Impact of Petrol Price Hikes on Household Spending Patterns in Telangana

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Abstract

For families using two-wheelers and vehicles, petrol is a daily essential and any price hikes can have a significant impact on their spending and saving patterns. With the objective of studying the effect of petrol price hikes on the spending habits, transportation costs, and household savings in Telangana, the study was designed to investigate how various household characteristics affect the extent of these effects. A convenience sample of 136 respondents (80 females and 55 males, primarily 18-23 years old) responded to a structured questionnaire. Reliability analysis, one-sample t-test, chi-square test of independence, one-way ANOVA and multiple linear regression were carried out. In a 5-point scale, respondents indicated that household spending (mean = 3.89, $p < .001$), transportation costs (mean = 3.42, $p < .001$) and savings (mean = 3.35, $p < .001$) were significantly affected, therefore all three null hypotheses are rejected. The main differentiator was income; the lowest income (less than ₹20,000/month) households reported the highest impact, while the highest income (more than ₹1,00,000/month) households reported the lowest (ANOVA $p < .05$ for all three indices), and income was the only consistent significant predictor across the regression models ($\beta \approx -.30$). The size of the effect did not differ between the monthly expenditure on petrol and between the areas of residence. A greater reduction in saving was seen with each day of vehicle use (χ^2 $p = .010$). Results show that the impact of petrol price increases is broad, but severely affects the poor, meaning that relief measures must be targeted. The keywords are Petrol price hikes, household spending, transportation expenses, household savings, income, Telangana.

1. Introduction

Petrol is very essential to the daily life of people as they are dependent on vehicles for travelling to work, colleges, markets, hospitals etc. Increased petrol prices have implications beyond the cost of the petrol itself. In addition to the direct rise in transport expenses due to the higher prices of petrol, the higher prices of other daily-use goods like food can also be indirect as they are imported using petrol. This situation can lead to changes in family spending patterns. They may be spending more on transportation and necessary expenses and have less money to save or spend on other necessities. This makes petrol price increases a key factor to consider when analysing household spending.

There have been several studies on the link between fuel prices and household spending. Shwetha S. (2026) has researched in “Impact of Fuel Price Hikes on Household Expenses in Post-COVID India.” The study provides an explanation on how the rise in petrol, diesel and cooking-fuel prices can create strain on household budgets. Transportation and fuel expenses will need to be higher for the family and other transportation and production costs will be higher, which will lead to a higher price of other products. The study specifically focuses on the strain on low and middle-income households due to their typically low income and high essential expenditure ratio.

Yet another study titled “Determination of the Household Consumption Expenditure’s Resilience towards Petrol Price, Disposable Income and Exchange Rate Volatilities” by Thomas Habanabakize (2021) looked into the impact of petrol prices on household consumption expenditure. It was a study of time series data to examine the impact of petrol price changes, disposable income, and exchange rate on household expenditure. The study found a long-term relationship between these factors. It revealed that prices for petrol could have an impact on consumption expenditure of households

in the long run. This is significant for the present study because the impact of the increase in petrol prices can be delayed. If there is a prolonged increase in fuel prices, households might adapt over time to their new consumption patterns.

Yves Kangni Kpodar (2006) has carried out a study on the effects of the rise of petroleum prices on household income and expenditures in Mali. The research revealed that the impact of petrol price increases can be experienced both directly and indirectly by households. The immediate impact is when households must use more of their income on transport and fuel. The indirect effect occurs when increases in fuel prices also lead to higher prices for other goods as a result of their transport and production. This could eventually cause the consumers to pay higher prices. The research also suggests that the impact of an increase in petroleum prices may vary across the spending behavior and economic status of households. This is important for Telangana since households vary in their income levels and transport requirements, and so may react differently if petrol prices are increased.

The Indian case has been analysed by Rahul Anand, David Coady, Adil Mohommad, Vimal Thakoor and James P. Walsh (2013) in "The Fiscal and Welfare Impacts of Reforming Fuel Subsidies in India." The researchers analysed the potential impacts on Indian households of fuel subsidy reforms. Their results indicated that increases in fuel prices and other associated prices could lead to a decline in the real income of households. Additionally, the study revealed unequal distribution of benefits from fuel subsidies among the different income groups. The study plays a significant role in the current research due to the evidence it has provided from India and has established that the phenomenon of change in fuel rates can impact the household welfare and buying power.

