

Relation Between Consumption and Fear of Covid-19: a Brazilian Post-Vaccine Perspective

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*Relación entre Consumo y Miedo al Covid-19 en la Perspectiva de Brasil Post-Vacunación
Relação entre o Consumo e o Medo da Covid-19 na Perspectiva do Brasil Pós-Vacinação*

Seventeen months after the decree of the COVID-19 pandemic, there is a different panorama about the influence of the new Coronavirus and its influence on social and consumption behavior. Thus, this study aims to verify changes in the feeling of fear of COVID-19 and in consumer relations, comparing the results of this research with those of others carried out at the beginning of the pandemic. For this research, a self-administered electronic questionnaire was answered by 246 online shoppers. Data were analyzed by descriptive statistics and a correlation matrix. The results showed an increase in purchases in virtual stores and local markets, but they have not proven to stock food and products for daily use, contrary to the literature. The survey also found behavioral differences between respondents up to 38 years old (among whom there was a strong perception of fear and intense nervousness with news related to COVID-19) and participants over this age (among whom there was annoyance with the pandemic, but a low sense of fear. Since we conducted this study 17 months after the declaration of the pandemic, our results reflect not only how the fear of COVID-19 changed consumer behavior but also how it varied amidst a more optimistic scenario resembling pre-pandemic scenarios. As suggestions for future studies, we highlight the analysis of the role of moderators such as gender and age.

Diecisiete meses después del decreto de la pandemia del COVID-19, se observa un panorama diferente sobre la influencia del nuevo coronavirus y su influencia en el comportamiento social y de consumo. Así, este estudio tiene como objetivo verificar cambios en el sentimiento de miedo al COVID-19 y en las relaciones de consumo, comparando los resultados de esta investigación con los de otras realizadas al inicio de la Pandemia. Para esta investigación se aplicó un cuestionario electrónico autoadministrado a 246 compradores en línea. La interpretación de los datos se realizó mediante estadística descriptiva y el uso de matriz de correlación. Los resultados mostraron un aumento de las compras en las tiendas virtuales y en los mercados locales, pero no se ha comprobado el aprovisionamiento de alimentos y productos de uso diario, contrario a la literatura. La encuesta también encontró diferencias de comportamiento entre los encuestados de hasta 38 años (entre los que había una fuerte percepción de miedo y nerviosismo intenso con las noticias relacionadas con el COVID-19) y los participantes mayores de esta edad (entre los que había molestia con la pandemia, pero una baja sensación de miedo. Como se realizó 17 meses después de declarada la pandemia, los resultados reflejan no solo el cambio de comportamiento producido por el miedo a la COVID-19, sino también la variación de estos hábitos en un escenario más optimista y más cercano al prepandemia. Como sugerencias para futuros estudios, destacamos el análisis del papel de los moderadores como el género y la edad.

Dezessete meses após a decretação da pandemia de COVID-19 têm-se um panorama diferente acerca da influência do novo coronavírus e sua influência nos comportamentos social e de consumo. Assim, este estudo tem o objetivo de verificar mudanças no sentimento de medo da COVID-19 e nas relações de consumo, comparando os resultados desta pesquisa com os de outras realizadas no início da Pandemia. Para essa pesquisa aplicou-se um questionário eletrônico autoadministrado à 246 consumidores virtuais. A interpretação dos dados foi realizada através de estatística descritiva e do uso da matriz de correlações. Os resultados apontaram o aumento de compras em lojas virtuais e em mercados locais, mas não comprovou a estocagem de alimentos e produtos de uso diário, contrariando a literatura. A pesquisa também encontrou diferenças comportamentais entre respondentes com até 38 anos (entre os quais observou-se uma

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forte percepção de medo e um nervosismo intenso com notícias relacionadas ao COVID-19) e participantes acima dessa idade (entre os quais observou-se incômodo com a pandemia, mas um baixo sentimento de medo. Por ter sido conduzida dezessete meses após a decretação da pandemia, os resultados refletem não apenas a mudança comportamental produzida pelo medo da COVID-19, mas também a variação desses hábitos em um panorama mais otimista e próximo do cenário pré-pandemia. Como sugestões para estudos futuros destaca-se a realização da análise do papel de moderadores como gênero e idade.

