Assessing the Change in the Consumption Pattern of Indian Consumers Due to Pandemic Lock-Down: A Study from FMCG Sector

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ABSTRACT: *Pandemics have been affecting consumers and economics at both micro- and macro-levels for centuries. Aggregate consumption is likely to take a hit along with other expected implications, and this paper is one of the first attempts to provide an overview of changes in the consumption of fast-moving-consumer-goods (FMCG) among Indian consumers. A basic framework was built around the metadata, which was categorised into four parts—consumers in the times of COVID-19, macroeconomic impacts of COVID-19, the impact of past disasters and pandemics on consumers and economies, and India in the trying times of COVID-19. The work reported in this paper also analyses changes in the medium of purchase and the time of most purchases made while stating possible explanations, which can contribute to those changes as the consumer attitude shapes the consumer behaviour. Results from this study are discussed with respect to the future implications for consumers and the FMCG sector.*
KEYWORDS: *Consumer behaviour, Consumption,COVID-19, FMCG, Pandemic*

I. INTRODUCTION

COVID-19 is the newest addition to the list of the pandemics that have affected consumers and economics at both micro- and macro-levels for centuries. The virus outbreak happened last year, allegedly from a lab in Wuhan city in the Hubei province of the People's Republic of China (Borger, 2020). At the time this paper was being written, i.e., 15th May 2020 onwards, COVID-19 had spread to 213 countries and territories around the world with a total count of reported cases being 44,44,670 and a total reported death toll of 3,02,493 (Coronavirus (COVID-19), 2020; Countries where COVID-19 has spread, 2020). Considering the high severity and high infection rate compared to other epidemics, the World Health Organization declared COVID-19, a pandemic on 11th March 2020. Since then, the number of reported cases has increased by 37 folds in approximately 2 months.

For this new virus, the human mortality rate is ten times higher than that for the seasonal flu,and there is no vaccine available yet (Abiad et al., 2020). This has made the world realise that the COVID-19 virus is likely to stay for a long period. Consumers and businesses, willingly or unwillingly, have adjusted their lifestyles according to the situation.Looking at the adversity caused by COVID-19 on countries such as China, Italy, and South Korea, the Indian Prime Minister, Narendra Modi, announced a nationwide lockdown on 24th March 2020 as a precautionary measure. COVID-19 had a direct impact on the number of positive cases and the death toll; however, there were many indirect repercussions on the Indian economy. Although the Indian government has been trying to protect the citizens from the adverse health effects caused by the virus through the implementation of restrictions on mobility, the economic setbacks due to such restrictions cannot be overlooked.

Consumption patterns are changing due to a prevalent fear of supply shortage. Consumers will likely indulge in hoarding as many essential products as they can. Hoarding is defined as an effort to 'accumulate large private stocks of goods when people perceive threats to supply' (Sterman and Dogan, 2015). Hoarding on a large scale can create a situation of excessive demand, and when the demand is not met, the prices of commodities tend to rise. Businesses, due to restrictions and limited availability of resources, would not be able to serve to the rising demand, which can make the products scarce (Long and Khoi, 2020).

The informal sector is likely to see a big rise in unemployment, as there are restrictions on mobility and lack of work-from-home (WFH) facility. Although there are government initiatives for avoiding such situations, instances of layoff can still be expected because of a lack of awareness. With unemployment, there comes a reduction in income and in turn a reduction in demand; therefore, a fall in the aggregate demand could be expected with the rise in unemployment. 'Demand shocks are likely to be subject to Keynesian multiplier' (Baldwin and Mauro, 2020).Considering that the aggregate consumption is expected to fall, the purpose of this work was to study the change in consumption patterns of fast-moving-consumer-goods (FMCG) among Indian consumers.

II. RELATED LITERATURE

This paper is consistent with the reviewed literature on the subject besides a few visible heterogeneities in the result. This paper is most consistent with the works of Andersen et al. (2020), Baker et al. (2020), and Carvalho et al. (2020). While their works have studied categorical changes in consumption, the findings revolved around the consumers outside of India who comprise the dataset for this work.

2.1 Consumers in the times of COVID-19 pandemic

A few observations were uniform throughout the review process. The overall spending initially spiked in Spain and the US, followed by a sharp decline (Baker et al., 2020; Carvalho et al., 2020). This change could be due to stockpiling behaviour, which could also be observed in Canadian and Vietnamese consumers (Long and Khoi, 2020; Richards and Rickard, 2020). An overall decrease in consumption was seen in China, Spain, and the US (Baker et al., 2020; Carvalho et al., 2020; Chen et al., 2020). Because of the persistent fear, Indonesian consumers have been avoiding cash transactions (Widayar and Arifin, 2000) and turning to online platforms. This behavioural shift can also be found in Canadian consumers (Charlebois, 2020). Chronopoulos et al. (2020) showed a fall in the discretionary spending in Great Britain with the average fall being 10.4 % on a week-to-week basis. Discretionary spending such as fashion, furniture, out-of-home entertainment, restaurant, and travel saw a fall in other parts of the world as well (Alexander et al., 2020; Andersen et al., 2020; Binder, 2020; Dunn et al., 2020). While the discretionary spending declined, the spending on essentials such as education, good supplies, and pharmacies increased(Chen et al., 2020; Knotek et al., 2020; Koslow et al., 2020a).

2.2 Macroeconomic impacts of COVID-19

International Labour Organization estimated that approximately 2.7 billion workers could be affected because of the lockdown ("ILO: COVID-19 causes devastating losses in working hours and employment," 2020). Unemployment was seen in three-quarters of Chinese consumers, while American consumers feared unemployment (Knotek et al., 2020; Rozelle et al., 2020). The implementation of restrictions on mobility could lead to a reduction in aggregate consumption by 22–40% (Eichenbaum et al., 2020; Jones et al., 2020). Dietrich et al. (2020) estimated a 6% fall in the GDP of America, while KPMG (2020) estimated a 4.3% fall. To quote a section from Andersen et al. (2020), 'If consumers respond to mass lay-offs, falling asset prices (Gormsen and Koijen, 2020) and an uncertain financial outlook (Baker et al., 2020) by slashing private consumption, the epidemic may mark the beginning of a demand-driven economic meltdown.'

2.3 Impact of past disasters and pandemics on consumers and economies

If COVID-19 were to follow in the footsteps of the influenza pandemic of 1918–1920, the world could expect a death toll of 150 million; the world GDP and aggregate consumption could fall by 6% and 8%, respectively. However, it is unlikely to see these figures manifest in the present because of the advancements made since 1920 (Barro and Weng, 2020). SARS epidemic, 2003, led to a decline in the consumer spending, an increase in the operating costs, and re-evaluation of country risks reflected in increased risk premiums(McKibbin and Fernando, 2020). In Nigeria, almost four out of five households stopped the purchase and consumption of bird meat and eggs because of theAvian Influenza Epidemic, while in Italy, the news about the virus caused approximately 20% decline in the sales of fresh poultry (Obayelu, 2007; Beach et al., 2008).

2.4 India in the trying times of COVID-19

According to the Centre for Monitoring Indian Economy, the unemployment rate stood at 24% for the week that ended on May 10, 2020 (Sharma, 2020). DEV(2020) shared concerns regarding unemployment leading to a fall in GDP. UN's 'ESCAPreported that India's GDP growth rate could fall to 4.8% (Alisjahbana et al., 2020), while McKibbin and Fernando (2020)estimated a fall in the GDP of India by $21–567 billion depending on the scenario. If the current pandemic emulated the influenza epidemic, India could see a death toll of 70 million, a fall in GDP, and consumption by 15% and 20%, respectively (Barro and Weng, 2020). Google reported declines in mobility in almost all categories except residential, which was expected. Retail saw the

greatest reduction in mobility at 85%, while the drop in groceries and pharmacies was 44% ("COVID-19 Community Mobility Reports," 2020). This drop in the mobility could be because 83% of Indian consumers believed that the world is in danger because of COVID-19 (Koslow et al., 2020b). Due to this fear, a shift to online channels of purchase could be expected (Bailay and Peermohamed, 2020; Koslow et al., 2020a, 2020b). Internet usage has also been augmented by 13%, which could be due to an increase in the time spent indoors (Madhukalya, 2020). According to the Nielsen survey, Indian consumers would not indulge in spending on discretionary items; however, the spending on essentials would increase. This pattern can be expected even when the lockdown comes to a halt (Anand, 2020). This result can be seen in the works of Abrar (2020), DEV (2020), ET Bureau (2020), and KPMG (2020): there was an increase in the consumption of household care products, lentils, rice, vegetables, and wheat, whereas the consumption of beverages, restaurants, meat, and alcohol fell.

