Interventions to Promote Climate-Friendly Diets

Simple & Effective: Adjustments to Menu Planning

Verena Berger, Claudia Müller

Abstract

Changing our current dietary behavior is important to reduce the associated negative impact on the environment. As part of a research project, the Zurich University of Applied Sciences investigated which interventions can be used to promote climate-friendly menu choices in urban catering establishments. For this purpose, various measures were tested and guest surveys were conducted in a 6-week field phase in four staff restaurants (SR) and four retirement centers (RC) in the city of Zurich. The most effective intervention was shown to be the easily implemented "menu change" intervention, which randomly changed meat and veggie menus on the menu lines. In both SR and RC, the number of vegetarian menus ordered increased as a result. In general, none of the interventions tested in the establishments resulted in complaints from guests. With good communication and in cooperation with the kitchen managers, changes can be initiated with the guests. The introduction of a menu plan that breaks away from the traditional menu line structure of "Menu 1" (meat) and "Menu 2" (vegetarian) and focuses on the menu content through a regular change can be a first step in breaking entrenched habits that are still prevalent in some catering establishments.

Keywords: Environmentally friendly nutrition, climate-friendly menu selection, communal catering, out-of-home catering, sustainability

Introduction

The provision of food for private consumption causes about one third of the environmental impact in Switzerland, of which more than 40 % is caused by the consumption of meat and animal products [1]. Accordingly, it is relevant to adapt our dietary habits in order to reduce the associated impact on the environment.

In the context of the project *"Energie- und klimabewusste Ernährung in städtischen Verpflegungsbetrieben"* ["Energy- and climate-conscious nutrition in urban catering establishments"][1] this should happen in the urban context (staff restaurants [SR] and retirement centers [RC]), but without restricting the freedom of choice of the guests. Previous studies already provide evidence that a combination of supply-side and demand-side measures can achieve an average reduction in CO_2-emissions from the menus consumed of nearly 20 % [2, 3]. In addition to other subprojects, which included assessing supply from a health and environmental perspective, various interventions were developed. This was done with the aim of being able to propose effective and easy-to-implement sales-promoting measures that promote climate-friendly choices.

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Breaking out of Old Routines

Certain eating habits and everyday routines pose a particular challenge when it comes to the desire to change eating behavior. Eating behavior is shaped by parents, friends, life partners or life situation. In addition, culture and social influences, certain preferences or even the everyday physical environment (at home, in the restaurant, in the canteen) contribute

[1] The project was tendered by the city of Zurich and funded by "*Energieforschung Stadt Zürich*". The complete report on FP 1.23 can be obtained at https://energieforschung-zuerich.ch/de/projekte/energie-und-klimabewusste-ernahrung-stadtischen-verpflegungsbetrieben/

Intervention	Description	Implementing catering establishment[a]	Intended impact (promoting climate-friendly choices)
Random menu change	Change of menu position in the menu plan; vegetarian and meat menus were randomly placed alternately on menu lines 1 and 2	1 RC 1 SR	Changing the decision-making situation, breaking habits
Color coding of the menus	Menus were evaluated using the Menu Sustainability Index[b]. Marked according to the respective environmental impact in red, yellow, green in the menu plan and at the menu counter; information flyer with notes on the evaluation visible in the company	1 SR	active engagement with the menu choice, learning
Stamp card	One stamp for each vegetarian menu chosen; the 11th menu is free of charge	1 SR	Behavior change through reward
Tasting bite	Vegan or vegetarian menu components of the following day's menus were offered for tasting before dinner	1 RC	Reduce reservations about vegetarian or vegan menus
"Competition"	Competition in table groups. Each vegetarian choice was rewarded with stickers and pinned to a column in the center of the table for all to see. The table group with the most vegetarian menus per week wins. Choosing of the winning group by management and are visibly recorded on poster.	1 RC	Behavior change through reward/competition and role model behavior

Tab. 1: **Implemented interventions from the field study**
RC = retirement center; SR = staff restaurant
[a] One SR and one RC served as control group without intervention to control for any unexpected influences, especially related to COVID-19 protection measures.
[b] Information on the Menu-Sustainability-Index: www.zhaw.ch/lsfm/mni

to forming our eating habits. Although these behavioral patterns make individual daily life efficient, it is correspondingly difficult to break these established behavioral patterns. Promising ways to change this are shown by behavioral research, which takes advantage of precisely these influencing factors or other barriers that prevent the desired behavior in the development of behavior change interventions. Research results show that intervention approaches based, for example, on nudging, communication measures and information at the point of sale in out-of-home catering can be effective in promoting behavior in the sense of sustainable nutrition, depending on the context, target group and desired target behavior [4–9].