1. Introduction

The World Health Organization decreed in May 2020 the COVID-19 pandemic. Still lacking a clear deadline, it is the most far-reaching and comprehensive humanitarian collapse in recent times. Originating in Wuhan (China), the SARS-CoV-2 virus: COVID-19 spread globally within six months (arriving in Brazil in February 2020) and has so far (October 1, 2021) tallied 233.25 million confirmed cases and 4.77 million deaths worldwide; of which 21.4 million cases and 596,413 deaths took place in Brazil alone. (Our World in Data, 2021).

Analyzing changes to consumption patterns due to the pandemic, Kirk and Rifkin (2020) concluded that borderline situations such as these first shock society, which tries to understand its predicament, identify exits and control even an uncontrollable situation. With more information, it creates collective solutions toward social well-being, which, over time, become a habit and, thus, a perennial part of social relations.

Surveys show that 47% of consumers bought more over the internet during 2020 than before the pandemic, and 36% bought less in smaller stores. The global averages for the same categories were, respectively, 43% and 30% (IPSOS, 2020). Despite the pandemic acting as its catalyst, this pattern of consumption points to an upward trend since 74% of Brazilians preferred to make virtual purchases in 2019, whereas this number increased to 86% in 2020. The categories that grew the most were hobby & bookstores (up 110%) and drugstores (88.7%), two categories linked to COVID-19, social isolation, and their long-term effects (Mastercard Spending Pulse, 2021).

Besides increasing sales in conventional virtual stores, the 2020 pandemic incited new applications and purchase services developed to meet this new demand and forced various enterprises used only to physical commerce to adapt to the digital world (by opening stores in social networks and selling their items via phones and messaging applications). A Brazilian Association of Electronic Commerce (ABCOMM, 2020) survey supports these statements and points to the opening of more than 150,000 new online sales channels during 2020.

Though fundamental to assess the influence of SARS-CoV-2: COVID-19 on social and consumer behavior, such studies analyzed the initial panorama of the pandemic, suffering from little information, few treatments, the ongoing draft and application of coping protocols, and the lack of accurate and positive prognoses for the end of the pandemic.

KEYWORDS

**Consumption,
Fear, COVID-19,
Pandemic, Brazil.**

PALABRAS CLAVE

**Consumo, Miedo,
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Based on the shown scenario, this article aims to analyze and discuss the existence of a relationship between the fear of the new Coronavirus and the changes in the purchasing behavior of Brazilians throughout the SARS-CoV-2: COVID-19 pandemic in Brazil. Thus, this study compares studies conducted at the beginning of the pandemic to current ones to assess changes in the fear of COVID-19 and consumer relations.

Since this article was written 17 months after the official declaration of the pandemic, while part of the literature addresses the first months, this investigation also intends to understand the variation of this behavior in a more optimistic scenario with populations massively receiving other vaccines, governments offered guidelines for the flexibilization of social distancing and isolation, reduction of severe cases of the disease and in which the consumers were already better adapted to this new reality.

In this sense, it is expected to offer academic contributions, by illuminating a field still lacking in investigations and practicals by helping to identify trends and purchase patterns that may continue in a post-COVID-19 scenario.

2. Theoretical Reference

After the initial selection, a preliminary analysis of the texts was carried out, eliminating those belonging to subareas that were not interesting to this study, such as the medical area, for example, keeping only those published in the subareas Social Sciences, Psychology, Business, Management, and Accounting and Economics, Econometrics and Finance, resulting in a total of 92 articles.

Finally, texts that did not essentially address the topic of this research (relation between fear of COVID-19 and changes in purchasing behavior) were removed from this total, resulting in a final quantitative of 77 articles, used as a basis for this research.