III. RESEARCH METHODOLOGY

The empirical analysis in the present paper is based on the data collected from a questionnaire that was created with the intent of evaluating the change in the consumption pattern of various types of goods among Indian consumers. Apart from demographics, every other question was presented to gather information about consumer behaviour and attitude in the times of COVID-19. Responses were collected from 419 consumers using Google forms in 8 days starting from 3rd May 2020 to 10th May 2020. Data collection was done as per non-probability convenience sampling. Data was skewed towards young people (15–25-year-olds), students, and people from major cities.

Demographics consisted of age, gender, occupation, and monthly family income. One of the statement questions was put to assess consumer attitude. It asked the respondents which one of the following statements they agreed with—"Indian economy will face significant prolonged negative consequences due to COVID-19", "Indian economy will face significant negative consequences due to COVID-19 but will be able to overcome them", or "Indian economy will not face significant negative consequences due to COVID-19". The rest of the questions were presented purely to study how consumption/purchase patterns of essential commodities changed during the times of COVID-19. The first question was asked to see a change in the purchase of essential commodities and respondents were asked to select one of the following options i.e. 'I bought more than usual amount of essential products', 'I bought usual amount of essential products', or 'I bought less than usual amount of essential products'. The second question was 'At what time period did you feel the need to buy a fairly high amount of essential products?', and the respondents could choose between three options—'5th March–25th March 2020', '25th March–14th April 2020', or '14th April–3rd May 2020'—which represent the time before the first lockdown, time of the first lockdown, and time of the second lockdown, respectively. The third question was, 'Which medium of purchase do you think worked for you during the lock-down?', and the respondents could answer from the following three options—'Home deliveries by the local stores', 'Online websites/apps', or 'Going to the stores'.

The last two questions were directed to find the change in the consumption of essential commodities. The former question was, 'Would you say that your consumption of essential products during the lock-down:', and the respondents could answer, 'Increased significantly', 'Increased by a fair amount', 'Did not change', 'Decreased by a fair amount', or 'Decreased significantly'. The latter question was asked for identifying the change in the consumption of different categories of essential commodities—'Alcohol', 'Baked goods', 'Beverages', 'Dairy products', 'Flour, Rice and Sugar', 'Household care', 'Meat', 'Over-the-counter medicines', 'Personal care', and 'Tobacco products'—and the respondents could select 'Increased', 'Decreased', or 'Did not change' for each category.

SPSS by IBM was used as the primary statistical softwareon the collected data for analysing it and for interpreting the results. The collected data variables had two distinguished types of measurements—nominal and ordinal. As the data was both nominal and ordinal in nature, non-parametric tests such as Chi-squared test, Kruskal Wallis H test, and Spearman's correlation were used. Descriptive figures were also utilized to gauge significant percent changes across the data. The reliability of the data was measured using Cronbach's Alpha.

IV. ANALYSIS AND INTERPRETATION

Demographics were excluded since the reliability was not strong. The remainder of the data had a reliability of Cronbach's Alpha of 0.712 (see Table I). This implies that this data could be used to make inferences. Spearman's rank correlation coefficient was used to determine whether the change in the purchased amount of essential commodities (amount purchased) and the overall consumption of essential commodities (overall consumption) had a significant relationship with the change in the consumption of FMCG across different categories. The change in the amount purchased had a significant correlation with almost all the categories with an exception of 'Over-the-counter medicines'. Although the relationship was significant at 0.01 level (2-tailed) for most categories, the correlation was not strong with the highest coefficient being 0.191,

which was for the 'Personal care' category (see Table IIA). There was a significant relationship between the change in the overall consumption and the change in the consumption for almost all categories except 'Alcohol', which was an outlier with a significance value of 0.164. The best relationship was observed for 'Flour, Rice, and Sugar' at approximately 38% (see Table IIB).

4.1 Consumption changes in FMCG categories due to COVID-19

Overall consumption was observed to have increased in 54.6% of the respondent consumers, out of which 46% reported an increase in consumption by a fair amount and 8% reported a significant increase in consumption. One out of every three respondents reported buying more-than-usual amount of essential products. The distribution of the change in consumption of products across all categories is not the same across the fields of the change in overall consumption (at alpha = 0.05); in other words, there is a significant relationship between the change in overall consumption and the change in consumption of products across all categories (see Table IIIA). A similar relationship is observed between the change in the purchased amount and the change in the consumption of products across almost all categories (see Table IIIB). That means the change in the consumption of products across all categories (except over-the-counter medicines) is not evenly distributed with respect to the change in the purchased amount.

The consumption of alcohol, tobacco, and meat was seen to have decreased in the majority of the respondents (see Figures 1, 11, and 8, respectively). The change in alcoholconsumption was the highest among all categories. The change in the alcohol- and tobacco-consumption could be due to two aspects—practical and psychological. The practical aspect could be the closure of liquor stores and a ban on the sale of tobacco products(India Today Web Desk, 2020). Regarding the psychological aspect, consumers could have been fearful of the health risks that come withthe consumption of these products, especially in the times of COVID-19, and may have reduced their consumption. According to Carvalho et al. (2020), the spending on goods like tobacco showed more-than-two-fold increase. The difference observed between this finding and that of Carvalho et al. (2020)is due to the restrictions implemented by the government. Several reasons could contribute to the decrease in meat consumption—meatis not treated as a part of staple foods in most of India; it is costlier than vegetarian alternatives; etc. Moreover, rumours linking meat consumption and COVID-19 had been floating around on social media platforms even before the introduction of the first lockdown—this could have been the primary reason for the steep fall in the meat consumption (DEV 2020; ET Bureau 2020).

Consumers who decreased their consumption of beverages represented 37% of the sample, whereasonly 24% of the consumers increased the consumption of beverages (see Figure 3). The ban on the sale of alcohol could be one of the reasons behind this outcome. Similar trends can be observed with the change in the consumption of baked goods (see Figure 2). This finding is also reflected in the outcome of the applied test.

In India, dairy products, flour,fruits, and vegetables are a part of staples that means a large number of consumers are likely to spend on these categories, given the circumstances. 47% of the consumers reported an increase in the consumption of fruits and vegetables, whereas 43% and 41% reported an increase in the consumption of flour, rice and sugar, and fruits and vegetables, respectively (see Figures 4, 5, and 6). Existing literature was in accord with this except for the work of Richards and Rickard (2020); the differences could be due to different geographies. These products are a crucial aspect of the Indian diet, and therefore it is reasonable to suggest, given the finding, that the consumption of these products has increased during the lockdown.

Household care products were highly demanded for disease-prevention-purposes. 32% of consumers increased their spending on this category, whereas19%of consumers reported a decrease (see Figure 7), which could be due to the supply shortage of such products. The number of consumers who decreased their consumption of over-the-counter medicines was larger than those whoincreased the consumption of such medicines (see Figure 9);the results for this category were interestingly unexpected. The change in the consumption of over-the-counter medicines was not significantly related to the change in the amount purchased (see Table IIIB) (p-value is greater than alpha). The difference between the consumers who decreased andthose who increased their consumption of personal care products was not significant; this conflicting behaviour could be due to the differences in opinions. The consumers who increased their consumption of personal-care products might havebelieved that it is important to take care of themselves especially in such times, whereas those who decreased their consumption might havebelieved that the purchase of such products during the times of COVID-19 could unnecessarily cause a cash-crunch-situation.

This pattern of distribution across categories may be attributed to a variety of factors—in the times of crises, pre-existing beliefs and attitudes may exhibit a shift, which is likely to affect the consumption behaviour. Such situations generate mass hysteria and fear, which results in three possible outcomes—hoarding of essential commodities, concerns regarding health risks, and possible experience of a cash crunch. Hoarding could be the reason that a higher percentage of consumers reported an increase in their consumption of 'Flour, Rice, and Sugar'—people resort to hoarding out of the fear of running out of essential commodities when the demand exceeds the supply by a huge margin. As shown in Figure 14, 99% of the respondents believed that Indian economy will face significant negative consequences, which reflects the fear among consumers—fear of

unemployment and cash crunch—and this can account for the reduction in discretionary spending as appears to be the case for 'Baked goods', 'Beverages', and 'Personal care'. Besides the fear in the consumer mind-set, government restrictions, which represent a practical aspect, could also account for this pattern of distribution. A reduction in the consumption of alcoholic and tobacco products could be due to the ban on the sale of these products. The reported, small reductions in other categories could be due to mobility restrictions.

4.2 Change in the attitude and behaviour of Indian consumers

A pandemic situation is bound to force consumers to react in a way to ensure that they are physically, mentally, and economically secure. 15.5% of consumers reported having purchased their essentials on online platforms during the lockdown (see Figure 12). Using 1.6% as a benchmark value for the pre-virus proportion of the online sales (E-Commerce Can Spur Growth, Boost Trade in South Asia 2020), it can be inferred that the online channel of purchase has seen a significant increase in the market share of all retail sales. This could be a reasonable attempt to avoid human contact. There is a significant relationship between the medium of purchase and the change in the purchased amount(at alpha = 0.05) (see Table IVB).