This will make it possible to understand from these studies that the impact of a rise in petrol price may vary within a household budget. The primary impact is an increase in transportation costs. For instance, frequent riders of two-wheelers or cars could end up paying more for gasoline in their monthly budgets. Meanwhile, higher fuel prices can raise the transportation and distribution costs of business. These extra expenses could be translated into increased food and other product prices to consumers. Consequently, household budgets may be required to put more money towards basic needs.

Next, it has an impact on household saving. If families are on a fixed monthly income, if their essential expenses go up, there will be less money available to save. Also, families can cut down on unnecessary expenses such as entertainment, shopping, eating out, and more to make ends meet each month. The study regarding fuel price rise in India also indicates that the rise in the fuel prices can lead to rise in the transportation, other household expenditure and squeeze the disposable income.

The issues are particularly germane in the context of private vehicles and road transport usage of households in Telangana, which rely heavily on such services for their day-to-day living. The impact of petrol price increases may not be the same for every household. It can depend on factors such as monthly income, family size, occupation, vehicle ownership, distance travelled, and dependence on private transportation. For instance, a household that uses a car on a daily basis for travel to work may find a bigger rise in the monthly cost of transportation compared to one that takes public transport.

While there have been earlier studies on petrol prices, fuel consumption and expenditure of households, and welfare, there is a need to explore these issues in a specific context of households in Telangana. A state level study can give a better indication of the impact of petrol price increases on households' income management. It can also be used to determine if families are cutting other costs, increasing transportation costs or decreasing their savings.

Hence, the present study, A Study on the Impact of Petrol Price Hikes and Household Spending Pattern in Telangana" is aimed to study the impact of the petrol price hikes on household expenditure. The focus of the study is primarily on changes in household consumption, transportation costs, and household saving. The study of these areas will enable the

research to gain insight into the adjustment of monthly budgets of families in Telangana when there is a rise in the price of petrol and how this adjustment will affect their financial situation.

Review of Literature

Kangni Kpodar (2006): The study concluded that oil price rises impact on households differently, higher gasoline/diesel prices mainly impact non-poor households while higher kerosene prices impact poor households more. It is not applicable to the households of Telangana, though applicable to Mali.

The study concluded that fuel subsidies benefit the richer household much more than the poorer household and that abolishing subsidies can decrease household purchasing power. It is however a national-level analysis and not deals with household spending in Telangana.

Narayan et al. (2019): The research concluded that the connection between petroleum consumption and economic growth varies across Indian states, and is more robust in the richer states. It looks at economic growth, not household spending, however.

The study revealed that the increasing price of petrol was due to international crude oil price and government pricing policies, adding an economic burden on the public. It does not, however, look at how households spend, but at the factors affecting price rises.

Petrol was found to be the primary source of energy for transportation among rural households of Tiruchirappalli District, the study revealed, and the financial burden of their increased prices had affected rural households. It is, however, only applicable to households in rural areas in one district.

The study concluded that as income of middle class families increases, they spend more on essential items, cut down on spending on non-essential items, and diminish their savings and opt for credit to meet their daily expenses. It is, however, not about petrol prices but the cost of living in general.

Addition of petrol, diesel and cooking-fuel hikes after COVID-19 hit reduce household purchasing power, with higher impact on lower and middle income groups, reveals the study. It, however, used secondary information and did not look at regional differences.

Andriamihaja & Vecchi (2007): The study concluded that increases in oil prices lead to an increase in household spending due to direct and indirect effects, and that this effect is greater in poor than in rich households. But it has to do with Madagascar.

The study revealed that subsidy removal had negative effects on household income and standard of living in Bayelsa state; those with low income are faced with hardship due to increased running cost. But it does not cover the Nigerian households and is rather about subsidy removal.

Research gap

Past research has demonstrated that increases in petrol and fuel prices can have a positive effect on household spending, transportation costs and financial strain. Shwetha S. (2026) examined fuel price increases in post-COVID India based on secondary data, but did not gather primary detailed data from households, nor did they consider regional variations. The prices of petrol and consumption expenditure of the households have been explored in South Africa by Habanabakize (2021) and in Mali by Kpodar (2006). The studies offer helpful evidence but are set in different economic and geographical contexts. Anand et al. (2013) explored the fuel subsidy reforms and welfare of households in India, though primarily in a national context. Hence, the effect of petrol price increase on the behaviour of household

expenditure, transport costs and saving in Telangana is an area of research gap. This issue is being addressed in the present study by using the primary data collected at the household level.

