

Determinants of food-related behaviour change: Applying the COM-B model to understand the barriers and facilitators to plant-focused food consumption.

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Abstract

In recent years, there has been an increased focus on more sustainable behaviours, including the adoption of a plant-focused diet¹. However, significant barriers still remain in this transition. Previous literature has outlined the motivations for moving towards a plant-focused diet, but there is still little knowledge on the additional barriers to behaviour change, which cannot be resolved through motivation alone. This study investigates key barriers and facilitators to plant-focused diets, through the use of the COM-B model, to gain a greater understanding of the combined influences of motivations, opportunities, and capabilities in enabling this transition. In person surveys were conducted with customers of the university canteen, lasting no more than 5 minutes, discussing the reasons behind their food choices and their opinions on plant-based items. These insights were used to identify the barriers and facilitators to plant-focused diets. Clear concerns arise in a person's capabilities and opportunities to engage in this. The findings highlight 3 main barriers to plant-focused food consumption: the perceived additional costs often involved, the lack of availability of suitable substitutes, and the overall lack of knowledge about plant-focused diets and their health benefits. Furthermore, significant barriers remain due to the outdated stigmas attached to plant-focused diets, exacerbated by the lack of knowledge. While food-related behaviour change is a complex topic, this paper's findings indicate that small, but significant interventions can be implemented to aid in this transition.

Key words: plant-focused, sustainability, behaviour change, COM-B, food choices, diet.

¹ For the purpose of this research, the term 'plant-focused' will be used, which encompasses any diet which recommends eating more plant food, following a plant-based diet, or adhering to an overall more sustainable way of eating.

Introduction

As global climate change remains at the forefront of current news, there is a widespread call for more extensive action to be taken, emphasizing the urgency to encourage more sustainable behaviours (IPCC, 2022). The need to shift behaviours towards more sustainable practices is necessary now more than ever. Several ways to enhance sustainable living have been discussed, with the adoption of a plant-focused diet noted as instrumental in reducing environmental ramifications (Carey et al. 2023). Transitioning to a more plant-focused diet can be considered an excellent way for individual's to lower their environmental impact while maintaining a healthy diet (Blokhuys et al., 2024). An increase in consumer awareness towards more sustainable practices have been noted in recent trends (ElHaffar et al., 2020). However, relying on people's motivation to act accordingly is not enough (Feber et al., 2020).

Despite efforts to encourage the transition to plant-focused diets, substantial barriers still remain in persuading individuals to reduce their meat consumption (Cheah et al., 2020). Additional factors beyond motivations influence behavioural change, such as a person's capabilities or opportunities, and these must be taken into account when investigating sustainable behaviour change (Michie et al., 2011). For instance, one seminar study (Collier et al., 2022) identified that meat-eating participants in their study reported some level of interest in reducing their meat consumption. Despite these desires, barriers to this transition still remained, from negative beliefs on plant-focused diets, to the desire for agency over their food choices (Collier et al., 2022). To fully understand the facilitators and barriers to transitioning diets, all factors which influence behaviours must be addressed.

Therefore, this paper aims to examine these behaviour patterns, to understand the rationale behind individual's food choices, and create suitable interventions to encourage more

plant-focused food consumption. This paper follows a mix-methods research approach, using the COM-B model as a framework, which addresses the capabilities, opportunities, and motivations to behaviour change. The additional factors to plant-focused diets and behaviour change will be examined, filling in the gaps from previous literature. The goal is not only to understand the rationales behind food-related behaviours but to gain insights into how individuals can be encouraged to engage in a more plant-focused diet.

Theoretical framework

Plant-focused diets have gained significant popularity, not only for their health benefits when compared to an omnivore diet but also for the reduced environmental damage when considering land and water use (Carey et al., 2023). As we transition to a more sustainable lifestyle to combat the current global crisis, the switch to a more plant-focused diet has been repeatedly emphasized. The ‘protein transition’, an initiative proposed by the Dutch Health Council, stresses the importance of switching towards a plant-focused diet (Ministerie van Volksgezondheid, 2023). As it stands, current Dutch policies aim to switch to a 50/50 diet by 2030. However, recent advisory reports from the Health Council of the Netherlands state that a further shift to a 60/40 diet is necessary, outlining that a more plant-focused diet not only better aligns with the Dutch dietary guidelines but can also result in a 25% reduction of environmental impact from food consumption (Ministerie van Volksgezondheid, 2023). This initiative follows previous research on the environmental benefits of plant-focused diets. These studies were unanimous in their conclusions; that higher consumption of plant-based foods and lower consumption of animal-based foods were associated with lower environmental impact (Carey et al., 2023). Yet, despite these benefits, significant barriers to this transition still remain.

Previous studies have focused on the motivational influences to switching diets. While motivations, both internal and external, are significant in explaining sustainable behaviours, they are not the only factors involved. The COM-b model (Michie et al., 2011), which outlines a person's capabilities, opportunities, and motivations to engaging in behaviour change, gives a broader understanding of the barriers or facilitators to plant-based food consumptions. The use of this model has been outlined in previous studies to understand some behavioural triggers for plant-focused diets, discussing the use of a fruit and vegetable subscription box (Craveiro et al. 2021). It was stated that 'any given behaviour occurs when an individual has the required physical and psychological abilities to perform that action, a supportive physical and social environment, and reflective processes that activate it'(Craveiro et al. 2021) and this was reflected in their study, showing that the purchase of meal-plan boxes was substantial in promoting more sustainable diets. However, this is limited in its findings, as transitioning to more sustainable behaviours is not equally achievable for everyone (Bal & Stok, 2022). Those who use these schemes are already intrinsically motivated to change and possess the additional means to do so. But whether a person is motivated to act in a certain way is irrelevant if they do not have the capability to do so.

Common barriers to plant-focused diets are the costs involved and the lack of knowledge on the matter. Similar research has suggested that consumers with higher incomes were more likely to purchase plant-based meat alternatives, again perpetuating this notion that engagement in plant-focused diets is not equally achievable (Jiang & Farag, 2023). As such, individuals who may face financial constraints, or are limited in information on plant-focused diets are less willing to switch (Kuosmanen et al., 2023). While switching costs present a substantial obstacle, with the perception that plant-focused diets are more expensive than the common omnivore diet,

it is not always the case. Plant-based consumers have been shown to overall spend less than all other consumers, indicating that these misconceptions on the subject act as an additional barrier to engagement (Pais et al., 2022).

