

Consumer Behavior During the COVID-19 Pandemic: A Study of the Food Consumption Practices in Ponta Grossa (PR)

Comportamento do Consumidor Durante a Pandemia de COVID-19: Estudo das Práticas de Consumo Alimentar em Ponta Grossa (PR)

*Mirna de Lima Medeiros*¹

*Rúbia Gisele Tramontin Mascarenhas*²

Abstract

The pandemic of the severe acute respiratory syndrome of coronavirus 2 (SARS-CoV-2), known as COVID-19, is already considered one of the greatest pandemics in history. Occasions as this can generate significant disruptions that can be temporary or permanent and require prompt business adaptations since consumption beyond usual is also contextual. Eating is essential, but what is considered food and what you want (or can) eat is not. It depends on choices (conscious and unconscious) of consumers. In view of this context, we seek to investigate how the COVID-19 pandemic changed food-buying habits in a medium-sized city in Paraná. To this end, we applied an online questionnaire to residents of Ponta Grossa. One hundred thirty one valid responses were obtained and analyzed using descriptive statistics. We obtained 131 valid responses that we analyzed using descriptive statistics. How, where and what food do households buy have changed. Delivery and pick-up services for ready meals, as well as their preparation at home, have increased. Prioritizing small local businesses and places where sanitary measures are notable also became more important. Among the foods consumed, we observed the intention to buy fresh and healthy food in parallel with sweets, cookies and sausages. The results indicate that health, security, solidarity and compensation can be key factors for food choices during and after the pandemic. These results are useful for entrepreneurs in the area, as well as in other areas, and are consistent with the specialized international literature regarding trends in consumer behavior.

Keywords: Consumer Behavior. Pandemic. COVID-19. Food. Ponta Grossa. Paraná.

Resumo

A pandemia da síndrome respiratória aguda grave do coronavírus 2 (SARS-CoV-2), conhecida como COVID-19, já é considerada uma das maiores pandemias da história. Ocasões como essa provocam disruptões significativas que podem ser temporárias ou permanentes e exigem rápidas adaptações dos negócios já que o consumo além de habitual é contextual. Alimentar-se é essencial, mas o que se considera alimento e o que se deseja (ou se pode) comer não. Depende de escolhas (conscientes e inconscientes) dos consumidores. Tendo em vista esse contexto, essa pesquisa almejou analisar

¹ Universidade Estadual de Ponta Grossa – UEPG, Brasil. ORCID <https://orcid.org/0000-0002-7198-9835>. E-mail: mirnadelimamedeiros@gmail.com

² Universidade Estadual de Ponta Grossa – UEPG, Brasil. ORCID <https://orcid.org/0000-0003-2024-331X>. E-mail: rubiамasc@gmail.com

como a pandemia da COVID-19 alterou os hábitos de compra de alimentos em uma cidade de porte médio no Paraná. Para esse fim foi aplicado um questionário online aos residentes de Ponta Grossa. Obteve-se 131 respostas válidas que foram analisadas por meio de estatística descritiva. Como, onde e que alimentos compram os domicílios sofreram alterações. Serviços de entrega e retirada de refeições prontas, bem como o seu preparo no lar sofreram incrementos. Priorizar pequenos empreendimentos locais e lugares onde medidas sanitárias estejam notáveis também passaram a ter mais importância. Já dentre os alimentos consumidos percebeu-se a busca por alimentos frescos e saudáveis em paralelo com doces, bolachas e embutidos. Os resultados apontam que saúde, segurança, solidariedade e compensação podem ser fatores chave para as escolhas alimentares durante e após a pandemia. Esses resultados são de utilidade para empreendedores da área, bem como de outras áreas e coadunam com a literatura internacional especializada com relação a tendências do comportamento do consumidor.

Palavras-Chave: Comportamento do Consumidor. Pandemia. COVID-19. Alimentação. Ponta Grossa. Paraná.

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1 Introduction

Food choices are complex and they belong to a society culture. At the same time that the culture impacts on the choice of culinary products that are consumed, food also creates the cultural identity of the society in which it is inserted. (Mascarenhas, 2005; Montanari, 2008). Nutrition relates directly to the daily life and to the scenario (sociocultural, historical, economic, etc.) in which it is inserted. Meals are conditioned by these factors and consequently become the routine and the life style “mirror” of a certain time of history and of the social context as well (Borges, 2010; Flandrin & Montanari, 1998). Furthermore, meals “not only have the function of determining time division, but also of representing the social dynamics when they are considered as the existing table rituals.” (Borges, 2010, p.02).

Some situations, nonetheless, make persons obliged to adapt themselves. Among such situations, availability, access or health issues can be highlighted (Pérez-Rodrigo *et al.*, 2020). When a certain disease spreads itself quickly and globally, these issues are combined thus causing temporary or permanent changes. The pandemic of the coronavirus 2 severe acute respiratory syndrome (SARS-CoV-2), known as COVID-19, was decreed on 11th March, 2020 and it can be already considered as one of the greatest pandemics in history (Barreto *et al.*, 2020; Lai *et al.*, 2020). Its

worldwide spreading, without the existence of any treatment or any vaccine, has brought the need for measures in order to stem its spreading such as lockdowns, quarantines (compulsory or voluntary), social distancing (the whole population or vulnerable groups), closings (“non-essential” businesses and also frontiers) and people agglomeration prohibition (Gössling *et al.*, 2020).

Such determinations have impacted several essential human structures such as the food systems and, among them, the end consumer closest bond, the food environments. In each global level, it is notorious that the food environments are changing abruptly both in their external dimensions - food availability, prices, suppliers - and in their personal dimensions - geographical access, affordability, convenience and desirability (Cullen, 2020; UNSCN, 2020). These changes in the food environment influence the food acquisition and consumption practices performed by the population. This is because the consumption (what is consumed, when and where) is habitual, but it is also contextual (Sheth, 2020).

Some studies (Cranfield, 2020; Galunion & Qualibest, 2020) already signal behavioral changes concerning nutrition due to the pandemic. Understanding such changes can be useful to new discussions in the academic scope, but it is also and mainly useful to ground the sector strategies, to target opportunities and to support the design of new businesses.

In view of such a context, it was inquired: Has the COVID-19 pandemic changed the food purchase habits in Paraná? And additionally: What were the changes which occurred in a medium-sized town? In face of this research problem, the present study aimed to analyse how the COVID-19 pandemic has changed the food purchase habits in a medium-sized town in Paraná. The following necessary specific objectives were determined for its achievement: to discuss the reflexes of the pandemic situations in the consumption behavior, especially the food one; to verify the channels through which food is being acquired; to check what type of food has been

consumed; and to examine issues that can influence the decision on what organization one should acquire food from.