India introduced a lockdown quite early into the COVID-19 pandemic. The first lockdown was announced on 24th March 2020; at that time, the reported number of cases in the country was about 600 (The Hindu Net Desk 2020). As the media reports about COVID-19 flooded the world, instilling widespread fear in public, a high number of consumers (54%) reported buying several commodities during the time period 25th March–14th April 2020 (see Figure 13). This could be the typical hoarding behaviour, as consumers feared a complete lockdown and concomitant inability to buy essentials due to lack of mobility. Similar trends have been observed in the US and Spain (Baker et al. 2020; Carvalho et al. 2020), although the timelines were different, considering the different phases of the pandemic. There is a significant relationship between the time period and the change in the purchased amount (at alpha =0.05) (see Table VB).

Ultimately, it is the consumer attitude that shapes the consumer behaviour. Almost all respondents (99.05%) believed that there would be significant negative consequences on the Indian economy because of the pandemic (see Figure 14). While 68% of the respondents believed that India would be able to overcome these consequences, 31% believed that these consequences would prevail for prolonged periods. This reflects fear, which persists in the minds of Indian consumers regarding COVID-19.

V. CONCLUSION

This work reported in this paper is one of the first attempts towards providing an overview of the change in consumption of FMCG categories during the trying times of COVID-19 among Indian consumers. To assess these trends, a questionnaire was created with the intent of shedding light on how an average Indian consumer behaves in terms of the purchase of essential and non-essential/discretionary goods in times of crisis. Non-parametric tests were then applied using SPSS to obtain the required findings. A significantly large number of consumers had increased their level of spending on essential commodities (such as dairy products, flour, rice, sugar, fruits, vegetables, and household care) and reduced the consumption of discretionary products (such as alcohol, baked goods, beverages, meat, and tobacco products) except over-the-counter medicines. These findings are consistent with those presented in existing papers—visible differences, if any, are due to different geographies and timelines. These findings represent the consumption change of essential commodities for an Indian consumer. What constitutes an essential product is dependent on PESTEL factors (Political, Economic, Social, Technological, Environmental, and Legal) which could be unique to demographics, geographies, and culture. This implies that the consumption pattern of dairy products, meat, and tobacco products might be completely different in another country from what is reported for India. The distribution of changes in the overall consumption/ purchased amounts is not evenly spread across the changes in the consumption for different categories of FMCG products (except over-the-counter medicines) (See table IIIA and IIIB). In other words, the consumption change for almost all the categories is significantly related to the changes in the purchased amount and overall consumption. This behaviour can be interpreted through four possible explanations—hoarding of the essential products, perceived health risks, fear of unemployment and cash crunch, and restrictions imposed by the authorities. Lastly, more and more consumers are switching to online channels for shopping, which could be to avoid physical human contact; most consumers were seen purchasing the most during the first nationwide lockdown, which could be attributed to the stockpiling behaviour.

These responses used here represent only a small proportion of the population; hence, the data and inferences could only insinuate the trends of overall changes in the consumption and purchase of essential commodities, and thus they cannot be considered entirely conclusive. This simple yet informative study tells about the number of consumers whose consumption increased, decreased, or did not change, but it does not take into account the amount overall-consumption-change of the commodities. The data was skewed towards younger generations and urban populations, and it is possible that the older generations and rural populations exhibit different behaviour. The sample size was limited because of a lack of resources and time constraints.

The results of this work can be used to encourage and advance future research in the field and suggest possible implications for the FMCG sector. An improvement in the supply-chain distribution is anticipated for closing the existing gap between the demand and supply, which would not only reduce the supply shortage but would also restore the prices of the commodities to normal. Excessive demands could be reduced by implementing partial operations of various firms for increasing the level of production and meeting the demand.

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TABLES AND FIGURES

Table I: Reliability Statistics

All the variables except demographics were tested to find the reliability of the data. A Cronbach's Alpha greater than 0.6 is said to be reliable and can be used to conclude.

Cronbach's Alpha	N of Items
.712	17

Table IIA: Correlation tests

This table represents a correlation between the changes in the purchased amount and consumption of FMCG categories. A sig. greater than 0.05 makes the relationship insignificant. A correlation coefficient is a statistical measure of the strength of the relationship between two variables.

			Amount Purchased
Spearman's rho	Amount Purchased	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	419
	Alcohol	Correlation Coefficient	.175[**]
		Sig. (2-tailed)	.000
		N	419
	Baked Goods	Correlation Coefficient	.163[**]
		Sig. (2-tailed)	.001
		N	419
	Beverages	Correlation Coefficient	.189[**]
		Sig. (2-tailed)	.000
		N	419
	Dairy Products	Correlation Coefficient	.134[**]
		Sig. (2-tailed)	.006
		N	419

			Correlation Coefficient	.160**
	Flour Rice Sugar		Sig. (2-tailed)	.001
			N	419
	Fruits Vegetables		Correlation Coefficient	.161**
			Sig. (2-tailed)	.001
			N	419
	Household Care		Correlation Coefficient	.188**
			Sig. (2-tailed)	.000
			N	419
	Meat		Correlation Coefficient	.110*
			Sig. (2-tailed)	.024
			N	419
	Over The Counter Medicines		Correlation Coefficient	.076
			Sig. (2-tailed)	.121
			N	419
	Personal Care		Correlation Coefficient	.191**
			Sig. (2-tailed)	.000
			N	419
	Tobacco Products		Correlation Coefficient	.157**
			Sig. (2-tailed)	.001
			N	419

Table IIB: Correlation tests

This table represents a correlation between the changes in the overall consumption and the consumption of FMCG categories. A sig. greater than 0.05 makes the relationship insignificant. A correlation coefficient is a statistical measure of the strength of the relationship between two variables.

				Overall Consumption
Spearman's rho	Overall Consumption		Correlation Coefficient	1.000
			Sig. (2-tailed)	.
			N	419
	Alcohol		Correlation Coefficient	.068
			Sig. (2-tailed)	.164
			N	419
	Baked Goods		Correlation Coefficient	.235**
			Sig. (2-tailed)	.000
			N	419
	Beverages		Correlation Coefficient	.275**
			Sig. (2-tailed)	.000
			N	419
	Dairy Products		Correlation Coefficient	.320**
			Sig. (2-tailed)	.000
			N	419
	Flour Rice Sugar		Correlation Coefficient	.379**
			Sig. (2-tailed)	.000
			N	419
	Fruits Vegetables		Correlation Coefficient	.275**
			Sig. (2-tailed)	.000
			N	419
	Household Care		Correlation Coefficient	.235**
			Sig. (2-tailed)	.000
			N	419
	Meat		Correlation Coefficient	.113*
			Sig. (2-tailed)	.021
			N	419
	Over The Counter Medicines		Correlation Coefficient	.117*

	Sig. (2-tailed)	.017
	N	419
Personal Care	Correlation Coefficient	.098[*]
	Sig. (2-tailed)	.045
	N	419
Tobacco Products	Correlation Coefficient	.114[*]
	Sig. (2-tailed)	.019
	N	419

Table IIIA: Hypothesis Test Summary

This table represents the findings from the Kruskal Wallis test between the changes in the overall consumption and the consumption of FMCG categories. A sig. greater than 0.05 makes the relationship insignificant. A significant relationship implies that the distribution of fields of variable 1 is not evenly distributed across the fields of variable 2.

	Null Hypothesis	Sig.	Decision
1	The distribution of Alcohol is the same across categories of Overall Consumption.	.011	Reject the null hypothesis.
2	The distribution of Baked Goods is the same across categories of Overall Consumption.	.000	Reject the null hypothesis.
3	The distribution of Beverages is the same across categories of Overall Consumption.	.000	Reject the null hypothesis.
4	The distribution of Dairy Products is the same across categories of Overall Consumption.	.000	Reject the null hypothesis.
5	The distribution of Flour Rice Sugar is the same across categories of Overall Consumption.	.000	Reject the null hypothesis.
6	The distribution of Fruits Vegetables is the same across categories of Overall Consumption.	.000	Reject the null hypothesis.
7	The distribution of Household Care is the same across categories of Overall Consumption.	.000	Reject the null hypothesis.
8	The distribution of Meat is the same across categories of Overall Consumption.	.001	Reject the null hypothesis.
9	The distribution of Over The Counter Medicines is the same across categories of Overall Consumption.	.010	Reject the null hypothesis.
10	The distribution of Personal Care is the same across categories of Overall Consumption.	.036	Reject the null hypothesis.
11	The distribution of Tobacco Products is the same across categories of Overall Consumption.	.008	Reject the null hypothesis.