This lack of knowledge can be further observed in the on-going negative associations with plant-focused diets and its perceived 'lack of nutrition' (Fehér et al., 2020). The theory of planned behaviour (TPB), and the value-belief-norm (VBN) theory have been previously used to discuss the driving forces behind behaviour change (Fehér et al., 2020) (Choi et al., 2015). However, when investigated, personal hindrances to switching arose, with individual's proclaiming their commitment to eating meat and the difficulty in giving it up (Fehér et al., 2020). The idea of switching, in omnivores eyes, was not only due to lack of nutrition but associated with a loss, in removing a key component of their diet. This resistance to switching diets could be considered a form of loss aversion, with patterns of attachment to meat, and feelings of sadness and depravity when considering abstaining from meat consumption (Graça et al., 2015). Interesting studies have examined individuals representation of meat, the impact of meat, and rationales for changing habits in relation to their willingness to adopt a more plant-focused diet. Findings raised two main propositions, individual's affective connections to meat consumptions, and their rationalisation of meat consumption, with pro-meat justification reframed as self-exonerations ('it's not my fault') (Graça et al., 2015).

These rationalities and habits can be further attributed to one's social norms and environment. Social norms and identity play a substantial role in shaping one's behaviours. Four relevant value orientations have been addressed to explain beliefs and intentions related to environmental behaviour, being egotistic, altruistic, biospheric, and hedonic (De Groot et al., 2007) (Steg et al., 2012). As values reflects an individual's personality, the concept of oneself

directly affects one's behaviour (Choi et al., 2015). Those who favour biospheric tendencies fall in line with environmental beliefs and intentions. While those with hedonic values may refrain from pro-environmental actions if it threatens their comfort or pleasure, which can be associated with this previously discussed attachment towards meat (Steg et al., 2012).

Social norms and environments can present themselves as barriers to engaging in plant-focused diets and sustainable behaviour. Research has demonstrated the influence of subjective norms on sustainable behaviour, in an effort for individuals to gain social approval among their group members (Yamin et al., 2019). As individuals tend to surround themselves with those who engage in similar behaviours, the opportunities to explore plant-focused diets can therefore be limited. Similarly, adopting a plant-focused diet disrupts the normality of these social environments (Rosenfeld and Burrow, 2017, as cited in Arpinon 2023) and lays the foundation for discriminatory behaviours (MacInnis and Hodson, 2017, as cited in Arpinon, 2023). Social norms can thus be viewed as social judgement towards certain behaviour, posing as a significant barrier to plant-focused food consumption and resistance to switching. Likewise, willingness to reduce or switch often comes from women, as meat tended to be depicted as a male food and as such vegetarian men may be subjected to efforts in reconciling their gender identity with their dietary identity, further exacerbating this social judgement (Graça et al., 2019).

The personal values, social norms, and environments of an individual therefore significantly influence engagement in sustainable behaviour, however little research on these barriers within the context of the COM-B model exist. Previous research has only focused on an individual's motivation to change. While motivation to engage in pro-environment behaviour is necessary, if the capabilities or opportunities to do so are not there, motivation becomes irrelevant. Although the costs involved in switching have been discussed under the COM-B

model, it is still heavily focused on motivation, with little guidance provided on how to suitably solve these issues. The inclusion of the capabilities and opportunities to act on these motivations is lacking, which is why this research will focus on the COM-B model as a framework. From this, suitable interventions will be outlined to allow for further engagement. The context of this study focuses on the customers of the university canteens, with the majority of whom are students. While these customers may present different barriers compared to other groups, and as such require different interventions, the wide range of backgrounds a university setting provides should adequately outline how a person's capabilities, opportunities, and motivations influence their engagement in sustainable behaviour and thus plant-focused diets.

Therefore, the main research question will investigate: *How do capabilities, opportunities, and motivations act as barriers or facilitators for plant-focused food consumption?* To gain a better understanding of this, additional questions will be investigated, such as: *What are the most often identified barriers and facilitators in capabilities, opportunities, and motivations for plant-focused food consumption?* and *Does judgement play a role in consuming or not consuming plant-based items?* These questions will outline the many barriers and facilitators and how these can be examined in the context of the COM-b model.

Methods

Study design

This study was conducted across the multiple canteens of the University of Utrecht, operated by the catering company Eurest. The canteen customers were chosen for this research as they provided a diverse population - including staff, students, and guests of various ages and diets.

The high volume of customers allowed for efficient data collection over 5 days. Results from this research will also be used by Eurest to help in transition to a more plant-focused menu. Short surveys were chosen as the method to collect data to gain a greater understanding of the barriers and facilitators to plant-based consumption in a quick and convenient manner for both interviewers and participants.

Surveys were conducted in person, with interviewers collecting and storing data via a tablet. The survey questions were shown to participants, with interviewers filling in the responses on the tablet. Icons were provided to demonstrate the different reasons and shown to participants with them clicking icons they resonated with. To protect the privacy of participants, participation was anonymous, and data was securely stored, for a maximum of 10 years, in compliance with the Association of Universities in the Netherlands. Participation was completely voluntary, and participants could end the survey at any moment. The survey design involved interviewers asking participants questions directly, promoting active engagement in the discussion rather than just distributing a survey link.

Recruitment and participant sample

Participants were approached immediately after purchasing and asked if they were willing to participate. After informed consent was given, participants were asked a series of and closed open questions on their food choice and reason for this, with the survey lasting no more than 5 minutes. Participants were chosen at random to gain a more conclusive result. Participants were recruited across all university canteens by 5 interviewers total, conducting the surveys in English or Dutch, depending on the preferences of participants and interviewers.

A total of 298 responses were collected (214 students, 61 employees, 23 guests). The ages ranged from 16 to 75 years ($M = 26.85$; $SD = 10.93$). 172 identified as women, 121 as men, and 5 as non-binary. From this, 48.32% stated their diet was omnivore, 12.75% vegetarians and 2.35% as vegan. These results differ slightly from the national averages on diets, with 5% of the Dutch population not eating meat and 0.5% identifying as vegan/plant-based (Netherlands, 2024a).

Table 1.

Tabulation of Diet

I would describe my day-to-day diet as...	Freq.	Percent
Omnivore	144	48.32
Flexitarian	84	28.19
Pescatarian	16	5.37
Vegetarian	38	12.75
Vegan	7	2.35
Other	9	3.02
Total	298	100.00

Note: table 1 contains all diets outlined in the survey, and the percentage of participants who followed these diets.