The defined local to carry out the research was Ponta Grossa. It is understood that its reality can be interesting, because in addition to being a reference for the surrounding municipalities, it was also one of the commercial flexibilization pioneers. The town is located in the region of Campos Gerais do Paraná, about 120 Km away from the capital Curitiba. This region has around 1 million inhabitants (IBGE, 2017) (Brazilian Institute for Geography and Statistics, 2017); the University Hospital of Ponta Grossa State University became a reference for the Regional Health Administration municipalities, comprised of twelve municipalities of Campos Gerais, when facing the new coronavirus. During the analysed period, several decrees concerning COVID-19 were enacted. Specifically related to nutrition, it was verified that the closing occurs initially so that the subsequent eating out and street market service is made flexible, but supermarkets remained open with new standards for the access. The non-essential commerce remained closed only for 15 days, starting to work in phases in April. It means that the consumers could, if they wished so, make their purchases and eat out.

Subsequently, a brief theoretical framework concerning the consumer behavior in periods of crisis and contexts such as the pandemic one, and especially regarding food consumption, is presented. The methodological choices that grounded the current study and their results are exposed after this discussion. Lastly, some final considerations addressing academic and managerial implications and future study suggestions are made and the references which were used are exposed.

2 Consumer Behavior and COVID-19

The consumer purchase behavior and choices depend on several internal and external factors to the subjects, such as income, demography, social and cultural factors, the context, the influencers and the surroundings

(Casco, 2020; Engel *et al.*, 2000; Sheth, 2020). According to Sheth (2020), there are four main contexts that guide or deconstruct the consumer habits: social context changes (such as marriage, children or moving to other towns); disruptive technologies (such as *smartphones* and digital sales platforms); standards and rules (such as the ones related to the consumption in public environments and disincentive to harmful products to health such as cigarettes and alcohol); and fourth, and a less predictable context comprised of *ad hoc* natural disasters (such as earthquakes, hurricanes and global pandemics, such as the COVID-19 one). In addition to natural disasters, it is also pointed out that times of crisis often result in major transformations all over society and reflect in the consumption (Casco, 2020; Kirk & Rifkin, 2020; Mehta *et al.*, 2020).

Kirk and Rifkin (2020) suggest that the consumer behavior changes when faced with a pandemic by going through three stages. First, persons react by trying to defend themselves against perceived threats and to regain the control of lost freedom. The COVID-19 pandemic initial stages, for instance, have triggered some unusual consumer behaviors such as storing “survival items” and cleaning products and rejection (with denial of issues ranging from personal beliefs to the performance of opposite actions to the prescribed). As time goes on, consumers deal with the situation by exercising control in other domains and by adopting new behaviors in the second stage. In the current case, this stage was perceived in the social connection maintenance mainly via the digital environment, behaviors such as “do it yourself”, and brand change view according to their responses and actions in face of the pandemic. Finally, in the third stage, consumers become less reactive and more resilient and the long-term adaptation occurs (for example, changes potentially transformational in consumption and in individual and social identity).

The COVID-19 pandemic main immediate impacts on consumption and on consumer behavior involves, according to Casco (2020), the storage of goods (such as food and hygiene items); increase of information search about

COVID-19; resource improvisation and exploitation; consumption prioritization (frugality); digital technology adoption; increase of home deliveries and blurred limits between work and personal life. These factors unfold in several aspects in the persons' lives and they depend on the local situation where they are, as well as their perception regarding risk (Casco, 2020; Yang *et al.*, 2021).

For Mehta *et al.* (2020), the COVID-19 pandemic is not a normal crisis, it adds up to the economic mitigation and public health measures, and the behavior changes can be irrevocable. “The COVID-19 pulled the parking break for the human race bound to destruction and redirected the attention to life and to living” (Mehta *et al.*, 2020, p.299). Also according to the authors, the pandemic blow created or revived a purchase behavioral understanding, indicating a conscious change towards the spiritual consumption. This consumer behavior lies in experiences and impressions through the senses and consciousness. It takes precepts such as living within your means or capacity, responsible purchase (only the necessary), reuse, harmonious relations into account, among other issues.

Referring specifically to food consumption, such issues are also observed. Hunter (2020) presents five changes in the American people food consumption due to the pandemic: preference for home made food; healthier nutrition; emphasis on food safety; less exotic food; and local consumption trend.

As to the first issue, throughout history since the Industrial Revolution, changes started being constructed in the persons' life style who, due to any need related to work journey or due to any desire to share moments with other persons other than their family group, started gradually moving away from the cooking at home practice and then preferably joining eating out (Franco, 2001). There was interest in gastronomy and in the “*gourmet*”, although “the exponential growth of nutrition text production and culinary books coincided with the decline of the home cooking practice” (Flandrin & Montanari, 1998). The pandemic

opened up space for the return to the practice of buying ingredients in order to transform them at home (Araújo, 2020).

The preference for cooking at home derives from constraints in order to contain the pandemic (such as remote work, closing of bars, restaurants and snack bars) (Santos, 2020), as well as from emotions and beliefs related to the virus, as it allows greater control concerning food (its cleaning, cooking, etc.) (Araújo, 2020) and it can be considered as therapeutical or a hobby in some cases (Sheth, 2020).

The on-line course, video and recipe searches have increased exponentially (Borges, 2020; Burckhardt & Simon, 2020). Laguna *et al.* (2020) show that, when the official pandemic statement was released, the research trends related to food and purchase increased on *Google*®, on *Twitter*® and on *YouTube*®. Within the period analyzed by the authors (January to April, 2020), the persons' interest in restaurants decreased. On the other hand, the interest in recipes and delivery increased, reaching comparable or superior popularity to researches regarding health (COVID-19 symptoms and spreading).

The on-line searches reflect interests and concerns that can materialize in attitudes and in actions (Laguna *et al.*, 2020). As to the food delivery service observed in the searches, for example, Gray (2020) shows that the demand for retail food delivery services increased to such an extent that it caused a long waiting time in Canada.

As part of the daily routine change due to the pandemic, the population can experience several emotions such as stress, anxiety, fatigue, concern, anger, fear and hope, which can contribute to changing their behavioral intentions related to the purchase places (Yang *et al.*, 2021), the food consumption (quantity, variety and frequency) and also promote the involuntary search for comforting food as a “food desire” consequence (Vergara-Castañeda *et al.*, 2020) or “emotional hunger” (Silva, 2020).