Table IIIB: Hypothesis Test Summary

This table represents the findings from the Kruskal Wallis test between the changes in the purchased amount and consumption of FMCG categories. A sig. greater than 0.05 makes the relationship insignificant. A significant relationship implies that the distribution of fields of variable 1 is not evenly distributed across the fields of variable 2.

	Null Hypothesis	Sig.	Decision
1	The distribution of Alcohol is the same across categories of Amount Purchased.	.002	Reject the null hypothesis.
2	The distribution of Baked Goods is the same across categories of Amount Purchased.	.001	Reject the null hypothesis.
3	The distribution of Beverages is the same across categories of Amount Purchased.	.001	Reject the null hypothesis.
4	The distribution of Dairy Products is the same across categories of Amount Purchased.	.022	Reject the null hypothesis.
5	The distribution of Flour Rice Sugar is the same across categories of Amount Purchased.	.005	Reject the null hypothesis.
6	The distribution of Fruits Vegetables is the same across categories of Amount Purchased.	.001	Reject the null hypothesis.

7	The distribution of Household Care is the same across categories of Amount Purchased.	.001	Reject the null hypothesis.
8	The distribution of Meat is the same across categories of Amount Purchased.	.046	Reject the null hypothesis.
9	The distribution of Over The Counter Medicines is the same across categories of Amount Purchased.	.226	Retain the null hypothesis.
10	The distribution of Personal Care is the same across categories of Amount Purchased.	.000	Reject the null hypothesis.
11	The distribution of Tobacco Products is the same across categories of Amount Purchased.	.005	Reject the null hypothesis.

Table IVA: Medium * Amount Purchased Cross tabulation

This table represents a cross-tabulation between the medium of purchase and change in the purchased amount.

			Amount Purchased			
			I bought more than usual amount of essential products.	I bought usual amount of essential products.	I bought less than usual amount of essential products.	Total
Medium	Home deliveries by the local stores	Count	43	52	5	100
		Expected Count	34.1	58.0	7.9	100.0
		% of Total	10.3%	12.4%	1.2%	23.9%
	Online websites/apps	Count	19	36	10	65
		Expected Count	22.2	37.7	5.1	65.0
		% of Total	4.5%	8.6%	2.4%	15.5%
	Going to the stores	Count	81	155	18	254
		Expected Count	86.7	147.3	20.0	254.0
		% of Total	19.3%	37.0%	4.3%	60.6%
Total		Count	143	243	33	419
		Expected Count	143.0	243.0	33.0	419.0
		% of Total	34.1%	58.0%	7.9%	100.0%

Table IVB: Chi-Squared Tests

This table represents the significance of the Chi-squared tests. A Pearson Chi-squared significance greater than 0.05 and more than 20% of cells have an expected count less than 5 would mean that the result is insignificant.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.138[a]	4	.038
Likelihood Ratio	9.151	4	.057
Linear-by-Linear Association	2.274	1	.132
N of Valid Cases	419		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.12.

Table IVC: Symmetric Measures

This table shows the strength of the relationship between the variables. Phi's value measures the strength of the relationship. A Phi's sig. value of more than 0.05 would have made the result insignificant.

		Value	Approximate Significance
Nominal by Nominal	Phi	.156	.038
	Cramer's V	.110	.038
N of Valid Cases		419	

Table VA: Time Period * Amount Purchased Cross tabulation

This table represents cross-tabulation between the time period of most purchases made and the change in the purchased amount.

			Amount Purchased			
			I bought more than usual amount of essential products.	I bought usual amount of essential products.	I bought less than usual amount of essential products.	Total
Time Period	5th March - 25th March 2020	Count	55	64	8	127
		Expected Count	43.3	73.7	10.0	127.0
		% of Total	13.1%	15.3%	1.9%	30.3%
	25th March - 14th April 2020	Count	68	146	12	226
		Expected Count	77.1	131.1	17.8	226.0
		% of Total	16.2%	34.8%	2.9%	53.9%
	14th April - 3rd May 2020	Count	20	33	13	66
		Expected Count	22.5	38.3	5.2	66.0
		% of Total	4.8%	7.9%	3.1%	15.8%
Total		Count	143	243	33	419
		Expected Count	143.0	243.0	33.0	419.0
		% of Total	34.1%	58.0%	7.9%	100.0%

Table VB: Chi-Squared Tests

This table represents the significance of the Chi-squared tests. A Pearson Chi-squared significance greater than 0.05 and more than 20% of cells have an expected count of less than 5 would mean that the result is insignificant.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.193[a]	4	.000
Likelihood Ratio	18.831	4	.001
Linear-by-Linear Association	8.878	1	.003
N of Valid Cases	419		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.20.

Table VC: Symmetric Measures

This table shows the strength of the relationship between the variables. Phi's value measures the strength of the relationship. A Phi's sig. value of more than 0.05 would have made the result insignificant.

		Value	Approximate Significance
Nominal by Nominal	Phi	.230	.000
	Cramer's V	.163	.000
N of Valid Cases		419	
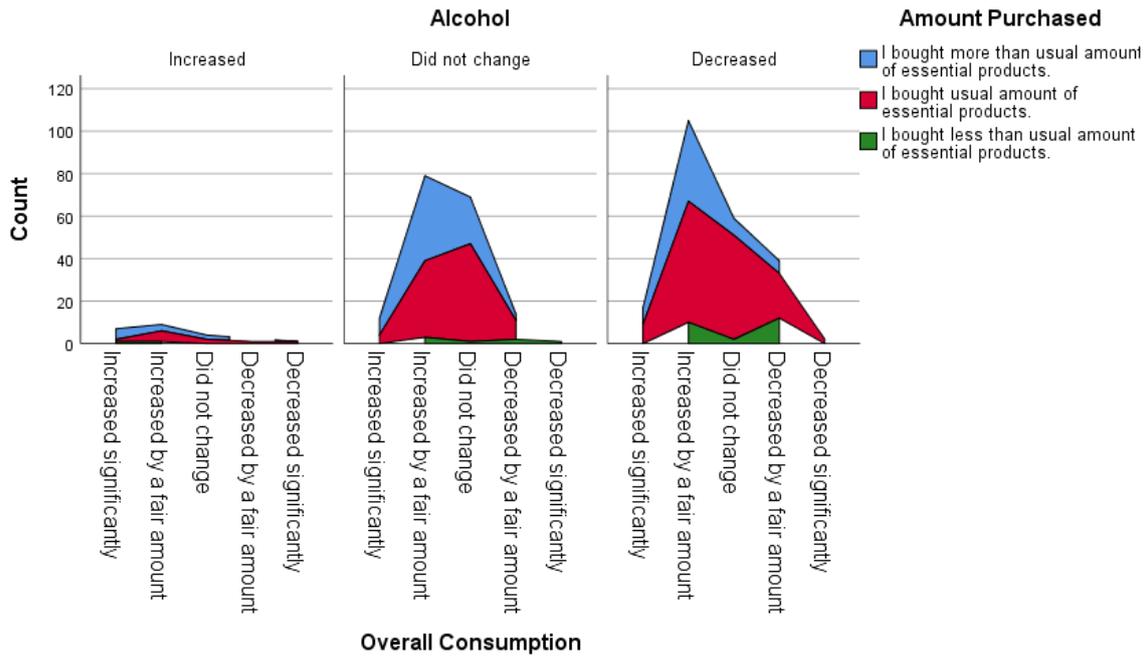
Figure 1