Research approach

The survey structure is based on the COM-B model, beginning by asking the participant if they bought a plant-based item. Two versions of the survey were created (one for plant-based and one for non-plant-based) and participants were shown the corresponding survey depending on their choice. The reasons for choosing remained the same for both surveys, the difference instead was the prompt provided. Those who chose the plant-based option were given the prompt ‘I chose the plant-based item because it is...’, whereas those who chose the non-plant-based were given the prompt ‘I did not choose the plant-based item because...’. Respondents who chose both a plant-based and non-plant-based option were directed to the plant-based questionnaire and included in the analysis of these responses. Participants were then asked for their reason for this decision, with examples provided such as ‘the plant-based option was not as tasty’. A total of 11 reasons

for this decision were provided to participants, with 1 option being ‘other’, if the provided reasons did not fit. Depending on their choice, follow up qualitative questions were asked to gain a deeper understanding of their reason. The survey ended with asking participants if they had any recommendations for the canteen on how they could make plant-based items more attractive and if they found there were any judgement or stigmas surrounding plant-focused diets. All follow-up questions asked are provided in the appendix below.

Data analysis

Data cleaning began with removing any inconclusive results. Dutch responses that were included in the analysis were translated to English and checked for accuracy. Respondents were given the option ‘other’ and asked to elaborate on this. These responses were examined to see if they fit into the previously given options. From this, all responses who chose a plant-based item and chose ‘other’ gave similar responses to the one's provided and were redistributed accordingly. Similarly, responses from those who picked a non-plant-based option were redistributed accordingly. However, a significant number of respondents suggested the choice was due to a habit, or overall preference for the non-plant-based option. The previously given option ‘other’ was therefore changed to ‘habit’ to include these response as an additional reason and included in the analysis.

All responses given to the questions regarding ‘recommendations’ and ‘judgement’ were included in the analysis, regardless of their reasoning. All responses used in the analysis were examined thoroughly and coloured coded into common themes. After results were checked and allocated accordingly, the most popular motives were further analysed (table 4). Data analysis began with a quantitative analysis of diet, gender, and motivations for their choice to outline any

correlations between them. From this, a qualitative analysis was conducted to further investigate the main reasons provided behind participants plant-based and non-plant-based food choices.

Positionality

As the primary researcher of this study, it was important to outline my personal commitment to maintaining a plant-focused diet and acknowledge its potential impact on this research. This personal stance may create bias. However, I was committed to maintaining transparency and including all perspectives to gain a complete understanding. Instead of dismissing any perspectives I deemed incorrect or irrelevant, I included and examined all opinions. This approach allowed me to develop viable interventions that addressed the needs of all participants of this study. Similarly, when creating interventions, I remained unbiased to avoid appearing moralistic or indifferent of the many barriers participants might face regarding plant-focused food consumption. This analysis was further checked by a non-biased third party to ensure this level of transparency and credibility was maintained.

Results

The analysis began with a cross-tabulation of gender and diet. Based on the chi-squared results below, there is no significant evidence to suggest that there is a correlation between gender and diet ($p = 0.088$). Although there was no statistical data to support this correlation, participants still felt it existed. Conversely, a cross-tabulation of gender and food choice suggested a significant correlation between gender and choice ($p = 0.0186$), with women more likely to choose the plant-based item.

‘Sometimes, especially for meat, not a man if you don’t eat meat’- Participant 84 (man, pescatarian).

Table 2.
Tabulation of Gender and Diet

I identify as...	I would describe my day-to-day diet as...						Total
	Omnivore	Flexitarian	Pescatarian	Vegetarian	Vegan	Other	
Woman	74	50	8	28	5	7	172
	51.39	59.52	50	73.69	71.43	77.78	57.72
Man	43.02	29.07	4.65	16.28	2.91	4.07	57.72
	69	33	7	8	2	2	121
Non-binary	47.92	39.29	43.75	21.05	28.57	22.22	40.60
	57.03	27.27	5.79	6.61	1.65	1.65	40.60
Total	1	1	1	2	0	0	5
	0.69	1.19	6.25	5.26	0.00	0.00	1.68
	20	20	20	40	0.00	0.00	1.68
	144	84	16	38	7	9	298
	100.00	100.00	100.00	100.00	100.00	100.00	
	48.32	28.19	5.37	12.75	2.35	3.02	

Pearson Chi2 = 16.415 Prob = 0.088

Note: First row has *frequencies*, second row has *column percentages*, and third row has *cell percentages*

Table 3.
Tabulation of Gender and Food Choice

I identify as...	Did you choose a plant-based option from the restaurant?		
	Yes	No	Total
Woman	51	121	172
	57.30	54.13	57.72
Man	29.65	70.35	57.72
	37	84	121
Non-binary	41.57	44.04	40.60
	30.58	69.42	40.60
Total	1	4	5
	1.13	1.83	1.68
	20	80	1.68
	89	209	298
	100.00	100.00	100.00
	29.87	70.13	100.00

Pearson Chi2 = 7.97 Prob = 0.0186

Note: First row has *frequencies*; second row has *column percentages*, and third row has *cell percentages*

Participants could pick up to 3 reasons for their choice. Of the respondents who picked a plant-based option, 67% of participants picked more than 1 reason for their choice. This

compares to only 33.49% of respondents who picked a non-plant-based option. Participants who picked plant-based were twice as likely to pick more than one option compared to those who did not. While those who chose the plant-based options typically provided ethical reasons for this such as animal welfare, those who did not focused on the content of item specifically, discussing the tastiness or protein content. The most common reasons for choosing a plant-based item were ‘health’, ‘sustainability’, and ‘animal welfare’. The most common reasons for choosing a non-plant-based item were, ‘taste’, ‘only item seen’, and ‘habit’.

Table 4.
Outline of all reasons for choosing/not choosing plant-based

Reason for choice...	Did you choose a plant-based option from the restaurant?	
	Yes	No
Cost	8	22
Taste	30	103
Health	31	16
Sustainability	38	4
Animal welfare	35	2
Not familiar	1	10
Item seen	12	33
Marketing	1	2
Social norm	1	6
Availability	8	29
Habit	0	58

Note: table 4 contains the number of times a participant chose one of the above reasons

Reasons for not choosing plant-based

1. Taste

The most common motive for not choosing the plant-based option was ‘taste’. In the subsequent qualitative analysis, three main themes emerged, ‘tastiness’, ‘texture’, and ‘preference’. Many respondents stated that plant-based options were simply not as tasty as the non-plant-based

options, both in general and in relation to the options within the canteen. There was no defining element for this, just that participants felt the plant-based option was ‘missing something’ (Participant 282, woman, omnivore). Similarly, participants discussed the textural differences between plant-based and non-plant-based foods, stating that their reason for not choosing was mainly ‘because of the difference in texture’ (Participant 72, woman, omnivore).