The act of eating takes various meanings and functions in the social distancing context. On the grounds of a qualitative research regarding the

middle class in Rio de Janeiro (Brasil), it is pointed out that the main associations of this group are food as affection, comfort and refuge (Santos, 2020). Bracale and Vaccaro (2020), based on the sales analysis in Italian markets during the confinement period in the beginning of 2020, also highlight the consumption of items as a result of their symbolic value, seeking comfort and sense of control.

These items are pointed out as unhealthy products. There was the increase of pasta, flour, eggs, long life milk and frozen food sales in the Italian study in question, in comparison with the *in natura* food reduction. According to the authors, for the Italians: “[...] Bread, pizza and home made cakes are archaic resilience tools that will undoubtedly remain in our collective imaginary as the paradigmatic food of our lives during the Coronavirus crisis.” (Bracale & Vaccaro, 2020, p.1426).

On the other hand, the concern about diet was also observed in the Italian reality during the *lockdown* in the beginning of 2020 (Di Renzo *et al.*, 2020). By attempting to keep the weight and to strengthen, a considerable part of the sample joined the “Mediterranean diet” and its nutritional quality remained high, especially in the North and in the center of Italy. Laguna *et al.* (2020), in a study on Spanish consumers (during and after the first lockdown), also observed changes due to the life style compulsory changes. Staying at home and no exercising raised some concerns regarding humor and body weight.

It should be mentioned that there is no scientific evidence that the consumption of a certain ingredient or the adoption of a specific diet prevents or combats COVID-19. Nutritionists and physicians suggest that “good nutrition” usual rules should be kept in times of pandemics. (Bracale & Vaccaro, 2020). However, the discourse related to nutrition in pandemic times that is found on-line (Laguna *et al.*, 2020; Silva, 2020) highlights the properties of some ingredients, the “ultra-processed”, the “real food” and the “healthy” issue and it can influence the consumer choices.

3 Methodology

An on-line questionnaire based on the *Google® forms platform* and disseminated via social networks (*Facebook®* and *Instagram®*) addressed to Ponta Grossa - PR residents was applied in order to carry out this proposed exploratory-descriptive study. It was disclosed on the researchers' networks, as well as in five purchasing groups (the ones with higher number of members) from Ponta Grossa on *Facebook®* social network. Furthermore, the “viral” strategy was used in addition to the research presentation as there was a request to share it with the network of contacts in the message body of those who received/viewed it. This strategy was considered the most adequate one by considering the social distancing that the period requires.

The instrument was developed specifically for the data collection of the study under consideration. A brief research was proposed in order to increase the adhesion and to facilitate the filling in via mobile telephone. A pre-test with two female professors was carried out, one from the marketing area and the other from the gastronomy area, and the initial model was adjusted from their doubts and suggestions. The final form (Appendix A) presented a header with a concise Free and Informed Consent Form (ICF) identifying the responsible researchers; the research objective; the data use authorization request for academic purposes in articles and reports; and the explanation that the identification of the respondents was not necessary thus preserving the anonymity. There was not any type of reward or sanction with the participation in the research on a voluntary basis.

Only residents from Ponta Grossa - PR were required to respond the research and only one resident in the domicile to fill in the form by taking into account all the purchases made for this household. This instruction was inserted both in the link access call and in the form itself. Thus, the domiciles with some type of internet access in Ponta Grossa (Paraná) are the research universe. The form was available to be filled in during a period of 10 days (16th to 26th/06/2020) and 131 valid responses were obtained.

The subjects, as previously mentioned, responded the questions by considering all the purchases of their domicile. Although the focus is not the individual, it is worth mentioning that 79% of the respondents were female; furthermore, the majority of the respondents had higher education and lived in the urban area and these facts can have implications in the decisions and in how food purchases are made.

Although the non-probabilistic sample by affordability due to the collection is considered, it is believed that the achieved return is sufficient for the discussion under consideration. The data were analyzed by using descriptive statistics and confronted with the existing academic studies and discussions on nutrition and COVID-19 up to now. Pearson correlation estimate among the variables concerning food purchase habits was also accomplished, in addition to analyzing the *clusters* by aiming to observe the existence of similarity among the variables concerning the purchase habits and the consumed foodⁱⁱ. It is noteworthy that the agglomerative algorithm of the variables for the analysis of *clusters* corresponded to Ward's method, which uses the variance analysis in order to assess the distance among the groups. In addition, the distance measure was the Euclidean one, which, according to Corrar *et al.* (2007), is a measure recommended for Ward's method.

4 Results and Discussions

Before discussing the obtained results, it is worth contextualizing the operation situation of the establishments that commercialize food in Ponta Grossa. Hence, measures are pointed out briefly as provided by municipal decrees so that it is possible to follow the changes in the services.

The first regulation that contemplated nutrition establishments suggested table distancing and alcohol gel supply in bars, restaurants and snack bars (Ponta Grossa City Hall, 2020a). The second one, the most striking one up to now, imposed the closing of beauty parlor services for 15 days and the opening only for delivery services (Ponta Grossa City Hall,

2020e). There were also restrictions concerning the number of persons and conditions for the access in markets (Ponta Grossa City Hall 2020f) that were established when the local commerce was still closed, but they last up to now.

Subsequently, there was the possibility for bars, restaurants and snack bars to go back to serving again in the lounges, but it was restricted to only one person per table (Ponta Grossa City Hall, 2020g); then, two persons and the *buffet* service release (Ponta Grossa City Hall, 2020b); and, afterwards, there was the release of a higher number of persons per table preferably those who were members of the same family coexistence (Ponta Grossa City Hall, 2020c). The opening of *shoppings* and commercial galleries was also allowed and the food court service capacity was reduced (Ponta Grossa City Hall, 2020h). All these norms also contemplated distancing aspects (in lines or at tables), mask use and hygiene of food and/or of places.

During the application of the research, the food establishments (both in food courts and in individual establishments) were already allowed to receive their customers, street markets and markets as well, but there was the “curfew” implementation on weekends requiring the closing of establishments until 11:00 p.m. and subsequent service restricted to deliveries (Ponta Grossa City Hall, 2020d, 2020i). After the conclusion of the research, this “curfew” came into force every weekday with an initial estimate of 15 days (Ponta Grossa City Hall, 2020a), but it was postponed several times.

By considering all the aspects regarding the rules and the norms for the food services in the municipality, the data analysis and the discussion take place. They were divided into three main blocks. The first one refers to the channel through which food is bought; the second one refers to the type of food which has been consumed; and the third one to issues that can influence the decision on what organization to purchase from.

