

**S1 Table.** Joinpoint regression analysis for age-standardized mortality rates in 17 cities and provinces between 2000 and 2020

| Group | Area           | Age-standardized mortality rate (per 100,000) |       | Trend 1   |                     | Trend 2   |                     | AAPC (95% CI) (%)      | p-value             |
|-------|----------------|---|-------|-----------|---------------------|-----------|---------------------|------------------------|---------------------|
|       |                | 2000  | 2020  | Year      | APC (%)             | Year      | APC (%)             |                        |                     |
|       |                | Both sexes                                    | Seoul | 25.1      | 7.5                 | 2000-2008 | -4.94 <sup>a)</sup> |                        |                     |
|       | Busan          | 27.6  | 8.4   | 2000-2003 | 1.12                | 2003-2020 | -6.69 <sup>a)</sup> | -5.55 (-6.49 to -4.61) | 0.15                |
|       | Daegu          | 28.3  | 7.9   | 2000-2020 | -6.68 <sup>a)</sup> |           |                     | -6.68 (-7.06 to -6.29) | 0.10                |
|       | Incheon        | 27.3  | 8.3   | 2000-2020 | -6.11 <sup>a)</sup> |           |                     | -6.11 (-6.61 to -5.62) | 0.54                |
|       | Gwangju        | 24.6  | 6.6   | 2000-2020 | -6.32 <sup>a)</sup> |           |                     | -6.32 (-6.88 to -5.77) | 0.90                |
|       | Daejeon        | 29.1  | 7.5   | 2000-2005 | -3.02               | 2005-2020 | -7.42 <sup>a)</sup> | -6.34 (-7.39 to -5.28) | 0.92                |
|       | Ulsan          | 29.2  | 8.0   | 2000-2020 | -6.41 <sup>a)</sup> |           |                     | -6.41 (-7.11 to -5.70) | 0.74                |
|       | Sejong         | -   | 7.1   | 2012-2020 | -12.1 <sup>a)</sup> |           |                     | -12.1 (-16.6 to -7.39) | -                   |
|       | Gyeonggi       | 27.4  | 7.6   | 2000-2005 | -4.83 <sup>a)</sup> | 2005-2020 | -6.98 <sup>a)</sup> | -6.44 (-6.86 to -6.03) | 0.54                |
|       | Gangwon        | 27.7  | 7.9   | 2000-2020 | -5.89 <sup>a)</sup> |           |                     | -5.89 (-6.41 to -5.37) | 0.17                |
|       | Chungcheongbuk | 31.6  | 10.4  | 2000-2002 | 3.68                | 2002-2020 | -7.02 <sup>a)</sup> | -6.00 (-7.87 to -4.09) | 0.77                |
|       | Chungcheongnam | 35.2  | 9.2   | 2000-2020 | -7.00 <sup>a)</sup> |           |                     | -7.00 (-7.50 to -6.50) | 0.01 <sup>a)</sup>  |
|       | Jeollabuk      | 30.8  | 7.2   | 2000-2020 | -7.10 <sup>a)</sup> |           |                     | -7.10 (-7.53 to -6.67) | <0.01 <sup>a)</sup> |
|       | Jeollanam      | 33.1  | 7.2   | 2000-2004 | -4.75               | 2004-2020 | -7.90 <sup>a)</sup> | -7.27 (-8.23 to -6.31) | 0.05                |
|       | Gyeongsangbuk  | 32.9  | 8.9   | 2000-2020 | -6.79 <sup>a)</sup> |           |                     | -6.79 (-7.09 to -6.49) | 0.01 <sup>a)</sup>  |
|       | Gyeongsangnam  | 33.9  | 8.8   | 2000-2008 | -5.57 <sup>a)</sup> | 2008-2020 | -7.56 <sup>a)</sup> | -6.77 (-7.32 to -6.21) | 0.13                |
|       | Jeju           | 25.9  | 7.4   | 2000-2020 | -5.35 <sup>a)</sup> |           |                     | -5.35 (-6.16 to -4.54) | 0.02 <sup>a)</sup>  |