However, when asked to elaborate on their reasoning, some participants were unsure, expressing habitual reasons for eating meat.

‘No, actually I always eat meat. I’m just very used to eating meat, so I don’t really pay attention to what’s available in terms of plant-based options either’. – Participant 20 (male, omnivore).

On the other hand, those who chose taste as a reason for picking the plant-based option were unanimous in their responses, outlining that ‘the plant-based options feel more fresh, in a way’ (Participant 156, woman, vegetarian).

2. No other option seen

A substantial number of participants who chose a non-plant-based options indicated that they had not seen a plant-based alternative. Of these responses, three themes emerged, ‘signs’, ‘variety’ and ‘asking preference’. As participants did not see any other options, their responses to the question ‘how can we make the plant-based option more visible?’ naturally included adding more signs and clear indications of whether options were plant-based or not. This included more clear symbols on the plant-based options, or pictures above indicating. Some participants even suggested having the plant-based and non-plant-based options in separate areas.

'I do think that they could do a little better at indicating what is vegan and what is not. For example, maybe they could make a separate shelf with the vegan products, that they really separate it from the rest of the products.' – Participant 115 (Male, Omnivore).

This could be linked to similar buying behaviours in grocery stores, with plant-based options usually in one area of the store, providing customers with a convenient way of accessing the necessary products and removing any barriers due to a lack of time or information. However, this may have adverse effects, and instead lead customers to avoid certain areas of the canteen (Gravely & Fraser, 2018).

Some participants further added that there was no variation or plant-based options at all, stating that it was 'lies, that there was only meat and cheese options' (Participant 81, man, flexitarian) and the reason for them not choosing the item was actually because there was no option available. From this, respondents also suggested that their choice would have changed if they were simply offered an alternative. This suggestion came from respondents who ordered coffee from the baristas. The default milk choice is cow milk and all participants who purchased a coffee with milk stated that if asked by the barista what milk they would prefer, they would have opted for a plant-based option. But because this was not suggested during the transaction, participants didn't realise alternative options were available and just settled for the cow milk out of habit.

'Among the options for drinks, it would be nice if the barista would ask what kind of milk you want. I assumed that question would still come up, but then suddenly I was already being served a cappuccino with cow's milk!' – Participant 48 (woman, omnivore).

3. Habit

Continuing with the topic of habit, an interesting finding which emerged was the large number of responses who mentioned habit as a reason for choosing the non-plant-based option.

Respondents expressed lifestyle and preference to eating meat or dairy when asked to elaborate on their choice. There was no real thought behind their choice, and when asked, they were unsure of why. This could be due to the environment of the research, as customers come during their lunch break and opt for the most convenient choice.

'I don't really think about it, like when I ordered, I kind of just forgot it was an option'. – Participant 47 (woman, omnivore).

However, some respondents further discussed these habitual reasonings, stating that this does not extend to their home environment. When in the canteen convenience was the priority, yet this was not the case when cooking for themselves.

'At home I sometimes choose vegan options, but when I'm at uni, I just want to eat something quick, and I really don't think about it'. – Participant 54 (woman, flexitarian).

This brings into question why a person's willingness to try plant-based options does not extend to all environments. Breaking habits, especially food-related ones, are intrinsically difficult. However, can it be called a habit if a person willingly deviates from this when cooking for themselves? In examining behaviours versus intentions, it is important to analyse the situation the person is in. While intentions have the potential to dominate over habits, it requires self-control, and in environments of stress or distraction, such as choosing a lunch meal during a busy day, these capabilities are often reduced, and hence habitual responses take over (Gardner et al., 2020). It assumes that the participants have the sufficient capabilities in all situations, which is not the case and should be taken into account when analysing results and thus creating suitable interventions. An easy and effective solution to this could be to highlight the plant-based alternatives, by putting them in a convenient to grab location, with an eye-catching sign.

Reasons for choosing plant-based

1. Sustainability

Customers who picked the plant-based option often chose more than one reason for this, with 'sustainability' being the primary motivation. Three main themes emerged from this, 'land-usage', 'scientific evidence', and 'carbon footprint'. Respondents outlined that following a plant-focused diet 'saves Co2 emissions, reducing a person's overall carbon footprint' (Participant 141, woman, vegetarian). From this, respondents also discussed the reduction in land use, expressing that the 'plants grown were only for human consumption rather than also to feed the animals we eat' (Participant 257, woman, vegetarian). Participants also highlighted the prominent scientific research on the effects of meat reduction, though there was no further explanation on this.

'It's not my opinion but fact that it is more sustainable, and research shows this. It's really important to be aware of sustainable behaviour and being vegan is the easiest way to do it.' – Participant 303 (woman, vegan).

Participants were then asked if they think acting sustainably is mainly important for future generations, for the global population (and people in the Global South in particular), or for sustaining biodiversity and nature. Most participants stated that all of the above were important for reasons to engage in sustainable behaviour. However, only a small number of participants went on to explicitly discuss the importance of including the global population.

'That is very important to me. I think being sustainable is especially important for future generations and for biodiversity and nature, about people in poor countries I think less in terms of sustainability.' – Participant 141 (woman, vegetarian).

In contrast to this, some respondents who picked the non-plant-based item felt following a plant-focused diet was not more sustainable. They expressed skepticism regarding the sustainability of plant-based items, with reasons for this in direct contradiction to those in the responses above. Of this, some discussed the negative ramifications of soy production, stating that soy plantations are a huge problem to the environment and therefore eating meat is better (Participant 217, woman, flexitarian). Others were unsure of the production of plant-based products and therefore the sustainability of them, demonstrating their concerns due to lack of knowledge and misinterpretation.

'This gentleman was very convinced that soy in particular was very harmful to the environment, that all the jungle goes for it, etc. That it would be even better to eat meat then.' – Participant 212 (man, omnivore).

2. Animal welfare

Animal welfare was the next motivation for choosing the plant-based option. Participants were asked if they would consider organic animal products as an alternative, with results broken into themes, 'yes organic is an alternative' and 'no organic is not an alternative'. Responses were evenly distributed between the 2 themes. From this half of respondents who considered organic as an alternative stated that it was an alternative to farmed meat, however stated it was still no replacement for a plant-based item (Participant 108, woman, veggie). Respondents who typically followed an omnivore or flexitarian diet stated that they would have chosen the organic meat option over the plant-based option if it was made available.

'I would consider organic options as an alternative, sure. I still love my animal products, I don't only want to eat plant based, so eating organic stuff is a great alternative!' – Participant 277 (woman, omnivore).