2.1. Consumption and fear of the COVID-19

At the beginning of the pandemic, there was poor information (almost none conclusive) about COVID-19, and this scenario made people start to make variations in their consumption patterns for fear of contracting this disease, which aroused the interest of different researchers (Silva; Gomes Neto; Grangeiro & Nadae, 2021). This phenomenon was observed in different countries: Viswanathan, Aly, Duncan, Mandhan (2020), Côte d'Ivoire, Honduras, Uganda, Tanzania, India, and the United States; Hakim, Zanetta, and Cunha (2021), Brazil; Tran (2021), Vietnam.

To understand how this fear affects human behavior, Ahorsu et al. (2020) developed the Fear of COVID-19 Scale (FCV-19S). They interviewed 717 Iranians and analyzed the collected responses by different psychometric tests to assess their reliability and validity. The result created a scale with seven reliable and valid items to determine the fear of COVID-19 among the general population.

Martínez-Lorca et al. (2020) proposed translating and validating the FCV-19S scale with Spanish university students. The study had the participation of 606 Spanish university students and found the FCV-19S dependable and valid to assess the fear of COVID-19 among Spanish university students.

Similarly, Lins & Aquino (2020) proposed a scale to evaluate the relationship between purchases and the fear of contracting COVID-19, dubbed the Panic Buying Scale with 393 Brazilians (251 women and 142 men), all applied remotely. Their results show their scale to be psychometrically acceptable.

Negative feelings toward COVID-19 affected the mental health of several people by bringing up feelings of fear and anxiety (Lina; Janssen & Geigl, 2022) which led many consumers to gradually change their purchasing behavior, moving them away from physical stores and closer to virtual sale platforms and delivery services (He et al., 2021). Prognoses indicate that such behavior will tend to remain after the pandemic.

Tran (2021) proposed a conceptual model to analyze the relation between fear and consumption changes, adding "pandemic fear" as a limit to uses and gratifications theory. Based on a sample of 617 online consumers analyzed by Partial least squares regression, the study showed pandemic fear had a positive moderating effect on the relation between perceived effectiveness of e-commerce platforms (PEEP), economic benefits, and sustainable consumption; and age, gender, educational stage, and income. Results suggest that fear during a pandemic increases the positive effect of PEEP on economic benefits, strongly affecting sustainable consumption and indicating that age was the only significant control variable.

The relation between the fear of contamination and consumer behavior during the pandemic also inspired a study by Nguyen et al. (2021). The study concluded that 80% of participants claimed having bought more on digital platforms than before the pandemic and that variables such as gender and behavior, such as deciding to social distance, increased overall digital sales. Moreover, fear of contamination drove the sales of pharmaceuticals and food.

The same pattern of behavior could be seen in the purchase of different categories of products, as pointed out by a study carried out by PWC (2020) which compared purchasing behaviors before and after the pandemic in 27 countries (including Brazil) and pointed out that COVID-19 led 63% of respondents to increase their volume of purchases through phone and digital platforms and that 86% of these interviewed, were likely to maintain such behavior even after the end of social distancing. Despite not giving specific emphasis to fear, this survey is interesting because it was conducted in different territories taking into account the influence of the new Coronavirus on sales.

Other studies investigated fear as the moderator of consumer behavior during the pandemic from different perspectives to assess how it influenced consumption patterns (Raza & Khan, 2021; Tran, 2021; Wang et al., 2021; Ahorsu et al., 2020; Goolsbee & Syverson, 2021; Laato et al., 2020; Lins & Aquino, 2020; Sheth, 2020 & Verma & Gustafsson, 2020)

Studies indicate that the fear of the new Coronavirus caused even people reluctant to buy online to enjoy the services of virtual stores - once faced with a choice between problems with digital platforms or getting sick, they realized e-commerce was less risky (Raza & Khan, 2021).

However, despite an increase in virtual purchases, consumption in physical stores remained a reality for varied reasons. Studies investigating these purchases showed a predilection for small establishments due to their proximity to consumers' residences, smaller clientele, and faster traffic (Goolsbee & Syverson, 2021). In Brazil, this predilection reached 75%. (Kantar Thermometer, 2020).

