

What Facebook can tell us about dietary choices

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Lifestyle changes for demand-side climate change mitigation is gaining more and more importance and attention. A new IIASA-led study set out to understand the full potential of behavior change and what drives such

changes in people's choices across the world using data from almost two billion Facebook profiles.

Modern [consumption](#) patterns, and especially livestock production in the agricultural sector to sustain the world's growing appetite for animal products, are contributing to and speeding the advance of interconnected issues like climate change, air pollution, and biodiversity loss. Our current way of life is simply not sustainable. It is clear that there needs to be a step-change in our behavior and consumption patterns to ensure that those that come after us have a healthy, life-sustaining planet to call home. Getting a large number of people with vastly different beliefs and values to change their consumption patterns and behavior is however not a simple matter.

While many previous studies have looked into the drivers of low-carbon lifestyles in general and sustainable diets in particular, the data they employed have often been based on a limited number of countries, or a limited number of survey respondents whose reported information sometimes varied from their actual behavior. In their study published in *Environmental Research Letters*, IIASA researcher Sibel Eker and her colleagues, made use of online social media data, particularly anonymous Facebook audience size data, as a global data source to represent the online behavior of billions of people in order to complement more traditional empirical studies.

"We were interested in finding out if we could use the data available on the social media platform Facebook to quantify the level of interest in sustainable diets, such as vegetarianism, in different countries around the world and to determine whether their online activity actually represents a real-life interest in vegetarianism and consumption patterns," Eker explains. "In addition, we wanted to see what other factors such as [education level](#), age, gender, or the GDP per capita, play a role in determining people's interest in sustainable diets in different countries."

In this regard, Eker and her colleagues created a dataset of daily and monthly active users who indicated having an interest in sustainable lifestyles, particularly vegetarianism. Their choice of the term vegetarianism was motivated by the breadth of the term compared to other terms like "plant-based diets" or "sustainable diets", and its availability as a pre-defined interest choice on the Facebook advertising platform.

"Our choice of vegetarianism and sustainable living as interest categories relevant for low-carbon lifestyles was based on a keyword search on the Facebook Marketing API in which they emerged as the ones with the highest global audience size among the available interest categories. A person's interest in vegetarianism can stem from a number of things ranging from animal welfare, to health, or religion. In the context of this study, we saw vegetarianism in particular, as an indicator of the spread of meat-free diets, which is more relevant for estimating food demand, rather than as an indicator of people's interest in a vegetarian lifestyle purely for environmental reasons," notes Eker.

The publicly available and anonymous data was retrieved from the Facebook marketing Application Programming Interface (API) at multiple points between September 2019 and June 2020 for the interest category, age, gender, education level, and country of each user. The dataset used covers a total of 131 countries and around 1.9 billion people, of which 210 million indicated an interest in vegetarianism, and 33 million indicated an interest in sustainable living.

The results indicate that the fraction of the Facebook audience interested in vegetarianism positively correlates with the rate of decline of meat consumption at the country level (in the countries with high vegetarianism interest)—in other words, the more people are interested in following a vegetarian [diet](#), the steeper the declining trend of meat consumption in the country. Meat consumption levels overall were

higher in high-income countries than in the low-income ones, but the interest in sustainable diets, as much as it is expressed online, seemed to be higher in those countries too, which, according to the researchers, is promising for trends towards more sustainable and equitable meat consumption.

Education, which has previously been shown to be a catalyst to achieve the SDGs, could be a catalyst here too, unless superseded by high-income levels, since it emerged as the most important factor affecting interest in vegetarianism. This effect was more pronounced in low-income countries. Gender also emerged as a very strong distinguishing factor, with women tending to have a higher interest in [vegetarianism](#) than men. GDP per capita and age followed these two indicators in terms of their effect on people's interest in a vegetarian lifestyle.

"Our study shows that online social media data can indeed be useful to analyze and estimate food consumption trends. While the importance of education, income, and gender was previously known based on local studies, we ranked them for the first time on a global scale," says Eker. "Policies that are designed to stimulate adoption of sustainable diets, especially communication policies, should take the social heterogeneity and existing tendencies—which could be low hanging fruit—into account. Heterogeneity across countries also plays an important role, and studies like ours help to understand international differences and to design local customized policies."

More information: Sibel Eker et al, Using social media audience data to analyse the drivers of low-carbon diets, *Environmental Research Letters* (2021). [DOI: 10.1088/1748-9326/abf770](https://doi.org/10.1088/1748-9326/abf770)

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