



# **To what extent does the use of menu intervention strategies that leverage behavioural economics influence customer behaviour and encourage more sustainable choices in the restaurant industry?**

**Sumair Gupta**

Student

Vasant Valley School, New Delhi, India

## **Introduction and background**

Humans are not always rational creatures aiming to maximise utility, and this fact has been shown and accepted, giving rise to the area of behavioural economics. Unlike the rational choice model of classical economics, the average person does not take into account all relevant costs and benefits before making a decision. The concept of "Homo economicus" has been central to the field of economics for decades. Several fields of study, including sociology, psychology, and behavioural economics, have come together to explain the complexities of human nature. Small, non-intrusive prods that encourage a more desired option for the person in a decision-making scenario are known as "nudges," and they were first proposed by Thaler & Sustain (2008) as part of the burgeoning discipline of behavioural economics. The idea may be used in a wide variety of contexts, with modifications made to suit each one according to the nudge's intended effect. The presence of the nudge alters the setting in which the decision is made and hence the nature of the decision made. Insights from the behavioural sciences are gaining prominence, which provides policymakers with an opportunity to apply this growing body of information about human behaviour to policymaking. This will help to define more effective policies to boost personal and societal well-being. The purpose of this research is to see whether people may be nudged into making more environmentally responsible lunchtime food choices.

The idea that humanity is in the midst of a worldwide climatic disaster is deeply ingrained in our culture. The production of greenhouse gases (GHGs) must be severely decreased if the United Nations Framework Convention on Climate Change's (UNFCCC) 2019 target of keeping the global surface temperature rise below 2°C is to be met. In order to take the collective step towards a more sustainable lifestyle, public policy has the ability to play a significant role. One-fifth of an individual's annual emissions may be traced back to what they eat (Swedish Environmental Protection Agency, 2018). Dietary shifts say Hedenus *et al.* (2014), are crucial if we're going to keep global warming below 2 degrees Celsius. Since nudges are characterised as minor and do not make large

changes to the decision architecture, they are straightforward to implement and cost little to no money (Thaler & Sustain, 2008). As food choices are generally seen as being made without a great deal of cognitive effort, studies on the effects of nudging in food-related scenarios have shown promising results (Kallbekken & Saelen, 2013). In 2018, the Swedish Environmental Protection Agency found that meat-eating was responsible for one-third of the typical household's emissions from food (and, as previously indicated, food consumption as a whole is responsible for one-fifth of the average household's overall emissions). Though GHG emissions from different types of meat might vary widely, it's generally true that a plant-based lunch results in fewer emissions overall.

It has been stated that increasing the availability of plant-based and vegetarian dietary alternatives is a crucial step towards lowering GHG emissions and achieving the desired results (Willett *et al.* 2019). At the United Nations and the Organisation for Economic Cooperation and Development (OECD), as well as at all governmental levels and in the private sector, reducing emissions has been established as a priority. The Paris Agreement, which was ratified by 195 nations, is a set of principles for how to deal with the growing climate change danger and limit global warming below 2 degrees Celsius (UNFCCC 2019). Reducing meat consumption has environmental benefits (Farchi *et al.* 2017) and health benefits (Machovina & Feeley 2014). The research presented in this article departs from the premise that dietary changes are significant and that shifting towards more plant-based diets may help us leave smaller carbon footprints. There is a growing need for government action to encourage healthier, more environmentally friendly eating habits, but it is unclear what shape these interventions should take. The use of carbon-based tariffs on food, sometimes known as a "meat tax," has been studied theoretically but has not yet been applied in practice as one method to decrease emissions related to food consumption. France, Sweden, and the United Kingdom, among other countries, have all utilised subsidies to encourage the production of environmentally efficient automobiles (Swedish Environmental Protection Agency 2011, Transportstyrelsen 2019, GOV.UK 2019). Grants for manufacturers that switch to greener practices are another tool proposed (Mont *et al.* 2016).

