

Impact of COVID-19 on Household Income and Consumption: A Study of Nainital District

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Abstract

The COVID-19 pandemic was a massive shock for virtually all sectors of the Indian economy barring high-end services that could switch to online working mode. As contact-intensive sectors were forced to cut back operations, their employees and vendors suffered a loss of income. Against that backdrop, this study looks at the impact of the pandemic on the income, saving and consumption patterns of households within the Nainital district of Uttarakhand. Its principal finding is that while the overall household income has declined, average consumption has actually increased (though the change is not statistically significant). This suggests a possible rise in borrowing which could have adverse economic effects among households in the future.

Keywords - Consumer behaviour, COVID-19, Saving pattern, Consumption expenditure, Income

Date of Submission: 10-06-2022

Date of Acceptance: 25-06-2022

I. Introduction

The COVID-19 pandemic triggered a once-in-a-century global crisis in 2020, with most countries experiencing a contraction in per capita GDP. This was the consequence of the unexpected onslaught of the novel coronavirus (that causes COVID-19) which was first identified in the city of Wuhan in China in December 2019.¹ The impact of the outbreak was not only felt by producers and suppliers of goods or services but also by consumers, as they struggled to balance their household budgets. Naturally, they found it difficult to maintain previous consumption habits and saving patterns. The analysis of changes in consumption and saving patterns since the outbreak of COVID-19 has been of immense interest to academics and policymakers since the early stage of the pandemic as high-frequency bank and credit card transaction data showed that households reacted to the spread of the virus with sizeable cuts in spending.

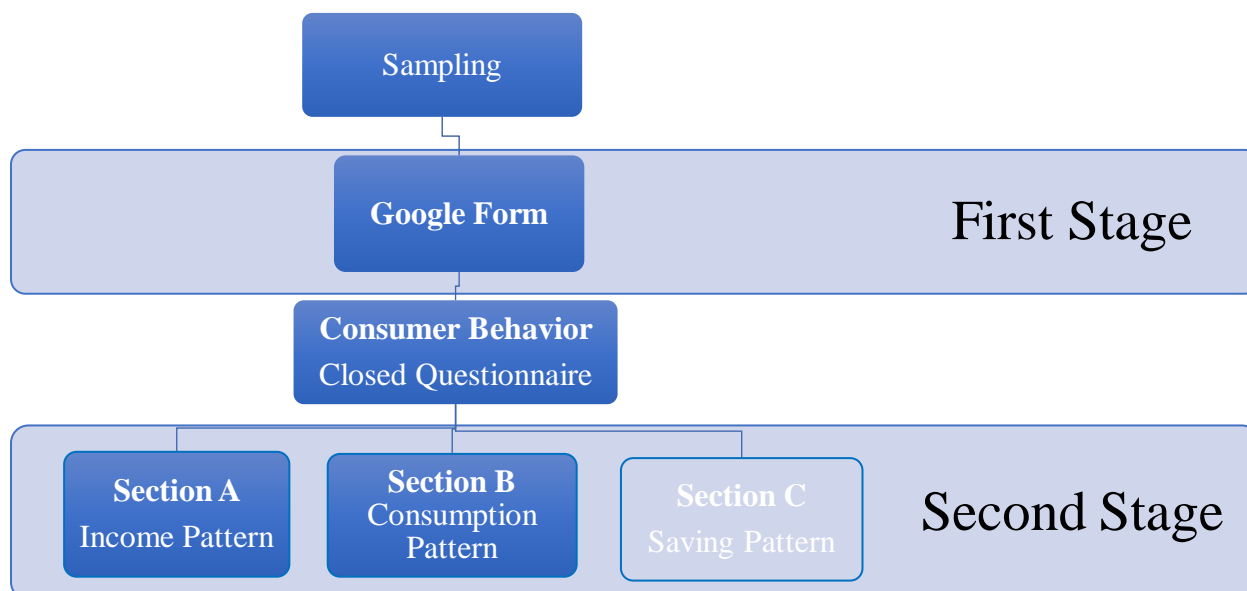
This research study mainly focuses on the impact of the pandemic on the income and consumption patterns of consumers in Nainital. Economic theory predicts that a decline in income causes a fall in consumption expenditure and therefore we should expect to see a decline in consumption due to the loss of jobs that many consumers suffered in the pandemic period. In modern economies, consumption habits are shaped by a wide range of factors and it is often difficult to isolate the influence of any one factor. However, given the massive impact of the pandemic, its effect on consumption was obvious and significant. Against this background, the study attempts to establish if the pandemic's impact on income and consumption spending was statistically significant for the consumers of Nainital. In addition, it goes deeper to conduct a granular analysis of the factors that caused changes in income and consumption among the respondents. For analytical purposes, the study treats 21 March 2020, as the date that separates the "pre-pandemic period" from the "post-pandemic

