

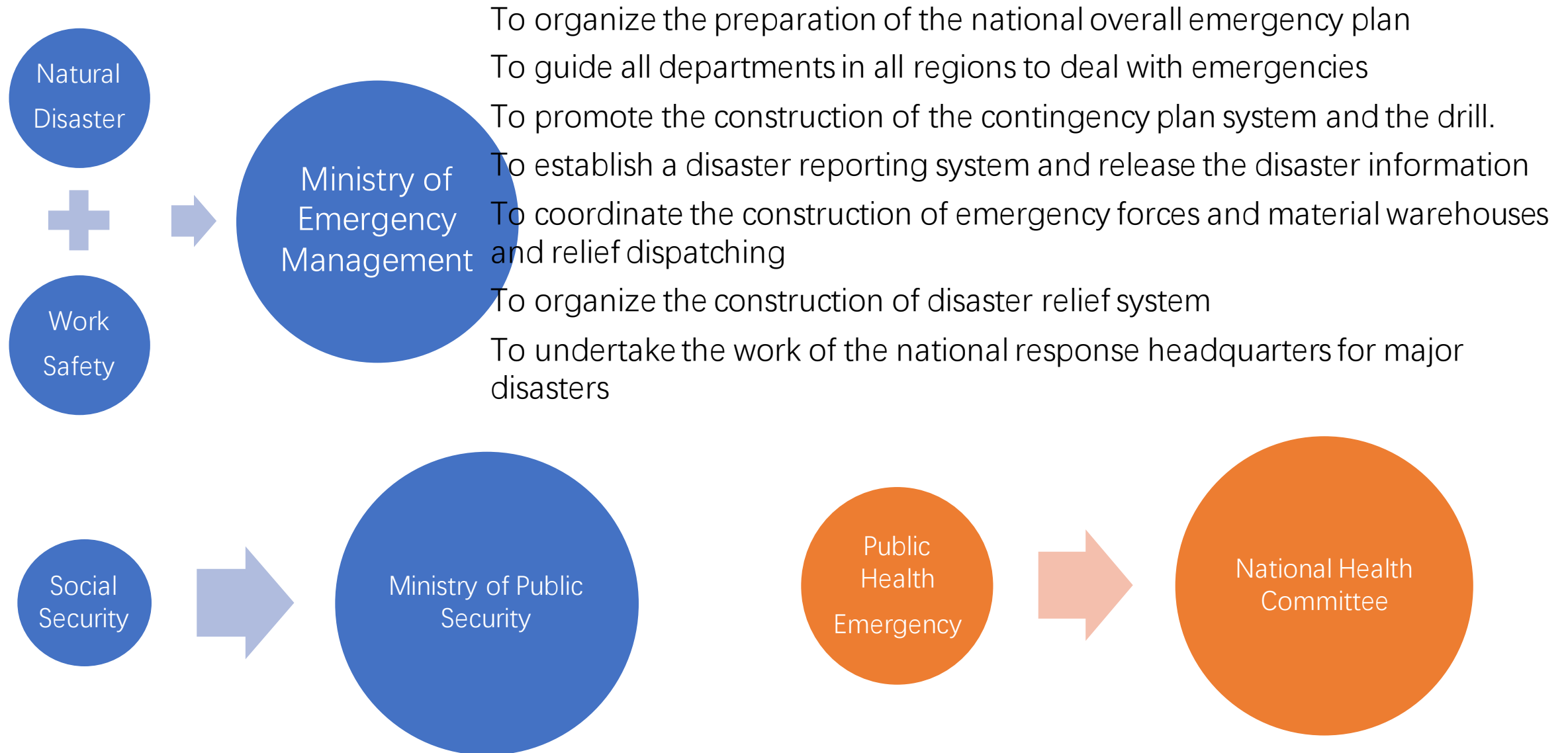
COVID-19: an emergency management perspective in China