Research objectives

To study the effect of increase in petrol prices on the expenditure pattern of the households in Telangana.

2. To examine the impact of the increase in petrol prices on household transport cost.

To analyse the effect of the increase in petrol prices on the savings of households.

Research hypotheses

H_1: Petrol price hikes have no significant effect on the spending patterns of the households in the state of Telangana.

H_{02}: As petrol prices increase, there is no significant change in the cost of transportation by the household in Telangana.

H_{03}: There is no significant effect of price increase of petrol on household saving and disposable income in Telangana.

Research Methodology

Research design

The study is of descriptive design, cross section type, quantitative approach, with primary data taken from the survey, secondary data taken from literature related to petrol prices, house spending and transportation costs and savings. The conceptual framework (Figure 1) posits that increases in the price of gasoline are directly linked to changes in household spending patterns, transportation costs and savings with household characteristics (income, family size, location etc.) acting as moderating variables.

Figure 1. Conceptual framework

The collection of samples and data.Gathering of samples and data.

The structured questionnaire was used to collect data from the 136 household respondents in Telangana by convenience sampling technique. The sample size was calculated using Cochran's formula (95% confidence level and 5% margin of error, $p = 0.5$) which yielded a sample size of $n_0 = 384.16$. For a population of $N = 200$, the finite population correction gives $n = 384.16 / (1 + (384.16 - 1) / 200) \approx 132$ respondents. More than the minimum number of complete responses were received (136) and these were all analysed. Table 1 shows a profile of the respondents.

Instrument and measurement

The questionnaire has a demographic section (gender, age, education, residence, family type, family size, monthly household income, vehicle ownership, who pays for petrol, monthly petrol spend, frequency of petrol-vehicle use and main mode of transport) and three sections of five questions each, covering household spending patterns (A1–A5), transportation expenses (A6–A10) and household savings (A11–A15). Multiple-point scales were used to capture responses. The impact questions were all coded 1–5, 5 being the highest impact of petrol price increases. “Cannot say”, “Not applicable” and “I do not have a savings target” were given the value of missing. Three composite indices were created as the mean of the valid items: the Spending Impact Index (A1, A3, A4, A5), the Transportation Expense Impact

Index (A6, A9) and the Savings Impact Index (A11, A12, A13, A15). The following items (A2, A7, A8, A10, and A14) were not selected in the same group and are not included in the other items. In the cleaning process, "Option Urban" was combined with "Urban" and a mis-typed income category was corrected.

Statistical tools

Analysis was done in Python (SciPy) and the coded data and all test output is provided in an excel workbook, to enable the analysis to be reproduced in an excel spreadsheet or SPSS. Some of the techniques employed were: descriptive statistics, Cronbach's alpha for reliability, one-sample t-tests against the midpoint of the scale (3), Pearson correlation, chi-square tests of independence with Cramér's V, one-way ANOVA with eta-squared and Tukey post hoc analyses (Levene and Kruskal-Wallis check), and multiple linear regression (standardised regression weights and variance inflation factors (VIFs)). The tests have been conducted at the level of 0.05. The regression model is:

Impact Index = b0 + b1(PS) + b2(UF) + b3(FS) + b4(SU) + b5(RU) [+ b6(INC)] + e

Monthly petrol spend (1–5 coded: PS), Frequency of vehicle use (1 = rarely, 5 = daily, coded: UF), Family size (1–4, coded: FS), Monthly household income (1–5, coded: INC) which is also included in a second set of models, as 38 respondents did not want to state their monthly household income.

5. Data Analysis and Interpretation

Profile of respondents

Table 1. Profile of respondents (n = 136)

Variable	Category	n	%
Gender	Female	80	58.8
	Male	55	40.4
	Prefer not to say	1	0.7
Age (years)	Below 18	6	4.4
	18–20	79	58.1
	21–23	45	33.1
	Above 23	6	4.4
Education	Undergraduate	121	89.0
	Postgraduate	12	8.8
	Other	3	2.2
Residence	Urban	82	60.3
	Semi-urban	32	23.5
	Rural	22	16.2
Family type	Nuclear family	110	80.9
	Joint family	21	15.4
	Other	5	3.7
Family members	1–3	22	16.2
	4–5	99	72.8
	6–7	8	5.9

