# Investigation of the Impact of Vegetarianism and Veganism on the Post-Covid-19 Gastronomy and Food Industry 

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#### Abstract

The aim of this term paper is to investigate the extent to which Covid-19 has influenced the gastronomy and food sector regarding fresh food counters and the to-go assortment in terms of vegetarian and vegan offerings.

An extensive literature and internet research was conducted for this thesis. In addition, this included a study of vegan- and vegetarian-friendly food offerings in ten different randomly selected restaurants in the city of Trier, Germany. The results show that on average a good selection of vegetarian dishes (33.6\%) and a small selection of vegan dishes (11.8\%) can be found in the individual restaurants.

The trend towards a plant-based diet has been evident for years but accelerated during the COVID-19 pandemic as society began to doubt the safety precautions of the meat industry and awareness of animal, environmental and health issues increased. This has led to many restaurants and food retailers expanding their range of vegetarian and vegan options to meet this demand. More and more vegan products can also be found in food retail, and the range of vegan alternative products in the to-go area or at fresh food counters for actual meat, sausage, cheese and fish products is expanding, as can be seen at pioneer REWE Group, for example.


Keywords: COVID-19, dietary habits, veganism, vegetarianism, vegourmets.

## 1 Introduction

What do Covid-19, Ebola, HIV, SARS, TB, Zika, and the Black Death have in common? All diseases are caused by the transmission of parasites, bacteria, or viruses to humans (Kannan, 2020). Due to animal diseases, there are 2.5 trillion human cases and 2.7 million human deaths each year (Salyer et al., 2017). Originally, Covid-19 was first detected at a live animal market in Wuhan, China, in December 2019 (Schockmel, 2020). Since February 2020, more than 658 million people have become ill, and more than 6.6 million deaths have been recorded from COVID-19 in more than 190 countries, as of December 19, 2022. The average lethality rate thus falls to about 1.1\% worldwide (Radtke, 2022).

There may be a link between the pandemic and veganism, as people have tended to consume a healthier and more plant-based diet since the Covid-19 outbreak (Schockmel, 2020). According to SPINS ${ }^{\circ}$ (2020) more customers purchased plant-based foods during the pandemic. Meat consumption, as well as seafood consumption, on the other hand, decreased (Loh et al., 2021). This trend occurred because people were no longer confident about the safety precautions of meat and fish processing. Not only did food producers of meat alternatives such as Beyond Meat and Impossible Foods recognize this trend and have been able to attract customers through more competitive marketing strategies, but fast-food restaurants such as Subway, Starbucks, and Burger King have also expanded their selection of offerings to include plant-based products (Loh et al., 2021). For example, the largest chain in the world Subway had introduced a Meatless Meatball Marinara Sub Sandwich in all UK stores in early 2020 (Loh et al., 2021). Burger King has launched its first plant-based Whopper® already in 2019 in its German stores (Burger King Deutschland GmbH, n.d.). In addition to fast-food restaurants, full-service restaurants have also noticed the shift and added more plant-based dishes to their menus. The HappyCow platform, an online restaurant research site, charted the impact of COVID-19 on restaurants. By August 2020, 413 vegan restaurants were forced to close during the COVID-19 pandemic, but 517 new vegan restaurants opened at the same time - making a total of 104 more vegan restaurants available worldwide (vegonomist, 2022). Even scientist Hanni Rützler, who analyzes the present and future of the dining culture as well as food trends for over 25 years now, recognized this trend already for a long time (Rützler and Reiter, 2021). According to Rützler and Reiter (2021), the post-corona gastronomy will include more vegetables. If the products are presented in terms of their taste and enjoyment, the plant-based diet no longer appeals only to vegans and vegetarians, but also reaches omnivores - the so-called "Vegourmets" (GO IN Company, n.d.).

## 2 Material and Methods

For this term paper a comprehensive literature and internet research was conducted. Since the term "Vegourmets" was first used in the Food Report 2022 by scientist Hanni Rützler, the dietary change is still very new and a current topic, and opinions of food experts and chefs play a relevant role in this context, information from online blog entries was used.

