

## Additional file 2. Map of geographic regions, mainland China

Mainland China are officially split into two and seven geographic regions as follows:

1. Two geographic regions
  - Northern: Beijing, Tianjin, Liaoning, Jilin, Heilongjiang, Shandong, Henan, Shaanxi, Gansu and Tibet
  - Southern: Jiangsu, Zhejiang, Anhui, Fujian, Hubei, Hunan, Guangdong, Guangxi, Chongqing, Sichuan, and Guizhou
2. Seven geographic regions
  - Northern: Beijing, Tianjin, Hebei, Shanxi, and Inner Mongolia
  - Northeast: Liaoning, Jilin, and Heilongjiang
  - Eastern: Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi and Shandong
  - Central: Henan, Hubei and Hunan
  - Southern: Guangdong, Guangxi and Hainan
  - Southwest: Chongqing, Sichuan, Guizhou, Yunnan and Tibet
  - Northwest: Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang

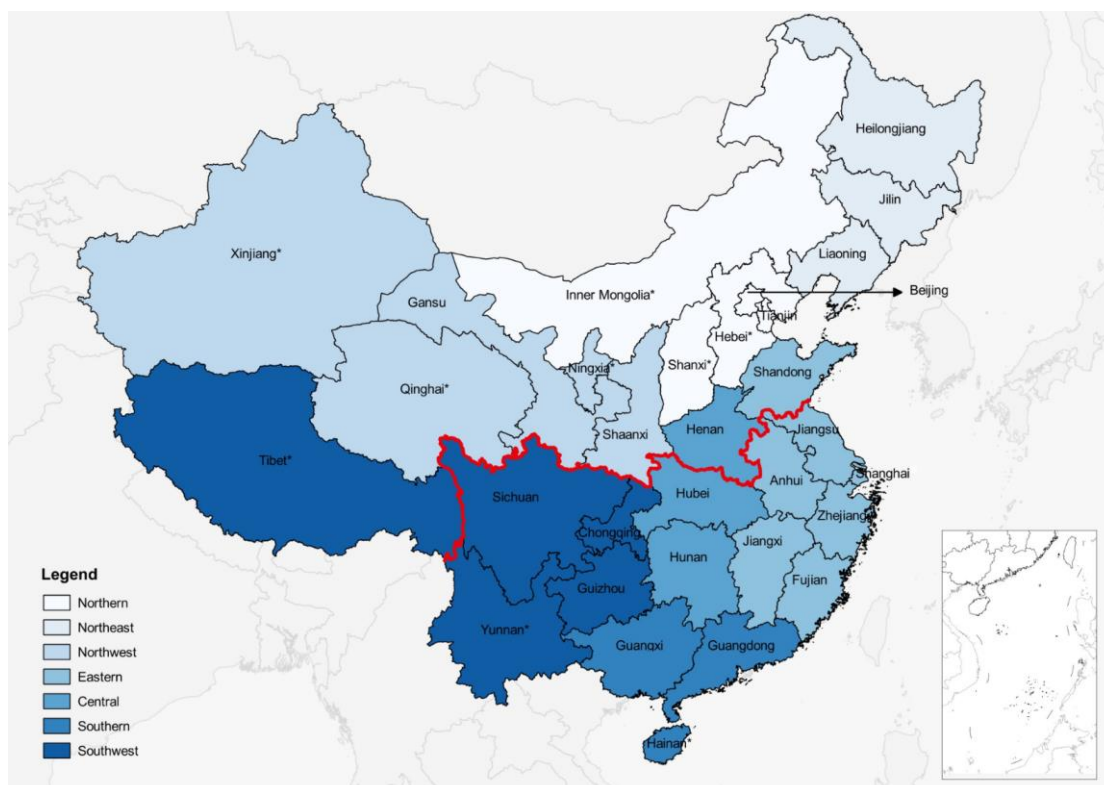


Figure S1. Map showing the seven geographical regions in mainland China (\*denote the provinces excluded in our analysis due to unavailability of influenza-related respiratory excess mortality estimates based on local surveillance data, including Hebei, Shanxi, Inner Mongolia, Hainan, Yunnan, Tibet, Qinghai, Ningxia and Xinjiang) (with Southern/Northern stratification, the red line separates the Northern and Southern provinces)