

Wildfire smoke more dangerous than other air pollutants for asthma patients

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Smoke from wildfires as viewed from the Desert Research Institute campus in Reno, Nev. Credit: Jim Metcalf/DRI

For people who suffer from asthma, wildfire smoke is more hazardous than other types of air pollution, according to a new study from the Desert Research Institute (DRI), the Renown Institute for Health Innovation (Renown IHI) and the Washoe County Health District (WCHD).

The study, which published last month in the journal *Environmental Health*, examined associations between airborne particulate matter (PM) from sources such as [wildfire](#), transportation and industry, and medical visits for asthma at Renown Health's emergency departments and urgent care centers in Reno, Nev. during the six-year period from 2013-2018.

According to their results, on days when wildfire smoke was present, elevated levels of PM_{2.5} ([fine particles](#) of 0-2.5 micrometers in size, about 30 times smaller than a [human hair](#)) led to a 6.1 percent increase in medical visits for asthma patients when compared with days of similar pollution levels that came from non-wildfire sources.

"Since we found significantly stronger associations of PM_{2.5} with asthma visits when wildfire smoke was present, our results suggest that wildfire PM is more hazardous than non-wildfire PM for patients with asthma," said lead author Daniel Kiser, M.S., Data Scientist with DRI and Renown IHI.

An increase in the harmfulness of PM from wildfires compared to PM from other sources may be attributable to differences in the chemical composition of PM or changes in [human behavior](#), since people are more likely to be outdoors in the summer, when wildfires typically occur. The research team notes that caution should be used when applying these results to other areas of the country, such as the Southeastern United States, since the harmfulness of wildfire smoke may be affected by the type of fuel that is being burned. Other factors, such as the distance that wildfire smoke was carried by the wind and burn temperature, may also play a role in the harmfulness of wildfire smoke.

The researchers found that air quality in the Reno area was affected by wildfire smoke on a total of 188 days during the study period. A total of 18,836 [asthma](#)-related emergency room and urgent care visits occurred

over the same five-year period of time, indicating that the influences of wildfire smoke and other types of air pollution on this medical condition are important to understand.

"In places like Reno, where wildfire events occur regularly during parts of the year and are expected to become more frequent in the future, an accurate understanding of the impacts of wildfire smoke on population health is critical," Kiser said.

More information: Daniel Kiser et al, Particulate matter and emergency visits for asthma: a time-series study of their association in the presence and absence of wildfire smoke in Reno, Nevada, 2013–2018, *Environmental Health* (2020). [DOI: 10.1186/s12940-020-00646-2](https://doi.org/10.1186/s12940-020-00646-2)

Provided by Desert Research Institute

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