In addition, a study was conducted to assess the vegan- and vegetarian-friendly restaurant selection in the city of Trier in Rhineland-Palatinate, Germany. For this purpose, ten restaurants were randomly selected. In each case, appetizer, main course, dessert, and extras such as dips were considered by analyzing the menu online. Fish and seafood were assigned to the "meat" category here, alongside the "vegetarian" and "vegan" categories. The Microsoft Excel program was used for data collection and presentation of the results.

## 3 Literature Overview

### 3.1 Definition "Vegourmets"

The term "Vegourmets" was coined by Hanni Rützler in her Food Report 2022 and refers to the post-corona gastronomy as being richer in vegetables. After all, anyone who wants to gain recognition and success in the restaurant and hotel industry in the future must be able to deliver a unique performance. The inventive solutions alone, such as delivery services and meal boxes for preparing delicious meals in one's own kitchen, which were developed during the pandemic, are no longer enough (Rützler and Reiter, 2021).
"Vegourmets" are people who are omnivores, meaning they also eat meat, but are curious about plant-based cuisine and have a desire to try perfectly prepared plant-based food (Wulf, 2021). The term "Vegourmets" is made up of the words "vegan" and "gourmet". However, this is not about using substitute products for sausages and steak from the supermarket, but rather using vegetables, legumes and grains, for example, and skillfully showcasing them (GO IN Company, n.d.). The term "Vegourmets" is used in this paper to refer not only to veganism, but also to vegetarianism.

### 3.2 Global change in dietary habits during the COVID-19 pandemic

Nowadays, there are about 500 million vegan people worldwide, the majority of whom are from Asia. Since the COVID19 outbreak, the percentage of vegans in the Western world has been increasing rapidly. In the U.S., the percentage increased from 3\% in 2020 to $5 \%$ in 2022. In Germany, the number of vegetarians and vegans has been steadily increasing since 2015. Reasons for not eating meat are animal welfare, health, influence from one's partner, and the environment (Maibaum, 2022).

In 2022, 1.58 million vegans (2\%) and 7.9 million vegetarians ( $10 \%$ ) lived in Germany. In 2021, the largest increase to date was recorded with $15 \%$ vegetarians and $25 \%$ vegans. Flexitarians make up a large share of the trend, with $18 \%$ of the German population identifying themselves as flexitarians in 2022, which is more than vegans and vegetarians combined. Flexitarians are the food manufacturers' target group for plant-based substitute products and are ensuring that they establish themselves on the market (Maibaum, 2022). The German vegetarian and vegan food market is worth over 1.2 billion euros and is growing between $25 \%$ and $33 \%$ annually. Germany is number one in the world for new vegan product launches with a $15 \%$ share of food and beverages (Maibaum, 2022). According to SPINS ${ }^{\circledR}$ (2020), more customers purchased plant-based foods during the pandemic, with a peak recorded in March 2020: sales of plant-based products grew $90 \%$ year-over-year. If only sales of vegan meat alternatives are considered from this, the number increased by $148 \%$ and by another $61 \%$ in the following four weeks. These figures show a growth rate of plant-based products two times greater than that of meat (SPINS, 2020).

### 3.3 Benefits of a plant-based diet

Consuming a plant-based diet has many benefits in terms of human health and the environment, as well as animal welfare (Fehér et al., 2020; Grant, 2017).