Monetary incentives can also help to change habits [10, 11]. To make rather uncomfortable actions easier to implement, playful approaches (e.g. gamification) can also support and motivate. For example, a gamified approach with rewards can increase engagement with food, increase knowledge about healthful eating, or increase environmental awareness, thus promoting fundamental attitudinal or behavioral changes in consumers [12–14]. In addition to the promising examples, however, the studies also highlight how complex the topic of dietary behavior is and how challenging it is to find behavior-changing interventions that can be implemented in practice for the target audience. The studies provide valuable information and serve as inspiration for implementing specific measures. However, a direct 1:1 implementation that also works in urban catering operations, is supported by the kitchen managers and fits the offer, communication or infrastructure on site is hardly possible.

With the aim of increasing the proportion of climate-friendly menus sold in urban catering establishments (SR and RC), various interventions were therefore developed and tested in the establishments. The findings from the field test primarily serve as a basis for decision-making by those responsible as to whether individual interventions should be implemented in the companies or not. At the same time, they serve as a source of inspiration and impetus for companies to try out new things and develop measures that are suitable for the respective company and make a contribution to reducing nutrition-related environmental impacts.

Methods

Intervention Design and Survey

In total, five different interventions were developed based on the literature and adapted to the local conditions and possibilities of the participating catering establishments (4 SR and 4 RC