Figure 01 presents changes in food purchase habits during the pandemic by considering both ready meal and market purchases. Regarding

the delivery orders, both fruit and vegetable (street market) and market producers, it is perceived that a great deal of persons did not accomplish these actions (street market: 70% and supermarket: 69% did not use the delivery service). It is not possible to confirm the reason, but it may be related to personal product choice, to deadlines and to delivery charges, among other issues such as service trust. Long waiting periods, as pointed out by Gray (2020) in the Canadian study, occurred at certain times in Ponta Grossa, mainly in the beginning of the pandemic, when it took the local supermarkets that offered the *delivery* service up to 5 days to deliver an order. In the period of the research application, the delivery average time both from markets and from street market producers (that started having a digital platform) was one business day on average.

The face-to-face purchases in markets were kept similar to the previous period or decreased in similar percentage: 40%. On the other hand, 19% increased the market purchase. The data concerning normality and increase may be related to the homemade meals. Going to markets with lower frequency does not mean a lower quantity consumption, because persons can be planning themselves more and acquiring a higher volume in order to avoid going there. Storing is a common reaction when there is future supply or product price uncertainty for basic needs (Kirk & Rifkin, 2020; Sheth, 2020). In addition, going to the trading places in pandemic times requires a “series of rituals of ablution and distancing” (Araújo, 2020, p.132) that may reflect on frequency.

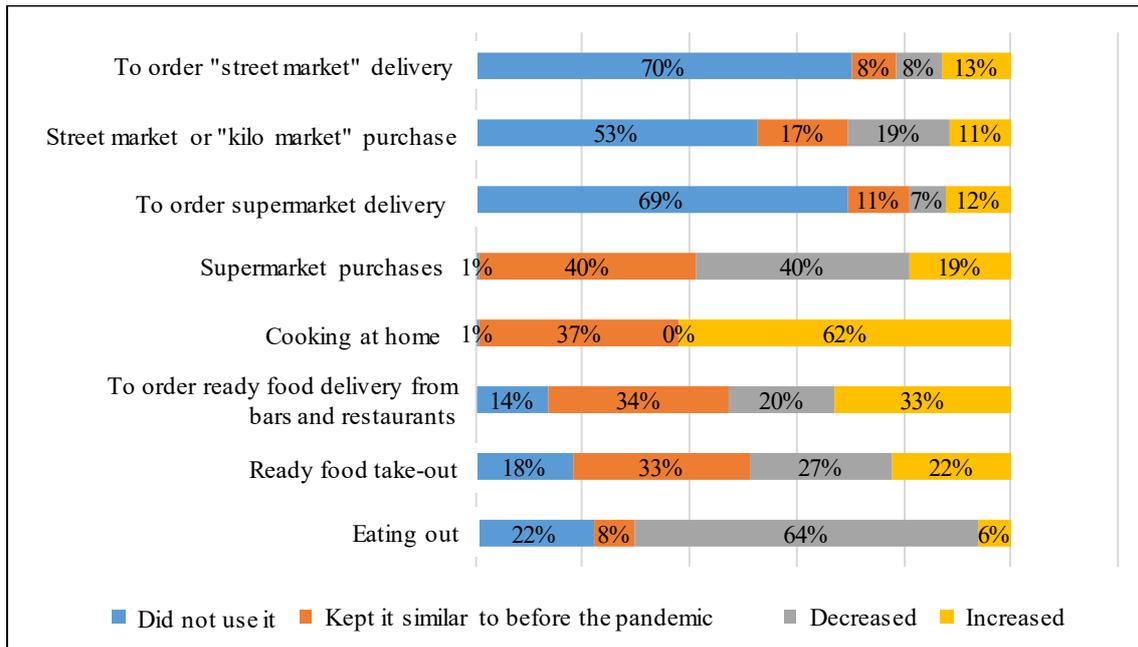


Figure 1. Changes in the food purchase habits during the pandemic
Source: This research data, 2020.

Cooking at home is the issue that presented the highest increase among the respondents' nutrition habits. This behavior can be configured as necessity, but also as a way to deal with the situation by exercising more control (second stage of consumer behavior phases by Kirk and Rifkin). According to Kirk and Rifkin (2020), the persons engaged in “do it yourself” projects in several areas in the COVID-19 pandemic: kitchen, bakery, confectionary, gardening, sewing, carpentry, painting, among others. Among the subjects of the current research, this behavior increased in 62% and it kept similar in 37%, with no mention of decrease. The result is congruent with the national research carried out by the consultancies (Galunion & Qualibest, 2020) in which it was pointed out that 93% of the respondents were cooking and preparing food at home in April (the beginning of the pandemic); among these, 45% cooked and kept the frequency and 44% increased the frequency. It is also similar to the American behavior, as in accordance with Hunter (2020), they are reporting greater confidence and more joy in cooking and they hope that they will cook more after the pandemic, and to the Spanish behavior that, according to Laguna *et al.*

(2020), started searching more recipes and have also cooked more in order to spend their free time and to keep their children entertained. This result can be considered as an expressive change and an impulse for the return to the homemade food practice.

The ready food orders had a 33% increase among the respondents and they were kept by 34% of the subjects. However, 20% decreased this type of purchase. The meal take-out in bars and in restaurants decreased by 27%, but 33% kept this habit and 22% increased it. The face-to-face consumption in bars and restaurants was the one that had the highest decrease with 64%. The *take-out* and *delivery* services became, thus, the main means of restaurant income, even if the lounges are able to receive the consumers in this municipality. By addressing purchases widely, Casco (2020) pointed out that the delivery service increase was one of the immediate effects of the pandemic and Sheth (2020) highlights that this habit will probably last.

The issue of the *delivery* use is one that had significant positive correlation with the act of eating out, as well as with the act of cooking at home (Table 1).

Table 1. Correlation among the selected variables concerning the food purchase habits during the pandemic

	Eating out	Take-out	Bar and restaurant deliveries	Cooking at home	Supermarket purchase	Supermarket delivery	Street market purchase	Street market delivery
Eating out	1	0.314**	0.198*	-0.015	0.200*	0.125	-0.078	-0.098
Take-out	0.314**	1	0.600**	0.003	0.011	0.290	0.285*	0.125
Bar and Restaurant Deliveries	0.198*	0.600**	1	0.212*	-0.117	0.443**	0.094	0.140
Cooking at home	-0.015	0.003	0.212*	1	0.295**	0.578**	0.349**	0.391*
Supermarket Purchase	0.200*	0.011	-0.117	0.295**	1	0.062	0.233	0.178
Supermarket delivery	0.125	0.290	0.443**	0.578**	0.062	1	0.151	0.418*
Street market purchases	-0.078	0.285*	0.094	0.349**	0.233	0.151	1	0.751**
Street market delivery	-0.098	0.125	0.140	0.391*	0.178	0.418*	0.751**	1

Source: This research data, 2020.