Fear of contracting Covid-19 also increased self-services. (Wang et al., 2021). Electronic totems, drive-throughs, and other purchasing processes requiring no human interaction give consumers the feeling of a traditional shopping experience with little or no human contact. (Diebner et al., 2020 & Kemp; Bui & Porter, 2021).

In the same vein, the substantial increase in demand for the delivery and take-out format also boosted the growth of delivery companies (which were already used by some consumers in the pre-pandemic scenario and began to receive attention from other customers during the COVID-19 health crisis), widely used by companies that did not have their distribution fleet. (Güney & Sangün, 2021 & Palau-Saumell, 2021). This habit, of accessing these apps to purchase the most different categories of products, despite having been instituted by necessity throughout the pandemic, must remain for convenience even with the flexibilization of the rules to combat the SARS-CoV-2 Coronavirus.

Moreover, Lins & Aquino (2020) showed that Brazilian consumers have sought to store food and daily life products, often without any specific need, to avoid contamination by COVID-19.

In the same direction, Lehberger et al. (2021) analyzed stockpiling during the pandemic, showing the reasons that triggered it (environmental uncertainty; reduced purchases; fear of supply shortage; group influences; absence of restaurants) or failed to (lack of need or the perception of need; absence of fear of scarcity; pre-pandemic habit of accumulation; altruism).

Though the pandemic is currently better controlled, we believe consumers are still afraid of the new Coronavirus, maintaining the interdependence between this fear and changes to Brazilian consumption patterns during the COVID-19 pandemic. To validate this statement, we elaborated three hypotheses (Table 1).

Table 1. - Relation between hypotheses and assumptions

<i>Hypotheses</i>	<i>Assumptions</i>
H1: Brazilians store food and daily life products to avoid going to markets and exposing themselves to COVID-19	Lins & Aquino (2020)
H2: Brazilians shop in virtual stores more often than in the pre-pandemic period	Tran (2021)
H3: Brazilians visit smaller stores more often than in the pre-pandemic period to avoid agglomerations	Goolsbee & Syverson, (2021)

Source: Prepared by the authors.

3. Methodological Aspects

This is an exploratory, descriptive study that aims to investigate changes to consumer patterns due to COVID-19 by a simple cross-sectional method based on a single collection of information from a given sample.

A non-probabilistic method was adopted in which participants were selected by convenience criteria. Our research universe was composed of people over 18 years of age with frequent online and offline consumption habits. A survey was proposed with 12 sentences extracted from the literature; nine evaluate the fear of COVID-19 among Brazilians, and three, the relation between it and consumer behavior during the pandemic.

The answers given to the sentences were measured by the seven-point Likert scale with anchors of 1. Strongly Disagree and 7. Strongly Agree. How questions and authors are correlated in the construction of the instrument used for data collection is shown in **Table 2**.

Table 2. - Relation between questions and authors

<i>Questions on the fear of COVID-19</i>	<i>Authors</i>
I am afraid of COVID-19	Ahorsu et al. (2020) & Martínez-Lorca et al. (2020)
I feel discomfort thinking about COVID-19	Ahorsu et al. (2020) & Martínez-Lorca et al. (2020)
My hands start sweating when thinking about COVID-19	Ahorsu et al. (2020) & Martínez-Lorca et al. (2020)
I am afraid to die of COVID-19	Ahorsu et al. (2020) & Martínez-Lorca et al. (2020)
I get nervous and anxious when hearing the news about COVID-19	Ahorsu et al. (2020) & Martínez-Lorca et al. (2020)
I have trouble sleeping because I am worried about contracting COVID-19	Ahorsu et al. (2020) & Martínez-Lorca et al. (2020)
My heart palpitates and accelerates when I think of contracting COVID-19	Ahorsu et al. (2020) & Martínez-Lorca et al. (2020)
I have adhered to social isolation for fear of contracting COVID-19	Laato et al. (2020)
I have avoided agglomerations due to COVID-19	Lins & Aquino (2020)
<i>Questions on the relationship between consumption and fear</i>	<i>Authors</i>
I have performed internet purchases more often for fear of contracting COVID-19	Tran (2020)
I have stocked food at home, so I do not have to leave it for fear of contracting COVID-19	Lins & Aquino (2020)
I have performed my purchases in smaller stores for fear of contracting COVID-19	Goolsbee & Syverson (2021)

Source: Prepared by the authors.