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2020.03.26

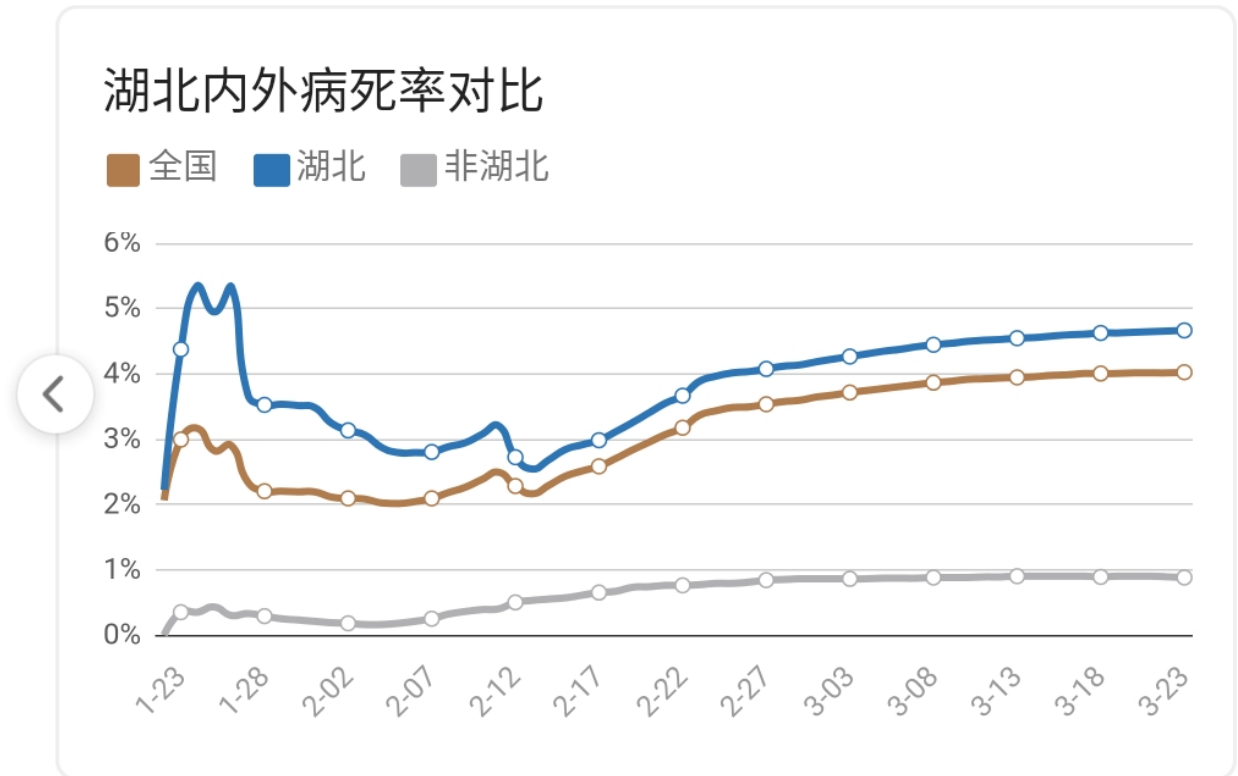
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The categorization of emergency management in China




Numbers by Mar. 26

- Confirmed: 81960
 - Imported cases: 541
- Cured: 74196
- Death: 3,293
- Mortality rate
 - National: 4.0%
 - **Hubei: 4.7%**
 - *Wuhan is the capital city of Hubei
 - **Other 30 provinces: 0.9%**