According to Chooi et al. (2019), 39\% of the population around the world was overweight and obese in 2015, with diseases found across the population stratum. In contrast, vegetarians and vegans, regardless of age, gender, and geography, are leaner than the omnivore group and are less likely to develop obesity (Fehér et al., 2020). Diabetes can also be prevented by a plant-based diet. Furthermore, the intake of saturated fats (Fehér et al., 2020; Grant, 2017) as well as cholesterol (Grant, 2017), and the development of cancer and chronic diseases can be reduced (Fehér et al., 2020; Grant, 2017).
In addition to the health aspects, there are also environmental benefits when the world's population adopts a more plant-based diet (Grant, 2017). Animal agriculture produces $18 \%$ of greenhouse gas emissions, with methane and nitrogen oxide making up the largest share through enteric fermentation and manure storage (Grant, 2017, Grossi et al., 2019). In addition, enormous amounts of agricultural crops are used for animal feed (Grant, 2017). It takes threequarters of agricultural land to feed animals in factory farming and then provide their products to consumers for their own consumption (Maibaum, 2022). Thus, $55 \%$ of the corn produced in the U.S., $40 \%$ of the world's grain crop, and more than $85 \%$ of the world's soybean crop is used for global animal feeding. The resources needed for factory farming, such as land area, energy, and water needed to grow feed, could be used more efficiently to produce food that goes directly to the consumer (Grant, 2017).

Another benefit of the vegan diet is animal welfare. Many vegans do not want to support the killing of animals through their diet and lifestyle (Schweizer Gastronomiefernschule, 2021). According to the non-profit organization and campaign Veganuary (n.d.), the vegan diet is the most efficient measure to avoid animal suffering.

### 3.4 Vegetarian and vegan gastronomy

The gastronomy is undergoing constant changes and is influenced primarily by the changing needs of diners. The demand for vegetarian and vegan options has now caught up with the gastronomy and the number of vegetarian and vegan restaurants has steadily increased over the years (Gastronomie-Trends, 2021). According to HappyCow (2020), an online platform with a global listing of vegan and vegetarian restaurants, there were only 85 vegan restaurants and 517 vegetarian restaurants in Europe in 2007. Over the years, the number of vegan and vegetarian restaurants has steadily increased. In 2019, there were 2662 vegan restaurants and 3816 vegetarian restaurants. The Covid- 19 crisis has not had a negative impact on the growth of vegan and vegetarian restaurants in Europe, but on the contrary. At the beginning of 2022, the number of vegan restaurants has increased from 2662 to 3406 - a growth of almost $25 \%$. The number of vegetarian restaurants has also increased, although not as much as vegan restaurants. From 3816, the number of vegetarian restaurants has increased to 4186 (HappyCow, 2022). The described development is shown in figure 1.
The fast-food industry recognized the supply gap and made huge steps regarding plant-based alternative products. As a result, Burger King ${ }^{\circledR}$ is working with The Vegetarian Butcher ${ }^{\top \mathrm{M}}$, a producer of meat alternatives based in the Netherlands. After Burger King introduced the Plant-based Whopper ${ }^{\circledR}$ in 2019, plant-based nuggets were launched in Germany the following year. In 2021, the world's first Plant-based Burger King ${ }^{\circledR}$ restaurant opened in Cologne, Germany,
from June $7^{\text {th }}$ until June $11^{\text {th }}$ in conjunction with The Vegetarian Butcher ${ }^{T M}$, which had created a lot of attention nationally as well as internationally. This influx confirmed that demand and curiosity are high. Gradually, more and more plant-based products were added to the range and since the summer of 2022, customers have been able to order a plant-based version of almost all products in all stores in Germany (Burger King Deutschland GmbH, n.d.).


Figure 1. Registered number of vegetarian and vegan restaurants in 2007, 2019 and 2022 in Europe modified from HappyCow (HappyCow, 2022).

Another example of the dietary change to vegetarianism and veganism is the opening of the completely vegan burger restaurant NIC in Stuttgart, Germany, in October 2022, offering mainly plant-based burgers and sides such as fries and nuggets. Dipping sauces such as sour cream and mayonnaise, as well as soft serve desserts, are also completely vegan (NIC Deutschland Franchise und Servicegesellschaft mbH, n.d).

The well-known burger chain Hans im Glück has also offered a diverse selection of vegan and vegetarian dishes since its inception, as sustainability is an important issue for the restaurant chain. The assortment is continuously changed, and all their sauces are vegan as well. By offering a diverse range of plant-based burgers, Hans im Glück wants to offer meat eaters an alternative to animal products and thus make their contribution to a more sustainable world. In 2020, the burger chain was named the most vegan-friendly system restaurant by PETA for its vegan burger selection (HANS IM GLÜCK Franchise GmbH, n.d.).