The questions were originally written in English and translated into Portuguese by the authors. Before the application of the questionnaire, the pre-test stage of the questionnaire was carried out with 25 people to assess the quality of the translations and the general construction.

The data were collected by a self-administered electronic questionnaire. Choosing this method is justified by how easily it accesses interviewees, low costs, quick collection of information, and minimizes typographical errors since answers are sent directly to the database.

The questionnaire was made available by Google Forms sent to respondents via email and WhatsApp message alongside an invitation letter. The survey was conducted between August 10 and 31, 2021, and had 246 respondents. Data were analyzed by descriptive statistics and a correlation matrix using, respectively, Microsoft Excell® and IBM® SPSS Statistics software.

As a sample selection methodology, a non-probabilistic method was adopted with participants being selected through the snowball method. This methodology was chosen since the objective of this work is to investigate the relationship between consumption and fear of COVID-19 in general and not among a specific group.

3.1. Sample Characterization

The survey was carried out with people who indicated having done purchases in virtual stores in the 30 days before the survey and were over 18 years old. The research sample is made up of 246 respondents, 131 (53.25%) female and 115 (46.75%) male, aged between 18 and 89 years. The identification of the respondents profile was based on the answers to two questions: "How old are you?" and "What is your gender?"

The sample characterization is similar to the researched universe (Brazilian population) for both variables, gender and age, as seen in **table 3**. Such data allow the results found in the sample to be extrapolated to the research universe.

Table 3. - Sample Characterization

Sample Characterization (years)	Universe						Sample					
	Male		Female		Total		Male		Female		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
15 - 19	1,767,792	2.80	1,599,380	2.36	3,367,172	2.58	4	3.48	3	2.29	7	2.85
20 - 24	8,630,229	13.68	8,614,963	12.73	17,245,192	13.19	16	13.91	17	12.98	33	13.41
25 - 29	8,460,995	13.41	8,643,419	12.78	17,104,414	13.08	12	10.43	16	12.21	28	11.38
30 - 34	7,717,658	12.23	8,026,854	11.86	15,744,512	12.04	17	14.78	12	9.16	29	11.79
35 - 39	6,766,664	10.72	7,121,915	10.53	13,888,579	10.62	13	11.30	16	12.21	29	11.79
40 - 44	6,320,568	10.02	6,688,796	9.89	13,009,364	9.95	10	8.70	17	12.98	27	10.98
45 - 49	5,692,014	9.02	6,141,338	9.08	11,833,352	9.05	11	9.57	13	9.92	24	9.76
50 - 54	4,834,995	7.66	5,305,407	7.84	10,140,402	7.76	8	6.96	15	11.45	23	9.35
55 a 59	3,902,344	6.18	4,373,877	6.46	8,276,221	6.33	8	6.96	5	3.82	13	5.28
60 - 64	3,041,035	4.82	3,468,085	5.13	6,509,120	4.98	3	2.61	7	5.34	10	4.07
65 - 69	2,224,065	3.52	2,616,745	3.87	4,840,810	3.70	6	5.22	5	3.82	11	4.47
70 - 74	1,667,372	2.64	2,074,264	3.07	3,741,636	2.86	3	2.61	3	2.29	6	2.44

75 - 79	1,090,517	1.73	1,472,930	2.18	2,563,447	1.96	2	1.74	1	0.76	3	1,22
80 - 89	979,382	1.55	1,507,073	2.23	2,486,455	1.90	2	1.74	1	0.76	3	1,22
<i>Total</i>	<i>63,095,630</i>	<i>100</i>	<i>67,655,046</i>	<i>100</i>	<i>130,750,676</i>	<i>100</i>	<i>115</i>	<i>100</i>	<i>131</i>	<i>100</i>	<i>246</i>	<i>100</i>

Source: Prepared by the authors.

