**Supplemental Table 1.** Percentage change (95% interval) in risk of hospital admissions or emergency visits per 10 ppb 24-hour mean ozone, meta-analysis results using different metric conversion ratios

| Disease Categories (age group) | Metric Conversion Ratio | | | Number of Estimates | | | | Studies Included |
|---|---|---|---|---|---|---|---|---|
| | EPA (2:1.5:1)[a] | U.S. Study (1.76:1.53:1)[a] | Community-specific Ratio | 8-hr max | 8-hr mean | 1-hr max | 24-hr mean | |
| ***General Hospital Admissions*** | | | | | | | | |
| Total RD[b] (All ages)[c] | 2.01 (-0.20, 4.28) | 2.03 (-0.21, 4.31) | 2.05 (-0.20, 4.35) | 1 | 3 | 1 | 1 | 1-6 |
| Total RD (Elderly) | **2.50 (0.91, 4.12)** | **2.47 (0.89, 4.07)** | **2.38 (0.84, 3.94)** | 0 | 1 | 2 | 5 | 3, 6-11 |
| Total RD (Children)[d] | 0.71 (-2.00, 3.49) | 0.69 (-2.03, 3.48) | 0.67 (-2.10, 3.51) | 1 | 1 | 1 | 1 | 2, 3, 5, 12 |
| Pneumonia (Elderly)[d] | **4.23 (2.85, 5.63)** | **4.24 (2.85, 5.63)** | **4.25 (2.87, 5.64)** | 0 | 0 | 1 | 4 | 8, 10, 13-15 |
| COPD (All ages) | **5.78 (0.69, 11.18)** | **5.74 (0.71, 10.96)** | **3.73 (-1.26, 8.97)** | 2 | 0 | 1 | 1 | 2, 6, 16-18 |
| COPD (Elderly)[e] | **2.53 (1.83, 3.25)** | **2.54 (1.29, 3.80)** | **2.54 (1.30, 3.80)** | 0 | 1 | 2 | 5 | 6, 8, 10, 13, 15, 19, 20 |
| Asthma (All ages) | 4.38 (-0.17, 9.13) | 4.35 (-0.18, 9.10) | 4.37 (-0.30, 9.28) | 0 | 2 | 1 | 3 | 2, 16, 21-24 |
| Asthma (Children) | 0.75 (-7.05, 6.00) | -0.68 (-6.56, 5.57) | -0.69 (-6.59, 5.59) | 0 | 2 | 4 | 0 | 2, 19, 25-28 |
| ***Emergency Hospital Admissions*** | | | | | | | | |
| Total RD (All ages) | **1.87 (0.73, 3.02)** | **1.90 (0.74, 3.07)** | **1.97 (0.76, 3.19)** | 2 | 5 | 0 | 3 | 29-37 |
| Total RD (Elderly) | **4.39 (2.42, 6.40)** | **4.47 (2.48, 6.50)** | **4.59 (2.52, 6.69)** | 4 | 5 | 0 | 2 | 29-31, 35, 36, 38-41 |
| Total RD (15-64 years) | 1.04 (-1.38, 3.41) | 1.06 (-1.31, 3.47) | 0.86 (-1.34, 3.10) | 4 | 2 | 0 | 0 | 29, 31, 35, 38, 40 |
| COPD (All Ages) | **4.98 (1.24, 8.86)** | **5.06 (1.24, 9.05)** | **5.13 (1.31, 9.09)** | 3 | 2 | 0 | 1 | 30, 38, 42-44 |
| Asthma (All Ages) | **6.51 (2.56, 10.63)** | **6.64 (2.60, 10.85)** | **6.73 (2.68, 10.96)** | 3 | 5 | 0 | 0 | 30, 31, 35, 38, 42, 45-47 |
| Asthma (Children) | 2.78 (-3.38, 9.33) | 2.83 (-3.45, 9.52) | 2.87 (-3.52, 9.67) | 3 | 3 | 0 | 0 | 31, 35, 40, 45, 47, 48 |
| Asthma (15-64 years) | 3.59 (-2.00, 9.50) | 3.63 (-2.02, 9.60) | 3.78 (-2.21, 10.14) | 2 | 4 | 0 | 0 | 31, 35, 36, 40, 47 |
| ***Emergency Visits*** | | | | | | | | |
| Total RD (All ages) | **1.21 (0.28, 2.14)** | **1.23 (0.29, 2.17)** | **1.29 (0.25, 2.35)** | 4 | 0 | 0 | 1 | 49-52 |
| Total RD (Children) | 2.78 (-1.85, 7.63) | 2.55 (-1.71, 6.98) | 2.56 (-1.72, 7.03) | 3 | 0 | 1 | 0 | 51, 53, 54 |
| Asthma (All ages) | **4.75 (2.14, 7.42)** | **4.50 (2.05, 6.99)** | **4.61 (2.14, 7.14)** | 6 | 0 | 2 | 0 | 50, 51, 55-59 |
| Asthma (Children) | **3.76 (1.59, 5.97)** | **3.67 (1.55, 5.81)** | **3.81 (1.61, 6.05** | 8 | 1 | 2 | 2 | 48, 51, 59-68 |

[a] The ratio of the 1-hr max: 8-hr max: 24-hr mean is provided in parentheses.
[b] RD = Respiratory Diseases
[c] The combined estimates excluded one outlying study.[69]
[d] Fixed-effect model used. Random-effect model used elsewhere.
[d] Estimates converted with the U.S. study ratio and specific ratios were combined in random-effect models; estimates converted using the EPA ratio were combined in a fixed-effect model.