¹ Economic Survey of India, 2020 -2021, <https://www.indiabudget.gov.in/economicsurvey/>

period" because this was the day when COVID-19 was officially declared a pandemic by the Indian Government. The main motivation for the study was to assess whether consumers have been able to maintain their previous consumption levels or not.

II. Research Methodology

The present study is based on primary data which was collected through an online questionnaire circulated among randomly selected respondents of Nainital district. The study uses exploratory and analytical research design.



Statistical tools and techniques

For data analysis, we have used both descriptive statistics and inferential statistics. To compare the income and consumption in the pre-pandemic and post-pandemic periods, we have used paired sample t-test. For data representation, diagrams such as pie-chart and bar charts have been used.

Objectives of the Study

The present study is based on the following objectives

1. To check if the income and consumption expenditures of households in Nainital district were significantly impacted by the COVID-19 pandemic.
2. To assess the impact of COVID-19 on the saving patterns of households in Nainital district.

Hypothesis

The study works with the following hypotheses.

1. H_0 : There has been no significant decrease in household income due to the pandemic.
 H_1 : There has been a significant decrease in household income due to the pandemic.
2. H_0 : There has been no decrease in household consumption expenditure due to the pandemic.
 H_1 : There has been a significant decrease in household consumption expenditure due to the pandemic.

Scope of the study

In this study, we have analysed the impact of COVID-19 on income and consumption expenditure of consumers in Nainital district. We hope that the study will help policymakers to frame welfare schemes that specifically help the worst hit households and also to deal with any future pandemics or similar economic disruptions.

Limitations of the study

As the study relies on data collected from the respondents of Nainital district, its findings may have limited applicability vis-a-vis consumers elsewhere in Uttarakhand. Further, the study assumes that the respondents were entirely honest and accurate in reporting their income and expenditure for both the "pre-pandemic" and "post-pandemic" periods.

III. Literature Review

Rashid N.K. & et. al, (2011). The researchers had Analyzed the expenditure and income patterns of households in Malaysia that focuses on income, expenditure, loan, and saving. This study is based on the post-global economic crisis what is the impact on the income and expenditure patterns of Malaysian households. The study identifies major components of a household's expenditure on food, education, and health; as well as saving and loans, in relation to household income.²

Binder & Carola (2020). In this research paper researcher shows that 30 to 40 percent of Americans are very concerned about the corona crisis, postponed travel, and delayed purchases of large ticket items as early as March 2020 but became more optimistic about the unemployment situation and revised downward their inflation. The researcher has analyzed the household spending response in the COVID-19 pandemic period and also analyses utilizing transaction-level household financial data. The researcher has concluded in the initial stage of COVID – 19 the household's spending increased sharply, particularly in retail, credit card spending, and food item. But overall household spending was decreased.³