4. Results

As the scale has seven points, the maximum possible value for the set of behavior toward COVID-19 is 63 points – top behavior level – and its minimum nine points – minimum behavior level (since seven questions were asked to assess this point). In turn, the maximum possible value for the set of behavior toward consumption during the pandemic is 21 points – maximum attitude level – and its minimum, three points – minimum behavior level (since three questions were asked to assess this point).

The results indicate respondents' great fear and discomfort toward COVID-19 caused significant changes in their consumer habits during the current pandemic. This conclusion is similar to other studies that also pointed out that the fear of a COVID-19 infection accelerated the search for purchases in a digital environment and with as little human interaction as possible, such as withdrawals in the drive-thru format, self-checkout, payment cashless or door-to-door delivery and the search for markets with low traffic and flexible hours (Kirk & Rifkin, 2020).

Though the pandemic affected respondents psychologically, it failed to do so physically, since 189 of them (76.23%) reported not feeling sweat on their hands when thinking about COVID-19, 183 (74.39%) had no trouble sleeping after considering the possibility of contracting COVID-19, and 146 (59.35%), no tachycardia when thinking about the same option.

At the end of the analyses, in total, 120 (48.78%) respondents claimed to buy more online for fear of contracting the virus against 107 (43.50%) who failed to make it a habit, and 102 (41.46%) reported having made purchases in smaller stores for fear of the new Coronavirus against 107 (43.50%) who failed to.

To analyze the relationship between fear and consumption during the COVID-19 pandemic more thoroughly, we elaborated a correlation matrix (table 4).

Table 4. - Correlation matrix: the relationship between fear and consumption in the COVID-19 pandemic

	1	2	3	4	5	6	7	8	9	10	11	12
1 - Fear of COVID-19	1											
2 - Discomfort when thinking about COVID-19	.758***	1										
3 - Sweaty hands when thinking about COVID-19	.391***	.463***	1									
4 - Fear of dying from COVID-19	.748***	.618***	.436***	1								
5 - Nervousness and Anxiety upon hearing about COVID-19	.566***	.666***	.457***	.607***	1							
6 - Problems sleeping for fear of contracting COVID-19	.336***	.437***	.588***	.379***	.486***	1						
7 - Palpitation when thinking about contracting COVID-19	.492***	.447***	.640***	.549***	.527***	.653***	1					
8 - Social isolation for fear of contracting COVID-19	.492***	.395***	.196***	.431***	.378***	.286***	.282***	1				
9 - Avoidance of agglomerations due to COVID-19	.364***	.249***	.132**	.257***	.207***	.171***	.192***	.592***	1			
10 - Food storage for fear of contracting COVID-19	.223***	.195***	.359***	.173***	.227***	.415***	.365***	.358***	.226***	1		
11 - Online shopping for fear of contracting COVID-19	.425***	.334***	.229***	.369***	.381***	.314***	.331***	.589***	.406***	.405***	1	
12 - Shopping in smaller stores for fear of contracting COVID-19	.387***	.328***	.312***	.325***	.324***	.317***	.438***	.437***	.358***	.392***	.401***	1

(**) for $P < 0.05$; (***) for $P < 0.01$.
Source: Prepared by the authors

Despite the significance of our results, we observed a large number of weak ($0.2 \leq \rho \leq 0.39$) or moderate ($0.4 \leq \rho \leq 0.69$) correlations, especially in questions on attitudes toward consumption during the pandemic.

Despite the many weak positive correlations, two of them corroborate the studies seen so far: the relationship between social isolation due to fear of the pandemic and avoidance of agglomerations ($\rho = 0.592$) and between social isolation for fear of the pandemic and increased online shopping ($\rho = 0.589$), leading us to believe that the fear of the pandemic mediated behavioral changes, especially toward digital purchases and crowded environments.