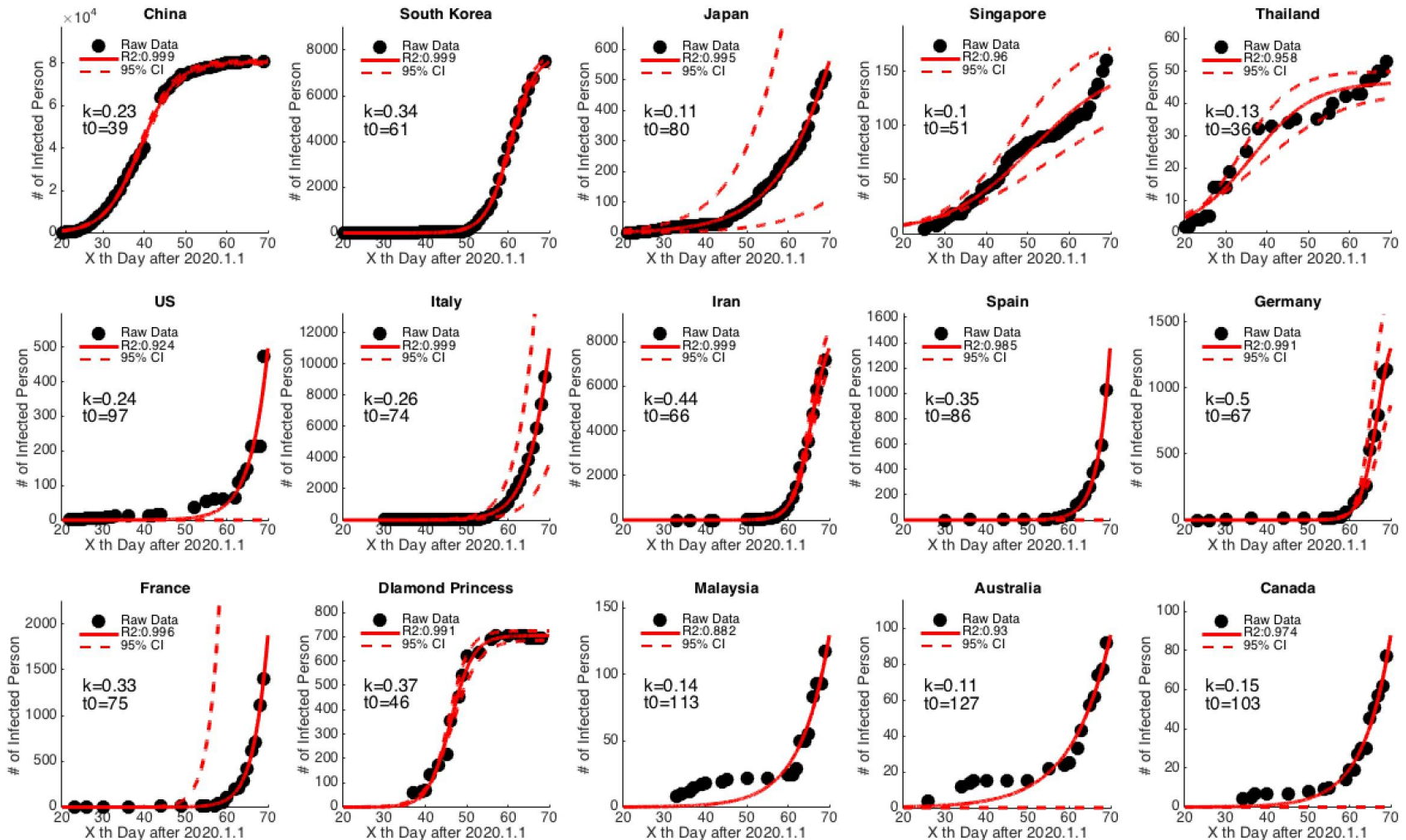
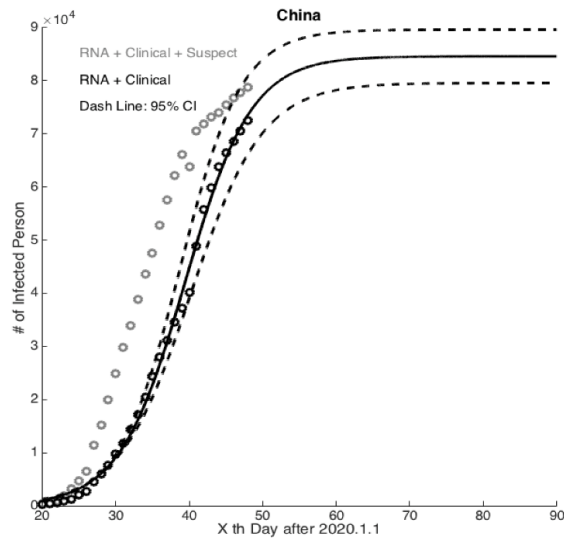


The serious shortage of medical resources may contribute to the high death rate in Hubei/Wuhan.

