**Supplementary Materials**

**Spatially resolved estimation of ozone-related mortality in the United States under two Representative Concentration Pathways (RCPs) and their uncertainty**

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**Table S1** Relative risks from epidemiological studyused in this study

|  |  |  |  |
| --- | --- | --- | --- |
| Disease | Measurement unit | RR (95% CI) | Source |
| Non accidental  all-cause mortality | MDA1 O3a | 1.0067 (1.0042-1.0092) per 20 ppb | Bell et al. (2004) for year round |
| MDA8 O3b | 1.0064 (1.0041-1.0086) per 15 ppb |
| MDA1 | 1.0041(1.0031-1.0051) per 10 ppb | Levy et al. (2005) for year round |
| MDA1 | 1.0084 (1.0057-1.0110) per 10 ppb | Levy et al. (2005) for warm season (May to October) |

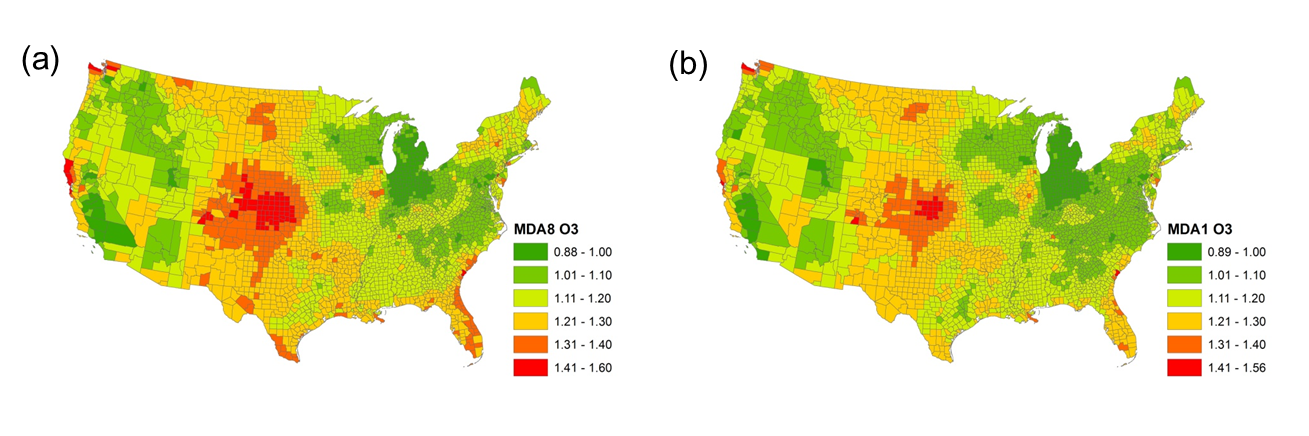
a) MDA1: maximum daily 1-hour averaged O3; b) MDA8: maximum daily 8-hour averaged O3