Note: *Significant correlation at a 5% significance level; ** Significant correlation at a 1% significance level.

By analyzing the correlation among the food purchase habits of the sample (Table 1), it is possible to verify a positive association and the frequency related to the eating out consumption and the ready food purchase, by taking-out in bars and restaurants or using their delivery services (*delivery* and *take-out*), also associating to the supermarket purchase (and vice versa). In the “cooking at home” case, it presented a positive correlation with the supermarket delivery, with the street market delivery, with the supermarket and street market purchases and also with the bar and restaurant delivery service use.

The daily life, the material culture, the mentalities, the body, the family, among other issues, influence the taste for certain food (Montanari, 2008). The pandemic, on the other hand, brought discourses and feelings capable of changing the daily consumption, either in search of health or in

search of emotional compensation or rewards (Santos, 2020; Silva, 2020). Thus, it was considered relevant to investigate whether there were changes regarding the products that one is purchasing in the place of study. The culinary product choice is presented in figure 2.

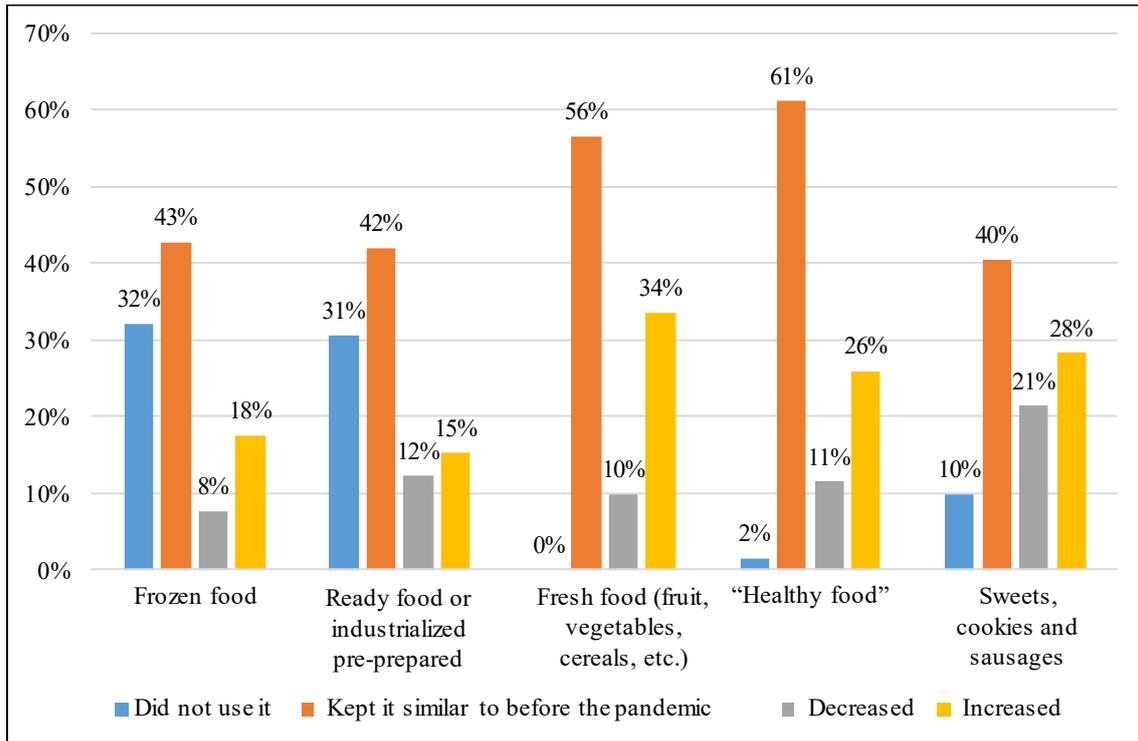


Figure 2. Types of consumed food
Source: This research data, 2020.

According to the current research, the fresh food purchase, that is, without any previous processing, such as fruit, vegetables and cereals, was the type of food with the highest increase (34%) and maintenance (56%), totaling an effective of 90% of the sample performing this action. This fact is congruent with the increase of the cooking at home act verified in the previous question. Furthermore, factors such as higher staying in, fear concerning food handling and the digital influencers and the media discourses may have influenced this issue as well (Silva, 2020).

The food consumption regarded as healthy had indexes of 61% keeping the habits prior to the pandemic and of 26% increasing the healthy

choices in the menu composition, which represents a joint percentage of 87% of the respondents preferring healthy choices in the food composition. The food market connected to health and to well-being was already growing significantly (Supporting Service for Small and Micro Companies, 2019) (SEBRAE, 2019) and the pandemic increased this trend. The discourse related to nutrition in times of any pandemic (Laguna *et al.*, 2020; Silva, 2020), the fear of disease and the interest in becoming stronger in terms of immunity or strength in the case of being affected by the disease further boost this issue (Ahuja, 2020; Di Renzo *et al.*, 2020; Laguna *et al.*, 2020).

In parallel to the healthy and to the fresh, sweets, cookies and sausages (ultraprocessed) present an interesting and antagonistic result, for there was a balanced percentage between decrease (21%) and increase (28%) of this kind of consumption. This result can denote social issues previously mentioned in the literature and they are subject to deepening in future studies such as: compensatory consumption (food as an “escape valve” or indulgence) (Silva, 2020; Vergara-Castañeda *et al.*, 2020), storage and item purchase with greater durability (Kirk & Rifkin, 2020; Laguna *et al.*, 2020) and at a lower price in some cases (Araújo, 2020).

In a more specific analysis regarding the similarity, by relating the food purchase habits and the types of consumed food, a dendrogram was constructed by variables (figure 3), by applying the *cluster* analysis. The formation of four groups can be verified in it: the first one is formed by cooking at home together with fresh food consumption, healthy food; the second one consists of supermarket purchases added to the sweet, cookie and sausage consumption; the third one presents similarity among the *take-out* and delivery users of bars and restaurants; the frozen and ready food consumption was included in a fourth group; finally, conglomerate five is represented by eating out together with the supermarket delivery, street market delivery and street market purchase. It demonstrates an explicit separation among the consumers who eat out and the ones who, in average, do it in the domicile, presenting a healthier nutrition for the latter.