The term "Vegourmets" does not include the term "gourmet" for nothing. In upscale cuisine, the focus on the plate no longer has to be on meat or fish. In 2019, for the first time in Europe, the gastronomy Guide Michelin awarded a Michelin star to the vegan restaurant "Seven Swans" in Frankfurt (Gastronomie-Trends, 2021). The world-famous Eleven Madison Park restaurant in New York City, under the direction of top chef Daniel Humm, became the first vegan restaurant in the world to receive three Michelin stars in October 2022 (Mörzinger, 2022). However, the restaurant was not always vegan. Already in 2011, the restaurant had three stars (Mörzinger, 2022), but animal products were still served until 2021. For the reopening of the restaurant after the lockdown, due to the Covid-19 pandemic, the menu was completely changed to vegan food (Hoberg, n.d.).

### 3.5 Vegan fresh food counter and vegan to-go products

The change in nutrition has not only influenced the gastronomy, but also the offer at the fresh food counter for meat, sausage, cheese and fish, but also the selection of to go products in self-service counters.

REWE Group is a good example with a wide range of vegetarian and vegan products with more than 1000 vegan items in its assortment (Esser, 2022). According to Julia Dopjans (2022), who works as an editor in corporate communications of the REWE Group, the results of a REWE Group survey on customer preferences about what is available at the fresh food counter show that $20 \%$ of respondents say they would like to buy plant-based alternative products. Conclusively, REWE Group introduced a vegan fresh food counter with a total of 34 items meat, sausage, cheese and fish, such as salami, liver sausage, barbecue skewers, steak, various aged cheese alternatives and delicatessen salads. Omnivores and flexitarians make up the target audience for vegan fresh food counters, as they already shop at the service counter for meats and cheeses and, according to observations, have become more open to vegan and vegetarian alternatives. Attracting vegans and vegetarians seems to be a potential challenge, as animal products still dominate the selection at the fresh food counter (Dopjans, 2022).

To go products are also increasingly offered in a vegan or vegetarian version. REWE Group is also a model example here with its own brand REWE to go and offers products such as sushi menus (e.g. Sushi Nanami vegan), salads (e.g. Salad Bowl Rustica vegan with mushroom balls), sandwiches (e.g. Sandwich vegan Chickenstyle Tandoori) and pasta salads (e.g. Pasta Salad Asiastyle vegan).

### 3.6 General challenges and measures for vegetarian and vegan gastronomy

Opening a vegetarian or vegan restaurant comes with some challenges that depend on different factors. Culinary traditions differ significantly in the Western as well as Eastern world regarding plant-based and animal-based diets. In Japan, for example, a strict vegetarian diet was lived among monks and nuns. This diet also spread to the general society of Japan. This is because tofu, pickled and fresh vegetables are present at every meal, while meat and seafood play only a secondary role (McConnell, 2020). In contrast, meat was considered a luxury item until a few years ago, and to some extent still is, and was a main component of the diet of modern Western society (Lea et al., 2006).

In countries where plant-based diets are not yet widespread or respected, it is difficult for foodservice operators to establish themselves and build a foothold. Several challenges can arise in establishing a vegetarian or vegan restaurant (Riverola et al., 2022). Riverola et al. (2022) conducted a systematic study in which they asked 12 vegetarian- and veganfriendly restaurants (4 restaurants each in the countries of Spain, Australia, and Colombia) about challenges and implemented measures they faced during the establishment.

First, there were social obstacles regarding their environment, which was not supportive, as this was not the appropriate neighborhood for a "hippie" restaurant. In addition, the restaurant owners would have received criticism from people who thought that the restaurant owners themselves would criticize these people regarding their diet, due to the consumption of animal products (Riverola et al., 2022). Another challenge was to create a vegan menu that would appeal to both vegans and non-vegans and attract them as clientele. On the one hand, the non-vegan community should be addressed, because the restaurant industry depends on the general population. On the other hand, it was important to develop original dishes without using the traditional ingredients such as meat and milk, but to meet the taste and but also appeal to omnivores.

