

Consumer food choices can help reduce greenhouse emissions contributing to climate change

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Changes in diet have been proposed as a way to reduce carbon emissions from the food system. But there has been little research on the affordability and feasibility of low-carbon food choices in the U.S. and how these choices could affect diet and climate change.

A new study that provides the latest, most comprehensive estimate of greenhouse gas emissions generated by U.S. consumer food purchases suggests that, if Americans directed their food purchases away from meats and other animal proteins, they could help reduce greenhouse gas emissions.

"We found that households that spend more of their weekly food budget on beef, chicken, pork and other meats are generating more greenhouse gas emissions. Our study shows that encouraging consumers to make [food choices](#) that are lower in greenhouse gas emissions can make a real difference addressing climate change," said Rebecca Boehm, the study's lead author and a University of Connecticut Postdoctoral Fellow with the Rudd Center for Food Policy and Obesity and the Zwick Center for Food and Resource Policy, who initiated this work at the Friedman School of Nutrition Science and Policy at Tufts University.

Altering food consumption could be a key area for reducing greenhouse gas emissions, as food purchases accounted for 16 percent of U.S. greenhouse gas emissions in 2013, according to the study. By comparison, commercial/residential activity accounted for 12 percent and industrial activity accounted for 21 percent of the nation's greenhouse gas emissions.

The study, published today in the journal *Food Policy*, was conducted by researchers with the UConn Rudd Center and the Zwick Center, the

Friedman School of Nutrition Science and Policy at Tufts University, the University of Missouri, and the U.S. Department of Agriculture's Economic Research Service.

The researchers utilized nationally representative data on food purchases, linking detailed household purchase data to a U.S. Environmental Protection Agency tool that can be used to calculate greenhouse gas emissions from every stage of the food supply chain, including production, manufacturing, distribution, transportation, and retail and restaurants.

"This study is a major advancement in our understanding the contribution of U.S. food choices to climate change," according to Boehm. Previous studies conducted in the U.S. did not always capture greenhouse gas emissions from all parts of the food system.

Key findings of the study include:

- Industries that produce beef, pork and other red meat generated the largest share of greenhouse gas emissions from household purchases, approximately 21 percent, followed by fresh vegetables and melons (11 percent), cheese industries (10 percent), and milk products and butter (7 percent).
- Greenhouse gas emissions generated by household food spending varied by race and educational attainment. More than 80 percent of households generating very high greenhouse gas emissions from their food spending (top fifth of households) were white. Twenty-six percent of households in with the highest (top fifth) tier of greenhouse gas emissions had a survey respondent with a college degree, compared to

approximately 12 percent in the bottom fifth for greenhouse gas emissions.

- Participation in the federal Supplemental Nutrition Assistance Program (SNAP) was associated with less greenhouse gas emissions from food spending (when not accounting for other household characteristics). Approximately 24 percent of households in the bottom fifth for greenhouse gas emissions participated in SNAP; only 9 percent of households in the top fifth for greenhouse gas emissions participated in SNAP.

"It's striking that many of the opportunities for environmentally-friendly dietary changes are with the households that have the most resources," said Sean B. Cash, Ph.D., senior author. Cash is the Bergstrom Foundation Professor in Global Nutrition at the Friedman School of Nutrition Science and Policy at Tufts. "Changes in food consumption in these households could reduce greenhouse gases by a disproportionate amount."

"For the first time, our study shows the association between the [greenhouse](#) gas emissions generated by the food system, household food spending patterns, and sociodemographic characteristics," Boehm said. "These findings can inform the debate on which diets and food spending patterns can best mitigate [greenhouse gas emissions](#) from the [food](#) system, while informing educational efforts to encourage low-carbon diets among the U.S. population."

More information: Rebecca Boehm et al, A Comprehensive Life Cycle Assessment of Greenhouse Gas Emissions from U.S. Household Food Choices, *Food Policy* (2018). [DOI: 10.1016/j.foodpol.2018.05.004](#)

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