All respondents who stated organic was not an alternative followed a vegetarian or vegan diet and did so for ethical reasons, stating that the 'organic market is still mass produced and can never compare to just avoiding meat when related to the welfare of the animals' (Participant 243, woman, vegan).

A surprising result, however, was the respondents who suggested that picking the plant-based option was not better for animals. Respondents stated their preference for organic over plant-based foods and emphasised the benefits to shopping local (Participant 172, woman, omnivore).

Overall animal welfare served as a compelling rationale for not consuming meat or dairy and switching to organic could be seen as a steppingstone towards a more plant-focused diet. However, organic produce is not without its limitations, the biggest one being cost. As mentioned by participants, the additional costs of purchasing organic meat or dairy is a key barrier and as such would instantly exclude certain groups from making the switch.

‘Yeah, organic would be fine for me, but i can’t really afford that, haha. As a student, that’s just a bit expensive.’ – Participant 264 (woman, vegetarian).

3. Health

To conclude, responses to health were examined and broken into 3 themes, ‘heart health’, ‘overall nutrition’, and ‘protein intake’. Of those who picked health, many stated that they knew plant-based options were overall healthier, suggesting that ‘you tend to eat more variety, and fresh produce, therefore consuming more nutrients and vitamins’ (Participant 294, man, flexitarian). Participants also indicated heart related benefits, stating that ‘meat, especially red meat can cause adverse effects on your heart health and contribute to higher cholesterol levels’ (Participant 106, woman, vegetarian).

'In general, I do think that eating plant-based food is healthier because when you eat plant-based food, you automatically start eating more vegetables and fruits and so on.' – Participant 158 (woman, flexitarian).

Yet, clear distinctions between those who did or did not choose the plant-based option arose. It appeared that those who picked the plant-based option had an overall knowledge of the diet and the nutritional information compared to those who did not. Respondents who did not pick the plant-based option were the only ones to discuss the amount of protein, suggesting that you can't get enough protein from plant-based options and therefore a fully plant-based diet is not healthy due to the lack of protein intake. Meat, in their opinion was a much more convenient and reliable source of protein and fit better with an active lifestyle. They tended to have a more rigid outlook on plant-focused diets, and a general lack of interest in exploring alternative options. This is similar to the previously discussed results on habits.

'Well, to be honest, i have never really explored how i build up my diet. I don't really think about eating plant based, and i know meat is a reliable way to get my proteins, so i guess i just stick to that.' – Participant 273 (man, omnivore).

Recommendations from participants

Unfortunately, 88 of the 298 respondents stated that they did not have any recommendations and were subsequently removed from the analysis. All remaining responses were examined, and broken into 3 main themes, 'cost', 'variety' and 'visibility'. Cost was the biggest recommendation. Regardless of their initial reason for their choice, respondents often went on to

discuss the cost differences between diets, suggesting that there needs to be an incentive for people to try plant-based options and that reducing the price of the plant-based option may help (Participant 172, woman, omnivore). In the case of the canteen, reducing plant-based options by €1, while increasing non-plant-based options by €1 could help in this. Costs, regardless of diet have been mentioned as one of the biggest concerns to plant-focused behaviours. There is often a surcharge for plant-based options, and this will sway those who are unsure on their decision towards a cheaper option.

'I think price is really very important. Look, I don't care if something is plant-based or not, if it's a cheaper one, I'm really going to buy that.' – Participant 84 (man, omnivore).

Participants further discussed the variety of options available. One of the reasons for not choosing the plant-based option was a lack of nutrients and protein with participants suggesting this could be solved with a wider variety of options. This was also noted numerous times from respondents who were motivated by taste, suggesting the 'plant-based option was lacking in some way' (Participant 13, woman, flexitarian). Again, this could be quickly solved by the canteen by increasing the variety of options available or simply making the current items more plant friendly. Similarly, participants mentioned a general lack of visible signs. While all items were marked as plant-based or not, this was not enough for customers. More colourful and captivating signs were recommended. Some suggestions include increasing the awareness of the benefits of plant-focused diets, by including interesting statistics on these signs.

'They could add more signs, and maybe they could advertise more about the sustainability aspect of the vegan products.' – Participant 214 (non-binary, omnivore).

On the boundary of this discussion, some participants had interesting responses when asked for recommendations, suggesting that regardless of the intervention implemented, the willingness to change behaviours must be there, and that some people are simply not willing.

'No, to be honest, I don't think people who don't feel like eating plant-based food are going to. I don't think the uni, or the caterer can really do much to change that.' – Participant 14 (man, omnivore).

Overall, recommendations from participants are in line with their reasons for their food choices. These recommendations are ones which could be implemented within the canteen.

Judgement around plant-focused diets

Finally, all responses to judgement were analysed and subsequently broken into, 'Yes I do think there is a stigma', 'No I don't think there is a stigma', and 'I think there is instead a stigma towards eating meat'. The responses were first analysed in correlation with diet. Vegan participants claimed that there is indeed a stigma around eating a plant-focused diet. However, participants attributed this to an overall lack of knowledge surrounding plant-focused diets, suggesting that it is more of a confusion around the topic, rather than judgement. Furthermore, it was stated that general knowledge on food health still centers around meat or dairy, further exacerbating this confusion.

'Yeah, some people really still have the idea that they have to eat meat in order to be healthy. I also think there is quite some misinformation about having a plant-based diet.' – Participant 152 (woman, vegetarian).

It was further noted that many of them surround themselves with people of similar diets and this stigma 'does not relate to their immediate bubble, suggesting that people are often judgemental of things they do not know or feel they belong to', (Participant 7, woman, vegetarian) which can be attributed to the idea of an ingroup/outgroup perspective. Following this, those who did not follow a strict plant-based diet were more doubtful of their opinion on the matter. Respondents noted that plant-based food was 'not as tasty or nutritious and that following a plant-focused diet meant you were lacking in some way' (Participant 206, woman, omnivore).

In the same vein, responses to this question included the idea that following a plant-focused diet was synonymous with leftist, woke culture, suggesting an elitist standpoint from those who do eat more plant-focused food. Similarly, the correlation between diet and socioeconomic status was highlighted, suggesting that following a plant-focused diet is only attainable if you fall under a certain income bracket.

'Yeah, I think people often have the idea that plant-based eating is a bit elitist, and that you have to have a certain socioeconomic status to be vegan. And I think to some extent that's just true, vegan food is often quite expensive.' – Participant 53 (man, omnivore).