**Table S2** Predicted ozone concentrations by climate region in 2001-2004 and 2057-2059a)

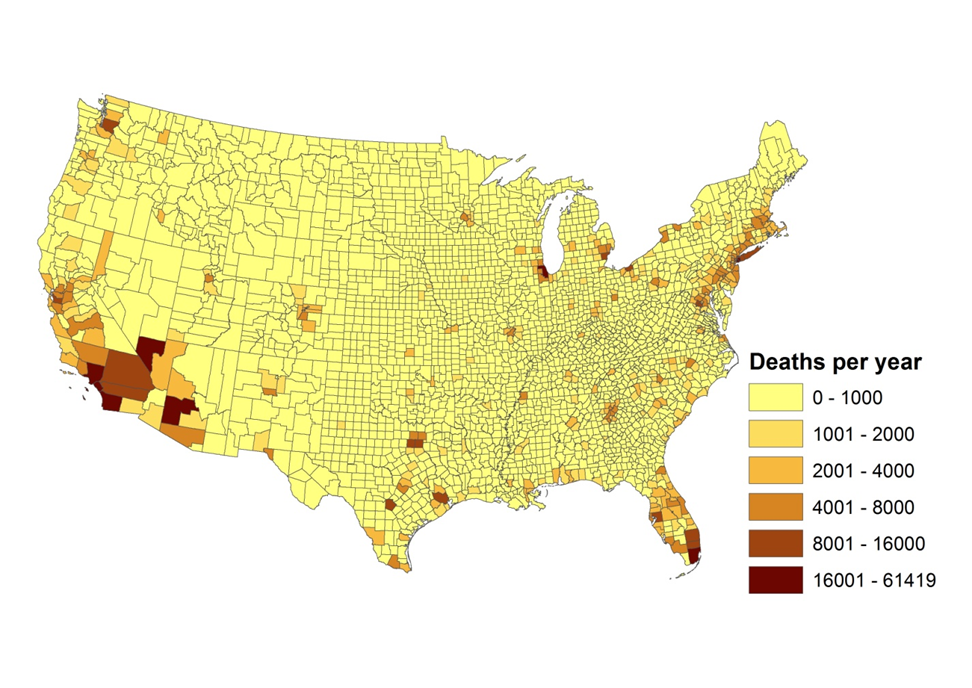
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Regionb | 2000s | |  | 2050s (RCP4.5) | | | |  | 2050s (RCP8.5) | | | | |
| MDA8 O3c | MDA1 O3d |  | MDA8 O3 | *Δ*O3e | MDA1 O3 | *Δ*O3 |  | MDA8 O3 | *Δ*O3 | MDA1 O3 | *Δ*O3 |
| Northeast | 44.9 | 50.7 |  | 41.4 | -3.4 | 45.9 | -4.8 |  | 46.8 | 1.9 | 51.6 | 0.9 |
| Southeast | 46.8 | 52.8 |  | 40.2 | -6.6 | 44.7 | -8.1 |  | 45.4 | -1.4 | 50.4 | -2.4 |
| East North Central | 43.0 | 47.6 |  | 38.9 | -4.1 | 42.6 | -5.0 |  | 44.2 | 1.2 | 48.3 | 0.7 |
| Central | 47.7 | 53.5 |  | 42.3 | -5.4 | 46.7 | -6.8 |  | 47.4 | -0.3 | 52.3 | -1.2 |
| West North Central | 40.5 | 44.5 |  | 37.0 | -3.5 | 40.7 | -3.8 |  | 42.0 | 1.5 | 45.9 | 1.4 |
| South | 41.9 | 47.1 |  | 36.8 | -5.2 | 40.8 | -6.3 |  | 41.0 | -0.9 | 45.5 | -1.6 |
| Southwest | 47.0 | 52.3 |  | 42.5 | -4.5 | 46.9 | -5.4 |  | 48.0 | 1.1 | 52.8 | 0.5 |
| Northwest | 42.5 | 47.3 |  | 40.0 | -2.5 | 44.2 | -3.1 |  | 45.1 | 2.6 | 49.8 | 2.6 |
| West | 45.2 | 51.3 |  | 41.7 | -3.5 | 46.5 | -4.8 |  | 47.2 | 2.0 | 52.4 | 1.1 |
| **Nation** | **44.6** | **50.0** |  | **39.7** | **-4.9** | **43.9** | **-6.1** |  | **44.7** | **0.1** | **49.4** | **-0.6** |

a) WRF-CMAQ results with calibration using county-level CMAQ-simulated/observed ratio during 2001-2004; b) climate region divided based on National Climatic Data Center (NCDC); c) Maximum daily 8-hr averaged ozone; d) Daily 1-hr averaged ozone; e) Difference of O3 concentration between 2001-2004 and 2057-2059

**Figure S1** County-level calibration ratios derived from CMAQ-simulated concentration-to-observed concentration for maximum daily 8-hour averaged O3 (a) am maximum daily 1-hour averaged O3 (b)



**Figure S2** Projected county-level baseline mortality incidence in 2050s Mortality incidences are based on projected mortality rates for 2050 and the averages of four population projections for 2055



**Figure S3** Projected O3 changes between 2001-2004 and 2057-2059 during warm season (May through September) under Representative Concentration Pathways (RCPs) and all-cause mortality due to the O3 changes (a) and (b) are O3 changes under RCP4.5 and RCP8.5, respectively, and (c) and (d) are excess mortalities under RCP4.5 and RCP8.5, respectively