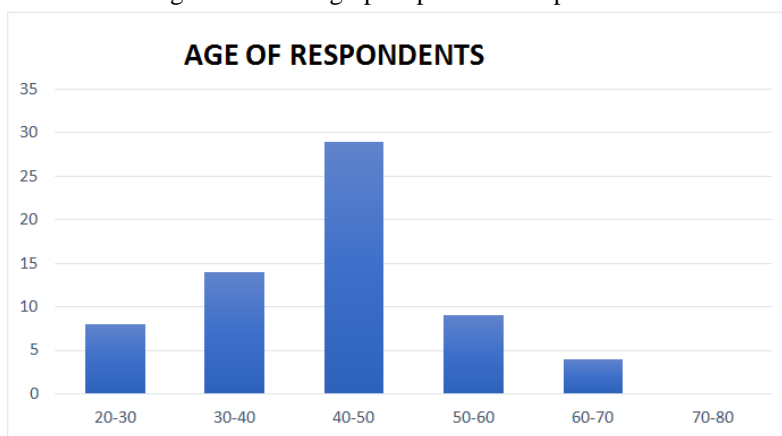
Coibion O. & et.al, (2020). In this study, the researcher had studied how the differential timing of local lockdowns due to COVID-19 causally affects households' spending and macroeconomic expectations at the local level using several waves of a customized survey with more than 10,000 respondents. About 50% of survey participants report income and wealth losses due to the coronavirus, with the average losses being \$5,293 and \$33,482 respectively. Aggregate consumer spending dropped by 31 percentage points with the largest drops in travel and clothing.⁴

Stephen B. & et. al, (2020). The study has described the impact of a pandemic on private consumption, which accounts for just over half of national income GNP. The impact of the pandemic has varied across income groups with low-income households more likely to see spending falls. While there may be significant forced savings accumulated as a result of the pandemic, this has largely been concentrated in higher-income households. These households spend relatively less of each euro of additional income in normal times, meaning that the boost to consumption when the pandemic is over is likely to be lower than would be the case if the shock had been equally distributed.⁵

Singh I. & et. al, (2020). The study traces income and employment changes through various phases of the lockdown in Panjab. The study is based on primary data collected in various phases of lockdown. They conclude that there was a large drop in income and employment with the announcement of lockdown.⁶

IV. Result and Discussion

Figure 1.1 Demographic profile of respondents



Source: Based on primary data

² Rashid N.K., and Nasir A. & Kamil N.F., 2011. Analysis of income and expenditure of households in the east coast of peninsular Malaysia. *Journal of Global Business and Economics*, 2(1). PP 59-72.

³ Binder, Carola, 2020. "Coronavirus Fears and Macroeconomic Expectations" Working Paper.

⁴ Coibion, O., Gorodinichenko, Y., & Weber, M. (2020). The Cost of the COVID-19 Crisis: Lockdowns, Macroeconomic Expectations, and Consumer Spending, *Beck Friedman Institute*, p, no, -2-4 https://bfi.uchicago.edu/wp-content/uploads/BFI_WP_202060.pdf

⁵ Abian & Bergin, Adele & Rehill L & Sweeney E. 2021. Exploring the impact of COVID-19 and recovery paths for the economy, *Economics and Social Research Institute (ESRI)*, vol 2020 (15).

⁶ Singh I., Singh S., and Baruah A., 2020. Income and employment changes under COVID-19 Lockdown: A study of urban Punjab, *Millennial Asin SAGE*. 11(3), P. 392-412.

Figure 1.1 shows the demographic profile of the study. We see that 45 percent of the respondents are in the 40 to 50 age group which is the highest age group of the study. 21 percent of the respondents are in the 30 to 40 age group and 14 percent of the respondents are in the 50 to 60 age group. 6 percent of the respondents are in 60 to 70 age group which is the least frequency age group of respondents.