Recap – Five phases in Wuhan

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- Phase I (December 1, 2019 to January 23, 2020): No strict epidemic control, except reporting cases, until the lockdown of the city was announced on January 23;
 - Phase II (January 24 to February 1): With city restriction, Wuhan gradually established traffic control and quarantine programs to restrict population flow. There was a huge shortage in medical resources;
 - Phase III (February 2 to 6): Strengthen prevention and control measures in community in Wuhan; “Huoshenshan”, “Leishenshan” and cabin hospitals have been delivered, and medical rescue teams of 20 provincial rushed to help;
 - Phase IV (Feb. 7 till Mar. 8th): Prevention and control measures have been further strengthened, and strict community measures have been implemented. Infected patients are basically all receivables and treated by hospitals.
 - Phase V (Mar. 9th till now): limited increment of new infection everyday, mainly are imported cases from abroad. But death rate is still increasing. 16 cabin hospitals closed. Continued community quarantine but less restriction.

The projection – confirmed cases

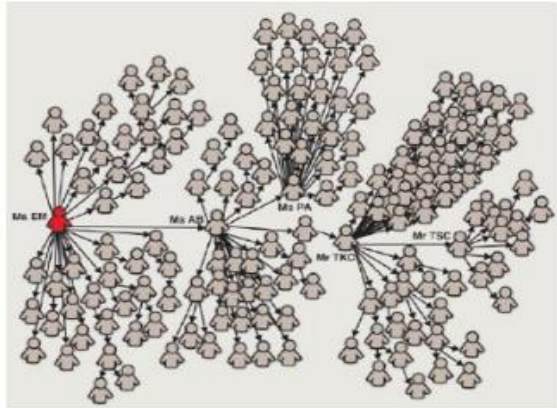


- Based on our estimation (As of Feb 18): it is highly possible that the situation will be stabilized by **the end of March in China.**

Three features of a complex network

These features contribute to the fast spread of virus.

- Small World: Short average distance
- Scale Free: Nodal degree conforms Power Law distribution.
- Aggregation:

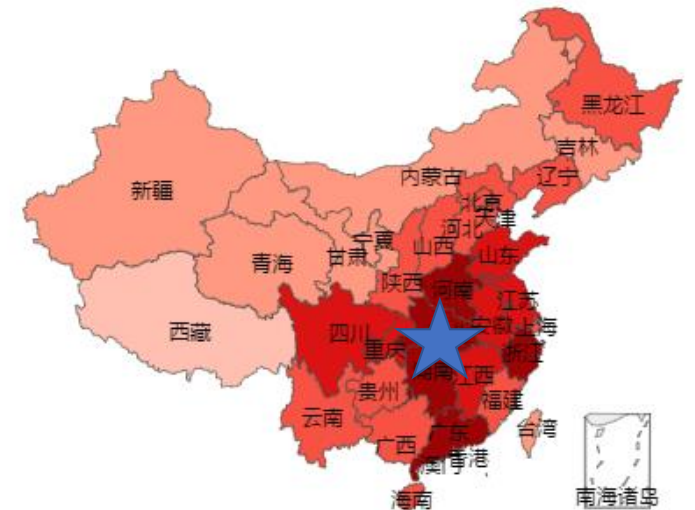


(Source: Baidu)

January 25th is the 2020 Chinese New Year. The most important holiday for the union of families and friends.

街道	日间人口密度
水塔街道	102778
六角亭街道	93378
荣华街道	90506
前进街道	90000
民意街道	74762
新华街道	67593
汉正街道	65000
满春街道	57333
民族街道	53542
宝丰街道	53368
民权街道	50800

Wuhan is a city with very high population density.



Wuhan is in the central part of China and has a population of 15 million. More than 5 million people left Wuhan before Jan. 23.

A disaster perspective

- Hazard
 - New virus
 - Very limited knowledge
- Exposure
 - Huge population: Wuhan has a permanent population of 11.081 million and a floating population of over 5 million
- Vulnerability
 - Limited healthcare infrastructure: 81,700 hospital beds by 2018
 - Aging society: 14% population are 65 years old+
 - Low public awareness

nature

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Covert coronavirus infections could be seeding new outbreaks

Scientists are rushing to estimate the proportion of people with mild or no symptoms who could be spreading the pathogen.