Bans on particular meals, as well as required vegetarian days (Lombardini & Lankoski, 2013), are examples of policies that limit the range of options available to consumers. Information-based approaches, such as climate certification and climate labelling for shops, restaurants, and individual goods, are also used. However, there is still no agreement on the best effective strategy for reducing GHG emissions from the food supply chain. The basic incentives for meat consumption must alter in some manner, but this will not be possible without a dramatic transformation in the consumer mindset. In many cultures, including Sweden's, meat is and always has been the centrepiece of a meal. As dietary habits are regarded as acquired sequences of actions reinforced in the past by experiences that boosted the survival rate (Van't Riet *et al.* 2011), it is challenging to modify them rapidly and permanently. Media coverage of the world's most pressing climate change challenges has helped raise awareness of the problem in Sweden. Half of the Swedes are in favour of reducing their meat intake, according to the Swedish Environmental Protection Agency (2011). Five-sixths of respondents have altered their meat intake because of climate concerns, up from 47% three years ago (Mancini, 2018). Nilsson (2017) found that one in five students aged 18-29 identified as vegetarians, while another study found that 40% of respondents had reduced or

eliminated meat eating in the previous year. For the first time since joining the EU, Swedish citizens ate less meat in 2017 (Swedish Board of Agriculture, 2018), and this trend has persisted into 2018. The Swedish Board of Agriculture reports that this is a significant shift following decades of rising meat consumption in the nation.

In 2017, climate and global warming were the top categories in the SOM Institute at Gothenburg University's annual survey, asking what people worry about the most (Solevind 2018). These numbers suggest that Swedish consumers' attitudes towards meat consumption are about to shift. However, the most significant shifts are experienced by groups of people who share other characteristics. Fast food sales in Sweden varied widely across cities when they promoted Earth Hour by discounting their "Green" menu by 50% for one hour. Lund, a university town in the south, had 98% of its lunchtime purchases come from the "green" menu, whereas Haparanda, a little town in the far north, saw 0% (Kihlberg, 2018). There is also a clear distinction between the sexes. Women show the greatest rate of change in their views (Mancini, 2018), whereas young men (16-24) show the least (Solander, 2018).

### **Theoretical Framework**

The idea of nudging is founded on ideas of constrained rationality, which may be seen in everyday human actions. The concept of "bounded rationality" casts doubt on the widespread belief that real people behave in the same way as the hypothetical "homo economicus" would. Stanovich and West's (2000) explanation of a topic that has been discussed for a long time across several study domains is framed by Kahneman's (2011) work. System I is the automatic system, which makes snap judgements (not necessarily the most utility-maximising) with a minimal amount of thought. Using a deeper degree of thought, greater deliberation, and self-discipline, choices are formed in System II, the reflective system. Behavioural economics (Camerer, 2011) incorporates this method of thinking into economic theory, and it has become an important aspect of social psychology research (Schwarz, 1998).

Therefore, behavioural treatments aimed at System I choices may be more successful than those aimed at System II decisions. This is because the choice will rely more on the decision environment and environmental signals and less on the individual's own thoughts and feelings (Wansink & Sobal, 2007). Everything that makes up the individual's immediate surroundings may be interpreted as environmental signals. Physical appearance, ambient sounds, and the product's visibility are all examples of environmental signals. The menu in a cafeteria, for example, serves a similar purpose. The system I is where the "uncontrolled, fast, associative, and unconscious" (Thaler & Sustain, 2008) decisions about eating are made (Marteau *et al.* 2012). The process of deciding what to eat is not one that takes a long time; instead, it is something we perform numerous times a day, and it is quick, effective, and requires little thought on our part. Thus, contextual signals in the context of a meal decision may play a significant impact on the ultimate selection. Therefore, there is great potential for food-related nudges to be successful. The term "nudging" was used by economists to describe a method of encouraging individuals to act in a manner that is beneficial to themselves, to society, or to both. This is accomplished without restricting people's freedom of choice or drastically altering their financial incentives.