At last, with such clustering, a profile of the food consumption habits together with the different types of food required by the respondents is outlined, highlighting the existing similarities among the sample individuals.

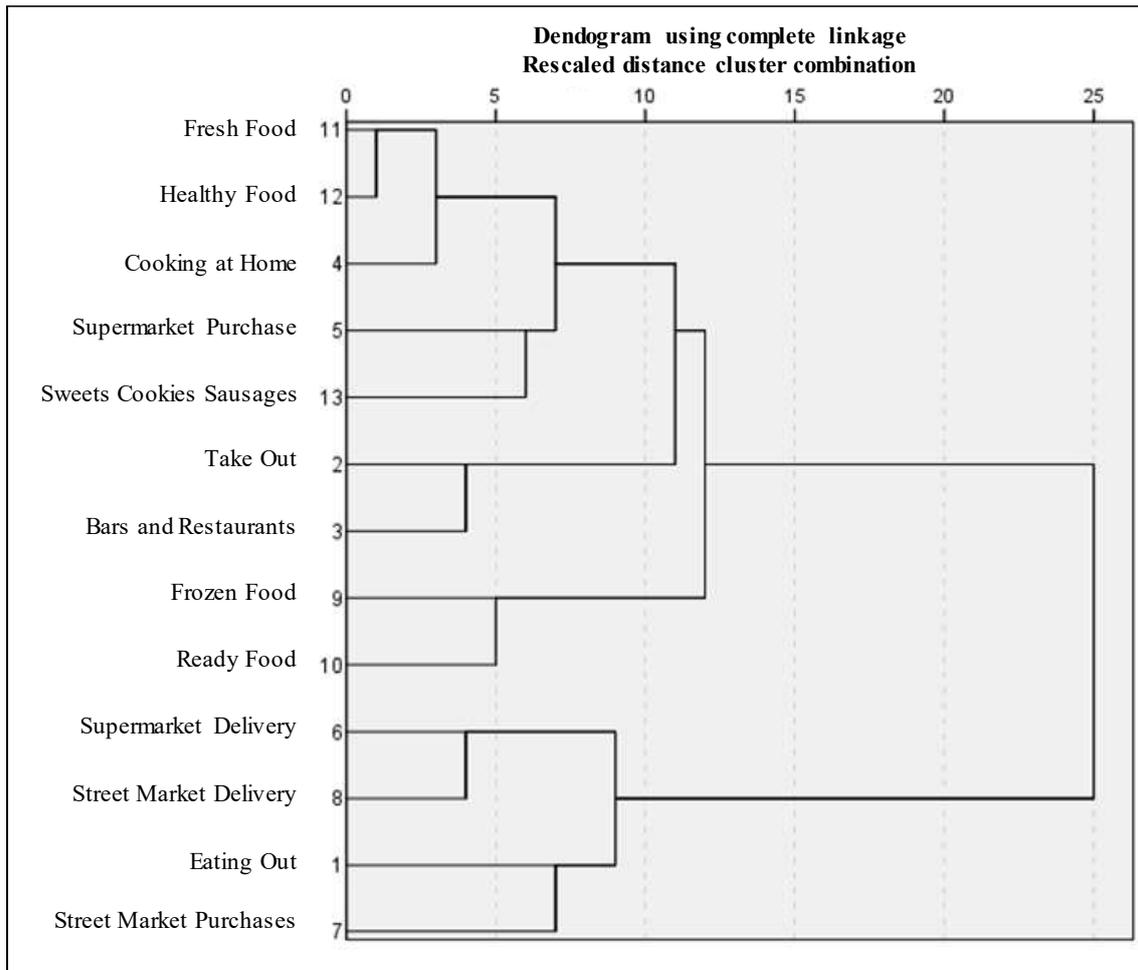


Figure 3. Dendrogram concerning the selected variables to represent the food purchase habits in the pandemic and the type of consumed food

As to the factors considered in the food establishment choices (figure 4), it was verified that the aspect with the greatest novelty level concerns the safety and hygiene issue. Almost half of the respondents (47%) started prioritizing establishments where they can verify what measures related to these aspects are being taken. In addition, 35% mentions that this issue was already considered before the pandemic, but it increased because of it. This

result is congruent with the one found by (Yang *et al.*, 2021) regarding the effects of quality and legitimacy of the retailers' service in the behavioral intention during the COVID-19 pandemic.