In order to counter these problems attending cooking classes was considered in order to get to know the variety of special vegetarian or vegan cuisine more closely and to expand knowledge as well as skills (Riverola et al., 2022). Nowadays, a variety of vegan and vegetarian cooking classes can be found on the Internet. The Plant Based Culinary Academy is an example of a culinary school to offer interested students a unique and incomparable training with the title of "Grand Plant Based Chef and Culinary Instructor" (Ziguri-Academy, n.d.).

Actions, to be able to place itself against the prejudices of the surrounding field, could be the guidance of public relations. Generating attention for the business can, in a positive case, make the restaurant more attractive and inviting. Through a virtual presence in the form of its own homepage or through a presence in the social media like Instagram, the restaurant can be advertised at the same time (Riverola et al., 2022). Food presentation does play a role in today's world, as "instagrammable" food, can gain greater reach and attention through social media (gastivo portal GmbH, 2020).

## $4 \quad$ Results and discussion

In this self-conducted study, ten restaurants in the city of Trier, Germany, were randomly selected and their online menus were reviewed for vegan- and vegetarian-friendly dishes. Appetizers, main courses, desserts, side dishes, and extras such as dips were considered. Menu offerings were classified into three categories: meat (including fish and seafood), vegetarian and vegan. The following restaurants were selected: masons, Kartoffel Kiste, Ms Lian, Donna Mia, Altes Brauhaus, Schlemmereule, Chicano, Burgeramt, Herrlich Ehrlich, and Louisiana.

The results of the study are shown in table 1 as well as in figure 2 . In general, it can be observed that meat and fish dishes still dominate the menus with an average of $54.6 \%$. Vegetarian dishes are represented on average by about one third ( $33.6 \%$ ) and vegan dishes by only one tenth (11.8\%) of the total menu offerings. The restaurants Kartoffel Kiste ( $80 \%$ ), Ms Lian ( $79.4 \%$ ), Altes Brauhaus ( $77.4 \%$ ) and the fine dining restaurant Schlemmereule ( $59.1 \%$ ) offer an aboveaverage number of dishes with meat. Vegetarian dishes are represented in all analysed restaurants. A very low number of vegetarian dishes, in terms of the total number of dishes offered in each restaurant, can be found at Ms Lian (5.6\%), Kartoffel Kiste (18.8\%) and Altes Brauhaus (22.6\%). In contrast, at the following restaurants, vegetarian dishes take up around half of the menu: masons (41.4\%), Donna Mia (46.5\%), Schlemmereule (40.9\%), Chicano (40.4\%) and Louisiana (54.2\%). Eight out of ten restaurants have a vegan selection of dishes. Altes Brauhaus as well as Schlemmereule do not offer any vegan dishes. Kartoffel Kiste, Donna Mia, and Louisiana offer vegan dishes at $1.3 \%, 4.7 \%$, and $3.4 \%$, respectively. In contrast, masons and Burgeramt are well positioned with $27.6 \%$ and $33.3 \%$ of vegan dishes, respectively.

To better understand the share of meat dishes as well as vegetarian and vegan dishes, the respective restaurants and their menus are described and discussed in more detail below:

- Masons: masons is a restaurant with an all you can eat à la carte concept, offering international dishes. Countries represented are for example Australia, France, Mexico and Vietnam. Most dishes are offered in a meat version, however, many dishes can be ordered optionally vegetarian or vegan (Masons Franchise UG (haftungsbeschränkt) and Co. KG, n.d.), resulting in a balanced selection of meat, vegetarian and vegan dishes, making it very friendly for vegetarians and vegans, as vegetarian and vegan dishes together account for 69\% of the food offered and performs the best in this study.
- Kartoffel Kiste: The restaurant serves local food (e.g. Trierer Spießbraten, Kappes Teerdich, Alt-Trierer Hacksteak) as well as a few international specialties based around the German potato (Kartoffel-RestaurantKiste Harry Betz KG, n.d.). Since German cuisine is known for its Currywurst, Schnitzel, and Bratwurst (Heinzelmann, 2014), many such dishes will be found on the menu, which is why the high proportion of meat dishes and few vegetarian dishes and fewer vegan dishes come about.
- Ms Lian: The restaurant offers Asian cuisine. Among the dishes served are sushi, various curries with different options (tofu, chicken, beef, large shrimp, duck, salmon) and soups with different options (tofu, chicken, beef) (Ms. Lian, n.d.a). The possible options are mainly meat-based, reflecting the high meat consumption in Asian cuisine (Godfray et al., 2018). However, there is a possible selection of vegetarian and vegan options in each category (Ms. Lian, n.d.a, n.d.b).
- Donna Mia: The restaurant offers Italian dishes with a focus on pizza and pasta, but also serves salads and grilled plates. Overall, the food offerings are well balanced between meat-based and vegetarian dishes. The vegetarian options are marked on the menu, which provides a better overview for interested customers (Donna Mia - Trier GmbH, n.d.).
- Altes Brauhaus: The restaurant includes traditional German dishes, which are very meat-based (Heinzelmann, 2014), which is why there is a high share of dishes with meat here as well (speisekarte.de, n.d.)
- Schlemmereule: The short menu of the fine dining restaurant Schlemmereule is mainly based on meat and fish (Restaurant Schlemmereule, n.d.).
- Chicano: The restaurant offers an American/Mexican cuisine. The vegetarian and vegan dishes are marked for easy reference (Chicano, n.d.). Although Mexico and the U.S. are known for its high consumption of meat (Godfray et al., 2018), Chicano offers a wide selection of vegetarian and vegan dishes (57.4\%). This indicates that the menu may have been adapted to the dietary change trend to create a larger target clientele.
- Burgeramt: In addition to burgers, the burger restaurant also offers finger food and salads. Vegan and vegetarian burgers are labeled on the menu (Burgeramt Trier, n.d.). Burgers are a simple and by now widely offered plant-based food (Burger King Deutschland GmbH, n.d.; HANS IM GLÜCK Franchise GmbH, n.d.; NIC Deutschland Franchise und Servicegesellschaft mbH, n.d.). Here, the switch to plant-based patties is no longer a surprise, but rather very common. Thus, $60.8 \%$ of the dishes are vegetarian and vegan.
- Herrlich Ehrlich: The restaurant changes its menu regularly and the dishes have an oriental touch. The menu is very simple with a total of 13 dishes with balance between meat-based ( $46.2 \%$ ), vegetarian ( $38.5 \%$ ), and vegan (15.4\%) dishes (Herrlich Ehrlich, n.d.).
- Louisiana: The Louisiana restaurant offers American cuisine. In contrast, although American cuisine is quite meat-based (Godfray et al., 2018), the restaurant offers half meat-based (e.g., chicken wings, grilled chicken) and half vegetarian (e.g., loaded nachos, scalloped potatoes) dishes. Vegan dishes are not offered (LouisianaTrier GmbH, n.d.).

Table 1.
Proportion of meat dishes as well as vegetarian and vegan dishes of the ten randomly selected restaurants in Trier, Germany, in relative quantity.

| restaurant | meat (\%) | vegetarian (\%) | vegan (\%) | sum dishes |
| :--- | :---: | :---: | :---: | :---: |
| masons | 31,0 | 41,4 | 27,6 | 58 |
| Kartoffel Kiste | 80,0 | 18,8 | 1,3 | 80 |
| Ms Lian | 79,4 | 5,6 | 15,0 | 107 |
| Donna Mia | 48,8 | 46,5 | 4,7 | 86 |
| Altes Brauhaus | 77,4 | 22,6 | 0,0 | 31 |
| Schlemmereule | 59,1 | 40,9 | 0,0 | 22 |
| Chicano | 42,6 | 40,4 | 17,0 | 47 |
| Burgeramt | 39,1 | 27,5 | 33,3 | 69 |
| Herrlich Ehrlich | 46,2 | 38,5 | 15,4 | 13 |
| Louisiana | 42,4 | 54,2 | 3,4 | 59 |
| mean | 54,6 | 33,6 | 11,8 |  |



