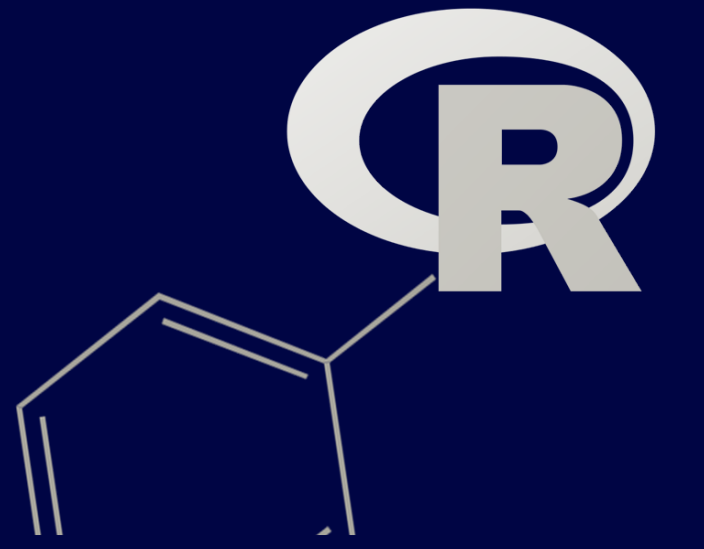




Influence of Chinese city's hygiene on the SARS-CoV-2 transmission

Wanqi Wang¹, Peng Zhao^{1, 2}

¹Department of public health, Xi'an Jiaotong-Liverpool University, Suzhou, China • ²Department of Environmental science, Xi'an Jiaotong-Liverpool University, Suzhou



Value and impact

Theoretical implication: how does hygiene impact the virus transmission, which will help to understand the transmission dynamics of the virus.

Practical implication: to evaluate the effectiveness of national hygienic cities, which will promote city hygiene in China and beyond.

Background

- Transmission dynamics of this emerging infectious disease haven't been fully understood
- Previous research shows the air quality may influence the virus transmission [@li_air_2020; @iha_comparative_2016]

Methods

- | | |
|--------------------------------------|--|
| National hygienic city | <ul style="list-style-type: none">• Ninety-three reconfirm national hygienic cities in China in 2018, this is the newest list of national hygienic city. |
| Total confirmed cases | <ul style="list-style-type: none">• nCov2019 packages• Excluding infected arrivals from abroad |
| Move-out data before lockdown | <ul style="list-style-type: none">• Baidu Qianxi• Inspect elements• 16 days (Jan 10, 2020 - Jan 25, 2020)• Each city's move-out strength is presented as a percentage• Total move-out strength was adjusted by each day's move-out strength. |

Results

preserve068a22e4efd66491

Figure 1: Move out trend from Wuhan

preserve908ce92d633c2825

Figure 2: A comparison of Tianmen and Shiyen

preserve02804ba19d377ad6

Figure 3: A comparison of all cities outside Wuhan

Future work

- Case-control match of hygienic cities and non-hygienic cities
- Multiple linear regression to total confirmed cases
- The difference in mortality & recovery time
- Detailed hygiene condition

Conclusions

- Lockdown of Wuhan effectively cut-down its move-out.
- Top 10% move-out cities from Jan are all in Hubei province
- The national hygienic city may not have significantly better control of the epidemic
- The outliers with weak epidemic control, are more likely to be non-national hygienic city

Limitations

- The transmission may start in early January, 2020 or earlier.
- The move-out data from Wuhan does not include transportation means
- The real performance of local government varies in response to this emerging infectious disease

Contact

Scan the QR code for this
<project's website> to find more
information.



✉ <Wanqi.Wang@xjtlu.student.xjtlu.edu.cn>

Acknowledgements

Data were from <Baidu Qianxi>, Dr. Guangchuang Yu's <nCov2019 packages>, and <National Health Commission of the People's Republic of China.>

The poster template was from Dr. Peng Zhao's <xjtlu package>.

Packages of <tidyverse>, <leafletCN>, <plotly>, <knitr> were used in data analysis and visualization.

References

