

Table 1: Increases in the Number of Excessive Heat Event Days (EHE Days) Caused by Climate Change

| Location | Average Number of EHE Days per Summer (Historical Average 1975-1995) | EHE Days Per Summer | | | |
|---|--|--|--|--|--|
| | | by Mid-Century (2045-2055) | | by End-of-Century(2090-2099) | |
| | | Climate Change Will Increase Per-Summer EHE Days by... | ...Making the New Total Number of EHE Days Increase to | Climate Change Will Increase Per-Summer EHE Days by... | ...Making the New Total Number of EHE Days Increase to |
| Atlanta, GA | 5 | 43 | 48 | 53 | 58 |
| Baltimore, MD | 8 | 37 | 45 | 61 | 69 |
| Birmingham, AL | 5 | 19 | 24 | 51 | 56 |
| Boston, MA | 11 | 40 | 51 | 60 | 71 |
| Buffalo, NY | 3 | 0 | 3 | 12 | 15 |
| Chicago, IL | 5 | 13 | 18 | 28 | 33 |
| Cincinnati, OH | 4 | 18 | 22 | 26 | 30 |
| Cleveland, OH | 5 | 0 | 5 | 12 | 17 |
| Columbus, OH | 5 | -1 | 4 | 11 | 16 |
| Dallas, TX | 11 | 11 | 22 | 26 | 37 |
| Denver, CO | 9 | 79 | 88 | 68 | 77 |
| Detroit, MI | 9 | 6 | 15 | 27 | 36 |
| Greensboro, NC | 8 | 51 | 59 | 62 | 70 |
| Hartford, CT | 6 | 25 | 31 | 52 | 58 |
| Houston, TX | 1 | 4 | 5 | 12 | 13 |
| Indianapolis, IN | 5 | 17 | 22 | 27 | 32 |
| Jacksonville, FL | 7 | 17 | 24 | 36 | 43 |
| Kansas City, MO | 7 | 31 | 38 | 41 | 48 |
| Los Angeles, CA | 1 | 59 | 60 | 87 | 88 |
| Louisville, KY | 8 | -3 | 5 | 21 | 29 |
| Memphis, TN | 9 | 9 | 18 | 31 | 40 |
| Miami, FL | 0 | 14 | 14 | 55 | 55 |
| Minneapolis, MN | 8 | 15 | 23 | 22 | 30 |
| New Orleans, LA | 5 | 3 | 8 | 49 | 54 |
| New York, NY | 11 | 44 | 55 | 64 | 75 |
| Newark, NJ | 8 | 47 | 55 | 60 | 68 |
| Philadelphia, PA | 6 | 48 | 54 | 67 | 73 |
| Phoenix, AZ | 7 | 77 | 84 | 68 | 75 |
| Pittsburgh, PA | 5 | 47 | 52 | 54 | 59 |
| Portland, OR | 4 | 38 | 42 | 47 | 51 |
| Providence, RI | 7 | 31 | 38 | 56 | 63 |
| Salt Lake, UT | 0 | 0 | 0 | 0 | 0 |
| San Antonio, TX | 5 | 18 | 23 | 25 | 30 |
| San Diego, CA | 1 | 38 | 39 | 60 | 61 |
| San Francisco, CA | 2 | 64 | 66 | 52 | 54 |
| San Jose, CA | 0 | 4 | 4 | 4 | 4 |
| Seattle, WA | 2 | 52 | 54 | 55 | 57 |
| St. Louis, MO | 11 | 24 | 35 | 34 | 45 |
| Tampa, FL | 3 | 33 | 36 | 56 | 59 |
| Washington, DC | 16 | 37 | 53 | 53 | 69 |
| Current average of EHE days per year... | 233 | | | | |
| Plus the additional EHE days climate change will cause annually by mid-century... | | 1,109 | | | |
| Results in more than five time as many EHE days by mid-century. | | | 1,342 | | |
| Plus the additional EHE days climate change will cause annually by the end of the century... | | | | 1,685 | |
| And the result is more than EIGHT TIMES as many EHE days by the end of the century. | | | | | 1,918 |

Note: This table shows the change to the number of EHE days projected to be caused by climate change and total projected average EHE days during 2045-2055 and 2090-2099, based on a climate model assuming the A1FI emissions scenario, which portrays a "business-as-usual" trend with continued significant reliance on fossil-fuels and no significant policy interventions. The figures in the "Average Number" column are the baseline; the figures in the "Climate Change Will Increase . . ." show the change in EHE days per summer as our climate warms up. Figures in the "Resulting in Overall . . ." columns show the combination of the baseline and the additional climate-induced levels. Note: "Summer" refers to the months of June, July and August.

