

# Veg 'nudge': An extra vegetarian option cuts meat consumption without denting food sales

30 September 2019



Two vegetarian options in the cafeteria of 'College C' - the Cambridge College that helped researchers run a "choice architecture" experiment. Credit: Nick Saffell

A study of over 94,000 cafeteria meal choices has found that doubling the vegetarian options—from one in four to two in four—reduced the proportion of meat-rich purchases by between 40-80% without affecting overall food sales.

The results are from the first major study to look at whether tweaking [food availability](#) can "nudge" people towards better decision-making for both [human health](#) and preservation of the planet.

Scientists from the University of Cambridge's departments of Zoology, Geography and Public Health gathered over a year's worth of mealtime sales data from three Cambridge college cafeterias. Two provided data on days with different menu set-ups, and a third college helped the researchers conduct a "choice architecture" experiment.

The research team found the biggest increases in

plant-based dining among the most carnivorous quartile of customers: those who had consistently picked meat or fish prior to the addition of a second veggie option.

Moreover, the team detected no "rebound effect". Opting for a vegetarian lunch did not make a compensatory meat-heavy dinner any more likely. The findings are published today in the *Proceedings of the National Academy of Sciences*.

Diets full of meat are leading drivers of species loss and [climate change](#), say scientists. Livestock and aquacultures behind meat, fish, dairy and eggs are responsible for some 58% of the greenhouse gas created by global food, and take up 83% of farmland despite contributing just 18% of the world's calorie intake.

"Shifting to a more plant-based diet is one of the most effective ways of reducing the environmental footprint of food," said study lead author Emma Garnett, a conservationist from Cambridge's Department of Zoology.



The cafeteria of 'College C' - the Cambridge College that helped researchers run a "choice architecture" experiment. Credit: Nick Saffell

"Replacing some meat or fish with more vegetarian options might seem obvious, but as far as we know no one had tested it before. Solutions that seem obvious don't always work, but it would appear that this one does."

Co-author Theresa Marteau, Professor of Behaviour and Health at Cambridge, said: "Education is important but generally ineffective at changing diets. Meat taxes are unpopular. Altering the range of available options is more acceptable, and offers a powerful way to influence the health and sustainability of our diets."

The researchers have contributed to food policy at the University of Cambridge, where the catering service has reduced meat options—including the removal of beef and lamb, the biggest contributors to meat-related [greenhouse gas](#)—and increased the range of vegetarian meals.

[Earlier this month](#), University cafeterias (separate from the colleges) announced a 33% reduction in carbon emissions per kilogram of food purchased, and a 28% reduction in land use per kilogram of food purchased, as a result of the changes.

"Universities are increasingly at the forefront of providing plant-based options that are affordable and delicious, making it easier to choose a more sustainable diet," said Garnett. "I think that's what really has to change."

"We're not saying all cafeterias and restaurants should turn vegan overnight. But if food were the film industry, vegetarian and vegan meals need to land more starring roles, and meat dishes have got to stop hogging the limelight."

The new study had an observational and experimental component. For the observational, two colleges provided data on weekday term-time meal selections at both lunch and dinner during 2017.



The cafeteria of 'College C' - the Cambridge College that helped researchers run a "choice architecture" experiment. Credit: Nick Saffell

Meals were purchased using university cards topped up with credit, allowing researchers to analyse anonymised data that tracked what individual diners ate for each meal on every day.

This dataset contained 86,932 hot meals (excluding salads and sandwiches) and 2,140 repeat diners. The range varied between occasional days with no vegetarian or vegan dishes, to days where 75% of the options were veggie.

"One of the exciting things about this study is the scale of information on individual diners' choices," said co-author Andrew Balmford, Professor of Conservation Science at Cambridge. "It allowed us to test for rebound effects, when customers compensate for less meat at lunch by eating more in the evening. We found little evidence of this."

Researchers built statistical models to show that doubling the vegetarian offering, from a quarter to half of possible meals, increased the proportion of vegetarian sales by 62% in the first college, and 79% in the second college. (A real-terms increase of almost 15 percentage points in both colleges.)

Caterers at a third college worked with researchers to conduct an experiment during the autumn term of 2017: lunchtime menus that alternated fortnightly between one veggie option (control) and two

(experiment). Doubling availability increased the proportion of vegetarian sales by 41%, or almost 8 percentage points.

Data from the summer term allowed researchers to assign 121 regular diners to a quartile based on their vegetarian meal consumption. "We discovered that changing the relative availability of vegetarian options had the strongest effect on those who usually eat more meat," said Balmford.

Garnett argues that vegetarian options have been an "afterthought" on menus for too long. "Flexitarianism is on the rise. Our results show that caterers serving more plant-based options are not just responding to but also reshaping customer demand."

"Simple changes such as increasing the proportion of vegetarian options could be usefully scaled up, helping to mitigate climate change and biodiversity loss," she said.

**More information:** Emma E. Garnett et al., "Impact of increasing vegetarian availability on meal selection and sales in cafeterias," *PNAS* (2019).  
[www.pnas.org/cgi/doi/10.1073/pnas.1907207116](http://www.pnas.org/cgi/doi/10.1073/pnas.1907207116)

Provided by University of Cambridge

APA citation: Veg 'nudge': An extra vegetarian option cuts meat consumption without denting food sales (2019, September 30) retrieved 28 November 2020 from <https://phys.org/news/2019-09-veg-nudge-extra-vegetarian-option.html>

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