|       |                |      |           |                     |                     |           |                        |                        |                     |
|-------|----------------|------|-----------|---------------------|---------------------|-----------|------------------------|------------------------|---------------------|
| Men   | Seoul          | 39.4 | 10.6      | 2000-2010           | -5.30 <sup>a)</sup> | 2010-2020 | -7.75 <sup>a)</sup>    | -6.53 (-7.04 to -6.02) | 0.72                |
|       | Busan          | 44.9 | 12.6      | 2000-2006           | -3.33 <sup>a)</sup> | 2006-2020 | -7.36 <sup>a)</sup>    | -6.17 (-6.99 to -5.33) | 0.29                |
|       | Daegu          | 41.8 | 12.0      | 2000-2020           | -6.80 <sup>a)</sup> |           |                        | -6.80 (-7.28 to -6.32) | 0.56                |
|       | Incheon        | 43   | 12.3      | 2000-2020           | -6.38 <sup>a)</sup> |           |                        | -6.38 (-6.86 to -5.90) | 0.33                |
|       | Gwangju        | 37.3 | 9.2       | 2000-2020           | -6.91 <sup>a)</sup> |           |                        | -6.91 (-7.63 to -6.18) | 0.47                |
|       | Daejeon        | 47.3 | 11.2      | 2000-2020           | -7.13 <sup>a)</sup> |           |                        | -7.13 (-7.84 to -6.41) | 0.19                |
|       | Ulsan          | 46.4 | 10.4      | 2000-2013           | -5.30 <sup>a)</sup> | 2013-2020 | -11.6 <sup>a)</sup>    | -7.55 (-9.24 to -5.83) | 0.30                |
|       | Sejong         | -    | 12.0      | 2012-2020           | -10.2 <sup>a)</sup> |           |                        | -10.2 (-15.3 to -4.78) |                     |
|       | Gyeonggi       | 43.4 | 11.2      | 2000-2006           | -5.13 <sup>a)</sup> | 2006-2020 | -7.41 <sup>a)</sup>    | -6.73 (-7.08 to -6.38) | 0.70                |
|       | Gangwon        | 42.4 | 11.8      | 2000-2009           | -3.84 <sup>a)</sup> | 2009-2020 | -7.44 <sup>a)</sup>    | -5.84 (-6.87 to -4.79) | 0.14                |
|       | Chungcheongbuk | 50.3 | 15.1      | 2000-2020           | -6.82 <sup>a)</sup> |           |                        | -6.82 (-7.42 to -6.21) | 0.58                |
|       | Chungcheongnam | 55.8 | 12.8      | 2000-2020           | -7.38 <sup>a)</sup> |           |                        | -7.38 (-7.93 to -6.84) | 0.01 <sup>a)</sup>  |
|       | Jeollabuk      | 51.4 | 11.1      | 2000-2020           | -7.51 <sup>a)</sup> | 2009-2020 | -1.56 <sup>a)</sup>    | -7.51 (-8.00 to -7.02) | <0.01 <sup>a)</sup> |
|       | Jeollanam      | 51.9 | 10.8      | 2000-2003           | -2.12               | 2003-2020 | -8.30 <sup>a)</sup>    | -7.40 (-8.59 to -6.20) | 0.23                |
|       | Gyeongsangbuk  | 52.0 | 13.3      | 2000-2020           | -7.09 <sup>a)</sup> |           |                        | -7.09 (-7.44 to -6.74) | 0.04 <sup>a)</sup>  |
|       | Gyeongsangnam  | 53.1 | 12.5      | 2000-2003           | -1.44               | 2003-2020 | -7.54 <sup>a)</sup>    | -6.65 (-7.70 to -5.58) | 0.99                |
| Jeju  | 41.4           | 10.9 | 2000-2020 | -6.17 <sup>a)</sup> |                     |           | -6.17 (-6.96 to -5.38) | 0.25                   |                     |
| Women | Seoul          | 15.4 | 5.0       | 2000-2020           | -6.17 <sup>a)</sup> |           |                        | -6.17 (-6.59 to -5.74) | 0.72                |
|       | Busan          | 16.7 | 4.9       | 2000-2003           | 1.59                | 2003-2020 | -6.70 <sup>a)</sup>    | -5.50 (-6.69 to -4.30) | 0.45                |
|       | Daegu          | 19.3 | 5.1       | 2000-2020           | -6.80 <sup>a)</sup> |           |                        | -6.80 (-7.34 to -6.27) | 0.06                |
|       | Incheon        | 16.5 | 5.6       | 2000-2020           | -6.01 <sup>a)</sup> |           |                        | -6.01 (-6.85 to -5.17) | 0.98                |
|       | Gwangju        | 15.9 | 4.7       | 2000-2020           | -5.91 <sup>a)</sup> |           |                        | -5.91 (-6.60 to -5.21) | 0.80                |
|       | Daejeon        | 16.7 | 4.7       | 2000-2020           | -6.35 <sup>a)</sup> |           |                        | -6.35 (-7.22 to -5.47) | 0.55                |