Source: Greene, S; Kalkstein L; Mills D; Samenow, J. 2011. "An Examination of Climate Change on Extreme Heat Events and Climate-Mortality Relationships in Large U.S. Cities." Weather, Climate and Society, October 2011, 3, 281-292."



New York, USA - June 10, 2011 where the thermometer reached 80+ degrees

Table 2: Increases in EHE-Attributable Mortality Caused by Climate Change

| Location | Average Mortality per Summer (Historical Average 1975-2004) | Mortality Per Summer | | | | Cumulative Additional Mortality | |
|------------------|---|---|--|---|--|--|--------------------------|
| | | By Mid-Century (2045-2055) | | By End-of-Century (2090-2099) | | By Mid-Century (2050) | By End-of-Century (2099) |
| | | Climate Change Will Increase Per-Summer Average Mortality by... | ...Making the New Total Summertime Mortality Increase to | Climate Change Will Increase Per-Summer Average Mortality by... | ...Making the New Total Summertime Mortality Increase to | Year after year of increased mortality due to climate change adds up to... | |
| Atlanta, GA | 35 | -11 | 24 | -6 | 29 | (359) | (756) |
| Baltimore, MD | 57 | 26 | 83 | 70 | 127 | 495 | 2,947 |
| Birmingham, AL | 24 | 8 | 32 | 51 | 75 | 103 | 1,680 |
| Boston, MA | 99 | 55 | 154 | 114 | 213 | 1,404 | 5,715 |
| Buffalo, NY | 18 | 33 | 51 | 74 | 92 | 479 | 3,190 |
| Chicago, IL | 93 | 49 | 142 | 157 | 250 | 1,034 | 6,361 |
| Cincinnati, OH | 12 | 9 | 21 | 16 | 28 | 245 | 897 |
| Cleveland, OH | 40 | 93 | 133 | 446 | 486 | 2,530 | 16,625 |
| Columbus, OH | 4 | 38 | 42 | 151 | 155 | 1,066 | 6,001 |
| Dallas, TX | 46 | 69 | 115 | 144 | 190 | 1,885 | 7,271 |
| Denver, CO | 48 | 46 | 94 | 35 | 83 | 1,551 | 3,515 |
| Detroit, MI | 52 | 133 | 185 | 402 | 454 | 4,109 | 17,877 |
| Greensboro, NC | 31 | 16 | 47 | 21 | 52 | 331 | 1,259 |
| Hartford, CT | 27 | 13 | 40 | 49 | 76 | 283 | 1,892 |
| Houston, TX | 2 | 14 | 16 | 25 | 27 | 406 | 1,391 |
| Indianapolis, IN | 23 | 28 | 51 | 50 | 73 | 837 | 2,783 |