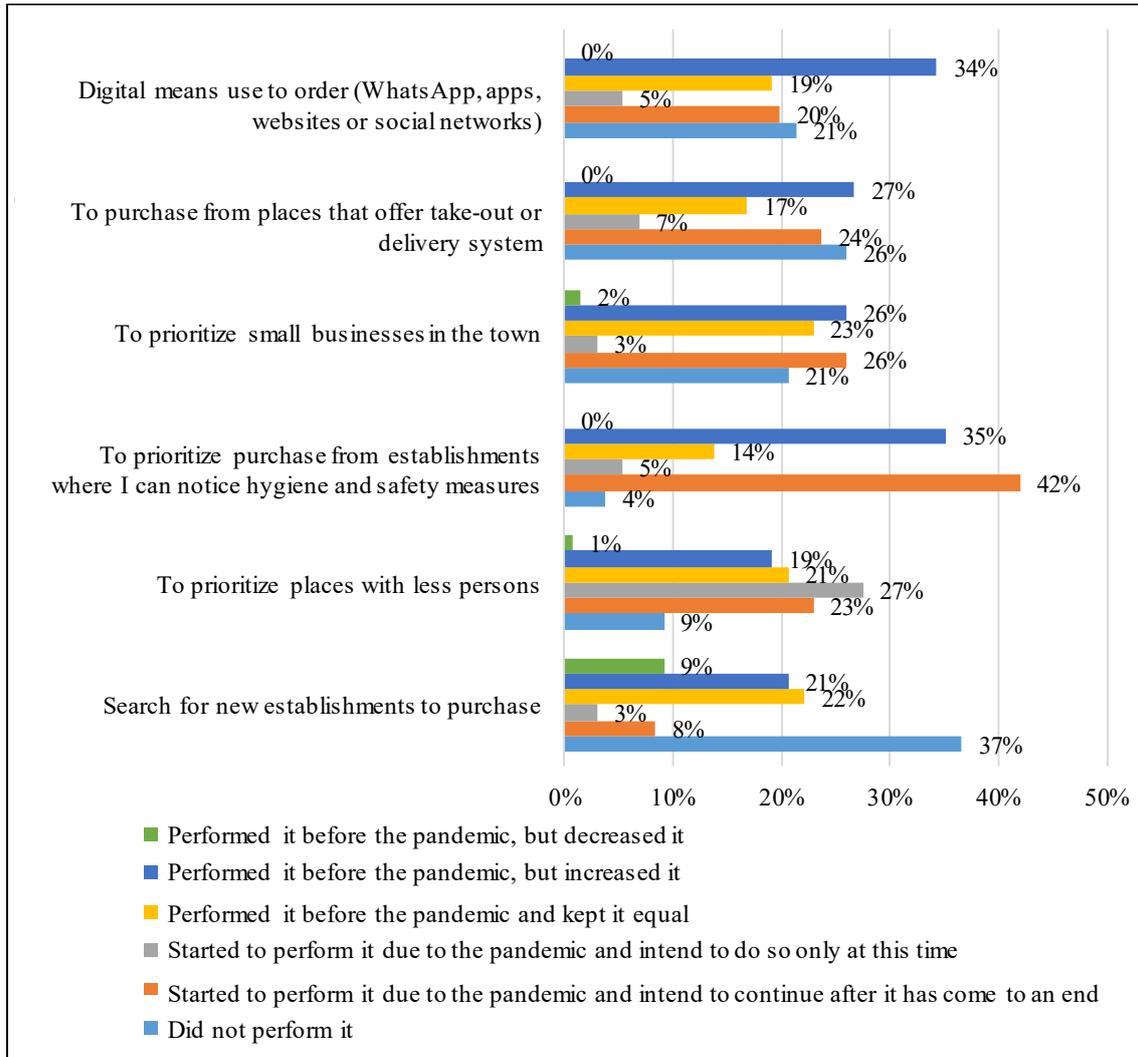


Figure 4. Factors considered for establishment choice for food purchase
Source: This research data, 2020.

In accordance with this demand, various booklets and notes are already being made available by entities such as ANVISA (National Health Surveillance Agency) (ANVISA, 2020), ABRASEL (Brazilian Association of Bars and Restaurants) (Abrasel, 2020b, 2020a; Abrasel *et al.*, 2020), SEBRAE (Supporting Service for Brazilian Micro and Small Companies) (dos Santos *et al.*, 2020; SEBRAE, 2020), FIEP (Federation of Industries of

Paraná State) (FIEP, 2020). Explanation, norms and recommendations both aiming at the food service safety during the current pandemic and at indicating this concern to be one that tends to last for a subsequent period of time are to be found in these documents. This fact was observed among the research respondents, as 42% shows that they started to be concerned about this issue during the pandemic and intend to continue with this attitude after it has come to an end.

These actions are also important, not only because they are a consumer concern, but also due to the fact that scientific data provide evidence that this virus may remain active during hours (depending on the surface material on which it lies), by causing concern about food safety and the questioning concerning contamination by nutrition (either by the food itself or by its continent). Hence, the care for the facility, equipment and utensil maintenance and sanitation is necessary by meeting the Good Practice standards in order to ensure food sanitary safety (Sousa *et al.*, 2020).

As to the searches for new establishments, it can be seen that 37% did not perform this activity, only 11% started performing it due to the pandemic, but 21% performed it before and increased the searches and 22% kept the contumacious searches. This fact can be related to the small enterprise prioritization and/or to the appearance of new enterprises (formal or informal) during the pandemic. The local small business prioritization was initiated by 42% of the respondents due to the pandemic and they intend to continue after it has come to an end, while 35% report that they already had this preference and increased it. The predilection for local businesses moves currencies within the region favoring its recovery and this issue exposure for the population as a booklet developed by the University (Raiher *et al.*, 2020); creation of initiatives such as the “*Made in PG*” (PGTH, 2020) seal; and campaigns with not entirely clear origin and its dissemination in the social networks as hashtags such as “#apoieopequeno” (“#supportthesmall#”), “#apoienegocioslocais” (“#supportlocalbusinesses#”),

among others, may have encouraged this new habit. The predilection for smaller and nearer home businesses can also be related to solidarity in times of need (Mehta *et al.*, 2020; Vergara-Castañeda *et al.*, 2020) and to safe and hygienic delivery guarantee (Mehta *et al.*, 2020).

As to the use of digital means for the purchase and the existence of delivery or take-out services, there was an increase in 34% and 27% of the respondents who already used them and 25% and 31% started to use these services respectively. *Delivery* and *take-out* as well as technology use already presented themselves as a trend for the food sector (FIESP & ITAL, 2010; Revista PEGN, 2018) (Federation of Industries of Paraná State & Food Technology Institute, 2010; Small Companies, Great Businesses Magazine, 2018), but there was an acceleration and strengthening of this trend as it is related to avoiding personal contacts, relevant factor (or mandatory) due to the pandemic and how the disease is transmitted (Casco, 2020).

“The existing habits of supermarket purchase and delivery are likely to be modified by the new guidelines and regulations, such as using masks and maintaining social distance” (Sheth, 2020, p.9). The eating out consumption in the food establishments may also be changed during a considerable period of time after the pandemic (Jain, 2020). This should occur not only due to the perceived ease, established bonds of trust with enterprises that were outstanding in product delivery and services perceived as superior, but also by the finding that the food service consuming public should be more alert to the hygiene and safety practices in the handling and services. On the other hand, the search for environments with lower quantity of persons presented an almost equated percentage regarding the intention of keeping this habit that started during the pandemic and that will continue after it has come to an end.

The social and contextual changes reflect in the behavioral changes for the purchase and food consumption accomplishments in catering commercial establishments. The presented results refer to the studied

reality, but they can generate discussions and ideas that apply not only to the local. Some considerations on the study carried out and future possibilities are provided regarding its continuity.

5 Conclusions

Food is not only a nutritional substance, but it also carries several meanings, emotional states and cultural identities. Whereas the inherent constraints to society shape the habitual consumption, food consumption is also impacted by the context. As such, the constraints related to affordability, technologies, as well as fear or expectations related to health can have a temporary or a permanent impact.

The current exploratory-descriptive study aimed to investigate how the COVID-19 pandemic changed the food purchase habits in a medium-sized town in Paraná. For this purpose, an on-line questionnaire was applied to the residents from Ponta Grossa (Paraná). Changes concerning ready food purchase habits were found, as well as the inputs for homemade food. The act of cooking at home was one of the most outstanding issues. Among the types of consumed food, the fresh and healthy food consumption in parallel with sweets, cookies and sausages was noticed. Finally, the increasing use of digital means for communication, food orders and the preference for small local enterprises are perceived as well.