Table 1.1: Monthly household income in the "pre-pandemic period" and "post-pandemic period"

<i>Monthly household income in pre-pandemic period (in Rs)</i>	<i>Frequency</i>	<i>Monthly household income in post-pandemic period (in Rs)</i>	<i>Frequency</i>
5000	11	5000	14
10000	7	10000	10
20000	10	20000	13
30000	11	30000	5
40000	4	40000	5
50000	7	50000	7
60000	2	60000	0
More	12	More	10

Source: Based on primary data

Table 1.2: Summary statistic of monthly household income pre-pandemic period and post-pandemic period

<i>Total monthly household income in pre-pandemic period (in Rs)</i>		<i>Total monthly household income in post-pandemic period (in Rs)</i>	
Mean	72673.75	Mean	66340.78125
Standard Error	22402.52972	Standard Error	22446.38888
Median	25000	Median	19000
Mode	10000	Mode	10000
Standard Deviation	179220.2378	Standard Deviation	179571.1111
Sample Variance	321198	Sample Variance	3224578
Minimum	3100	Minimum	2500
Maximum	120000	Maximum	120000
Count	64	Count	64

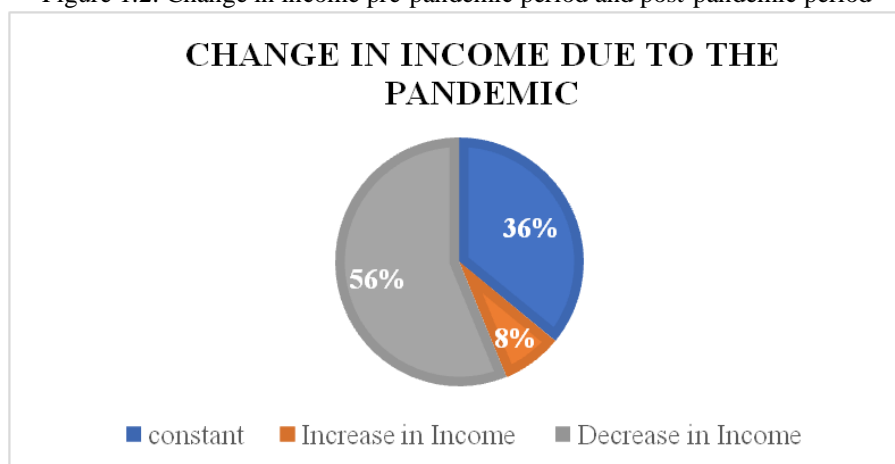
Source: Based on primary data

Tables 1.1 and 1.2 present descriptive statistics pertaining to the monthly household income of respondents in the pre-pandemic and post-pandemic periods. In our study area, the average income was Rs 72,673 in the pre-pandemic period which has reduced to Rs. 66,340 in the post-pandemic period. A monthly income of Rs 10,000 is found to be the most frequent among the respondents. Table 1.1 indicates that 28.12 percent of respondents' income was less than Rs 10,000, but following the pandemic the percent has increased to 34 percent. This means that the number of respondents earning less than Rs 10,000 increased by 6.25 percentage points in the post-pandemic period.

On the other hand, the number of respondents in the Rs 10,000 to Rs 25,000 income bracket decreased from 26.56 percent to 23.43 percent.

Rather strikingly, there are no respondents in the Rs 50,000 to Rs 60,000 category in the post-pandemic period, clearly indicating loss of income due to the pandemic.

Figure 1.2: Change in income pre-pandemic period and post-pandemic period



Source: Based on primary data

In figure 1.2 we have shown that and during COVID-19, 56 percent of the respondent’s reported that their income has decreased due to COVID-19 while 36 percent of respondents reported a constant income before and during COVID-19. Only 8 percent of the respondents have reported that their income has increased in the COVID-19 period.

