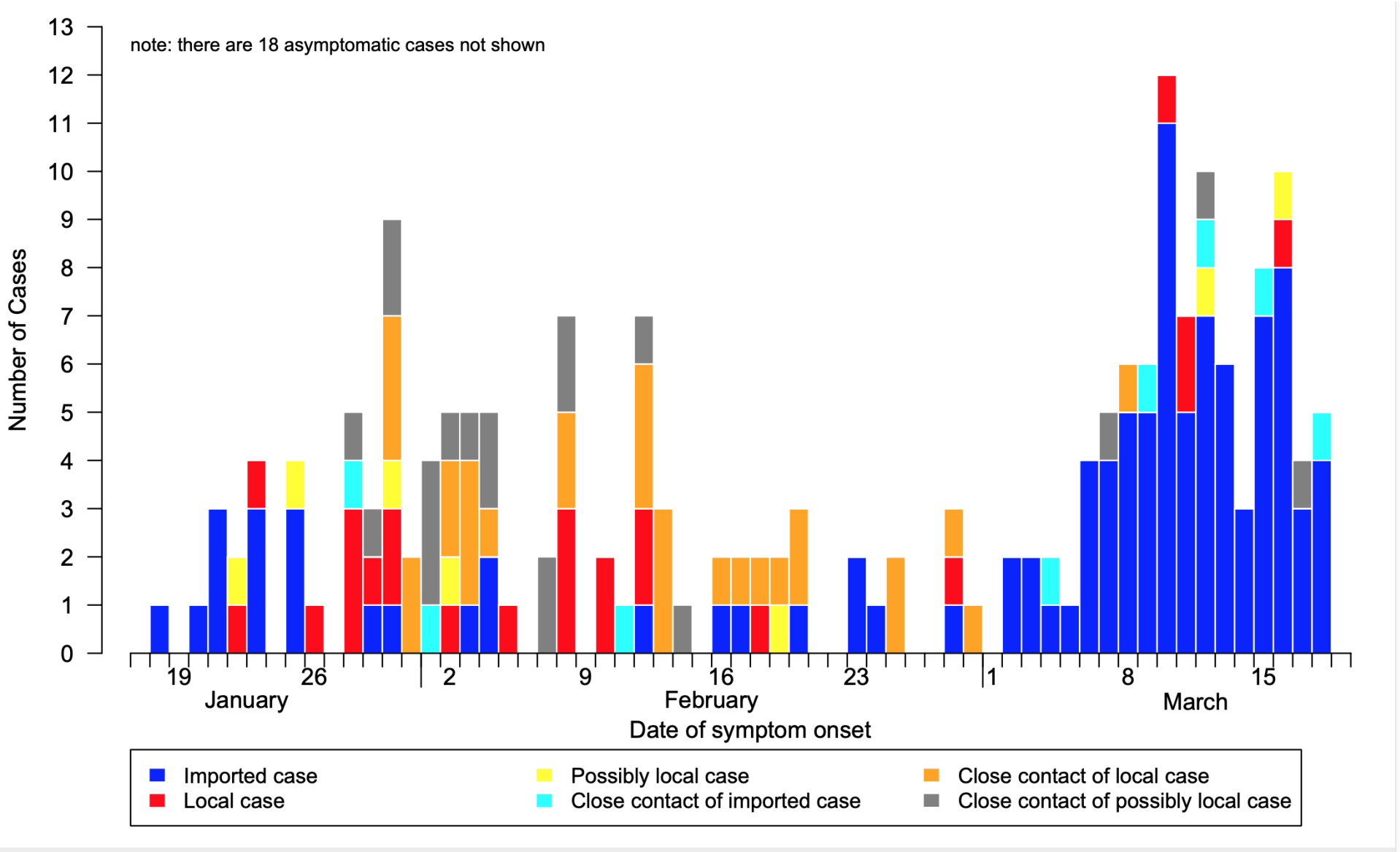
Examples:

- Case X visited London between 27 Feb and 8 Mar, symptom onset on 10 Mar
- Case Y visited London, Germany and Austria between 7 Mar to 14 Mar, symptom onset on 11 Mar
- Case Z visited the US between 12 Mar to 16 Mar, symptom onset on 16 Mar