Measures – All governments, all societies

- Identify the source of infection, control the source of infection
 - Test + Epidemic survey
 - Isolation
- Control transmission
 - Cut off the long-range transmission link (airline, railway, high-speed train etc.) to prevent and control the spread;
 - Initialize the city/community/family isolation/quarantine plan
 - Popularize the knowledge of sanitization and epidemic prevention
- Resource allocation
 - Hospital beds
 - 50,000 by Feb. 15th, 100,000 by Feb. 20th
 - Medical Team:
 - paired assistance program, 40,000+ Medicare people
 - Military force
 - Emergency Logistics
- Research and development of drugs and vaccines
- **Protect the vulnerable population**
 - Hospital
 - Nursing house
 - Prison
 - School

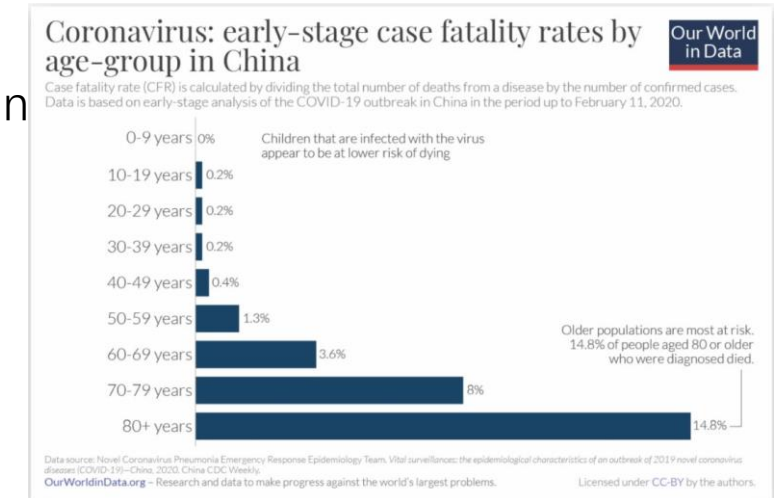
Substantial undocumented infection facilitates the rapid dissemination of novel coronavirus (SARS-CoV2)

Ruiyun Li^{1*}, Sen Pei^{2*†}, Bin Chen^{3*}, Yimeng Song⁴, Tao Zhang⁵, Wan Yang⁶, Jeffrey Shaman^{2†}

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Epidemiology of COVID-19 Among Children in China

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Challenges



Information release

Timeliness

Completeness



Emergency logistics

Integration of official and
unofficial resources

Coordination among
agencies



Involvement of CSO

Training demand

Coordination with official
teams



Issues with new technologies

Legal issue

Capacity issue



New policies

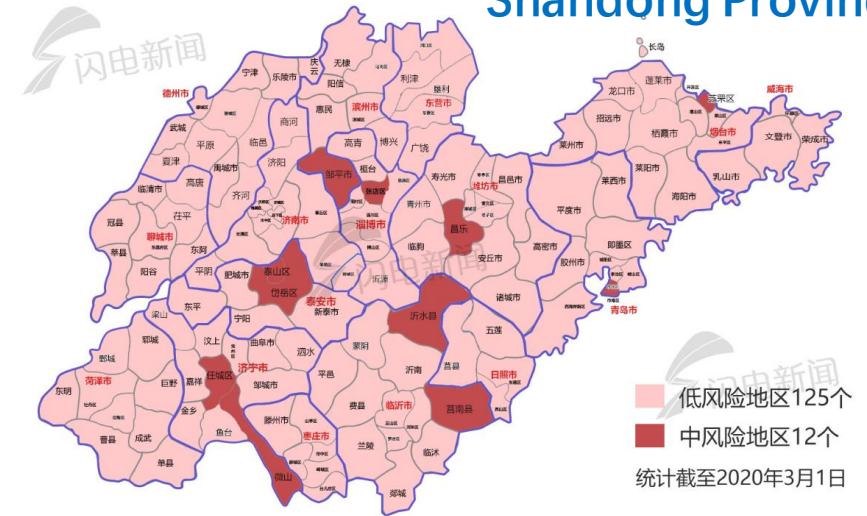
The guiding opinions on novel coronavirus pneumonia prevention and control in the district classification and scientific control and precision measures

Announced by the Joint defense joint control mechanism of the State Council (2020.02.18)

- Scientific prevention and control
- Precise policy implementation
- Regionalization and classification
 - Dynamic Risk zoning
 - Diversified control measures and different schedule for factory resumption