Those who felt there was no stigmas or judgements left very short remarks, expressing that people are free to do as they please (Participant 115, woman, flexitarian) Though, some participants suggested that there is now instead a stigma around eating meat or dairy, and that those who follow a plant-focused diet are very judgemental towards others. Participants felt, especially in the university setting, that following a plant-focused diet was encouraged. This could be linked to the previously stated idea that plant-focused diets are synonymous with left politics and as such a sense of pressure to switch diets. Likewise, diets can be looked at as a form of identity and as such anyone who does not belong to this group will feel a certain amount of judgement (Nezlek & Forestell, 2020).

'I find it is actually going in the opposite direction. That there is a shift to eating more plant based and a judgement towards meat now.' – Participant 215 (man, flexitarian).

Discussion

The findings of this paper outline the many barriers and facilitators to plant-focused food consumption along with the various stigmas associated with plant-focused diets. The most often identified facilitators to choosing a plant-based option can be seen as motivations for plant-focused diets. Both sustainability and animal welfare are rational reasons for choosing the plant-based option. This is reflected in participants responses, addressing the scientific research on switching to a more plant-focused diet. However, in the discussion of animal welfare and organic products, costs were mentioned as being a key barrier. While those who follow a strict plant-based diet do not see the benefits of organic meats, those who follow a more flexible diet see this as a means to act more sustainably and in the interest of animals. But the additional costs are a

significant barrier to this. Although the motivations may be there, the capability to do so, -that being the ability to afford it-, is not. Therefore, while the motivation can be seen as a facilitator to plant-focused consumption, the capability to purchase, and thus engage in this behaviour acts as a key barrier.

Similarly, health can be seen as a motivation for plant-focused consumption, and as such a facilitator. Participants emphasized the many health benefits of eating more plant-focused foods. Yet participants who cited health as a reason for not choosing the plant-based option did so because they felt it did not provide the same nutrition as the non-plant-based products. Participants had the idea that you cannot be both plant-focused and maintain a healthy lifestyle and this is reflected in the previous work by Fehér et al. (2020), discussing the idea of malnutrition as a key barrier to switching.

The most common reason for not choosing the plant-based option, taste, can be seen as the biggest barrier. Participants suggested that the plant-based option was lacking in some way, suggesting a form of loss aversion, as reflected by both Fehér et al. (2020), and Graça et al. (2015). Participants felt a sense of depravity when considering switching to a more plant-focused diet, and as such lacked a willingness to change. Some recommendations to fix this problem included adding more seasoning to the plant-based options or including more variety in products. However, participants who initially stated that the plant-based option missed something in taste, again mentioned the idea that the plant-based option was not as nutritious as the non-plant-based options. This could be associated with a lack of information or awareness of plant-based foods. Incomplete knowledge has been recognized as one of the main barriers to adopting a plant-focused diet, with taste and enjoyment being contributing factors to a more positive perspective on plant-based foods (Faber et al., 2020).

Participants discussed habit as a reason for not choosing the plant-based option, stating that they simply did not think of there being another option to choose from. As mentioned, this could be partially due to the environment. While breaking a habit requires the motivation to change, individuals must have the capability and opportunity to do so. In this case, providing clear and accessible information and suitable plant-based options can help aid in removing this barrier and thus motivating change. While this result was not an expected outcome of the study, the power of norms in sustainable behaviour have been outlined in previous studies, highlighting the difficulties involved and the importance of addressing this when implementing interventions (Cialdini 2021).

The last reason and thus barrier addressed in this study was that participants did not see another option. This is a fundamental barrier to behaviour change as regardless of intention or motivation, if individual's lack the opportunity to act, they cannot be expected to change. Although lack of opportunity is not a surprising finding in behaviour change as a whole, it is an unexpected result in the case of the Eurest canteen. As Eurest plans to use this study to aid in their transition to a more plant-focused menu, it would seem prudent that the first step to achieving this would be to have a plant-based option available for customers, even if it is only one.

Nevertheless, the main theme that participants reverted back to, regardless of their choice, was costs. The costs involved in switching diets can understandably be a major concern, especially when individuals are not equipped with the correct knowledge (Kuosmanen et al., 2023). Similar to the above-mentioned opportunities, the intentions of an individual are irrelevant if they do not possess the capabilities to act on them. This concern was mentioned repeatedly by participants and is one that needs the most attention when creating suitable

interventions. This barrier could be addressed by reducing the price of the plant-based option, while simultaneously increasing the non-plant-based option, as mentioned above. However, doing so may not dispel the preconception that a plant-focused diet is more expensive. While the prices of hot meals provided by Eurest vary slightly, all additional meals, such as salads and sandwiches are priced the same. Since the plant-based options do not always include a protein source, participants often find them less filling and perceive them to be less value for money compared to the non-plant-based option, further increasing the perception that plant-focused diets are more expensive.

Finally, the last question explores the influence judgement has on plant-focused consumption. Participants felt as though large stigmas were still attached to plant-focused diets, with the idea that it is not accessible to those in lower socioeconomic brackets. This conception can act as a significant barrier to change as individual's will not be motivated to even consider switching if they feel as though they lack the capabilities to do so. Similarly, the idea that those who follow a plant-focused diet judge those who do not, again removes any motivation there may be to switch. As stated, following a plant-focused diet could be considered part of a person's social identity, and as such create a sense of belonging and comfort. This can be further demonstrated in the correlation between gender identity and food choices. Judgements around plant-focused diets can create hostilities and diminish a person's willingness and opportunities to switch. These judgements can act as significant barriers to change. While resolving this issue is not easy, increasing knowledge on the subject is a crucial starting point. Knowledge is key to removing these barriers. It is important that individuals have all the necessary information to make decisions that benefit both them and the environment around them.

In conclusion, the motivations to eating plant-focused, such as animal welfare and sustainability can be seen as clear facilitators to plant-focused food consumption. Those who believe following a plant-focused diet is better, both for animal wellbeing and the environment will be motivated to make the switch and facilitate this change to the best of their ability. Yet, this motivation must be followed by the capability and opportunity to do so. As shown in the results, participants were limited in their capabilities and opportunities, in the perceived costs to switching, the lack of suitable options to choose from and the lack of knowledge available, both in the options available to them and on plant-focused diets as a whole. Not providing individuals with the suitable means is a significant barrier to behaviour change. Individuals who are hesitant to make the switch or lack the motivation to do so will be further deterred if doing so is not easily accessible to them.