|                |      |     |           |                     |           |                     |                        |                     |
|----------------|------|-----|-----------|---------------------|-----------|---------------------|------------------------|---------------------|
| Ulsan          | 18.0 | 5.9 | 2000-2020 | -5.92 <sup>a)</sup> |           |                     | -5.92 (-6.82 to -5.02) | 0.85                |
| Sejong         | -    | 3.8 | 2012-2020 | -14.8 <sup>a)</sup> |           |                     | -14.8 (-20.0 to -9.23) | -                   |
| Gyeonggi       | 16.1 | 4.6 | 2000-2020 | -6.47 <sup>a)</sup> | 2008-2020 | -0.51 <sup>a)</sup> | -6.47 (-6.81 to -6.13) | 0.24                |
| Gangwon        | 16.9 | 4.6 | 2000-2020 | -6.18 <sup>a)</sup> |           |                     | -6.18 (-6.77 to -5.59) | 0.72                |
| Chungcheongbuk | 17.6 | 7.0 | 2000-2020 | -6.58 <sup>a)</sup> |           |                     | -6.58 (-7.51 to -5.64) | 0.32                |
| Chungcheongnam | 20.2 | 6.3 | 2000-2010 | -6.60 <sup>a)</sup> | 2010-2020 | -0.50 <sup>a)</sup> | -6.60 (-7.27 to -5.91) | 0.22                |
| Jeollabuk      | 16.3 | 4.3 | 2000-2020 | -6.55 <sup>a)</sup> |           |                     | -6.55 (-7.20 to -5.89) | 0.26                |
| Jeollanam      | 20.4 | 4.5 | 2000-2020 | -7.28 <sup>a)</sup> |           |                     | -7.28 (-7.85 to -6.70) | <0.01 <sup>a)</sup> |
| Gyeongsangbuk  | 20.0 | 5.7 | 2000-2020 | -6.54 <sup>a)</sup> |           |                     | -6.54 (-6.94 to -6.13) | 0.18                |
| Gyeongsangnam  | 21.4 | 6.4 | 2000-2020 | -6.74 <sup>a)</sup> |           |                     | -6.74 (-7.31 to -6.17) | 0.10                |
| Jeju           | 16.7 | 5.3 | 2000-2020 | -5.08 <sup>a)</sup> |           |                     | -5.08 (-6.59 to -3.54) | 0.24                |

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p-values determine the statistical difference of the AAPC for each city or province with the AAPC for the average of the country. AAPC, average annual percentage change; APC, annual percentage change; CI, confidence interval. <sup>a)</sup>Significant difference.