Table 1.3: Monthly household consumption expenditure pre-pandemic and post-pandemic period

<i>Monthly household consumption expenditure in pre-pandemic period (In Rs)</i>	<i>Frequency</i>	<i>Monthly household consumption expenditure in post-pandemic period (In Rs)</i>	<i>Frequency</i>
5000	14	5000	13
10000	14	10000	17
15000	13	15000	9
20000	5	20000	7
30000	9	30000	7
More	8	More	10

Source: Based on primary data

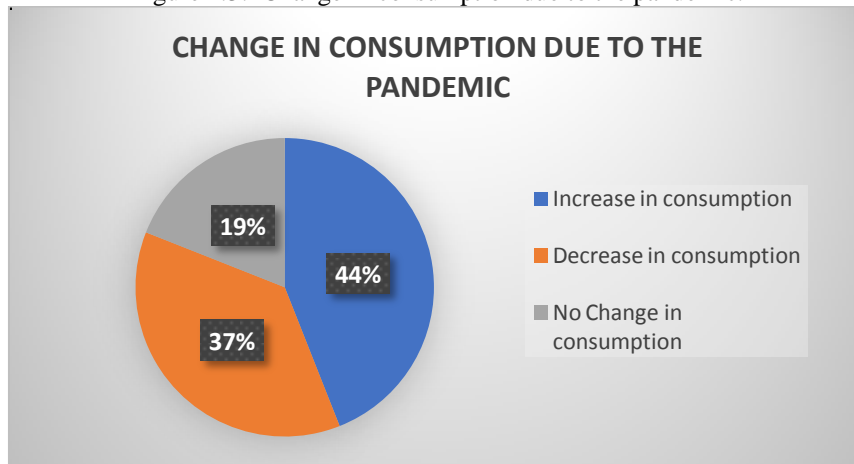
Table 1.4: Summary statistic of monthly household consumption expenditure in pre-pandemic and post-pandemic period

<i>Total monthly household expenditure pre-pandemic (In Rs)</i>		<i>Total monthly household expenditure post-pandemic (In Rs)</i>	
Mean	16801.71875	Mean	17831.48438
Standard Error	1705.197027	Standard Error	2029.75038
Median	14000	Median	12500
Mode	10000	Mode	20000
Standard Deviation	13641.57622	Standard Deviation	16238.00304
Sample Variance	186092601.8	Sample Variance	263672742.6
Skewness	1.260699543	Skewness	1.591217264
Minimum	4000	Minimum	4500
Maximum	60000	Maximum	80000
Count	64	Count	64

Source: Based on primary data

In tables 1.3 and 1.4 we present descriptive statistics pertaining to the monthly household consumption expenditure in the pre-pandemic and post-pandemic periods. In our study, consumption expenditure below Rs 5000 has the highest frequency in the pre-pandemic period. Before the pandemic, 22 percent of respondents reported a monthly consumption expenditure of less than Rs 5000. In the post-pandemic period, however, average monthly expenditure of families has increased, largely due to increased medical expenditure and expenditure on internet use. In the post-pandemic period, consumption in the Rs 5000 to Rs 10,000 bracket has the highest frequency. As per table 1.4, the average expenditure pre-pandemic period was Rs 16,801 per month, which has increased to Rs 17,831 per month in post-pandemic.

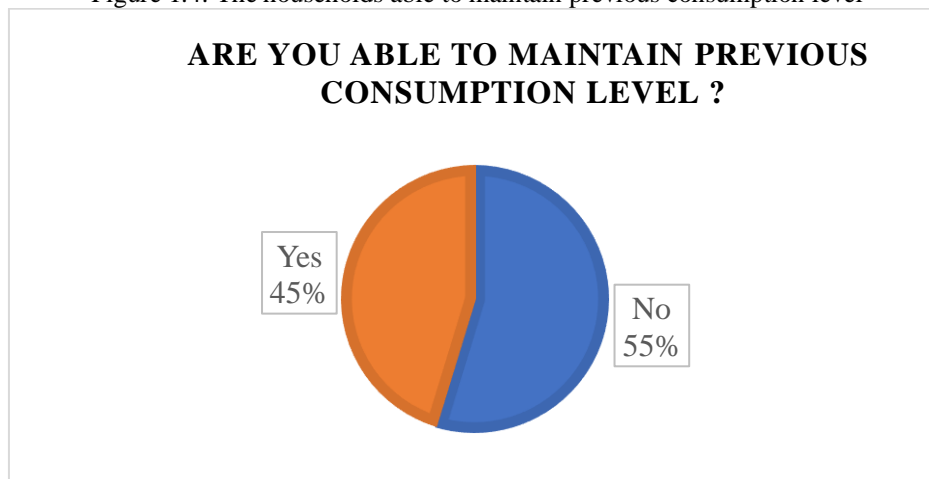
Figure 1.3: Change in consumption due to the pandemic.