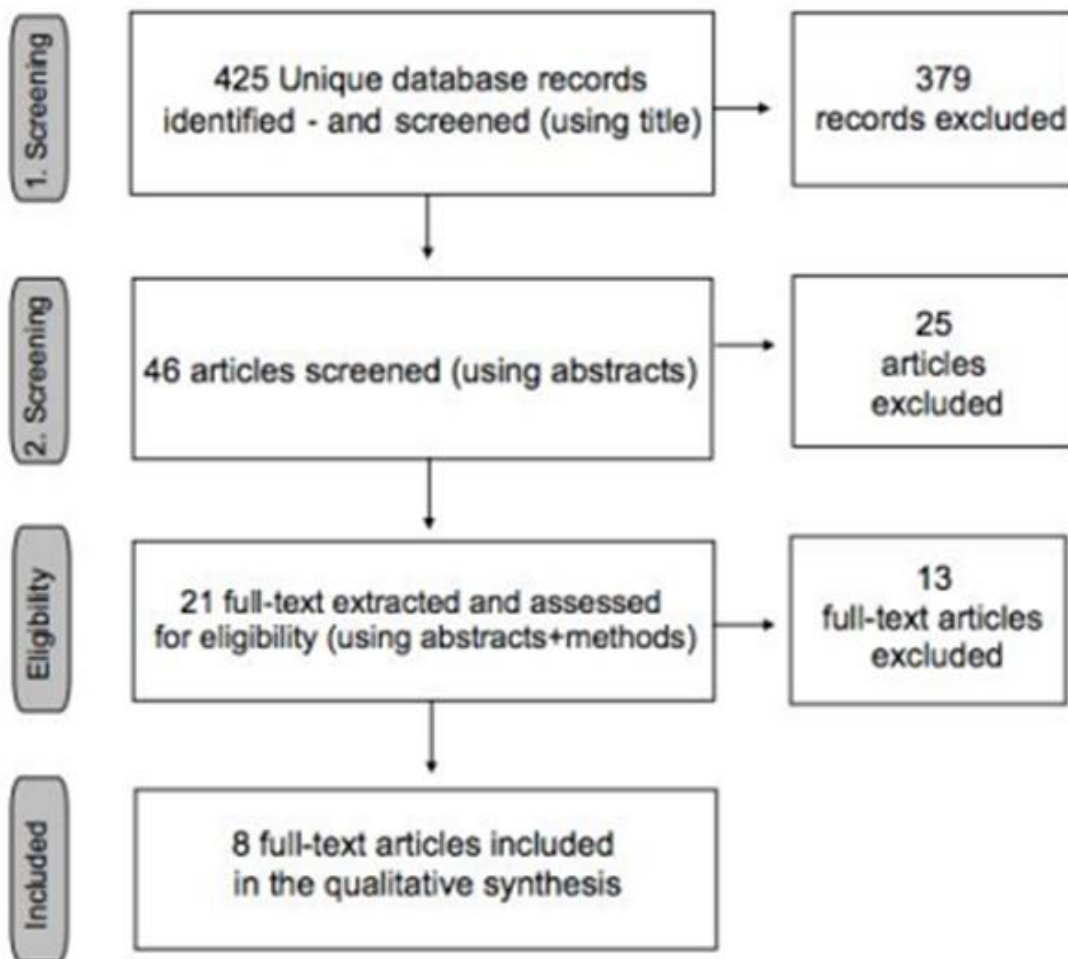
When individuals are busy and have limited attention, nudges, which are tools based on the existence of bounded rationality, serve a useful function. Alterations to the food decision's physical and social context are known as "shifts in the choice architecture" (Thaler & Sustain, 2008). Modifying factors like the layout of a menu might enhance the likelihood that a preferred option is selected, which would be beneficial from a policy and individual rationality standpoint. The suggested behaviour is highlighted by the altered environmental signals in the decision architecture.

### **Research question**

This study's overarching research question is whether or whether the subtle "nudge" of making the vegetarian choice more prominent on the menu would result in a higher percentage of regular customers making that selection. When this occurs, it may indicate that the nudge, which employs a menu intervention strategy to encourage a more sustainable option, is an efficient tool for bringing about the desired reduction in CO<sub>2</sub>e emissions. It is hypothesised in Sections 1 and 2 that if the vegetarian choice is placed at the top of the menu, the percentage of sales that day that come from vegetarians will rise.

### **Method**

The purpose of this study was to examine the evidence for and against encouraging plant-based diets. Three databases were searched initially, yielding 425 articles; 379 were disqualified due to title issues, and 25 were disqualified due to abstract issues. Thirteen of the remaining twenty-one articles were disqualified after reading their entire texts. The evaluation included a total of eight papers (Figure 1).