This paper aims to provide an increased understanding of the barriers and facilitators to plant-focused diets and how these can be examined through the perspective of the COM-b model. While previous studies have researched the behaviours around plant-focused diets, they lacked concrete conclusions on how addressing the capabilities, opportunities, and motivations of individuals can lead to the formation of clear and feasible interventions. Promoting behaviour change is not an easy task and requires an interdisciplinary approach to encompass the many factors involved. Monodisciplinary research tends to investigate a social challenge as a whole and create interventions or solutions that will fit the general population. But creating suitable interventions which will successfully promote behaviour change requires adapting to the many different people affected by this intervention. There is no one solution to this issue. While some individual's may need financial aid which can be implemented from an economic perspective, others may need the social securities that come from social identity and a sociological

perspective, while breaking habits requires the involvement of a psychological perspective. Sustainable and food-related behaviour change is a multifaceted topic and therefore needs an interdisciplinary perspective to increase awareness of the barriers and facilitators and ensure the correct interventions are created that suit the needs of those it affects. Along with recommendations from participants, these perspectives were considered when providing recommendations for the canteen, such as switching the default milk option to encourage a shift away from traditional cow milk consumption habits.

Recommendations and suitable interventions

The biggest challenges to behaviour change and adopting a more plant-focused diet are the perceived costs involved, the lack of options available, and the lack of knowledge on the topic. While knowledge on this topic is available online, additional factors such as capability, make searching and understanding this difficult. Reasons for these behaviours go beyond motivation, and it is clear from this research that regardless of one's motivation having the capabilities and opportunities to both obtain this information and act according differ significantly among individuals'. This leads to some clear and feasible interventions that can be implemented, in both the Earest canteens and similar environments. As cost poses as a major barrier, slightly reducing the prices of all plant-based options seems to be the most fitting solution to this. Similarly, making the default milk plant-based, with no additional costs included in this, can aid in removing this barrier. As well as this, removing the barrier of 'no other option seen' can be easily solved by increasing the availability of plant-based products. This includes not only increasing variety of options available but also increasing the range protein substitutions in plant-

based options. Similarly, ensuring that the plant-based options are restocked if they run out is a very simple, yet effective way to remove this barrier.

The results also indicate that a lack of signs was a significant barrier to choosing the plant-based option. Improving on this also provides the perfect opportunity to increase knowledge. Signs to show which items are plant-based could also include short, simple messages such as the protein intake of the item or the environmental benefits of choosing this item. As mentioned, there is an element of stress/distraction involved when picking a meal at lunch time, which is why any messages included in these signs should be as clear and to the point as possible, without giving off the idea that they are trying to push customers in a certain direction. Examples of these signs are provided in the appendix below.

This study identified the important COM-B factors which hindered the transition to a plant-focused diet and how these can be relayed as barriers to change. The recommendations provided - reducing the prices, increasing variety, and increasing the knowledge – address these barriers and provide customers with the necessary capabilities and opportunities to engage in this behaviour.

Limitations and recommendations for future research

As the research was conducted on a university campus, it is important to note the potential skew in the results. Research states that education attainment is associated with higher levels of pro-environmental attitudes and behaviours (Wang et al., 2022). As most participants of the survey were either current or past university students, it is important to be aware of this relation as the results of the survey may be influenced by this, and as such may not reflect the perspectives of the overall population.

The overall responses collected allowed for an effective analysis. Some issues arose during the collection process, both in obtaining enough responses from participants and in documenting the responses. As surveys were conducted immediately after participants purchased their food, some participants were reluctant to participate and thus gave very short answers or were not sure of the reason behind their decision. Additionally, some participants provided much more in-depth responses than others which at times proved difficult to efficiently document without losing both too much time and potential participants who purchased food as the interviewers were making notes. It was also very important for the interviewers to stay objective during the collection process, and not coax participants into a certain rationalisation. This again made it difficult in moments when participants were unsure of why they chose the item. Nonetheless, comprehensive results were collected and thus the data collection can be considered a success.

While this research provided clear interventions to aid in the transition to a more plant-focused diet, there is no guarantee that this will increase plant-focused food consumption. This can be an opportunity for future research. This research could be continued after the implementation of these interventions to see if they do in fact aid in changing people's behaviours and if not, what additional work can be done. From this, more in depth interviews could be conducted with customers to further understand their reasons. As sustainable behaviour is a wicked problem, there is no one solution and continuous research and the adaption of interventions are necessary.

Concluding remarks

This research highlights both the barriers and facilitators to adopting plant-focused diets, emphasizing the importance of motivations, capabilities, and opportunities in making dietary choices. Key motivations for choosing plant-based options include sustainability and animal welfare, but significant barriers such as perceived costs, lack of suitable options, and incomplete knowledge persist. Addressing these barriers demands an interdisciplinary perspective, and requires targeted interventions, such as reducing the prices of plant-based meals, improving the variety and visibility of these options, and providing clear, accessible information about their benefits. While this paper provides small, yet significant interventions, future research to examine the success of these interventions is needed.

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Appendix

Icons provided for respondents who chose the plant-based option

The plant-based option is.....



.... Cheaper



.... The option that I saw



.... Tastier



....I know the plant-based option through advertising



.... Healthier



.... What my friends chose



.... More sustainable



.... There was no other options



.... Better for animals

.....

....Other, namely:



.... New for me

Icons provided for respondents who chose the non-plant-based option

The plant-based option is.....



.... Too expensive



.... I did not see a plant-based option



.... Less tasty



....I know the non-plant-based option through advertising



.... Less Healthy



.... What my friends chose



.... Not more sustainable



.... There was no other options



.... Not better for animals

.....

.... Other, namely:



.... New for me

Closed Questions asked to all participants

If have heard / read and understood the information and I would like to participate in the study	
I would describe my diet as:	Omnivore (I eat everything)
	Flexitarian (I eat meat occasionally, but not every day)
	Pescatarian (I eat fish, but no meat)
	Vegetarian (I don't eat meat or fish, but I do eat cheese and eggs)
	Vegan (I don't eat animal proteins)
	Other, namely...
I identify as...	Woman
	Man
	Different (e.g., non-binary)
	I prefer not to say
Age	I am years old
I am visiting this restaurant as	a student
	an employee
	Other, namely...

Follow-up questions in survey for respondents who chose the plant-based option

Did you chose a plant-based option? (Yes)	Follow-up Questions
Cost	Would you still choose the plant-based option if it was as expensive or more expensive than the non-plant-based option? Why or why not? In general, do you think it is cheaper or more expensive to eat a plant-based diet?
Taste	Did you ever try this plant-based option before? What do you like about it?