This figure represents the consumers who changed their consumption of alcohol with respect to the changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours.
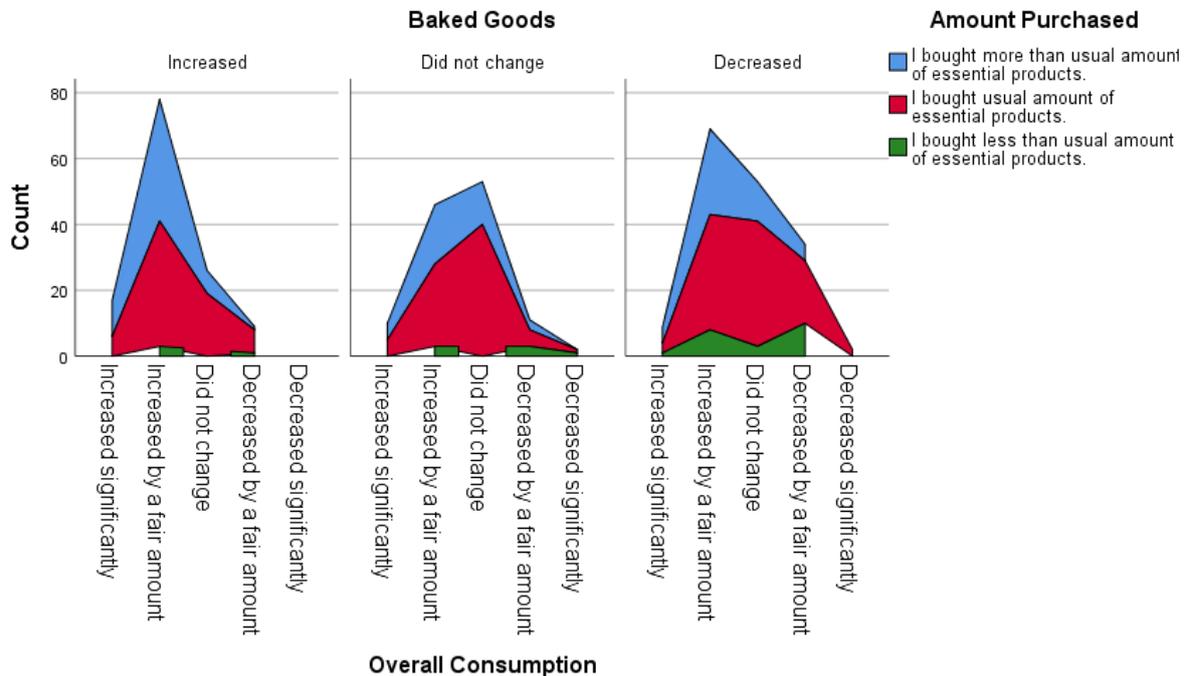
Figure 2