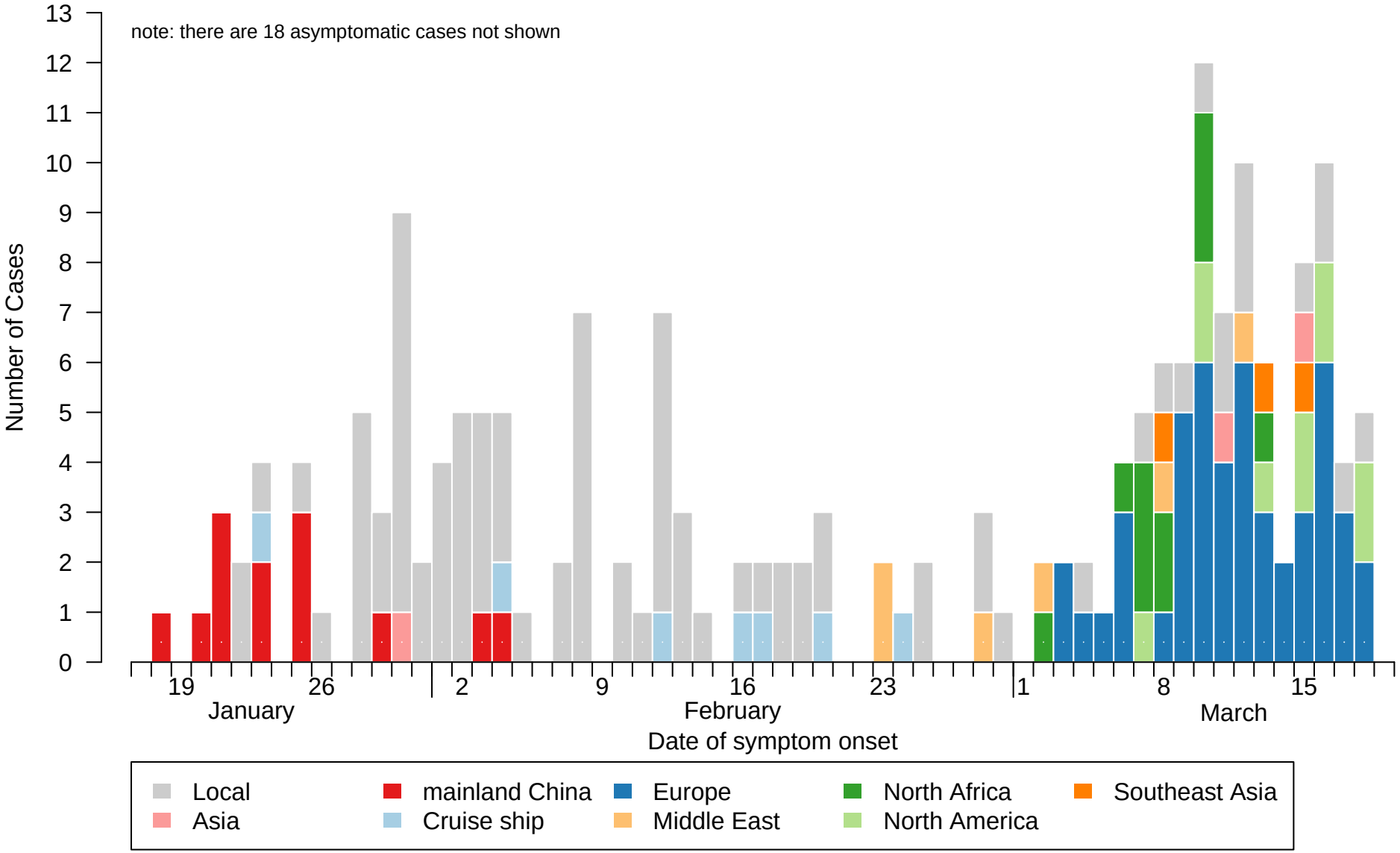


Incubation period distribution from
Li Q et al. 2020 New Engl J Med

Current situation: most recent cases imported



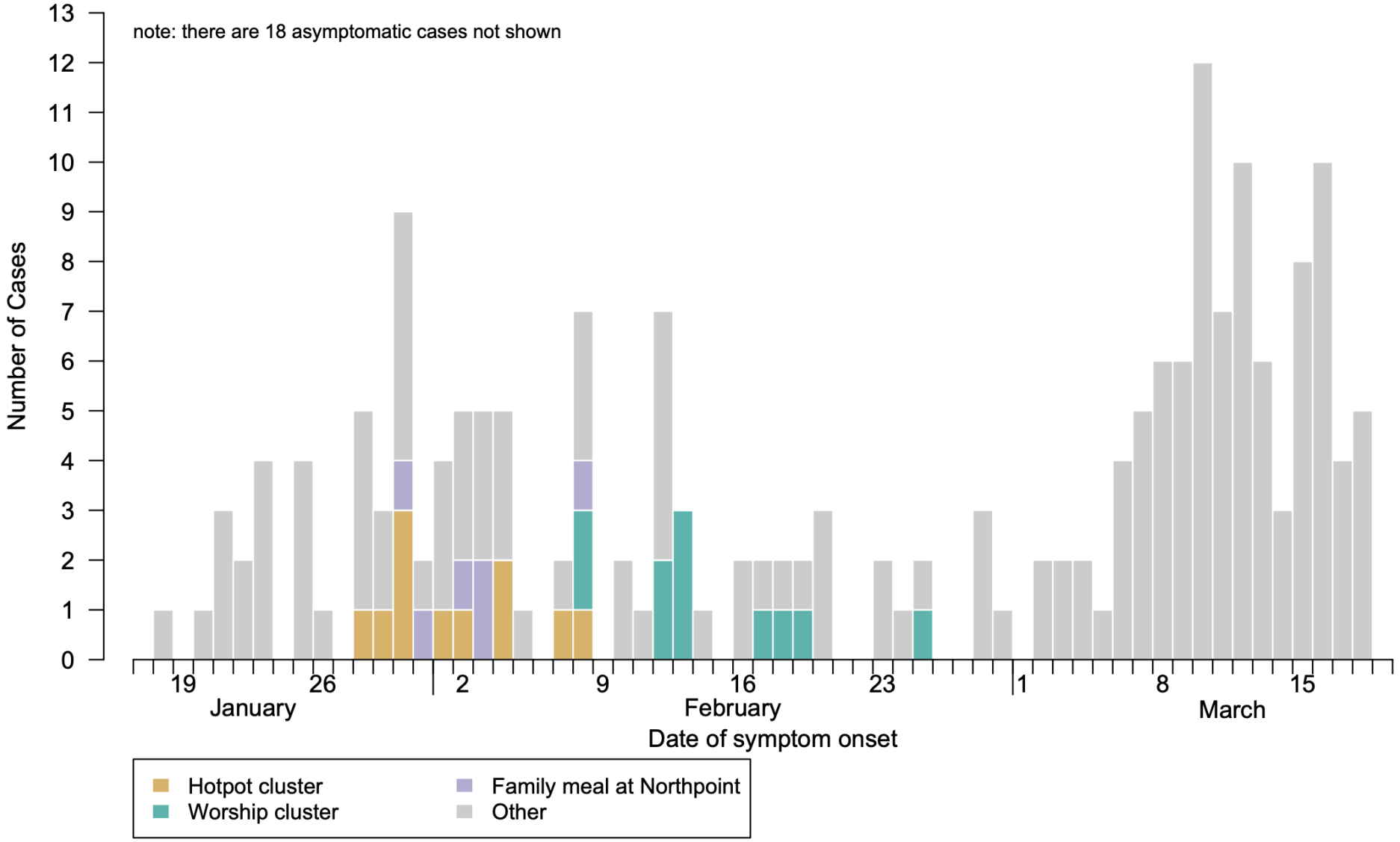
Imported or probably-imported cases



Places	# cases
Asia (not including China)	3
Mainland China	14 (1A)
Cruise ship	11 (4A)
Europe	48
Middle East	8 (2A)
North Africa	11
North America	11 (1A)
Southeast Asia	3