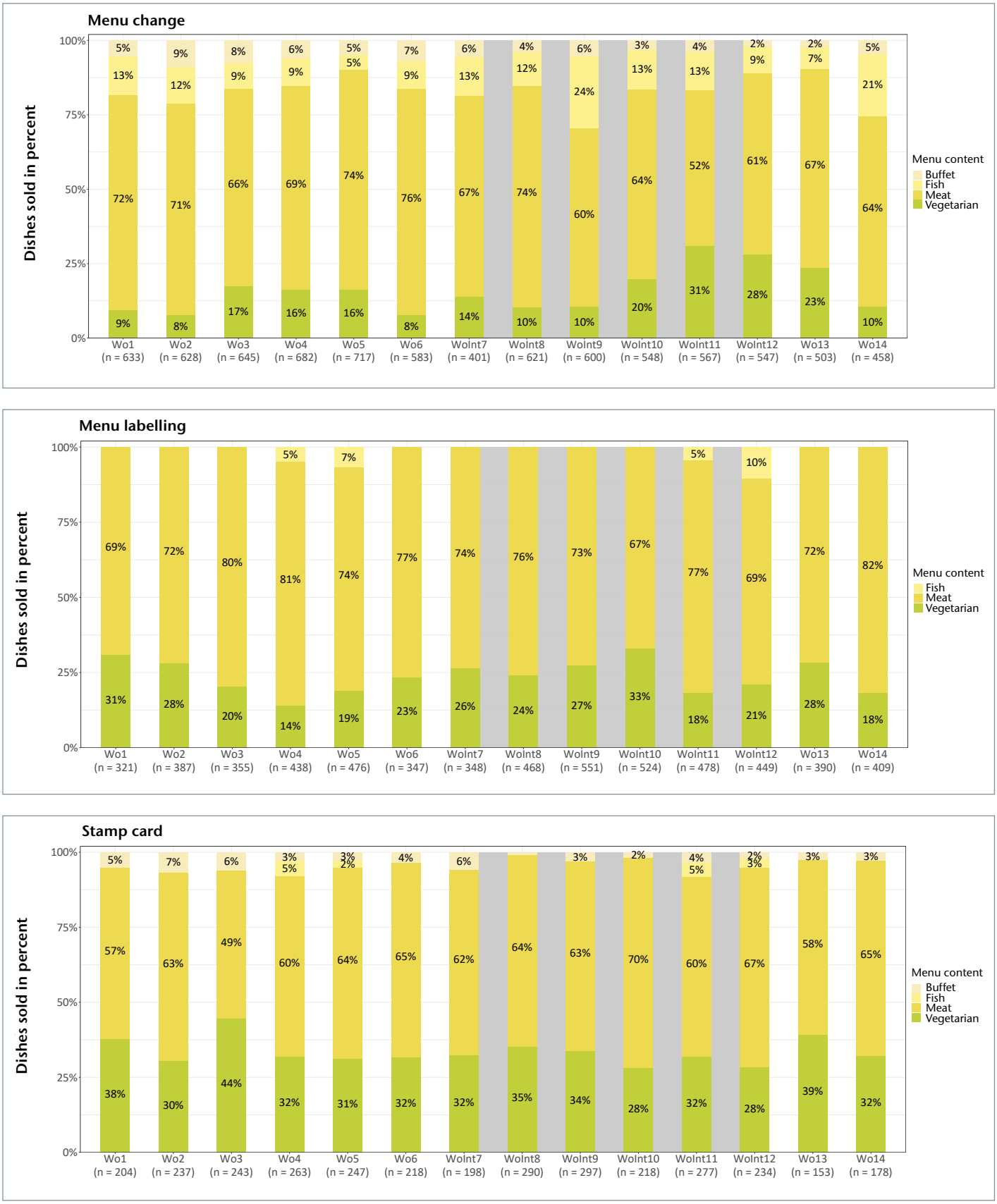

Fig. 1: **Overview of sales figures for staff restaurants (SR)**
Intervention weeks (WoInt) highlighted in gray, identical menu offering in weeks (Wo) 4–5 and 11–12.

with 1 control catering establishment each), which volunteered for the test (◆ Table 1). The effect was studied in a field experiment in which three interventions in RC and three interventions in SR were tested in a 6-week field phase. Surveys were conducted before and after the intervention period to obtain further information on guests, their attitudes toward food, and price willingness (in SR).
During the first two weeks of the field phase and the last two weeks, the same menu was offered on a menu line in all three SRs. For reasons of feasibility, the sales figures (or orders) of vegetarian menus were used as the target figure for measuring the impact of the various interventions, since a life cycle assessment calculation of the entire menu offering was not possible within the scope of the project. Accordingly, the choice of a vegetarian menu was equated with a climate-friendly choice.
The following aspects were considered in the development of the interventions: Results from interviews with kitchen managers, human resources and building infrastructure in the establishments, specific specifications or organizational requirements (especially for RCs, including consideration of the respective COVID-19 protection concepts), feasibility, and good chances of adoption of the intervention by other establishments after completion of the project if it proves to be effective.
Before the interventions were implemented in the establishments, lunchtime guest surveys were conducted. Participation in the first survey was available online via a link or QR code (PR only) or a paper questionnaire. The survey included questions about menu choice, food service behavior, and food type, as well as questions about the individual. In the second wave of the survey (t_2)[2] , additional questions specific to the intervention of the respective establishment were asked to determine the extent to which the intervention was noticed and understood.
The survey of the RC residents was designed to suit the target group (e.g., adjustment of the font size, reduction of questions and scales) and also took place before and after the intervention phase. The completed paper questionnaires were returned by mail and the answers were processed for data analysis.[3] At the end of the survey, the survey participants (SR and RC) were asked to generate a personal code with the help of four pieces of information, which should enable anonymous assignment to the second survey time point.