Health	In which ways is this plant-based option healthier, do you think? Would you consider eating plant-based part of an overall healthy lifestyle and why (not)?
Sustainability	Why do you think this product is sustainable? Ask follow-up: Is acting sustainably mainly important for future generations, for the global population (and people in the Global South in particular) or for sustaining biodiversity and nature?
Animal Welfare	Would you consider an organic option as an alternative? Why or why not?
Familiarity	Why did you want to try this product? Ask follow-up: What would persuade you to buy this product more often?
Another option was not seen	How satisfied are you with the range of products the restaurant has on offer?
Marketing	What is it that makes this product so attractive? How can the plant-based option be made even more attractive?
Social norms	Do you make different choices in other groups? Would you make a different choice if the people around you would not choose the plant-based option? Why or why not?
Availability	Would you have rather chosen a non-plant-based option? Why or why not?
Other	Can you elaborate on this?
Recommendations	Do you have any recommendations for making the plant-based options in the restaurant more attractive? Could you give suggestions of plant-based products you would like to see on offer?
Judgement	Do you find people are judgmental of plant-based diets?

Follow-up questions in survey for respondents who chose the non-plant-based option

Did you chose a plant-based option? (No)	Follow-up Questions
Cost	Would you consider choosing the plant-based option if it was as expensive or less expensive than the non-plant-based option? Why or why not? In

	general, do you think it is cheaper or more expensive to eat a plant-based diet?
Taste	Did you ever try the plant-based option? What do you miss in terms of taste?
Health	In which ways is the plant-based option less healthy, do you think? Would you consider eating plant-based part of an overall healthy lifestyle, and why (not)?
Sustainability	Why do you think the plant-based option of this product is not sustainable? Ask follow-up: Is acting sustainably mainly important for future generations, for the global population (and people in the Global South in particular), or for sustaining biodiversity and nature?
Animal Welfare	Would you consider an organic option as an alternative? Why or why not? Follow-up: Would you be willing to pay more for this option?
Familiarity	What would be needed for you to try the plant-based option?
Another option was not seen	How can we make the plant-based option more visible?
Marketing	What is it that makes this product so attractive? How could we make the plant-based option more attractive?
Social norms	Do you make different choices in other groups? Would you make a different choice if the people around you would choose the plant-based option? Why or why not?
Availability	When would a plant-based option be an alternative for you?
Other	Can you elaborate on this?
Recommendations	Do you have any recommendations for making the plant-based options in the restaurant more attractive? Could you give suggestions of plant-based products you would like to see on offer?
Judgement	Do you find people are ever judgmental of plant-based diets?

Example signs:

Mixed Bean Chilli €6.50

VEGAN

This product
contains 21 grams
of protein

Chickpea curry €6.50

VEGAN

This product
contains 23 grams
of protein

Beef Lasagne €8.00

CONTAINS MEAT/DAIRY

This product
contains 22 grams
of protein

Syntax

```
use "U:\RAW_masters.dta"  
  
ssc install asdoc  
  
// data clean  
  
drop if Do_not_use_data_eng_1==1  
  
drop if Do_not_use_data_1==1  
  
drop if Age_Eng==0  
  
drop in 60  
  
drop in 106  
  
drop in 140  
  
drop in 140
```

```
drop in 187

//tab of diet

tab Diet

tab DietEng

// Reasons for choosing

rename Reason_1 kosten1

rename Reason_2 smaak1

rename Reason_3 gezondheid1

rename Reason_4 duurzaamheid1

rename Reason_5 dierenwelzijn1

rename Reason_6 nietmeebekend1

rename Reason_7 nietgezien1

rename Reason_8 marketing1d

rename Reason_9 socialenorm1

rename Reason_10 beschikbaarheid1

rename Reason_11 anders1

rename Reason_11_TEXT anderstxt1

asdoc bysort Keuze: sum kosten1 smaak1 gezondheid1 duurzaamheid1
dierenwelzijn1 nietmeebekend1 nietgezien1 marketing1d
socialenorm1 beschikbaarheid1 anders1

rename Reason_not_1 kosten2

rename Reason_not_2 smaak2

rename Reason_not_3 gezondheid2

rename Reason_not_4 duurzaamheid2
```



```
rename Reason_not_5 dierenwelzijn2
rename Reason_not_6 nietmeebekend2
rename Reason_not_7 neitgezein2
rename Reason_not_8 marketing2d
rename Reason_not_9 socialenorm2
rename Reason_not_10 beschikbaarheid2
rename Reason_not_11 anders2
rename Reason_not_11_TEXT anderstxt2
asdoc bysort Keuze: sum kosten2 smaak2 gezondheid2 duurzaamheid2
dierenwelzijn2 nietmeebekend2 neitgezein2 marketing2d
socialenorm2 beschikbaarheid2 anders2
rename Reason_Eng_1 cost1
rename Reason_Eng_2 tastel
rename Reason_Eng_3 health1
rename Reason_Eng_4 sustainability1
rename Reason_Eng_5 animalwelfare1
rename Reason_Eng_6 notfamiliar1
rename Reason_Eng_7 seen1
rename Reason_Eng_8 marketing1
rename Reason_Eng_9 socialnorm1
rename Reason_Eng_10 availability1
rename Reason_Eng_11 other1
rename Reason_Eng_11_TEXT othertxt1
```

```

asdoc bysort Choice: sum cost1 taste1 health1 sustainability1
animalwelfare1 notfamiliar1 seen1 marketing1 socialnorm1
availability1 other1

rename Reason_not_Eng_1 cost2

rename Reason_not_Eng_2 taste2

rename Reason_not_Eng_3 health2

rename Reason_not_Eng_4 sustainability2

rename Reason_not_Eng_5 animalwelfare2

rename Reason_not_Eng_6 notfamiliar2

rename Reason_not_Eng_7 seen2

rename Reason_not_Eng_8 marketing2

rename Reason_not_Eng_9 socialnorm2

rename Reason_not_Eng_10 availability2

rename Reason_not_Eng_11 other2

rename Reason_not_Eng_11_TEXT othertxt2

asdoc bysort Choice: sum cost2 taste2 health2 sustainability2
animalwelfare2 notfamiliar2 seen2 marketing2 socialnorm2
availability2 other2

// Crosstab between Gender, diet and choice

tab GenderEng DietEng, col

tab Gender Diet, col

asdoc tabulate Gender Keuze, cchi2 cell chi2 column exact
expected lrchi2 row V

```

```
asdoc tabulate GenderEng Choice, cchi2 cell chi2 column exact  
expected lrchi2 row V
```

```
gen std_resid = (Gender - Keuze)/sqrt(Keuze)
```

```
gen std_resid = (GenderEng - Choice)/sqrt(Choice)
```

```
asdoc tabulate Gender Diet, cchi2 cell chi2 column exact  
expected lrchi2 row V
```

```
asdoc tabulate GenderEng DietEng, cchi2 cell chi2 column exact  
expected lrchi2 row V
```