Particulate Matter in Idaho

Research and Emerging Trends

2018 Region 10 P2 Roundtable
PM$_{10}$ and PM$_{2.5}$ particle size

- Human hair: 50–70 µm (microns) in diameter
- Combustion particles, organic compounds, metals, etc.: < 2.5 µm (microns) in diameter
- Fine beach sand: 90 µm (microns) in diameter
- Dust, pollen, mold, etc.: < 10 µm (microns) in diameter
<table>
<thead>
<tr>
<th>Study</th>
<th>Design and Location</th>
<th>Main Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Li et al. (10)</td>
<td>Case-crossover study in eight Chinese large cities</td>
<td>An increase of 10 µg/m³ in 2-day moving average concentrations of PM10, SO₂ and NO₂ was significantly associated with increases of daily CHD mortality</td>
</tr>
<tr>
<td>MONICA/KORA study (11)</td>
<td>Case-crossover study of 15,417 MI cases in Germany</td>
<td>An association between short-term PMs concentration and numbers of MI, especially for nonfatal and recurrent events</td>
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<tr>
<td>MCAPS (12)</td>
<td>12-year of time series study in USA</td>
<td>Daily variation in PM10-2.5 is associated with emergency hospitalizations for cardiovascular diseases among elderly population (≥65 years)</td>
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<tr>
<td>MED-PARTICLES project (13)</td>
<td>Case-crossover study in ten southern European cities</td>
<td>Wildfires and PM10 were associated with increased cardiovascular mortality in urban residents</td>
</tr>
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<td>Chang et al. (14)</td>
<td>Case-crossover study in Taiwan from 2006-2010</td>
<td>Higher levels of PM2.5 enhance the risk of hospital admissions for CVD on cool days (&lt;25 °C)</td>
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<td>EPHT program (15)</td>
<td>Case-crossover study in seven US states within the CDC EPHT network</td>
<td>Multiple cardiovascular outcomes in addition to AMI may be impacted by particulate air pollution in state-wide</td>
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<td>MINAP (16)</td>
<td>Case-crossover study of over 400,000 MI events in England and Wales</td>
<td>The strong associations with air pollution were observed with selected non-MI CVD outcomes, while no clear evidence was found for pollution effects on STEMI</td>
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<td>Zhao et al. (17)</td>
<td>Time-series study of 56,940 outpatient in China</td>
<td>A 10 µg/m³ increase in the present-day concentrations of PM10, SO₂, and NO₂ corresponded to increases of 0.56%, 2.07%, and 2.90% in outpatient arrhythmia visits</td>
</tr>
</tbody>
</table>
Wildfires Hampering Progress on Clean Air
Changes in air quality on the most polluted seven days of each year since 1970

Average change in PM2.5 concentration (µg/m³)

+0.26  0  -0.23  -0.47  -0.75  -1.08  -1.39
Turn off your engine

Clean Air Zone
Rachel Pollreis – Run

1:03 PM on Monday, April 30, 2018

Afternoon Run

Add a description

With someone who didn’t record? Add Friend

View Flybys

32 Runs on this Route

This Run 16:09/mi

Splits

<table>
<thead>
<tr>
<th>Mile</th>
<th>Pace</th>
<th>GAP</th>
<th>Elev</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15:41</td>
<td>15:42</td>
<td>-9 ft</td>
</tr>
<tr>
<td>2</td>
<td>16:38</td>
<td>16:34</td>
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</tr>
<tr>
<td>3</td>
<td>15:15</td>
<td>15:19</td>
<td>-15 ft</td>
</tr>
<tr>
<td>4</td>
<td>16:54</td>
<td>16:50</td>
<td>4 ft</td>
</tr>
<tr>
<td>5</td>
<td>16:14</td>
<td>16:09</td>
<td>-10 ft</td>
</tr>
</tbody>
</table>

5.04 mi  1:21:30  16:09/mi

Distance  Moving Time  Pace

Elevation  Stiff  Calories

Elapsed Time  1:27:30

Strava Android App

View Matched Runs

32 Runs on this Route

This Run 16:09/mi

Elevations

© Mapbox © OpenStreetMap Improve this map
Boise Downtown Air Quality

Median PM 2.5 Value

- 6.4 - 7.55
- 7.56 - 8.35
- 8.36 - 10.5
- 10.51 - 12
Median pm 2.5

Daily Traffic Count

$R^2 = 0.134$
Boise Downtown Air Quality

Median PM 2.5 Value

- 6.4 - 7.55
- 7.56 - 8.35
- 8.36 - 10.5
- 10.51 - 12