Results and Discussion

GBasically, the sales figures in SR and RC for the intervention "menu change", where meat and veggie menus randomly changed on the menu lines (menu line "Menu 1" normally meat and "Menu 2" normally vegetarian), show a selective increase in sales of vegetarian menus in the intervention period.
Compared to the other interventions implemented in the SR, one can see a significant increase in vegetarian menus sold in the SR with "menu change" (weeks 11 and 12) compared to the period with identical menu offerings without intervention (weeks 4 and 5: weeks 35 and 36) (◆ Figure 1).
The fluctuations in the sales figures of vegetarian and meat/fish menus over the entire period of the survey of the sales figures could, on the one hand, be explained by the range of menus on offer, but also by changes in the guest structure, due to home office arrangements due to COVID-19. With the exception of the which hardly attracted any attention[4], the participants in the second survey, were generally positive about the inventions.
On the basis of the menu choices documented by the kitchen managers in the individual retirement centers, there was generally a higher choice of vegetarian menus in establishments with the "menu change" intervention than in the other establishments, with the same range of options (◆ Figure 2). Particularly interesting from a practical point of view: Initial concerns that residents might defy or not accept the "menu change" intervention in particular remained unfounded. With the tasting bites no large fluctuations in the menu choice could be recognized and with the "competition" a constant portion of vegetarian menus was documented over the weeks. Even though no major changes in menu choice were documented in the latter two interventions, occasional tasting of new or unfamiliar products was considered by kitchen managers to be very useful and beneficial in reducing prejudice against unfamiliar vegan and/or vegetarian menu components. From the feedback on the competition intervention, it appears that these at least stimulate conversations and discussions on the topic of the environment and nutrition, and not only among the residents or guests, but also among the kitchen managers and staff.
The "menu change" measure was easy to implement in SR and RC and did not lead to any complaints being voiced by guests. Other studies also show that simple measures such as changing the position of the menus in the menu plan can be beneficial. For example, Egeler and Baur [15] were also able to show in a 12-week intervention study that a random distribution of meat and veggie dishes on the menu lines reduced the sale of meat-containing dishes. This measure was supplemented with an expansion of vegetarian and vegan offerings and neutral naming of menu lines. The effectiveness of this measure is also confirmed by a study from Great Britain [16]. The fact that additional labeling of dishes with information

[2] N (SR) at t_1: 215, N at t_2 = 136
[3] N (RC) at t_1: 124, N at t_2 = 96
[4] In the follow-up survey, 6 out of 36 people said they noticed a change in the restaurant, and of those, only 3 people indicated the stamp card. In total, 6 full stamp cards were redeemed.