**Figure 1: PRISMA tool for research**

## Discussion

The impact of each individual nudge utilised by Ensaff *et al.* (2015) cannot be determined without considering the whole effect. Compared to the baseline period, participants' selection of plant-based food products rose dramatically during the intervention and in the three weeks after the intervention. Students were 2.50 times more likely to choose a plant-based item during the intervention compared to before it. Therefore, it was evident that combining various choice architecture tactics, such as pre-filled trays, stickers, and posters, improved availability, proximity, labelling, etc., had a positive impact. Labels may be powerful nudges, as shown by research on the topic of encouraging people to eat more sustainably (Visschers & Siegrist, 2015). It is important to note that the more climate-friendly meals are also more plant-based, but the nudge was made by informing participants on the climate effect of their meals, and it is not necessarily safe to conclude that the same effect would have been seen by labels with information on plant-based meals. Using a wide variety of nudges, such as positioning, signage, and images, Cohen *et al.* (2015) assessed the impact of choice architecture. The nudges were also effective, but this time in encouraging F&V consumption. When experienced chefs were brought in to teach the cafeteria workers and provide healthier cuisine, Cohen *et al.* (2015) found that students ate more fruits and vegetables and less processed foods. Friis *et al.* (2017) contrasted the impact of single nudges with the combined tactics discussed above and found that a default choice appeared to effectively promote vegetable consumption in adults. While both priming and perceived variety nudges tend to lower total calorie intake, they did so in this research primarily by decreasing meat eating, which in turn increased plant-based food consumption. The effects of different serving

sizes on meat and vegetable consumption were investigated by Reinders *et al.* (2017). During the intervention phase, diners were automatically given more vegetables and fewer meat dishes than they would have during the control period. Vegetables served on plates were eaten at a much greater rate during the intervention period compared to the control period when the default option was not used. Meat consumption also dropped dramatically when the intervention began. A more plant-based diet was consumed since portion proportions were automatically adjusted. Still, it's unrealistic to think that this prod will cause widespread behavioural shifts. In addition, Campbell-Arvai *et al.* (2014) found that when presented with enticing meat-free menus, a huge majority of student canteen customers (89.7%) chose meatless meals, demonstrating the effectiveness of a default choice as a nudge tactic. Furthermore, the research demonstrated that participants' selection of an appetising meat-free lunch increased to 92.5% when they were also provided with information on the climate effect of the meal alongside the default choice. The least effective nudge for both desirable (47.5% success rate) and undesirable (20% failure rate) options was just presenting the information. The informational nudge was also employed by Carfora *et al.* (2016). They found that information on the mental health advantages was particularly helpful in getting people to eat more fruits and vegetables, but information about the physical health benefits had the opposite impact. The only research conducted on preschoolers found that the nudging technique of combining veggies with familiar meals or improving their aesthetic appeal did not improve vegetable consumption. In conclusion, it seems that nudging has an impact on encouraging a more plant-based diet. Seven out of the eight studies that looked at the effect of choice architecture on plant-based food intake indicated a favourable effect. Since the research explores such a wide range of nudges and employs such different study methodologies, it is not possible to do a direct comparison of the studies (and impact sizes). As a result, no attempt was made to conduct a comprehensive study of the publications that were analysed.

Only three of the eight studies included in this meta-analysis looked at the effect of nudging on people's transition to a plant-based diet; one of these three studies used the term "climate-friendly meals" rather than "plant-based," and another called them "meat-free meals." The next five studies did not discuss nudging as a strategy towards plant-based diets but rather as a means of boosting plant-based foods (i.e. fruit and vegetables) with or without reducing meat intake. Despite the small sample size, it was chosen to include studies that looked at how nudging impacted individuals to adopt a more plant-based diet. Nudges to eat more vegetables did not cause research participants to change their diets at other meals, as shown by Hoefkens *et al.* (2011). In light of these findings, it could be reasonable to assume that encouraging individuals to eat more plant-based foods at each meal will lead to an increase in the overall quantity of plant-based foods consumed each day. However, research reveals that opting for a nutritious lunch could be used as an excuse to binge on junk food later in the day. These contrasting findings highlight the need for more studies on pay structures. The purpose of this review is to shed light on the possible connection between eating more fruits and vegetables and adopting a more plant-based diet.

This research focused on the uptick in plant-based foods since there is less information available on nudges towards plant-based diets. However, further focus on meat reduction is an intriguing entrance point to plant-based diets. A recent study by Carfora *et al.* (2017), for example, showed promising results in reducing specific meat

products (i.e. processed meat) by using choice architecture via text messages, and it would be interesting to cover this method of influencing consumers towards a plant-based diet in a future review.

