**Online Supplementary Documents**

**Table S1** Health system characteristics of 28 provinces in China in 2015

| Provinces      | Sample size | Per capita GDP, CNY (US$) | OOP/THE | Outpatient expenditure per visits, CNY (US$) | Inpatient expenditure per admission, CNY (US$) | Ward Beds per 1000 inhabitants | Health professionals per 1000 inhabitants |
|----------------|-------------|---------------------------|---------|---------------------------------------------|-----------------------------------------------|---------------------------------|------------------------------------------|
| Beijing        | 47          | 106497 (17099)            | 17.39   | 440.90 (70.79)                              | 20149.20 (3235.05)                            | 5.14                            | 10.4                                      |
| Tianjin        | 109         | 107960 (17334)            | 30.98   | 290.90 (46.71)                              | 15250.20 (2448.49)                            | 4.12                            | 5.9                                       |
| Hebei          | 746         | 40255 (6463)              | 36.89   | 210.20 (33.75)                              | 7517.00 (1206.89)                             | 4.61                            | 5.0                                       |
| Shanxi         | 522         | 34919 (5606)              | 33.09   | 230.30 (36.98)                              | 8045.50 (1291.74)                             | 5.00                            | 5.8                                       |
| Inner Mongolia | 807         | 71101 (11416)             | 36.45   | 218.00 (35.00)                              | 8146.50 (1307.96)                             | 5.33                            | 6.5                                       |
| Liaoning       | 543         | 65354 (10493)             | 36.01   | 259.40 (41.65)                              | 8604.90 (1381.56)                             | 6.09                            | 6.0                                       |
| Jilin          | 386         | 51086 (8202)              | 36.73   | 240.30 (38.58)                              | 8406.90 (1349.77)                             | 5.25                            | 5.8                                       |
| Heilongjiang   | 310         | 39462 (6336)              | 35.98   | 241.20 (38.73)                              | 8285.70 (1330.31)                             | 5.58                            | 5.6                                       |
| Shanghai       | 71          | 103796 (16665)            | 21.75   | 316.00 (50.74)                              | 16084.60 (2582.46)                            | 5.08                            | 7.0                                       |
| Jiangsu        | 855         | 87995 (14128)             | 27.02   | 235.50 (37.81)                              | 10060.30 (1615.23)                            | 5.19                            | 6.1                                       |
| Zhejiang       | 749         | 77644 (12466)             | 29.49   | 225.50 (36.21)                              | 10578.00 (1698.35)                            | 4.92                            | 7.3                                       |
| Anhui          | 893         | 35997 (5779)              | 29.82   | 203.20 (32.62)                              | 6809.20 (1093.25)                             | 4.35                            | 4.6                                       |
| Fujian         | 495         | 67966 (10912)             | 26.11   | 209.10 (33.57)                              | 8173.50 (1312.30)                             | 4.51                            | 5.5                                       |
| Jiangxi        | 846         | 36724 (5896)              | 27.54   | 213.00 (34.20)                              | 6956.00 (1116.82)                             | 4.33                            | 4.6                                       |
| Shandong       | 1569        | 64168 (10302)             | 31.95   | 229.40 (36.83)                              | 8589.70 (1379.12)                             | 5.27                            | 6.3                                       |
| Henan          | 1330        | 39123 (6281)              | 35.16   | 164.40 (26.40)                              | 6874.40 (1103.72)                             | 5.16                            | 5.5                                       |
| Hubei          | 519         | 50656 (8133)              | 33.52   | 214.30 (34.41)                              | 7823.00 (1256.02)                             | 5.86                            | 6.3                                       |
| Hunan          | 804         | 42754 (6864)              | 33.72   | 253.60 (40.72)                              | 6980.10 (1120.69)                             | 5.85                            | 5.5                                       |
| Guangdong      | 896         | 67503 (10838)             | 26.04   | 216.40 (34.74)                              | 9982.20 (1602.69)                             | 4.02                            | 5.7                                       |
| Guangxi        | 519         | 35190 (5650)              | 26.64   | 173.20 (27.81)                              | 7154.60 (1148.71)                             | 4.47                            | 5.7                                       |
| Province     | Population | Total THE | THE per capita | Total OOP | OOP per capita | THE as % of OOP | Theoretical range ratio |
|--------------|------------|-----------|----------------|-----------|----------------|------------------|------------------------|
| Chongqing    | 244        | 52321 (8400) | 28.27 | 266.10 (42.72) | 7481.80 (1201.24) | 5.85 | 5.5 |
| Sichuan      | 1542       | 36775 (5904)  | 29.67 | 219.20 (35.19)  | 7091.20 (1138.53) | 5.96 | 5.8 |
| Guizhou      | 174        | 29847 (4792)  | 23.39 | 228.90 (36.75)  | 5387.70 (865.02)  | 5.57 | 5.3 |
| Yunnan       | 1061       | 28806 (4625)  | 30.24 | 179.70 (28.85)  | 5849.50 (939.17)  | 5.01 | 4.8 |
| Shannxi      | 611        | 47626 (7647)  | 32.80 | 211.50 (33.96)  | 6604.30 (1060.35) | 5.59 | 7.0 |
| Gansu        | 475        | 26165 (4201)  | 29.87 | 169.70 (27.25)  | 5447.10 (874.56)  | 4.91 | 5.0 |
| Qinghai      | 152        | 41252 (6623)  | 23.90 | 181.10 (29.08)  | 7980.20 (1281.26) | 5.87 | 6.0 |
| Xinjiang     | 95         | 40036 (6428)  | 24.94 | 208.40 (33.46)  | 6318.80 (1014.51) | 6.37 | 6.9 |
| Total        | 17370      | 49992 (8026)  | 29.27 | 233.90 (37.55)  | 8268.10 (1327.48) | 5.11 | 5.8 |
| Maximum      | 1569       | 107960 (17334)| 36.89 | 440.90 (70.79)  | 20149.20 (3235.05) | 6.37 | 10.4 |
| Minimum      | 47         | 26165 (4201)  | 17.39 | 164.40 (26.40)  | 5387.70 (865.02)  | 4.02 | 4.6 |
| Range ratio  | 33.38      | 4.13        | 2.12  | 2.68  | 3.74  | 1.58 | 2.26 |

*Note:* CNY – Chinese Yuan; OOP – out-of-pocket; THE – total health expenditure. Range ratio is the ratio of maximum to the minimum.

Source: China Statistical Yearbook of Health and Family Planning (2016).

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**Figure S1** Analysis framework of health care utilization including health system and individual characteristics