

Smell and taste changes provide early indication of COVID-19 community spread

November 11 2020, by Sara Lajeunesse



Researchers find that self-reports of smell and taste changes provide earlier markers of the spread of infection of SARS-CoV-2 than current governmental indicators. Credit: Engin Akyurt, Unsplash

Self-reports of smell and taste changes provide earlier markers of the

spread of infection of SARS-CoV-2 than current governmental indicators, according to an international team of researchers. The researchers also observed a decline in self-reports of smell and taste changes as early as five days after lockdown enforcement, with faster declines reported in countries that adopted the most stringent lockdown measures.

"In response to the COVID-19 pandemic, many governments have taken drastic measures to prevent their intensive care units from becoming overwhelmed with patients," said John Hayes, professor of food science, Penn State. "Our research suggests that an increase in the incidence of sudden smell and taste change in the general population may indicate that COVID-19 is spreading. This knowledge could help decision-makers take important measures at the local level, either in catching new outbreaks sooner, or in guiding the relaxation of local lockdowns, given the strong impact of lockdown on economic and social activities."

In their study, which published on Oct. 14 in *Nature Communications*, the researchers used data from the Global Consortium for Chemosensory Research survey, a global, crowd-sourced online study deployed in more than 35 languages. Specifically, the team examined data that were collected from April 7 to May 14, 2020, although study recruitment is still ongoing.

In addition, the team looked at data from the French government—which beginning on May 7, 2020, has been categorizing various geographical areas of the country as red or green, depending on their COVID-19 prevalence. Compared to [green areas](#), red areas were characterized by higher active circulation of the virus, higher levels of pressure on hospitals and reduced capacity to test new cases.

Finally, to determine whether self-reported smell and taste loss could serve as an early indicator of the number of COVID-19 cases, and

therefore hospital stress, the team compared data from France with data from Italy and the United Kingdom, each of which implemented lockdown measures at different times and with different levels of stringency.

"Our primary aim was to test the association between self-reported smell and taste changes and indicators of pressure in hospitals, such as COVID-related hospitalizations, critical care resuscitation unit admissions and [mortality rates](#), for each French administrative region over the last three months," said Veronica Pereda-Loth, lead researcher at the Université Paul Sabatier Toulouse III in France. "Our secondary aim was to examine temporal relationships between the peak of smell and taste changes in the population and the peak of COVID-19 cases and the application of lockdown measures."

Overall, the team found that smell and taste changes were better correlated with the number of COVID-19 admissions to hospitals than France's current governmental indicators, which look at the ratio of ER consultations for suspicion of COVID-19 to general ER consultations. Specifically, the researchers found that the peak onset of changes in smell/taste appeared four days after lockdown measures were implemented. In contrast, the governmental indicator based on ER consultations peaked 11 days after the lockdown.

"Our findings are consistent with emerging data showing that COVID-19-related changes in smell and taste occur in the first few days after infection," said Hayes. "They suggest that self-reports of smell and taste changes are closely associated with hospital overload and are early markers of the spread of infection of SARS-CoV-2. Therefore, potential outbreaks and the short-term efficacy of a [lockdown](#) could be monitored by tracking changes in [smell](#) and [taste](#) in the population."

More information: Denis Pierron et al, Smell and taste changes are

early indicators of the COVID-19 pandemic and political decision effectiveness, *Nature Communications* (2020). DOI: [10.1038/s41467-020-18963-y](https://doi.org/10.1038/s41467-020-18963-y)

Provided by Pennsylvania State University

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