A: asymptomatic

Local clusters with ≥5 cases



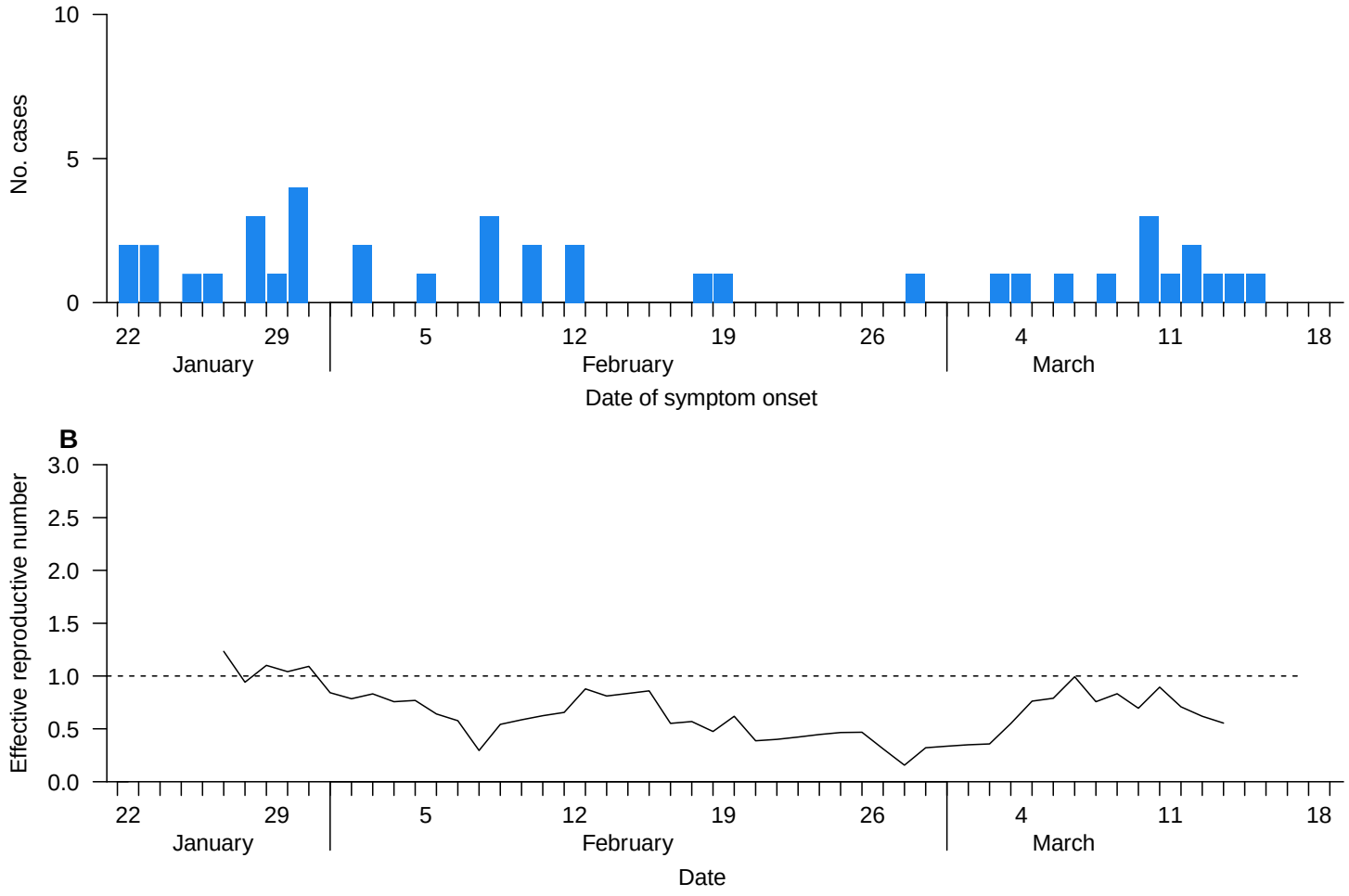
Cluster	# cases
Hotpot	11
Worship (福慧精舍)	12 (1A)
Family meal (Northpoint)	6