## **Conclusion**

According to the analysis, default settings provide the most persuasive nudging. They save time and energy since the subject doesn't have to actively make a choice, and they also function as a normative or recommended default. People may be effectively nudged to adopt greater plant-based diets by using this technique. More judiciously using nudges such as signs, labels, stickers, rating scales, proximity, availability, and enhanced attraction of plant-based solutions is likely to have a larger impact. The consumption of plant-based foods may be increased via the use of intelligent menus that promote and simplify the selection of plant-based meals. Everything mentioned above has a place in the may framework and may be used within it. There has to be a lot more study done on plant-based diets and the effects of pushing. Also, a lot more data about how various prods to a plant-based diet affect people over time. This may also shed light on whether or not eating more fruits and vegetables might help one cut down on their consumption of meat and other animal products. The contemplation idea of people's change-readiness needs much more testing, especially in relation to plant-based diets.

## **Future research**

According to the authors' extensive literature review, few nudge-based intervention trials have focused on plant-based diets. Both "nudging" and "plant-based" are very recent developments, which is likely to blame. It's likely that there will be more combined research on these factors in the years to come. Many studies examining the relationship between nudges and plant-based diets have relied on surveys to learn about participants' intentions but have not intervened to learn about participants' actual actions and behaviours, the authors discover. The vast majority of questionnaire results were not included in this review, but future research could compare the numerically measured intentions with post-intervention behavioural change to determine the usefulness of intentions as an indicator for behavioural change with regard to (plant-based) diets.

## References

- Camerer, C. F. (2011), Behavioral game theory: Experiments in strategic interaction, Princeton University Press.
- Campbell-Arvai, V., Arvai, J. and Kalof, L. 2014. Motivating sustainable food choices. *Environment and behavior* 46(4), pp. 453–475.
- Carfora, V., Caso, D. and Conner, M. 2016. Randomized controlled trial of a messaging intervention to increase fruit and vegetable intake in adolescents: Affective versus instrumental messages. *British journal of health psychology* 21(4), pp. 937–955.
- Carfora, V., Caso, D. and Conner, M. 2017. Randomised controlled trial of a text messaging intervention for reducing processed meat consumption: The mediating roles of anticipated regret and intention. *Appetite* 117, pp. 152–160
- Cohen, J.F.W., Richardson, S.A., Cluggish, S.A., Parker, E., Catalano, P.J. and Rimm, E.B. 2015. Effects of choice architecture and chef-enhanced meals on the selection and consumption of healthier school foods: a randomized clinical trial. *JAMA pediatrics*
- Ensaiff, H., Coan, S., Sahota, P., Braybrook, D., Akter, H. and McLeod, H. 2015. Adolescents' Food Choice and the Place of Plant-Based Foods. *Nutrients* 7(6), pp. 4619–4637.
- Farchi, S., De Sario, M., Lapucci, E., Davoli, M. & Michelozzi, P. (2017), 'Meat consumption reduction in Italian regions: Health co-benefits and decreases in ghg emissions', *PloS one* 12(8), e0182960.
- Friis, R., Skov, L.R., Olsen, A., Appleton, K.M., Saulais, L., Dinnella, C., Hartwell, H., Depezay, L., Monteleone, E., Giboreau, A. and Perez-Cueto, F.J.A. 2017. Comparison of three nudge interventions (priming, default option, and perceived variety) to promote vegetable consumption in a self-service buffet setting. *Plos One* 12(5), p. E0176028.
- Hedenus, F., Wirsenius, S. & Johansson, D. J. (2014), 'The importance of reduced meat and dairy consumption for meeting stringent climate change targets', *Climatic change* 124(1-2), 79–91.
- Hoefkens, C., Lachat, C., Kolsteren, P., Van Camp, J. and Verbeke, W. 2011. Posting point-of-purchase nutrition information in university canteens does not influence meal choice and nutrient intake. *The American Journal of Clinical Nutrition* 94(2), pp. 562–570.
- Kahneman, D. & Egan, P. (2011), *Thinking, fast and slow*, Vol. 1, Farrar, Straus and Giroux New York
- Kallbekken, S. & Sælen, H. (2013), "nudging" hotel guests to reduce food waste as a win-win environmental measure', *Economics Letters* 119(3), 325–327.
- Kihlberg, J. (2018), 'Vi ser ett skifte mot lättare kött – och mer veganskt'. *Dagens Nyheter*. 1 March
- Lombardini, C. & Lankoski, L. (2013), 'Forced choice restriction in promoting sustainable food consumption: Intended and unintended effects of the mandatory vegetarian day in Helsinki schools', *Journal of consumer policy* 36(2), 159–178
- Machovina, B. & Feeley, K. J. (2014), 'Taking a bite out of biodiversity', *Science* 343(6173), 838–838.
- Mancini, L. (2018), 'Sifo: mer än varannan anpassar köttkonsumtionen för klimatets skull'. *SVT Nyheter*. 11 December.
- Marteau, T. M., Hollands, G. J. & Fletcher, P. C. (2012), 'Changing human behavior to prevent disease: the importance of targeting automatic processes', *science* 337(6101), 1492–1495