Source: Based on primary data

In figure 1.3, 44 percent of respondents report that their consumption has increased in the pandemic period, while 37 percent of respondent's reported that their consumption has decreased in the same period. Only 19 percent of respondents' report that their consumption has not changed since the pandemic struck. This is due to the respondents enjoying a permanent source of income, such as a government job, or because they have substantial savings.

Figure 1.4: The households able to maintain previous consumption level



Source: Based on primary data

Figure 1.4 indicates that 45 percent of households claim that they were able to maintain their previous consumption level either due to government jobs, very high income from the self-owned business or high accumulated savings. 55 percent of households were not able to maintain their previous consumption level because of a fall in income and unavailability of buying opportunities and job loss.

Figure 1.5: Savings of households in the pre and post pandemic periods



Source: Based on primary data

As shown in figure 1.5, 77 percent of households were able to save before the pandemic, while only 59 percent of households could do so in the post-pandemic period, indicating that saving became increasingly difficult for several households due to the pandemic.

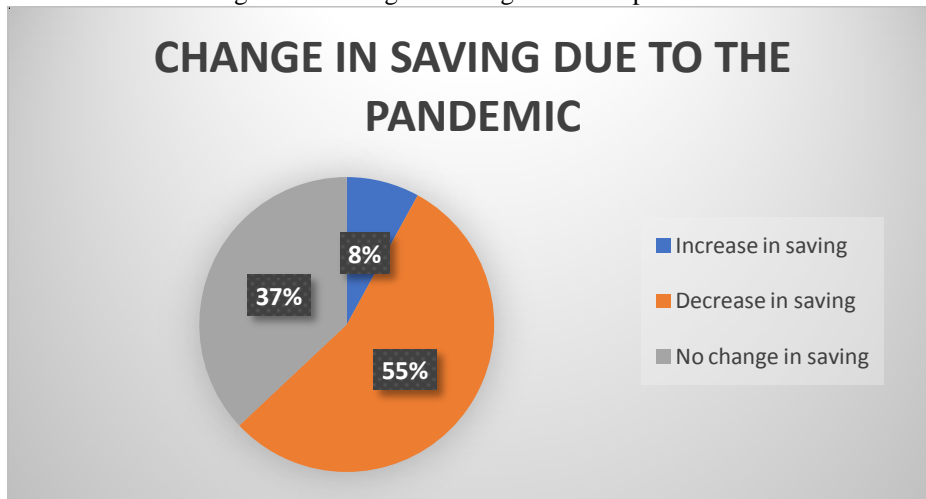
Table 1.6 Monthly households Saving in pre-pandemic and post-pandemic period

<i>Monthly households Saving in pre-pandemic period (In Rs)</i>		<i>Monthly household saving in post-pandemic (In Rs)</i>	
Mean	8531.428571	Mean	6966.28125
Standard Error	1541.106618	Standard Error	1726.702471
Median	5000	Median	1000
Standard Deviation	10787.74633	Standard Deviation	13813.61977
Sample Variance	116375470.8	Sample Variance	190816091
Minimum	800	Minimum	700
Maximum	50000	Maximum	80000
Count	49	Count	64