This figure represents the consumers who changed their consumption of baked goods with respect to the changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours.
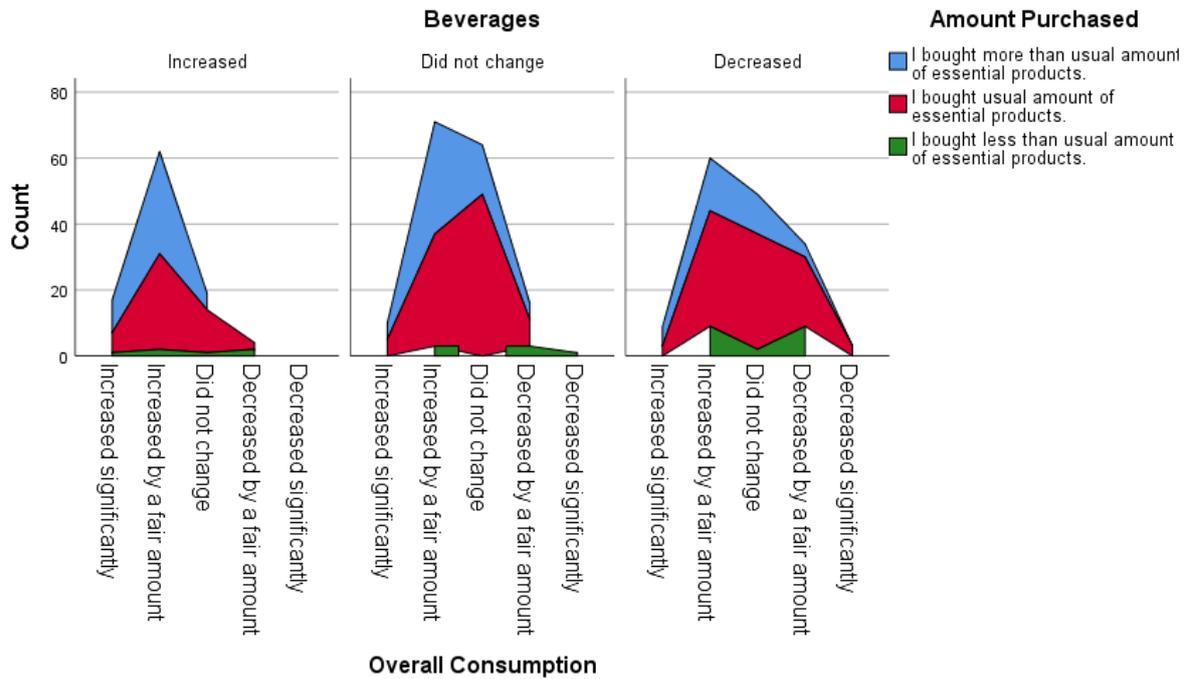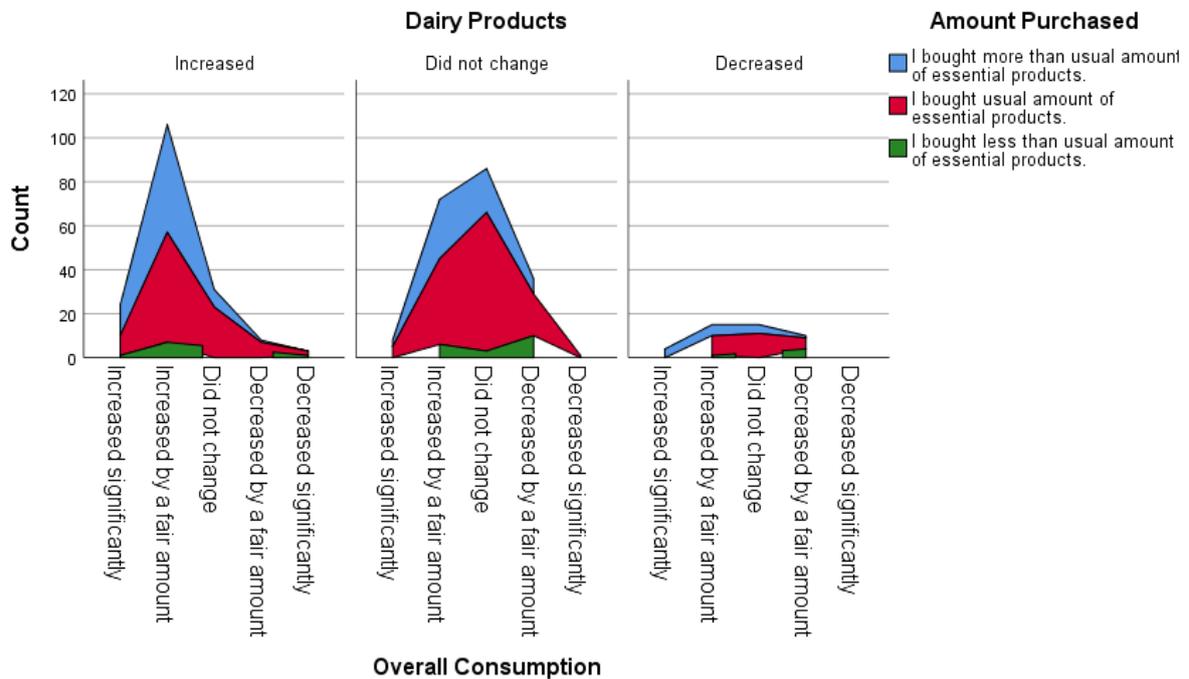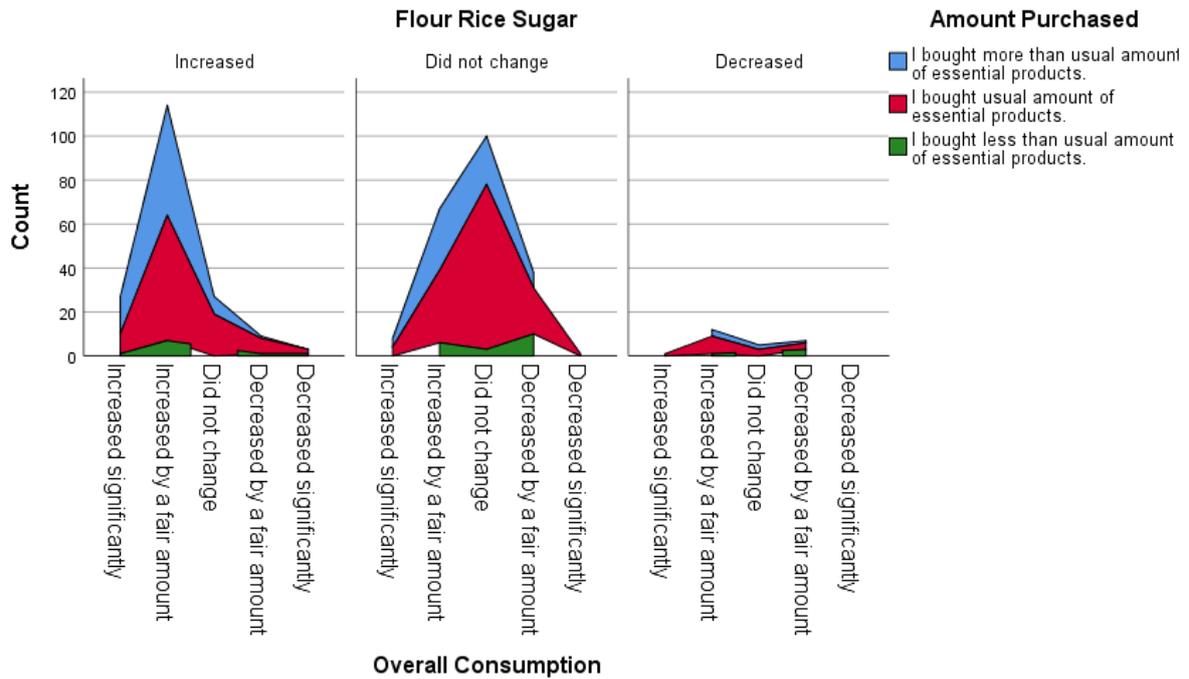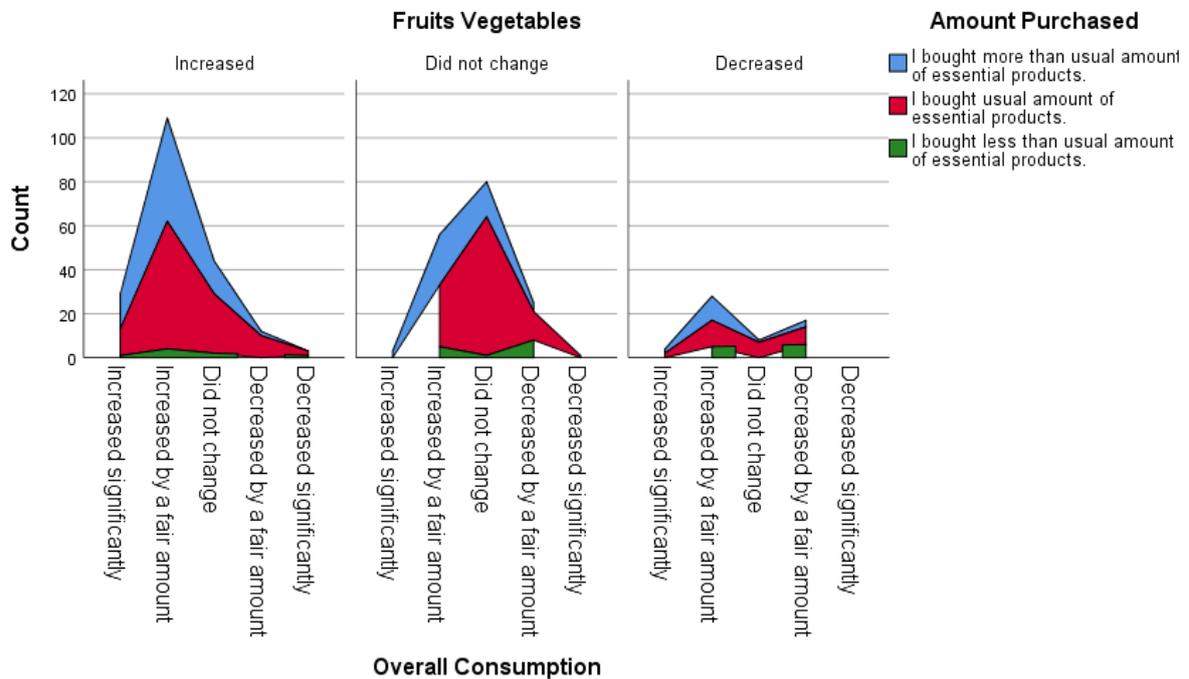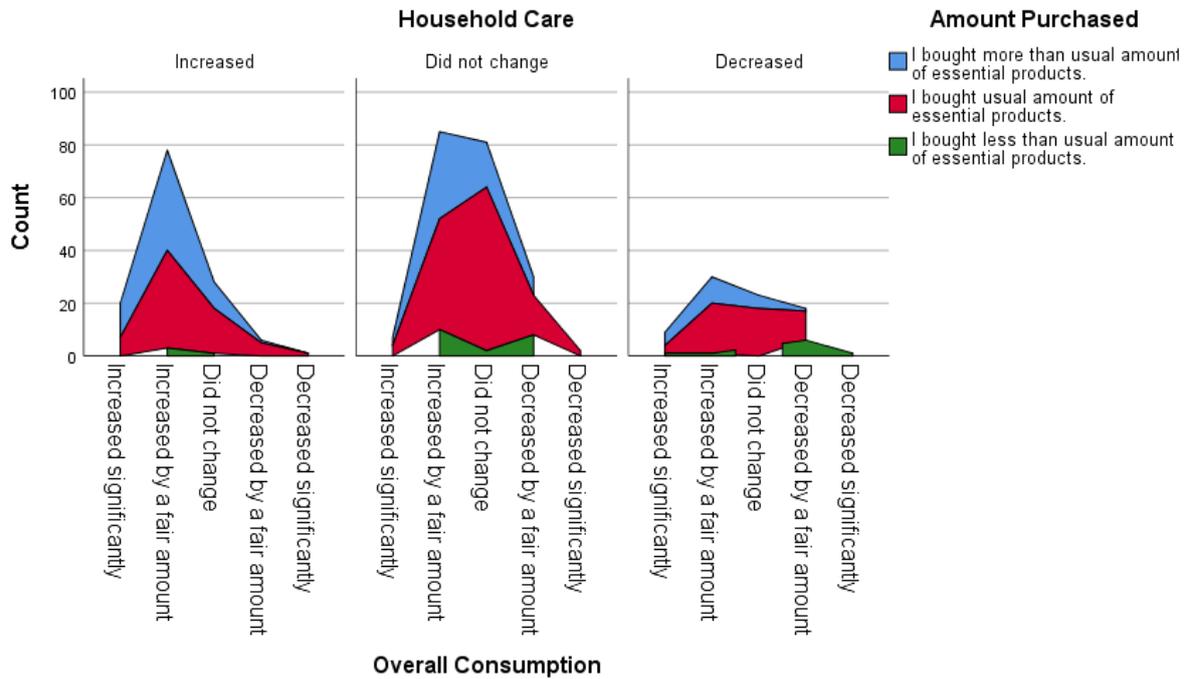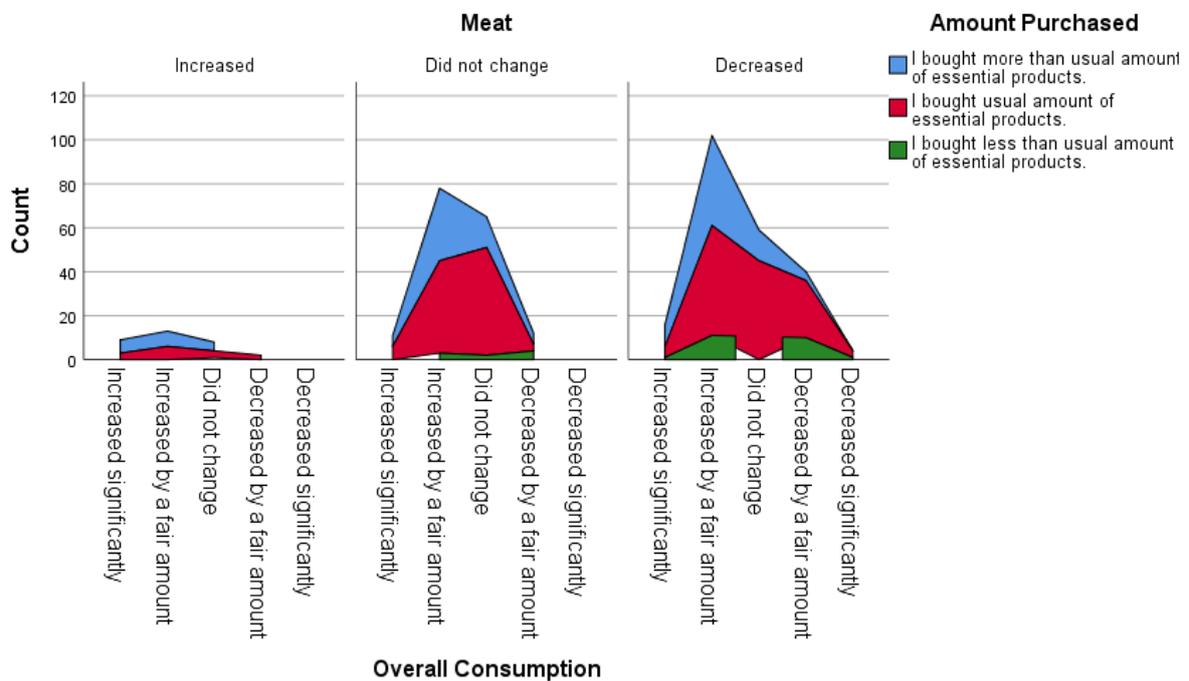
Figure 3