Table 2: Increases in EHE-Attributable Mortality Caused by Climate Change

| Location | Average Mortality per Summer (Historical Average 1975-2004) | Mortality Per Summer | | | | Cumulative Additional Mortality | |
|---|---|---|--|---|--|--|--------------------------|
| | | By Mid-Century (2045-2055) | | By End-of-Century (2090-2099) | | By Mid-Century (2050) | By End-of-Century (2099) |
| | | Climate Change Will Increase Per-Summer Average Mortality by... | ...Making the New Total Summertime Mortality Increase to | Climate Change Will Increase Per-Summer Average Mortality by... | ...Making the New Total Summertime Mortality Increase to | Year after year of increased mortality due to climate change adds up to... | |
| Jacksonville, FL | 30 | 81 | 111 | 169 | 199 | 1,813 | 8,141 |
| Kansas City, MO | 41 | 48 | 89 | 71 | 112 | 1,280 | 4,236 |
| Los Angeles, CA | 18 | 11 | 29 | 29 | 47 | 219 | 1,222 |
| Louisville, KY | 39 | 218 | 257 | 337 | 376 | 5,081 | 18,988 |
| Memphis, TN | 46 | 84 | 130 | 247 | 293 | 1,645 | 10,154 |
| Miami, FL | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Minneapolis, MN | 14 | 79 | 93 | 107 | 121 | 2,892 | 7,516 |
| New Orleans, LA | 22 | 7 | 29 | 46 | 68 | 221 | 1,613 |
| New York, NY | 184 | -2 | 182 | 65 | 249 | (573) | 1,127 |
| Newark, NJ | 56 | 13 | 69 | 30 | 86 | 320 | 1,409 |
| Philadelphia, PA | 53 | 4 | 57 | 25 | 78 | (39) | 714 |
| Phoenix, AZ | 33 | 11 | 44 | 58 | 91 | 213 | 2,021 |
| Pittsburgh, PA | 19 | 14 | 33 | 19 | 38 | 411 | 1,241 |
| Portland, OR | 9 | 8 | 17 | 12 | 21 | 237 | 736 |
| Providence, RI | 37 | 16 | 53 | 50 | 87 | 353 | 2,035 |
| Salt Lake, UT | 2 | 1 | 3 | 2 | 4 | 36 | 113 |
| San Antonio, TX | 21 | 6 | 27 | 14 | 35 | 98 | 631 |
| San Diego, CA | 0 | 4 | 4 | 7 | 7 | 119 | 396 |
| San Francisco, CA | 3 | 2 | 5 | 5 | 8 | 87 | 260 |
| San Jose, CA | 10 | 3 | 13 | 5 | 15 | 69 | 281 |
| Seattle, WA | 11 | -2 | 9 | 1 | 12 | (99) | (125) |
| St. Louis, MO | 24 | 58 | 82 | 113 | 137 | 1,285 | 5,621 |
| Tampa, FL | 25 | 0 | 25 | 16 | 41 | (72) | 351 |
| Washington, DC | 24 | 33 | 57 | 49 | 73 | 942 | 2,994 |
| Current annual average mortality... | 1,332 | | | | | | |
| plus the additional annual mortality due to climate change by mid-century... | | 1,316 | | | | | |
| results in DOUBLED total EHE-mortality by mid-century: | | | 2,648 | | | | |
| By the end of the century the additional burden of climate change on EHE-mortality is even greater compared to current levels . . . | | | | 3,276 | | | |
| Resulting in more than a TRIPLING of EHE-Mortality by the end of the century. | | | | | 4,608 | | |
| By 2050, the additional cumulative heat-related mortality caused by the additive effect of climate change is: | | | | | | 32,934 | |
| By 2099, the additional cumulative heat-related mortality caused by the additive effect of climate change is: | | | | | | | 150,322 |

Note: This table shows the additional mortality caused by climate change as well as total EHE mortality by 2050 and 2099 based on a climate model assuming the A1FI emissions scenario, which portrays a "business-as-usual" trend with continued significant reliance on fossil-fuels and no significant policy interventions. It also shows the cumulative impact of the additional mortality that occurs due to the effect of climate change. The figures in the "Average Number" column are the baseline; the figures in the "Climate Change Will Increase . . ." show the change in mortality per summer as our climate warms up. Figures in the "Making a New Summertime Total" show the combination of the baseline and the additional climate-induced levels. Note: "Summer" refers to the months of June, July and August.

Sources: Column 2: Kalkstein L., Greene S., Mills D., Samenow S. "An evaluation of the progress in reducing heat-related human mortality in major U.S. cities," 2010, Natural Hazards. DOI 10.1007/s11069-010-9552-3.

Columns 4 and 6: Greene, S; Kalkstein L; Mills D; Samenow, J. 2011. "An Examination of Climate Change on Extreme Heat Events and Climate-Mortality Relationships in Large U.S. Cities." Weather, Climate and Society, October 2011, 3, 281-292.