Some changes shall last after the pandemic and they were pointed out by the research respondents, being also suggested by scholars. These changes have both managerial implications and potential for the existing businesses. Thus, it is worth highlighting that the recovery of some *hobbies* such as bakery, confectionary and cooking in general can decrease the interest in purchasing some products or their eating out consumption, but, on the other hand, it makes room, for example, for “limited experiences” with the supplying of pre-packaged kits for meals or for direct commercialization of inputs that were previously for the *food service* companies. The concern about safety should be translated into keeping

hygiene and distancing maintenance inside the lounges or even into an exponential increase of lean business models without any consumption in the local, focused on *delivery* and *take-out*. An issue that already presented itself as a trend in the sector, but that may not have been strong enough in a medium-sized town as Ponta Grossa yet and that appeared in a meaningful way in the correlations both with the act of cooking at home and with those who eat out. At last, a third outstanding managerial implication derives from the purchase increase by taking into account some factors such as solidarity, sustainability and values in the consumption in general and also in the food sector specifically.

In face of such trends, it is suggested that the food sector entrepreneurs either from the retail business or from the *food service* should: reinforce the safety measures released by the World Health Organisation and booklets from the sector entity and communicate them to their customers in a more reassuring way regarding safety; also communicate values and contribution to the surroundings, mainly in the case of small local enterprises; adapt their products to the delivery and take-out services regarding hygiene, quality and time; and increase the usability of apps, social networks and forms used for food orders. It is emphasized that the long pandemic period may change how people purchase, perhaps irreversibly. Hence, long-term strategies are required so that the organizations gain competitive advantage and build the consumer trust.

Ways of preparing food, food customs and differentiated products are found in the nutrition of several peoples. Nutrition habits are formed progressively concerning the culture of peoples and gradually become part of the community identity by respecting their particularities, and by building their patrimony. Just as culture is not stagnant, production methods, purchase distribution and food consumption start modifying in the course of time, and by considering the particularities of a pandemic period, adaptations occur both in the distribution and in the food consumption. They can be adaptations in the family scope, such as the meal market and

eating out, as well as technology that can bring nutrition consumers and suppliers together if it is used to improve the distribution and sales channels

Even though there are some efforts from the teaching institutions in Brazil, there are still few studies that address the COVID-19 impact on nutrition; hence, the present study corroborates the building of new referentials and discussions at the same time that it contributes to the market. Studies related to food consumption were found in European and North American countries in the pandemic period. Their recent release opens up new comparative possibilities from its replication in the country.

As in any study, the current one has research limitations. The application of the on-line instrument, as well as its leanest extent to favor the achievement of a higher return was necessary due to the social distancing required at the moment. Other research designs could capture other nuances and present further discussion on the issues that were addressed in the research by detailing them. Subsequently, it can also be confirmed whether the consumer intention to really keep some habits will materialize.

Although the focus has been on the domiciles and not on the individuals, the respondents' sample characteristics (predominantly female, with urban residence and with higher education) may have influenced the results and they encourage some discussions. Although the current study has not checked who is responsible for the decision and food purchase in the studied domiciles, the sample can denote the existence of issues related to the gender of these actors; future studies can investigate the consumer behavior, differentiating the subjects by gender, age group, social status, and the roles played by each group in the domiciles. Moreover, compared studies and also specific ones addressing specific segments and issues such as psychological, economic and social aspects of the food purchase choices are desirable.

In conclusion, the choice of a town with a flexible reality at an early stage in the pandemic period is a positive and negative factor at the same time, as it can be a parameter for new openings while its population can consider itself “safer” as it was less locked up, even though there has been extensive work of warnings and awareness related to COVID-19.

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Appendix A – Data Collection Form

Food purchases in Ponta Grossa (PR) in pandemic times

This form is part of the research carried out by Professors XXXX from University XXXXX related to food purchase changes caused by COVID-19 in Ponta Grossa (Paraná). The research is not funded by any company or any financial sponsorship.

It has academic purpose and its results will be used in reports and articles, but its results can be useful to the town projects. If you agree to participate, your participation is voluntary and your identity will be kept in confidence.

We would ask you to respond carefully and sincerely **ONLY IF YOU ARE A RESIDENT IN PONTA GROSSA - PR**. We would ask **ONLY ONE RESIDENT IN THE DOMICILE** to fill it in by considering all the purchase made for this household.

*Obligatory.

- 1) Has the pandemic made you change how you choose where you purchase food?
Check the box(es) that occurred to you

Obs. If you are filling it in on the mobile telephone, drag to one side to visualize all the option columns.

	Performed it before the pandemic and kept it equal	Performed it before the pandemic, but increased it	Performed it before the pandemic, but decreased it	Started performing it due to the pandemic and intend to do so only at this time	Started performing it due to the pandemic and intend to continue after it has come to an end	Did not perform it
To search for new establishments in order to purchase						
To prioritize places with less persons						
To prioritize to purchase from establishments where I can notice safety and hygiene measures						
To prioritize small businesses in town						

To purchase from locals that offer take-out or delivery system						
To use digital means to order (WhatsApp, apps, websites or social networks)						

2) Concerning the food purchase frequency, check the box that corresponds to your behavior during this pandemic.

Obs. If you are filling it in on the mobile telephone, drag to the side to visualize all the option columns.

	Decreased	Kept it similar to before the pandemic	Increased	Did not use it
Eating out				
Ready food take-out				
To order ready food delivery from bars and restaurants				
Cook at home				
Supermarket purchases				
To order delivery from supermarkets..				
Purchase in street markets or "kilo markets"				
To order delivery from "street markets"				
Frozen food consumption				
Ready food or pre-prepared industrialised consumption				
Fresh food consumption (fruit, vegetables, cereals, etc.)				
"Healthy food" consumption				
Sweet, cooky and sausage consumption				

3) If you have any comment regarding this research or your experience related to food purchase during the pandemic, feel free to share it with us.

*Not obligatory.

Respondent professional occupation: _____

Gender: () Male () Female () I would rather not declare

Neighborhood residency: _____

If you want to receive the current research results after its conclusion, leave your e-mail contact.

*Not obligatory

_____.

Notes:

ⁱ For the Brazilian Institute of Geography and Statistics (IBGE), the medium-sized town is the one that has a population between 100.000 and 500.000 inhabitants. The town in question recorded around 311 thousand inhabitants in the last census (2010) and it is estimated that it already has around 352 thousand inhabitants at the moment (IBGE, 2019).

ⁱⁱ As the variables are qualitative, each dimension was given a value, corresponding to: (0) for those consumers who kept the consumption or the purchase; (1) for those who increased them, and (-1) for those who decreased them.

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