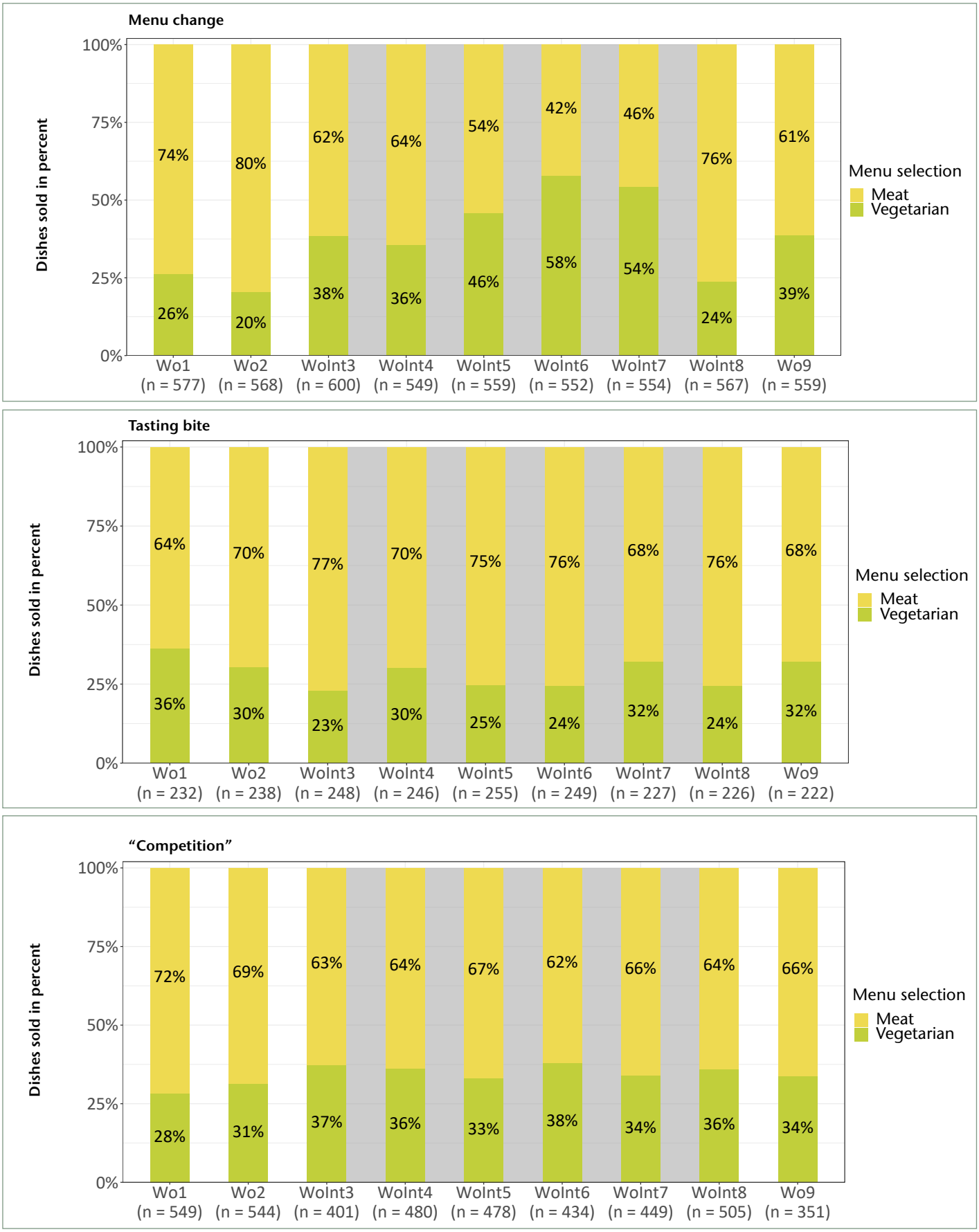

Fig. 2: **Overview of sales figures for retirement centers (RC)**
Intervention weeks (WoInt) highlighted in gray, identical menu offer in all establishments in the intervention weeks.

on environmental but also health aspects can increase the choice of sustainable meals cannot be clearly deduced from our results. On the other hand, other studies, which also served as our inspiration for the "menu labeling" measures, show that labeling, whether in the form of traffic light colors or symbols, can be conducive to making environmentally friendly and/or balanced choices [17–19]. In the best case, this additional information can trigger a learning effect [20, 21] and thus contribute to the promotion of a sustainable diet.

A combination of menu placement and a good, varied offer of vegetarian and vegan dishes should therefore be aimed for in out-of-home catering establishments. Based on the literature, the availability of information on environmental and health aspects is also recommended. With reference to the significance of the results, limitations should also be mentioned. The recording of sales figures, which should provide as objective a data basis as possible in order to testify to the effect of the interventions, was only possible manually and not without gaps for the RC.

A completely uniform menu plan in all establishments could not be realized due to the different specifications in the respective restaurants, nor could a calculation of the climate and/or environmental impact of all menus offered. It should also be mentioned that the number of survey participants who could be assigned to both survey dates in order to make statements on an individual level about changes in relation to certain attitude/knowledge variables remained below expectations. The originally planned interviews with RC residents also had to be dispensed due to COVID-19 contact restrictions.

Conclusion

The interventions did not result in any complaints in any of the test operations. With good communication and in cooperation with the kitchen managers, changes can be initiated with the guests. The introduction of a menu plan that breaks away from the traditional menu line structure of "Menu 1" (meat) and "Menu 2" (vegetarian), and focuses on the menu content through a regular change can be a first step in breaking entrenched habits that are still prevalent in some catering operations. This also goes hand in hand with a creative menu design that makes vegetarian and vegan menus a taste experience. In order to achieve this, further training of those responsible for the kitchen may be necessary. Furthermore, in Switzerland, the increased integration of sustainability topics is already planned in the vocational training of cooks, which can promote the offer of tasty, climate-friendly menus in out-of-home catering in the future. Especially in the case of the dietary needs of the elderly population (residents of retirement centers), despite necessary climate and environmental goals, the required energy and nutrient intake should not be neglected. Ideas to keep the environmental impact low and to counteract malnutrition with appetizing, yet age-appropriate menus have also emerged in the project.[5]

Conflict of Interest
The authors declare no conflict of interest.