A: asymptomatic

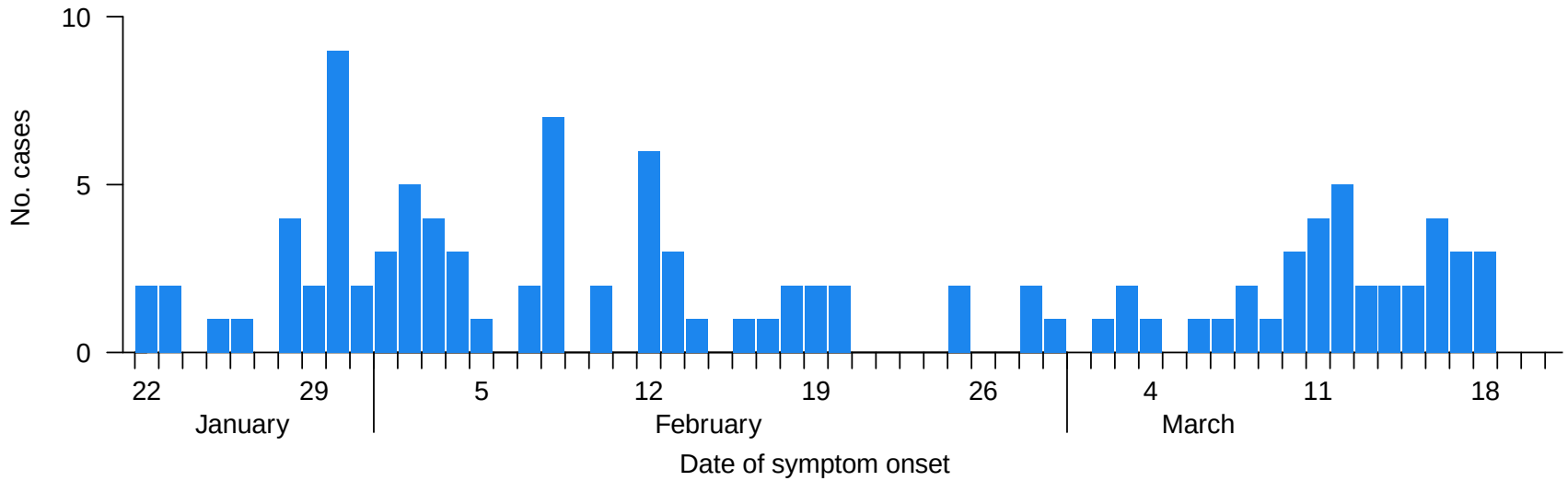
Reproductive number

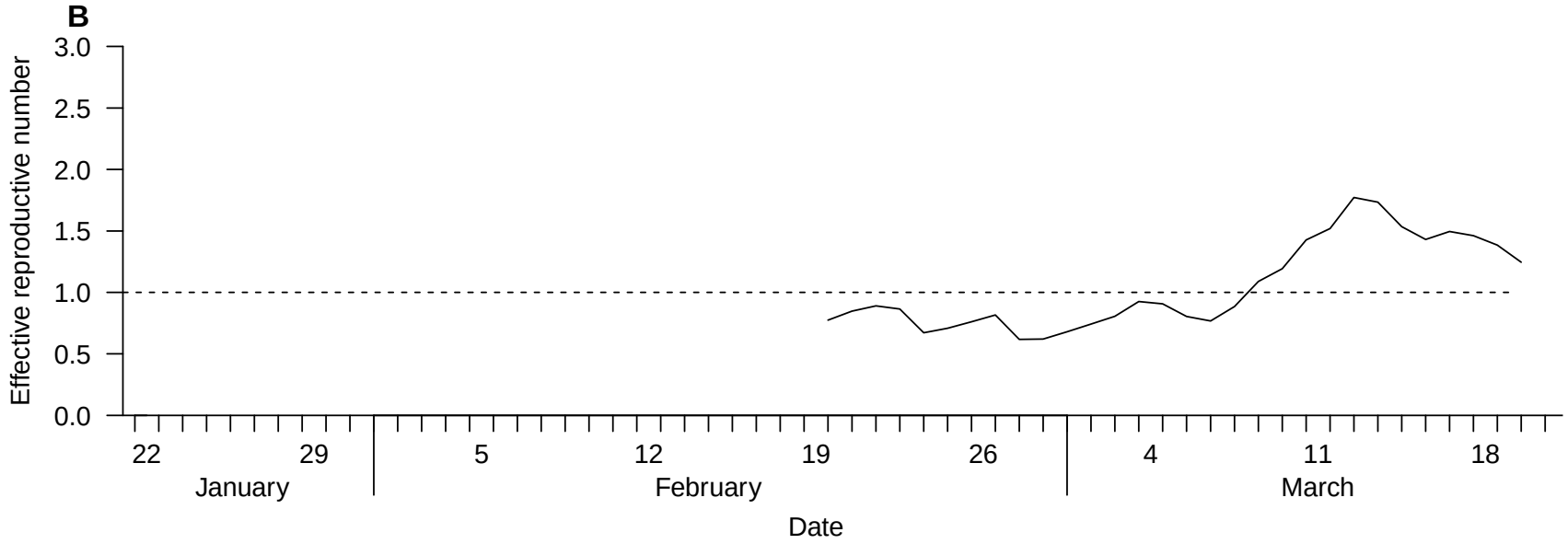
- Basic reproduction number (R_0): The average number of secondary cases per one case in a population where all individuals are susceptible to infection
  - Inherent to pathogen but can vary by location because of population density and contact patterns
- Effective reproductive number at time t (R_t): The average number of secondary cases per one case in a population over time
  - Will vary over time and indicates real-time transmissibility
- Reasons for R to change – (1) immunity after infection; (2) reduction in transmission because of effective control measures and behavioral changes