We conducted some additional data analysis following some procedures (using the statistical package SPSS): in the first moment, it was interpreted the kurtosis of every variable, and after this, the question related to avoiding crowding was eliminated. Using cluster analysis, it was seen that the variable age as a suitable parameter for dataset classification (gender does not seem like an appropriate parameter). Analyzing the data, 38 years of age is the median, and two groups were created.

We obtained the two equations for the groups and the results are shown in **table 5**.

Table 5. - Discriminant analysis (function coefficients)

	Groups	
	1 (until 38 years)	2 (more than 38 years)
1 - Fear of COVID-19	1,278	1,179
2 - Discomfort when thinking about COVID-19	0,366	0,402
3 - Sweaty hands when thinking about COVID-19	0,240	0,171
4 - Fear of dying from COVID-19	-0,519	-0,339
5 - Nervousness and Anxiety upon hearing about COVID-19	0,301	0,002
6 - Problems sleeping for fear of contracting COVID-19	-0,092	0,001
7 - Palpitation when thinking about contracting COVID-19	-0,198	-0,036
8 - Social isolation for fear of contracting COVID-19	1,120	1,168
9 - Food storage for fear of contracting COVID-19	0,090	0,071
10 - Online shopping for fear of contracting COVID-19	-0,242	-0,240
11 - Shopping in smaller stores for fear of contracting COVID-19	0,108	0,062
Constant	-7,306	-7,082

Source: Prepared by the authors

We can notice some differences between the two groups: in group one (youngest respondents), there is a strong perception of fear and an intense nervousness with news related to COVID. On the other hand, the second group (more than 38 years-old) became more bothered by the situation but showed less fear during the pandemic. Both segments changed consumption habits and became concerned with this new situation. It was seen that 62% of the cases were classified correctly, and some indicators were: the eigenvalue was 0,64 and significance 0,190.

Therefore, data showed respondents changed their social habits, highlighted by their preference for attending places with fewer people and social distancing: 71.54 adhered to social isolation, and 84.55% avoided agglomerations, both for fear of contracting the new Coronavirus. When asked about stockpiling food to reduce purchase frequency, 82.52% claimed not making it a habit.

5. Discussion

The collected data suggest that the pandemic and the news surrounding it have produced negative feelings and psychological discomfort in respondents since 136 (55.28%) indicated being nervous or anxious when hearing news about COVID-19, and of this total 106 (77.94% of the total) are afraid of contracting COVID-19, 96 (70.58%) feel uncomfortable when thinking about COVID-19 and 145 (58.94%) are afraid of dying from COVID-19.

These values agreed with the results of other studies, such as Mertens et al. (2020) and Hart et al. (2022). They indicated that the frequency of media use in the search for information about COVID-19 significantly affected daily tasks and increased negative emotions of fear, worry, and anxiety and that digital platforms exerted a more significant influence on the construction of this feeling compared to other media.

Concerning the psychological effect of the pandemic, the results were compatible with those observed by other studies, such as those by Ahorsu et al. (2020) and Martínez-Lorca et al. (2020) who also showed a favorable statistical relationship in the questions presented, Szymkowiak et al. (2021), who identified changes in social and shopping behaviors due to fear of infection by this disease, such as social isolation, avoidance of visiting high-traffic stores and increased purchases in virtual stores. The studies of Sheth (2020) & Zwanka & Buff (2021) who also identified similar behaviors, such as staying at home, shopping online, avoiding eating in restaurants, visiting cinemas, traveling and public transport, and preferring open and well-ventilated places and the assistance of robotics assistants instead of humans.

As for the stockpiling, the non-identification of this behavior corresponds to an original contribution of this research because it contradicts the analyzed literature, which observed an increase in this practice throughout the pandemic. Kim (2020), for example, proved the relationship between the fear of COVID-19 and the increase in storage behavior. In the same sense, other studies indicated that the fear of the new Coronavirus resulted in different changes in consumption patterns, such as storage of food and other essential products, in addition to the expansion of hygiene and cleaning products and personal protection, increase in online shopping and growth of home delivery services (Tran, 2021), a similar effect to that observed by Lins & Aquino (2020) in their research with Brazilian consumers.