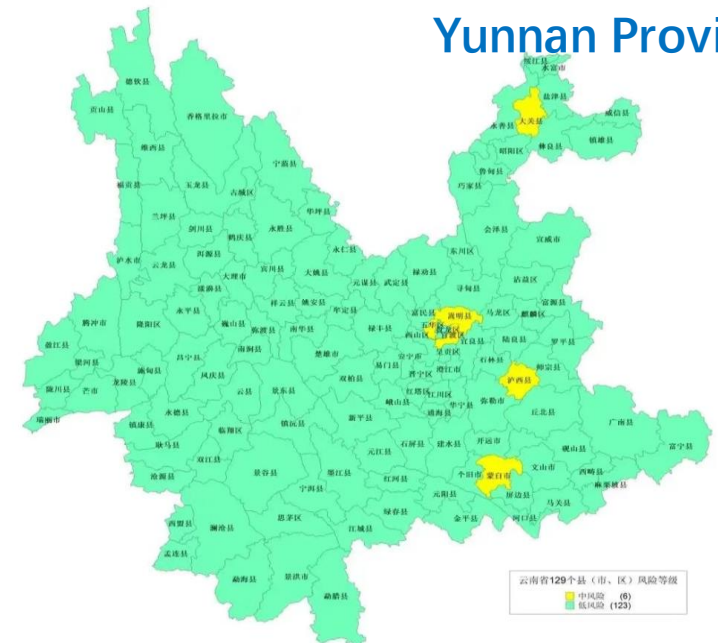
山东省新冠肺炎疫情分区分级表

Shandong Province



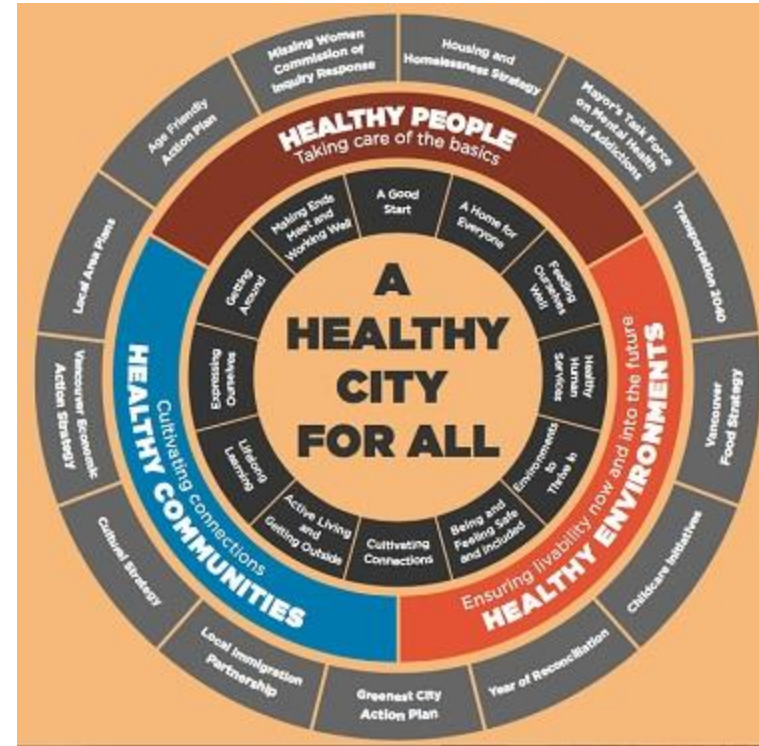
按照相关规定，风险等级每周调整一次，发生突发聚集性疫情或不明原因社区传播疫情时随时调整。

Yunnan Province



Potential Improvements – Healthy Cities

- Density Control
 - Population
 - Building
- Circulation corridor
- Five-minute Life-Circle
- Infrastructure standards
- Health Culture
- Integrated City Plan



(Source: WHO)



Potential Improvements – Others

- Improving the awareness and ability of the public and the community in disaster prevention and mitigation/Risk communication
- Continuity plan for multiple stakeholders (governments at all levels, business, community, family...)
- Mechanism to support the development of small and medium-sized enterprises.
- Integrated channel/platform for mobilization of emergency materials



We need global cooperation

- Information sharing
- Transmission control
- Emergency logistics
- Collaborations in R&D
- ...

“覆巢之下无完卵”

There will be no complete egg when a nest is flipped over.

Thank you!

All information are based on person research.
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