Effective R_t in Hong Kong prior to March 15

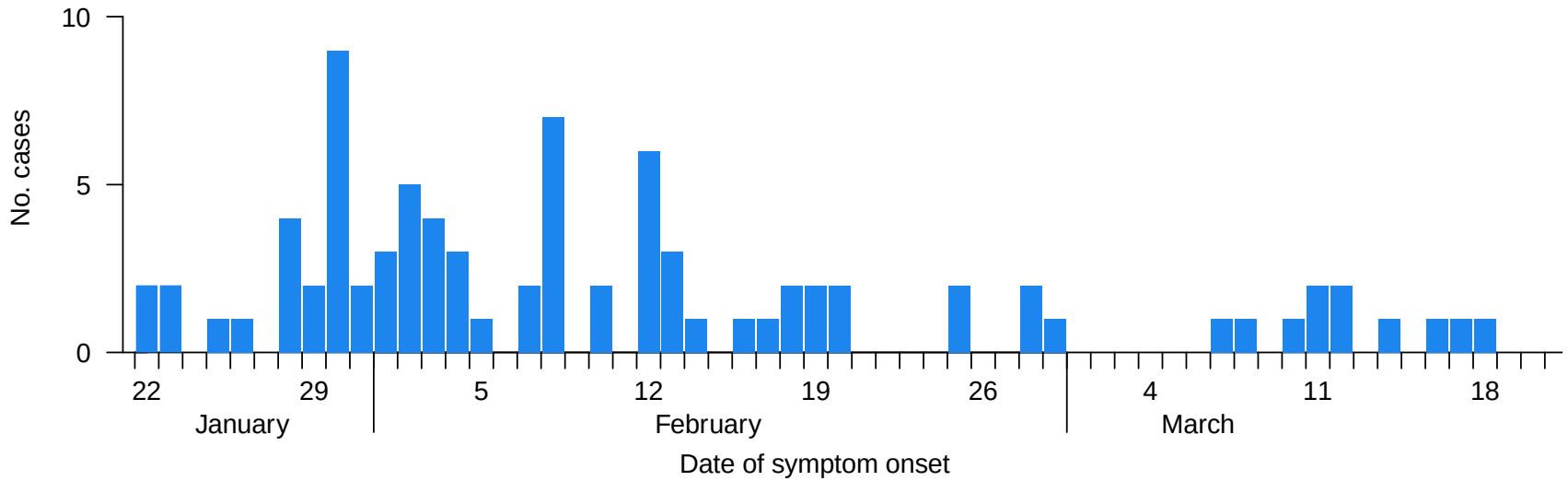


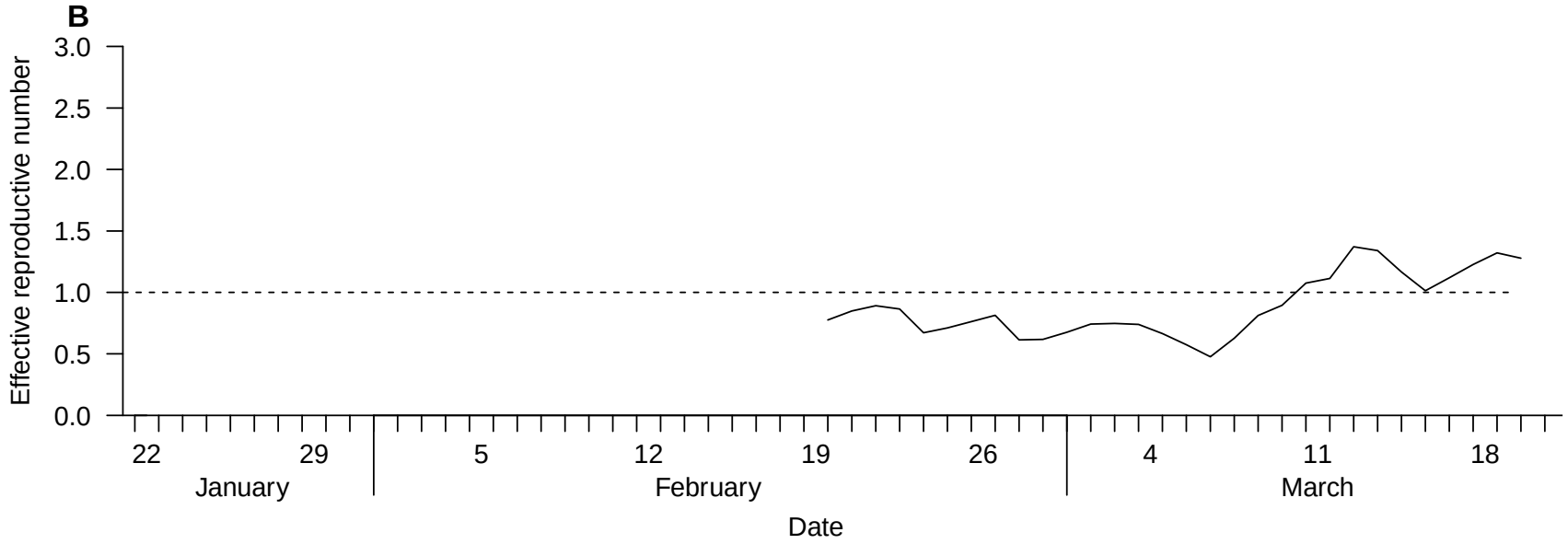
Effective R_t in Hong Kong (if “possibly local” = local)





Effective R_t in Hong Kong (if "possibly-local" = imported)





Lan Kwai Fong – early March

https://www.vice.com/en_ca/article/v74qd8/hong-kong-declining-nighlife-coronavirus-protests

Lan Kwai Fong – last Friday night

https://twitter.com/birdyword/status/1238481091226480640

Findings from telephone survey on preventive measures taken at individual level against COVID-19

Items	Survey 1 (21-23 January) (n=1008) % (95% CI)	Survey 2 (11-14 February) (n=1000) % (95% CI)	Round 3 (10-13 March) (n=1005) % (95% CI)
Preventive measures taken against COVID-19			
Avoid going to crowded places	61.3 (57.2, 65.4)	90.2 (86.2, 94.2)	85.1 (81.7, 88.4)
Avoid people with cold symptoms	66.8 (62.7, 70.9)	80.0 (76.0, 84.0)	78.7 (75.3, 82.1)
Use facemasks	74.5 (70.4, 78.6)	97.5 (93.5, 100)	98.8 (96.0, 100)
Wash hands more often including using hand sanitizer	71.1 (67.0, 75.2)	92.5 (88.6, 96.5)	93.0 (90.0, 96.0)
Avoid touching common objects or use protective measures when touching common objects	36.4 (32.3, 40.5)	73.8 (69.8, 77.9)	73.1 (69.6, 76.7)
Stay at home as much as possible	Not available	88.0 (83.9, 92.1)	83.8 (80.5, 87.1)
Avoid going to health care facilities	Not available	81.0 (77.0, 85.1)	74.7 (71.1, 78.3)

Abbreviation: CI = confidence interval

Telephone surveys were conducted among Hong Kong adults aged 18 years or above. Participants were recruited using random-digit dialling of both landline and mobile telephone numbers. Proportions were weighted by age and sex to the adult population in Hong Kong.

Urgent Recommendations

1. HKU will be making available an Rt dashboard for real time outbreak monitoring
2. R_t lags by the sum of the incubation period + symptom onset to diagnosis and reporting
   - Can be compensated in part by digital/AI augmentation eg Octopus/mobile phone location services reflecting social mobility/distancing
3. Importance to observe social distancing to protect self and others
   - Businesses may consider shortening hours and restricting access
   - Government may need to step in otherwise
4. HK is now at our HIGHEST RISK for a sustained local outbreak since COVID-19 began, therefore:
   - Improve logistics and people flow for arriving passengers at the airport and for those who seek self quarantine in hotels
   - Protect older adults, especially those in nursing homes and retirement communities
   - Protect and help the foreign domestic helper community, so they can in turn protect their employing families and HK at large
5. Keep calm, stay healthy and carry on – together we will get through this!