We may have found these divergent results for several reasons; the first concerns the national political-economic environment. The increasing rate of unemployment and reduced purchasing power hinder purchases in large volumes and in smaller local stores, which tend to have higher prices than large retailers, although other studies have observed an increase in storage behavior even among low-income populations (Viswanathan; Aly; Duncan; Mandhan, 2020).

The second reason for the characterization of our sample is that the population is already used to online shopping. Moreover, the pandemic affected this population's leisure and work less severely. An ANRPN survey (National Association of Registrars of Natural Persons) shows that only 6.38% of the total victims of the pandemic up to March 2021 were Brazilians below 38 years old (ANRPN, 2021).

Finally, the third reason for our results is the temporal space separating this study from previous ones. The studies that inspired our hypotheses took place at the beginning of the pandemic, in which people were beginning to understand a scenario still lacking any glimpse of solution or improvement, whereas

our study took place 17 months after the beginning of the pandemic; a scenario in which a large part of the population is fully immunized, living a life close to the pre-pandemic period, directly interfering with respondents' answers.

This justification finds support in the work of Kim (2020), who states that this behavior is more common in situations of uncertainty and insufficient knowledge.

Finally, concerning online shopping behavior, these results are in agreement with the academic literature that indicated an increase in online sales in response to consumer demands and the need to mitigate the negative effects of government-imposed lockdown restrictions and the reduction in high-traffic stores at peak times. (Sheth, 2020 & Zwanka & Buff, 2021).

Almost all the results corroborate the findings in the literature showing that, in general, the fear of COVID-19 led people to isolate themselves (Laato et al., 2020 & Szymkowiak et al., 2021), avoid agglomerations (Sheth, 2020 & Zwanka & Buff, 2021.) and bought more from virtual stores (Raza & Khan, 2021; Tran, 2021; Wang et al., 2021; Ahorsu et al., 2020; Goolsbee & Syverson, 2021; He et al. 2020, Laato et al., 2020; Lins & Aquino, 2020; Martínez-Lorca et al., 2020) and local shops (Goolsbee & Syverson, (2021) than before the pandemic.

Our study only disagrees with the literature on food stockpiling (Kim, 2020; Tran, 2021 & Viswanathan; Aly; Duncan & Mandhan, 2020) since respondents failed to make that a habit. Such evidence points to the fact that consumers are afraid of contamination from the SARS-CoV-2 virus: COVID-19, changing their consumption habits, though less markedly than in other studies.

Thus, based on the collected and analyzed data, we could confirm two of our three hypotheses [table 6](#).

Table 6. - Status of the proposed hypotheses

<i>Hypotheses</i>	<i>Status</i>
H1: Brazilians store food and daily life products to avoid going to markets and exposing themselves to COVID-19	Rejected
H2: Brazilians shop in virtual stores more often than in the pre-pandemic period	Confirmed
H3: Brazilians visit smaller stores more often than in the pre-pandemic period to avoid agglomerations	Confirmed

Source: Prepared by the authors

6. Final Considerations

This study aimed to analyze the changes in fear of COVID-19 and consumer behavior in studies conducted at the beginning of the pandemic and current ones. We conclude that this variation occurred since, unlike previous studies, our interviewees claimed not to stockpile food, a rejection of hypothesis 1.

Our data also shows that the relation between the fear of infection by the SARS-CoV-2 virus: COVID-19 and changes in purchasing habits of Brazilian consumers is still real, mainly due to the higher prevalence of e-commerce and visits to local stores during the pandemic, though less markedly than studies conducted at the beginning of the pandemic show.

It is impossible to claim which recent social and consumer changes will remain after the pandemic. Still, we can suppose that the adaptation of markets and the habituation of consumers to this new form of sale and delivery will perpetuate what we found in this study.

The limitation of this study is the division of questions by product categories to find the most expressive changes were most expressive. Moreover, a study from the sales perspective could evaluate how the pandemic affected businesses, especially among those used to making sales exclusively in physical stores. As suggestions for future studies, we highlight the analysis of the role of moderators such as gender and age.

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