**Supplemental Table 2.** Multi city studies on ozone and risk of hospital admissions or emergency visits

| Hospitalization Type | Disease Category | Location | Lag Selection | Age Group | Pollutants Model | Season of Analysis | Estimates (95% Confidence Interval) | Original Ozone Metric | Reference |
|---|---|---|---|---|---|---|---|---|---|
| General Hospital Admission | Total RD[a] | 16 Cities (Canada) | Lag1 | All | Single | Warm | 2.50 (1.56, 3.45) | 1-hr max | Burnett et al., 1997 [70] |
| | | | | 65+ | | | 2.33 (0.55, 4.13) | | |
| | | | | 0-64 | | | 2.62 (1.27, 3.98) | | |
| | | | | All | Multiple | Warm | 2.50 (1.27, 3.75) | | |
| Emergency Hospital Admission | Asthma | 4 Cities (Europe) | Lag0 or lag1 | 15-64 | Single | All | 2.45 (-4.49, 9.89) | 8-hr max[b] | Sunyer et al., 1997 [71] |
| | | | Lag1 or lag2 | 0-14 | Single | All | -0.77 (-4.14, 2.71) | | |
| Emergency Hospital Admission | COPD | 5 Cities (Europe) | One Day | All | Single | All | 2.60 (1.32, 3.90) | 8-hr mean[b] | Anderson et al., 1997 [72] |
| | | | | | | Cold | 1.82 (-0.26, 3.95) | | |
| | | | | | | Warm | 2.42 (0.94, 3.93) | | |
| | | | Cumulative | All | Single | All | 3.38 (1.64, 5.16) | | |
| Emergency Hospital Admission | Total RD | 4 Cities (Europe) | Lag0 or lag1 | 15-64 | Single | All | 1.88 (0.80, 2.97) | 8-hr max[b] | Spix et al., 1998 [73] |
| | | | | | | Warm | 1.22 (-2.30, 4.86) | | |
| | | | | | | Cold | 0.92 (-2.03, 3.96) | | |
| | | | | 65+ | Single | All | 2.30 (1.11, 3.52) | | |
| | | | | | | Warm | 2.42 (0.94, 3.93) | | |
| | | | | | | Cold | 1.22 (-0.59, 3.05) | | |
| Emergency Visit | Asthma | 3 Cities (U.S.) | Best available lag | 5-34 | Single | All | 4.63 (0.06, 9.40) | 8-hr max | Jaffe et al., 2003 [74] |
| Emergency Hospital Admissions | COPD+Asthma | 4 Cities (Australia) | Lag3 | 65+ | Single | All | 1.21 (0.15, 2.27) | 1-hr max[c] | Simpson et al., 2005 [75] |
| | Total RD | 4 Cities (Australia) | Lag0-1 | 65+ | Single | All | 0.40 (-0.55, 1.36) | 1-hr max[c] | |
| General Hospital Admission | Total RD | 10 Cities (Canada) | Not Specified | All | Single | All | 2.17 (1.12, 3.22) | 24-hr mean | Cakmak et al., 2006 [76] |
| Emergency Hospital Admission | Respiratory Disorder | 11 Cities (Canada) | Lag2 | 0-28 days | Single | All | 2.67 (1.44, 3.91) | 24-hr mean | Dales et al., 2006 [74, 77] |
| Emergency Hospital Admissions | COPD | 36 Cities[d] (U.S.) | Lag0 | 65+ | Single | All | -0.98 (-1.34, -0.61) | 8-hr mean | Medina-Ramon et al., 2006 [78] |
| | | | | | | Warm | -0.76 (-1.40, -0.12) | | |
| | | | | | | Cold | -1.46 (-2.28, -0.64) | | |
| | | | Lag1 | 65+ | Single | All | 1.01 (0.58, 1.45) | | |
| | | | | | | Warm | 1.48 (0.92, 2.03) | | |
| | | | | | | Cold | 0.43 (-0.41, 1.28) | | |
| | | | Lag0-1 | 65+ | Single | All | 0.12 (-0.38, 0.63) | | |
| | | | | | | Warm | 0.83 (0.23, 1.43) | | |
| | | | | | | Cold | -0.95 (-1.85, -0.03) | | |

| Hospitalization Type | Disease Category | Location | Lag Selection | Age Group | Pollutants Model | Season of Analysis | Estimates (95% Confidence Interval) | Original Ozone Metric | Reference |
|---|---|---|---|---|---|---|---|---|---|
| | Pneumonia | 36 Cities[d] (U.S.) | Lag0 | 65+ | Single | All | -0.70 (-0.99, -0.41) | 8-hr mean | |
| | | | | | | Warm | 0.03 (-0.35, 0.41) | | |
| | | | | | | Cold | -0.49 (-1.24, 0.26) | | |
| | | | Lag1 | 65+ | Single | All | 0.64 (0.35, 0.94) | | |
| | | | | | | Warm | 1.29 (0.89, 1.69) | | |
| | | | | | | Cold | -0.52 (-1.03, -0.01) | | |
| | | | Lag0-1 | 65+ | Single | All | 0.92 (0.61, 1.23) | | |
| | | | | | | Warm | 1.26 (0.78, 1.74) | | |
| | | | | | | Cold | -2.52 (-3.42, -1.61) | | |
| | | | | | Multiple | All | 2.22 (0.82, 3.64) | 8-hr mean | |
| General Hospital Admission | Respiratory Diseases | 11 Areas (NY, U.S.) | Lag2 | 0-17 | Single | All | 1.34 (0.78, 1.90) | 1-hr max from 10am to 6pm | Lin et al., 2008 [79] |

[a] RD = Respiratory Diseases.
[b] The alternative ozone metric 1-hr maximum was also reported.
[c] The alternative ozone metric 4-hr maximum was also reported.
[d] 16 Cities in the U.S. for estimates from cold season analysis.

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