This figure represents the consumers who changed their consumption of beverages with respect to the changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours).
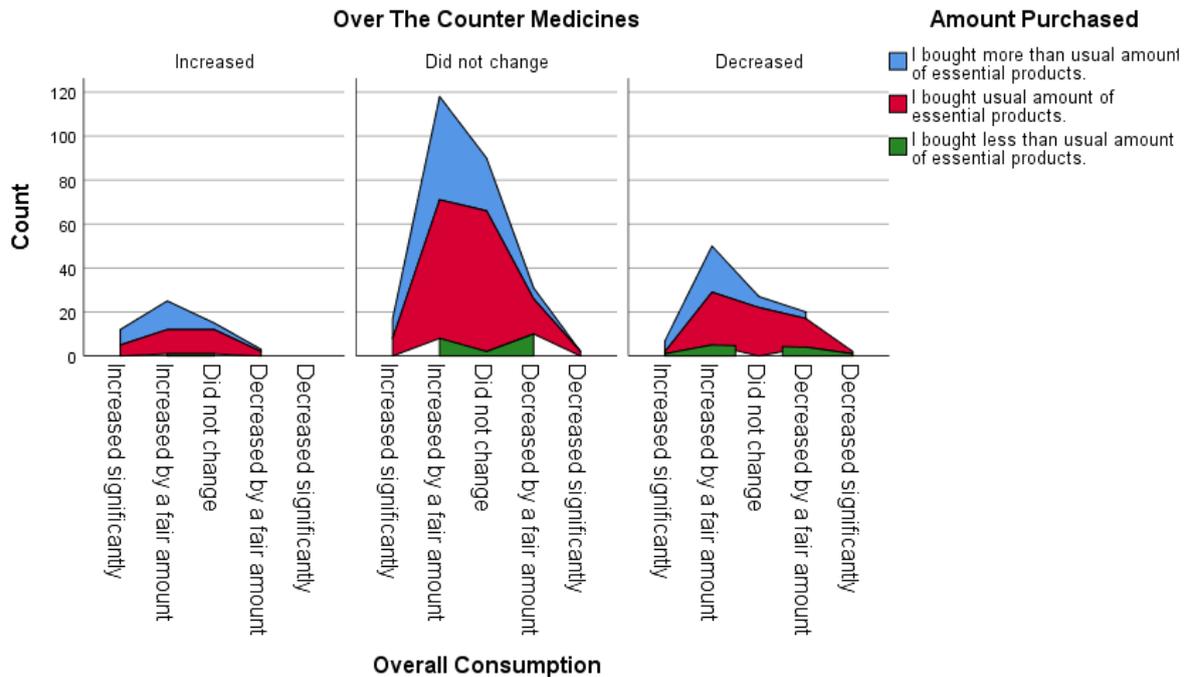

Figure 4

This figure represents the consumers who changed their consumption of dairy products with respect to the changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours).

Figure 5

This figure represents the consumers who changed their consumption of flour, rice, and sugar with respect to the changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours).

Figure 6

This figure represents the consumers who changed their consumption of fruits and vegetables with respect to changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours).
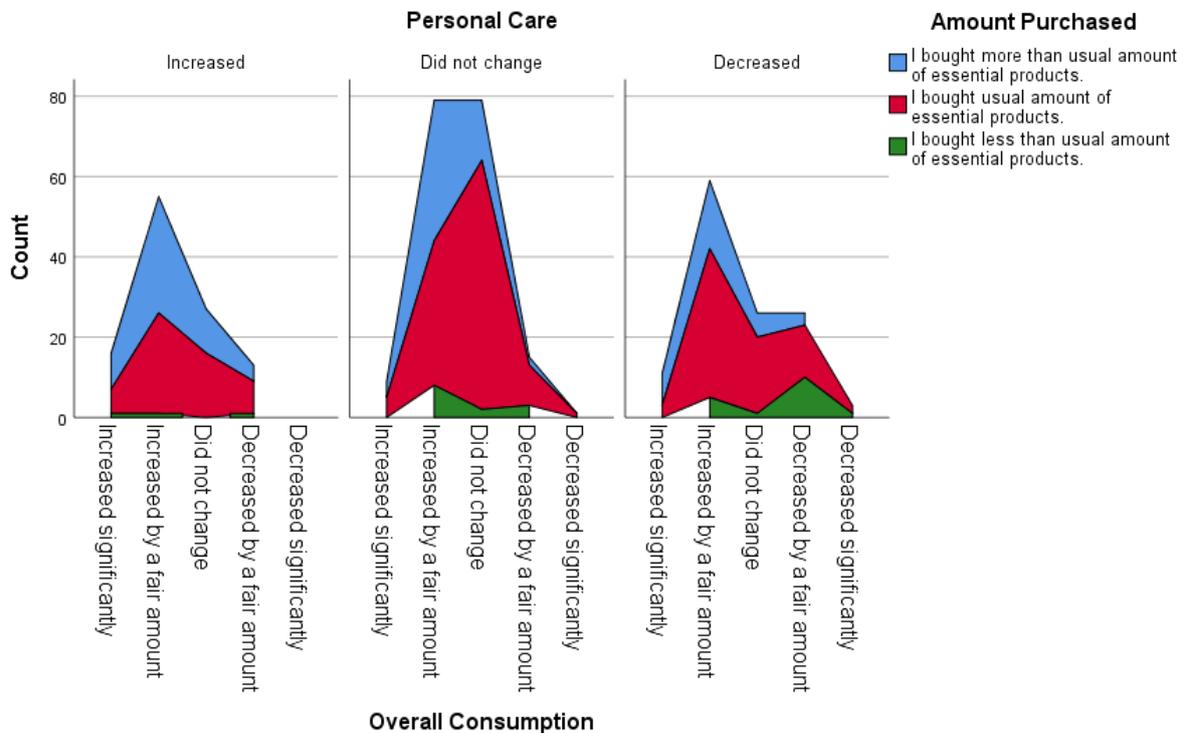
Figure 7

This figure represents the consumers who changed their consumption of household-care-products with respect to changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours).
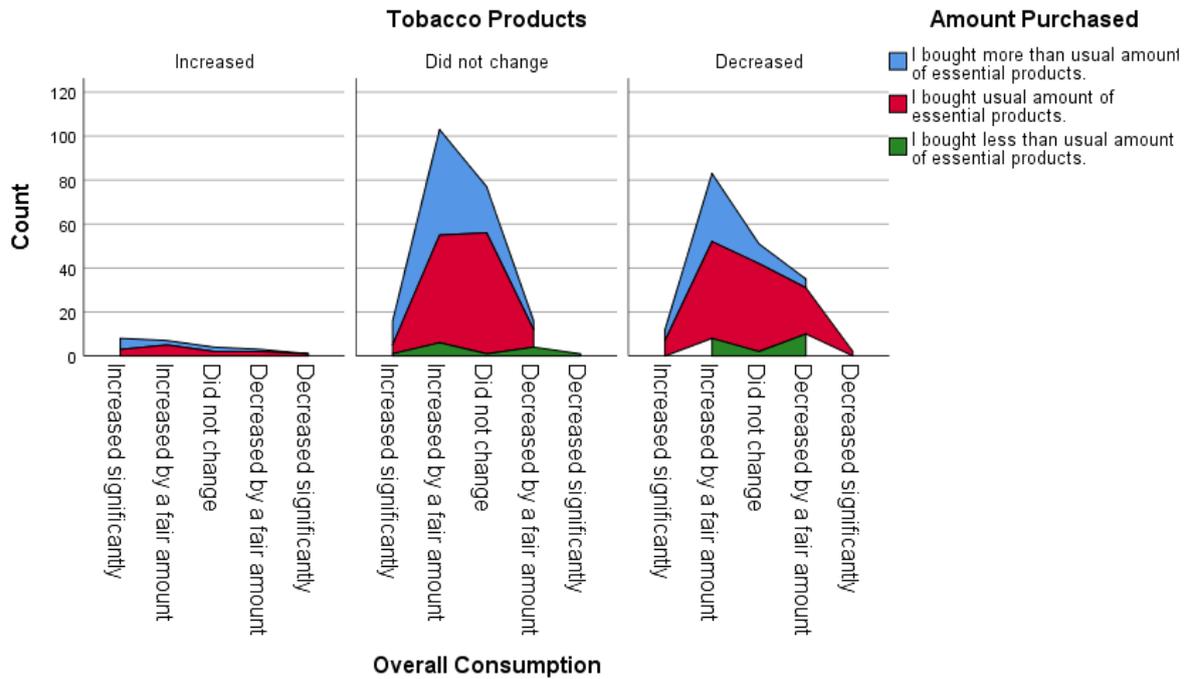

Figure 8

This figure represents the consumers who changed their consumption of meat with respect to changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours).

