

Supplementary File 1. Research data

Table 1. Statistical data of “smart” driving force variables.

| | X1 | X2 | X3 | X4 | X5 | X6 | X7 | X8 | X9 | X10 | X11 | X12 | X13 | X14 | X15 |
|-------------|--------|---------|---------|----------|-------|------|------|-------|-----|---------|--------|----------|-------|-------|------|
| 2008 | 61445 | 1052.81 | 1912.26 | 8805 | 5911 | 120 | 2557 | 21.62 | 1.1 | 655.09 | 107.08 | 594.12 | 85.96 | 46.12 | 2717 |
| 2009 | 67455 | 1344.48 | 2170.42 | 9314 | 6201 | 160 | 2590 | 22.39 | 1.2 | 801.04 | 142.1 | 608.08 | 87.05 | 44.44 | 2790 |
| 2010 | 79427 | 1671.75 | 2542.5 | 9576 | 6662 | 366 | 3263 | 24.48 | 1.9 | 931.34 | 152.52 | 922.19 | 88.82 | 44.38 | 2970 |
| 2011 | 96872 | 1924.3 | 3220.41 | 10458 | 7023 | 450 | 3732 | 26.09 | 2.2 | 1002.1 | 250.16 | 928.38 | 94.16 | 44.42 | 5614 |
| 2012 | 112980 | 2244.91 | 3845.73 | 11423.76 | 7049 | 480 | 4410 | 27.21 | 2.5 | 1153.1 | 269.63 | 1143.28 | 94.6 | 44.02 | 5941 |
| 2013 | 125031 | 2723.47 | 4356.56 | 12760.51 | 7426 | 490 | 4516 | 28.78 | 6.6 | 1206.7 | 323.58 | 19728.88 | 94.22 | 44.06 | 6548 |
| 2014 | 136564 | 3244.45 | 4925.34 | 13494.72 | 9091 | 746 | 4658 | 30.27 | 6.7 | 1097 | 325.48 | 28391.36 | 95.32 | 44.14 | 6861 |
| 2015 | 149307 | 3354.49 | 5572.27 | 14247.94 | 9515 | 1120 | 4898 | 31.35 | 6.8 | 1034.87 | 313.04 | 50251.9 | 95.67 | 44.47 | 7122 |
| 2016 | 159597 | 3708.57 | 6133.31 | 14648.77 | 10282 | 1194 | 5311 | 31.98 | 6.9 | 1107.21 | 339.18 | 47299.59 | 95.98 | 44.75 | 7207 |
| 2017 | 171563 | 4402.98 | 6997.22 | 15263.77 | 10402 | 1517 | 5752 | 33.65 | 7.1 | 1124.42 | 401.58 | 63415.67 | 96.26 | 44.9 | 7301 |
| 2018 | 181039 | 4821.26 | 7825.37 | 16039.56 | 10654 | 1626 | 5845 | 34.78 | 7.4 | 1284.06 | 492.01 | 76634.53 | 96.78 | 45.15 | 7455 |

Note: The unit of each index variable is shown in section 3.1 in the main manuscript.

Table 2. Statistical data of urban built-up area of Nanjing.

| Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Urban built-up area (km ²) | 592.07 | 598.14 | 618.64 | 637.71 | 653.31 | 713.29 | 726.4 | 755.27 | 773.79 | 796.35 | 813.65 |
| Y (%) | 8.973 | 9.065 | 9.376 | 9.665 | 9.902 | 10.811 | 11.009 | 11.447 | 11.728 | 12.07 | 12.332 |

Notes: Urban built-up area data is retrieved from the Statistical Yearbook from Ministry of Housing and Urban-Rural

Development of the People’s Republic of China (MOHURD); the administrative area of Nanjing is retrieved from the latest data

from China’s National Administrative Division Information Platform.