Figure 2. Classification of the dishes of ten randomly selected restaurants in Trier according to the categories meat (plus fish and seafood), vegetarian and vegan, whereby starters, main courses, desserts as well as side dishes and extras (dips) were considered. (Comment: Internet research for purely vegan restaurants in the city of Trier did not yield any results)

## 5 Conclusion

Plant-based diets, which include vegetarian and vegan diets, have gained a lot of popularity in recent years (Maibaum, 2022). This trend evolved into a lifestyle and was driven by several factors, such as growing awareness of healthy eating, environmental protection, and animal welfare (Park and Kim, 2022). During the COVID-19 pandemic, this trend was amplified as plant-based diets were seen as health-promoting and immune-boosting, and doubts arose about safety precautions related to animal foods (Schockmel, 2020).

The increase in plant-based diets has also had an impact on the gastronomy and the food industry. Thus, more and more restaurants are focusing on vegetarian and vegan dishes (HappyCow, 2022) as well as the offered products in food retails and fresh food counters (Dopjans, 2022; Esser, 2022; REWE Group, n.d.). This development has helped vegetarian and vegan cuisine become more mainstream and has become a major trend in the foodservice industry.

According to the results of the conducted study in Trier, it is shown that a large part of the menu of the respective restaurants offers a vegetarian or even partially vegan selection, even if not in every restaurant.
For the operators of vegetarian and vegan restaurants, this development poses a few challenges: (1) To diversify and vary the range of vegetarian and vegan dishes and to get to the original traditional dishes of each culinary cuisine to meet customer demand. (2) It is also important to carefully select the production chain and ingredients to ensure that the dishes are high quality and healthy since customers value a healthy diet and fresh food. (3) Positioning in the market and standing out from competitors.

By using innovative recipes or by introducing creative vegetarian and vegan menus, the challenges can be overcome. A know-how can be expanded by attending vegan cooking courses, which will also be offered more and more frequently in the future (Ziguri-Academy, n.d.). Especially in upscale vegan cuisine, creativity and know-how are important components to create interesting and enjoyable dishes such as beet tartare, vegan pasta sauces and vegetables with deep-fried wild mushrooms. Therefore, a visit at a cooking class can be beneficial for newcomers (Gastronomie-Trends, 2021).

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## Appendix

Table 2.
Collected data of meat-based, vegetarian and vegan dishes from ten randomly selected restaurants in Trier, Germany.

| restaurant | meat | meat (\%) | vegetarian | vegetarian (\%) | vegan | vegan (\%) | sum | sum (\%) |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| masons | 18 | 31,0 | 24 | 41,4 | 16 | 27,6 | 58 | 100,00 |
| Kartoffel Kiste | 64 | 80,0 | 15 | 18,8 | 1 | 1,3 | 80 | 100,00 |
| Ms Lian | 85 | 79,4 | 6 | 5,6 | 16 | 15,0 | 107 | 100,00 |
| Donna Mia | 42 | 48,8 | 40 | 46,5 | 4 | 4,7 | 86 | 100,00 |
| Altes Brauhaus | 24 | 77,4 | 7 | 22,6 | 0 | 0,0 | 31 | 100,00 |
| Schlemmereule | 13 | 59,1 | 9 | 40,9 | 0 | 0,0 | 22 | 100,00 |
| Chicano | 20 | 42,6 | 19 | 40,4 | 8 | 17,0 | 47 | 100,00 |
| Burgeramt | 27 | 39,1 | 19 | 27,5 | 23 | 33,3 | 69 | 100,00 |
| Herrlich Ehrlich | 6 | 46,2 | 5 | 38,5 | 2 | 15,4 | 13 | 100,00 |
| Louisiana | 25 | 42,4 | 32 | 54,2 | 2 | 3,4 | 59 | 100,00 |
| mean |  | 54,6 |  | 33,6 |  | 11,8 |  |  |