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[5] Menu database for PR, SR and RC: https://energieforschung-zuerich.ch/de/projekte/energie-und-klimabewusste-ernahrung-stadtischen-verpflegungsbetrieben/

References

1. Jungbluth N, Keller R: Nachhaltigkeit beim Essen durch weniger Fleisch? Schweizer Zeitschrift für Ernährungsmedizin 2014; 26–30.
2. Ellens J, Hildesheimer G, Scherrer J et al.: Personalrestaurant-Wettbewerb. Zusammenfassung Nr. 48. 2018.
3. Ellens J, Hildesheimer G, O'Conner I et al.: Personalrestaurant-Wettbewerb. Forschungsprojekt FP-1.15. Zürich 2018.
4. Allan V, Vierimaa M, Gainforth HL et al.: The use of behaviour change theories and techniques in research-informed coach development programmes: a systematic review. Int Rev Sport Exerc Psychol 2018; 11: 47–69.
5. Bray J, Hartwell H, Price S et al.: Food information presentation: consumer preferences when eating out. Brit Food J 2019; BFJ-09-2018-0605.
6. Bucher T, Collins C, Rollo ME et al.: Nudging consumers towards healthier choices: a systematic review of positional influences on food choice. Br J Nutr 2016; 115: 2252–63.
7. Langen N, Dubral R, Ohlhausen P et al.: Review von Interventionsstudien aus den Bereichen Nudging, Information und Partizipation und deren methodischer Fundierung sowie Ableitung von Stellschrauben zur Steigerung nachhaltigen Essverhaltens. Arbeitspapier Nr.4. Berlin 2017.
8. Skov LR, Lourenço S, Hansen GL et al.: Choice architecture as a means to change eating behaviour in self-service settings: a systematic review. Obes Rev 2013; 14: 187–96.
9. Winkler G, Röger C, Berger B et al.: Nudging – leicht gemacht Praktische Handlungsempfehlungen für die Hochschulgastronomie. Kooperationsprojekt des Kompetenzzentrums für Ernährung mit der Hochschule Albstadt-Sigmaringen und der Techniker Krankenkasse. Freising 2018.
10. Finkelstein EA, Kosa KM: Use of incentives to motivate healthy behaviors among employees. Gender Issues 2003: 21: 50–9.
11. Waterlander WE, Steenhuis IHM, Vet E de et al.: Expert views on most suitable monetary incentives on food to stimulate healthy eating. Eur J Public Health 2010; 20: 325–31.
12. Berger V, Mielser L, Hari Jürg: The potential of gamification in changing consumer behaviour towards a more sustainable nutrition behaviour. Academy of Marketing Conference, Bournemouth (UK), 10. July 2014.
13. Berger V, Schrader U: Fostering Sustainable nutrition behavior through gamification. Sustainability 2016; 8: 67.
14. Orji R, Vassileva J, Mandryk RL: LunchTime: a slow-casual game for long-term dietary behavior change. Pers Ubiquitous Comput 2013; 17: 1211–21.
15. Egeler G-A, Baur P: Menüwahl in der Hochschulmensa: Fleisch oder Vegi? Ergebnisse eines 12-wöchigen Feldexperiments. 2020.
16. Garnett CV, Crane D, Brown J et al.: Behavior change techniques used in digital behavior change interventions to reduce excessive alcohol consumption: a meta-regression. Ann Behav Med 2018; 52: 530–43.
17. Song H, Schuldt JP, McLeod PL et al: Group norm violations in an online environmental social network. Effects on impression formation and intergroup judgments. Group Process Intergr Relat 2017; 21: 422–37.
18. Osman M, Thornton K: Traffic light labelling of meals to promote sustainable consumption and healthy eating. Appetite 2019; 138: 60–71.
19. Krešić G, Liović N, Pleadin J: Effects of menu labelling on students' food choice: a preliminary study. Brit Food J 2019; 121: 479–91.
20. Littlewood JA, Lourenço S, Iversen CL et al.: Menu labelling is effective in reducing energy ordered and consumed: a systematic review and meta-analysis of recent studies. Public Health Nutr 2016; 19: 2106–21.
21. Bollinger B, Leslie P, Sorensen A: Calorie Posting in Chain Restaurants. Am Econ J Econ Policy 2011; 3: 91–128.