Mont, O., Lehner, M. & Heiskanen, E. (2016), 'Nudging—a promising tool for sustainable consumption behaviour?', *Journal of Cleaner Production* 134, 166–177.

Nilsson, P. (2017), 'Varannan svensk mer intresserad av vego'. *Djurens Rätt*. 28 June. URL: <https://www.djurensratt.se/blogg/varannan-svensk-mer-intresserad-av-vego>

Reinders, M.J., Huitink, M., Dijkstra, S.C., Maaskant, A.J. and Heijnen, J. 2017. Menu-engineering in restaurants - adapting portion sizes on plates to enhance vegetable consumption: a real-life experiment. *The International Journal of Behavioral Nutrition and Physical Activity* 14(1), p. 41.

Schwarz, N. (1998), 'Warmer and more social: Recent developments in cognitive social psychology', *Annual Review of Sociology* 24(1), 239–264.

Solander, I. (2018), 'Unga män väljer bort vegetariskt.'. *Dagens Nyheter*. 30 October. URL: <https://www.dn.se/nyheter/sverige/unga-man-valjer-bort-vegetariskt/>

Solevind, M. (2018), 'Svensk samhällsoro'. SOM-Institutet, Gothenburg University. Presentation.

Stanovich, K. E. & West, R. F. (2000), 'Individual differences in reasoning: Implications for the rationality debate?', *Behavioral and brain sciences* 23(5), 645–665.

Swedish Board of Agriculture (2018), 'Förbrukning, svensk marknadsandel, diverse'.

Swedish Environmental Protection agency (2011), 'Köttkonsumtionens klimatpåverkan, drivkrafter och styrmedel'. Swedish Environmental Protection agency, Stockholm. (Rapport no. 6456).

Swedish Environmental Protection agency (2018), 'Hushållens utsläpp står för två tredjedelar av de totala konsumtionsbaserade växthusgasutsläppen. resterande tredjedel kommer från offentlig konsumtion och investeringar'. <https://www.naturvardsverket.se/Sa-mar-miljon/Statistik-A-O/Vaxthusgaser-konsumtionsbaseradeutslapp-per-omrade/>

<https://www.naturvardsverket.se/Sa-mar-miljon/Statistik-A-O/Vaxthusgaser-konsumtionsbaseradeutslapp-per-omrade/>

Thaler, R. & Sustain, C. (2008), *Nudge: Improving decisions about health, wealth and happiness*, Yale University Press

Transportstyrelsen (2019), 'Bonus malus-system för personbilar, lätta lastbilar och lätta bussar'. Transportstyrelsen, Stockholm. (Rapport no. 6456).

UNFCCC (2019), 'The paris agreement'. <https://unfccc.int/process-and-meetings/the-paris-agreement/what-is-the-paris-agreement>

Van't Riet, J., Sijtsema, S. J., Dagevos, H. & De Bruijn, G.-J. (2011), 'The importance of habits in eating behaviour. an overview and recommendations for future research', *Appetite* 57(3), 585–596.

Visschers, V.H.M. and Siegrist, M. 2015. Does better for the environment mean less tasty? Offering more climate-friendly meals is good for the environment and customer satisfaction. *Appetite* 95, pp. 475–483

Wansink, B. & Sobal, J. (2007), 'Mindless eating: The 200 daily food decisions we overlook', *Environment and Behavior* 39(1), 106–123

Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., Tilman, D., DeClerck, F., Wood, A. et al. (2019), 'Food in the anthropocene: the eat–lancet commission on healthy diets from sustainable food systems', *The Lancet* 393(10170), 447–492