Figure 9

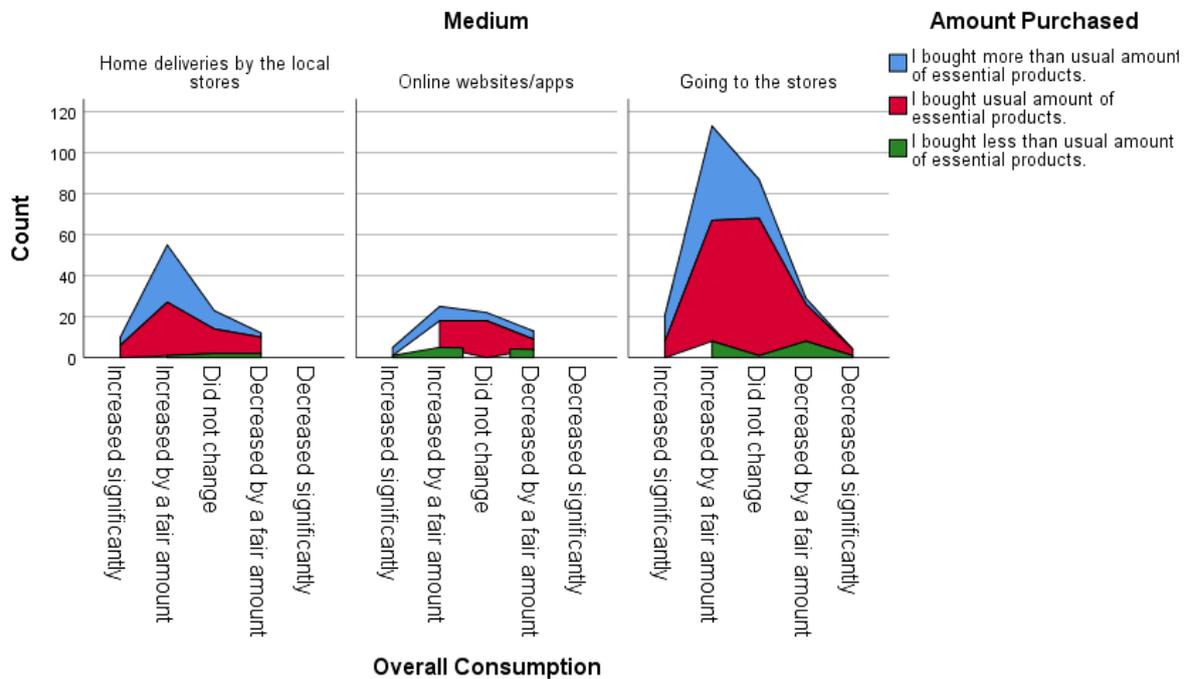This figure represents the consumers who changed their consumption of over-the-counter medicines with respect to changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours).

Figure 10

This figure represents the consumers who changed their consumption of personal-care-products with respect to the changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours).

Figure 11

This figure represents the consumers who changed their consumption of tobacco products with respect to the changes in the overall consumption (x-axis) and the purchased amount (area represented by different colours).

Figure 12

This figure represents the consumers' medium of purchase with respect to the changes in the overall consumption (x-axis) and in the purchased amount (area represented by different colours).
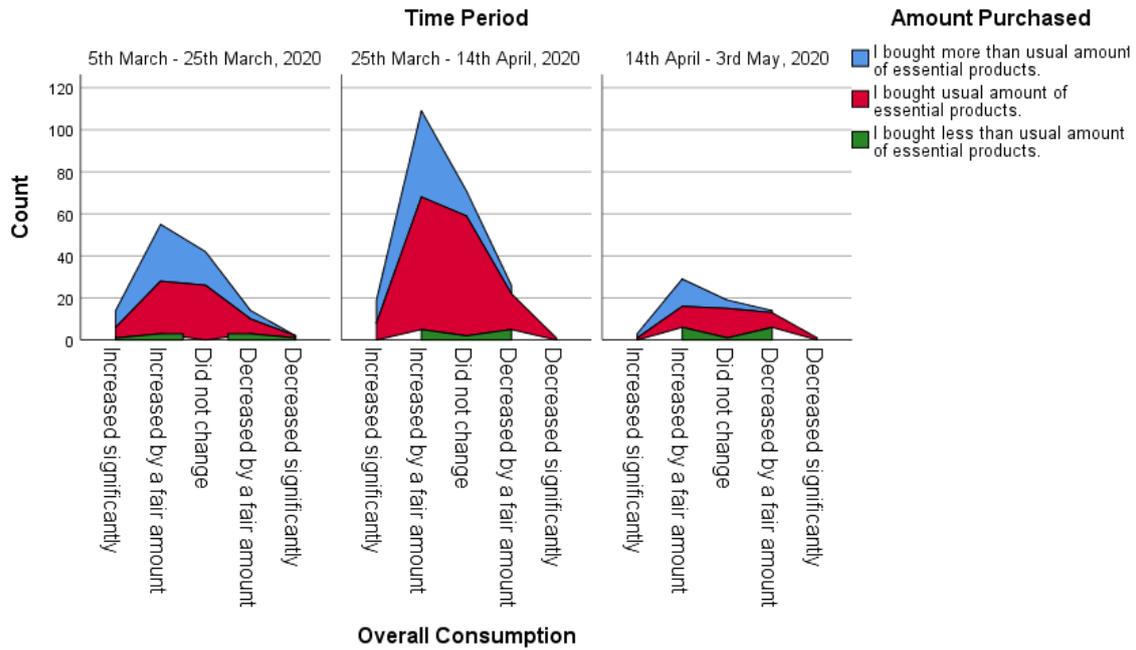
Figure 13

This figure represents the consumers' time periods of the maximum purchases with respect to the changes in the overall consumption (x-axis) and in the purchased amount (area represented by different colours).
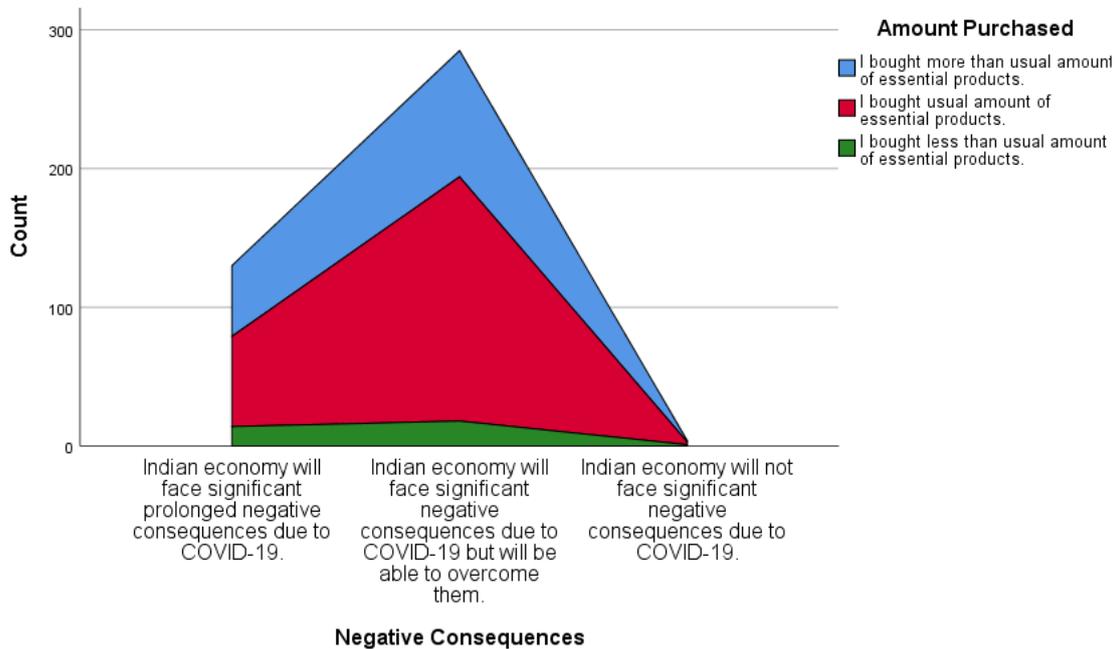

Figure 14

This figure represents the consumers' beliefs (x-axis) with respect to the change in the purchased amount (area represented by different colours).