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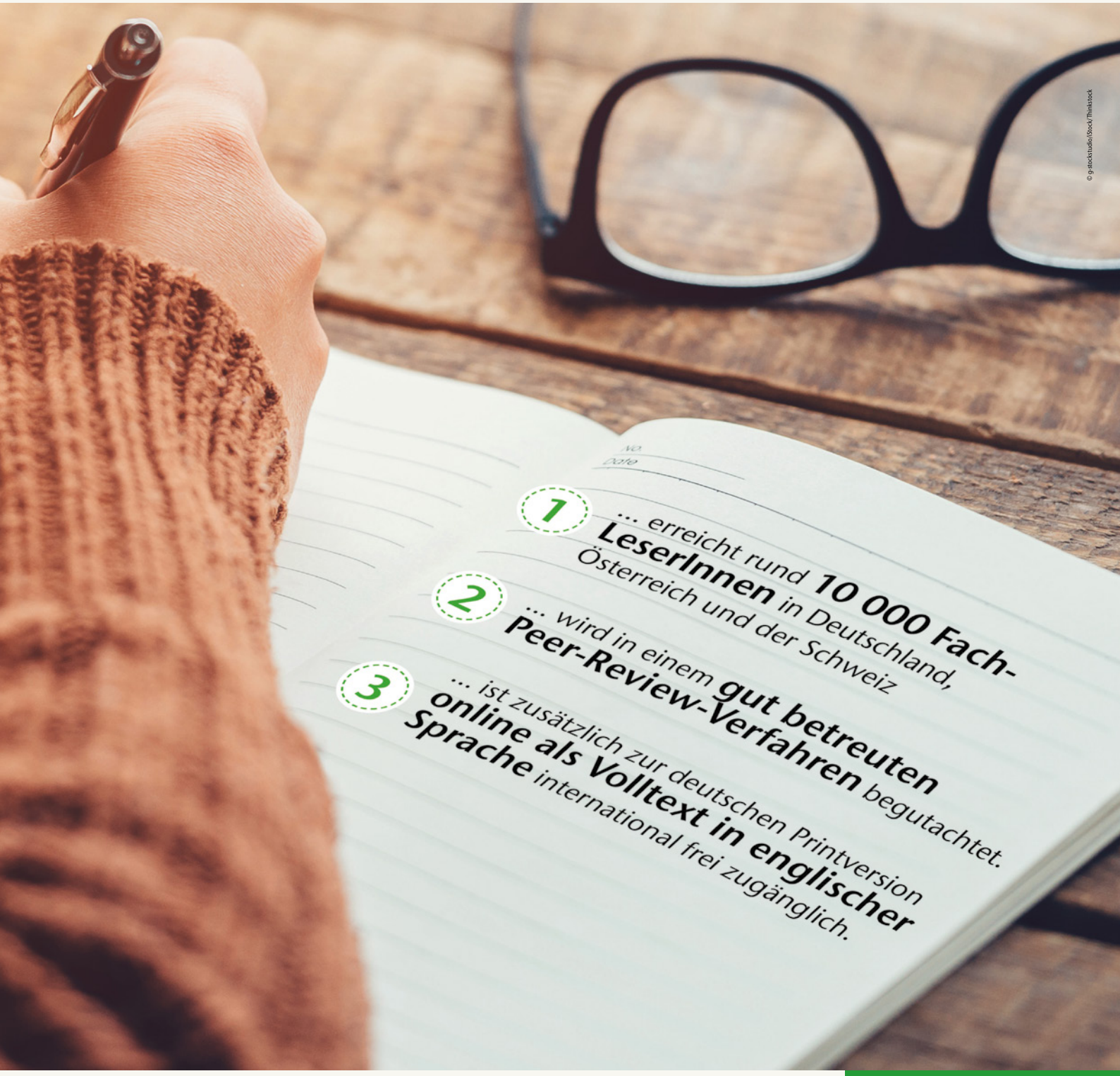

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