Source: Based on primary data

In table 1.6 we present descriptive statistics pertaining to the monthly household saving in the pre-pandemic and post-pandemic periods. The average household monthly saving is Rs 8,531 per month in the pre-pandemic period but in the post-pandemic period the average decreased to Rs 6,966 per month, indicating a fall of Rs 1,565 in average saving per month due to the pandemic. 59 percent of respondents lie in below Rs 5000 per month saving category while 16 percent of respondents lie in Rs 5,000 to Rs 10,000 monthly saving categories. only 6 percent of the respondents lies in more than 10,000 rupees but in post-pandemic period this number has decreased from 6 to 3 percent which means 50 per cent of the respondent saving has decreased.

Figure 1.6 Change in saving due to the pandemic



Source: Based on primary data

Figure 1.6 shows the saving trend of respondents during COVID-19 period. 55 percent of respondents' saving has decreased while 37 percent of respondents saving has remained constant through the pandemic. Only 8 percent of respondents, largely those enjoying a secure monthly income, reported an increase in their saving level in the pandemic period.

Hypothesis Testing

1. H_0 : There has been no significant decrease in household income due to the pandemic.
 H_1 : There has been a significant decrease in household income due to the pandemic

We use a paired sample t-test on MS Excel, comparing the reported incomes of the sample respondents in the pre-pandemic period and post-pandemic periods. The test results are as follows.

t-Test: Paired Two Sample for Means

	Variable 1	Variable 2
Mean	73033.65079	66743.01587
Variance	32629532888	32755355476
Observations	63	63
Pearson Correlation	0.996200471	
Hypothesized Mean Difference	0	
Df	62	
t Stat	3.167056264	
P(T<=t) one-tail	0.001194791	
t Critical one-tail	1.669804163	
P(T<=t) two-tail	0.002389581	
t Critical two-tail	1.998971517	

The above result shows that the difference between the income of households in the pre and post pandemic periods is statistically significant at the 0.05 level of significance. Therefore, we reject the null hypothesis and conclude that the pandemic did have a significant negative impact on the income of Nainital's households.

2. H_0 : There has been no decrease in household consumption expenditure due to the pandemic.
 H_1 : There has been a significant decrease in household consumption expenditure due to the pandemic.

As before, we use a paired sample t-test on MS Excel, comparing the reported consumption expenditures of the sample respondents in the pre and post pandemic periods. The test results are as follows.

t-Test: Paired Two Sample for Means

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	16801.71875	17831.48438
Variance	186092601.8	263672742.6
Observations	64	64
Pearson Correlation	0.710706321	
Hypothesized Mean Difference	0	
Df	63	
t Stat	-0.709273331	
P(T<=t) one-tail	0.240385806	
t Critical one-tail	1.669402222	
P(T<=t) two-tail	0.480771611	
t Critical two-tail	1.998340543	

The above result shows that the difference between the expenditure of consumers before and after the pandemic is not statistically significant at the 0.05 level of significance. We, therefore, do not reject the null hypothesis and conclude that the pandemic did not have a significant negative impact on the consumption expenditure of Nainital's consumers. (However, it is noteworthy that average household consumption expenditure has actually increased in the post-pandemic period.)

Taken together, the results of the above two hypothesis tests suggest that while there was a significant decline in the income of Nainital's consumers, that did not reflect a corresponding decline in consumption expenditure. This indicates that consumers managed to maintain their consumption levels through the pandemic either through borrowing or through liquidating their existing assets. The effect of this on future household budgets and consumption patterns would only become clear in the coming months and years.

V. Conclusion

As per our data analysis, we can conclude that the income of the respondents has decreased in the post-pandemic period as compared to the pre-pandemic period. However, consumption expenditure did not significantly change due to the pandemic. The natural inference to draw from this is a likely increase in household debt. This increased debt burden may continue to cast a shadow on consumer sentiment and spending going forward and we may require substantial policy interventions to restore pre-pandemic consumption trends.

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