Variable	Category	n	%
	More than 7	7	5.1
Monthly household income	Below ₹20,000	17	12.5
	₹20,001–₹40,000	18	13.2
	₹40,001–₹60,000	18	13.2
	₹60,001–₹1,00,000	19	14.0
	Above ₹1,00,000	26	19.1
	Prefer not to say	38	27.9
Vehicle owned	Yes, two-wheeler	67	49.3
	Yes, car	3	2.2
	Both two-wheeler and car	61	44.9
	No vehicle	5	3.7
Monthly petrol spend	Below ₹1,000	11	8.1
	₹1,001–₹2,000	32	23.5
	₹2,001–₹3,000	35	25.7
	₹3,001–₹5,000	23	16.9
	Above ₹5,000	35	25.7
Use of petrol vehicle	Daily	97	71.3
	4–6 days a week	20	14.7
	2–3 days a week	4	2.9
	Once a week	12	8.8
	Rarely	3	2.2
Main mode of transport	Two-wheeler	98	72.1
	Car	24	17.6
	Bus	8	5.9
	Other	6	4.4

There are more females (58.8%) than males in the sample, and 91.2% of the respondents are between 18 and 23 years old; 89.0% are undergraduates. The majority are urban residents (60.3%), have nuclear families (80.9%) and have cars in the household (96.3%). Most respondents use a petrol vehicle every day (71.3% of households, 72.1 % of respondents), and two-wheelers are the primary means of transport for 72.1% of respondents. Petrol is a regular

household occurrence for most respondents. Income-based tests use only the 98 percent of respondents for whom there is income data, as 27.9% did not report income.

Descriptive statistics and reliability

Table 2. Impact indices, descriptive statistics and reliability

Index	Items	k	Mean	SD	% scoring 4–5	Cronbach's α
Spending Impact Index	A1, A3, A4, A5	4	3.89	0.66	51.5	.768
Transportation Expense Impact Index	A6, A9	2	3.42	1.15	44.1	.831
Savings Impact Index	A11, A12, A13, A15	4	3.35	0.95	28.7	.805

Scale: 1 = lowest impact to 5 = greatest impact. % scoring 4–5 is the share of respondents with an index of at least 4. Item-level results are in Appendix A.

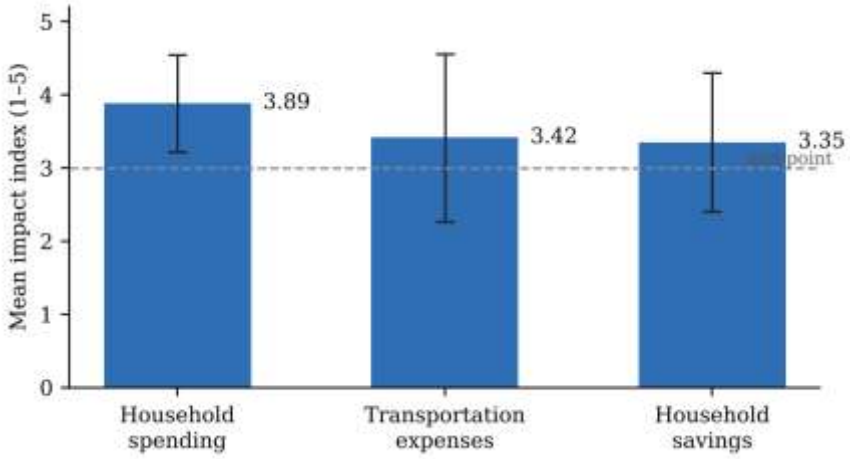


Figure 2. The mean impact index scores with standard deviations (error bars) are shown.

The means of all three indices are above the scale midpoint of 3 (Table 2 and Figure 2) and have the biggest effect on household spending. All indices have satisfactory to good reliability (α = 0.83 for transportation; α = 0.80 for savings and α = 0.77 for spending). The most positive single response was for overall monthly expenses (A1): 88.2% of the respondents indicated that their overall monthly expenses had risen (47.8% significantly and 40.4% slightly) while none indicated a reduction in expenses. Sixty-one percent of households spent more on food and grocery items; 61 percent of households decreased spending on entertainment and shopping. 64.0% reported that their savings have fallen each month (savings), 39.0% used their savings often or very often to pay for fuel (fuel) and 80.9% believe their savings will drop if prices keep rising.

The items not covered in the indices demonstrate how households react (Appendix B). Fewer than one-fourth (14.0%) use their vehicle less often and more than half (49.3%) use it as often as before. 32.4% of people cut back on unnecessary journeys in transport habits (A8), 27.9% increased their use of public transport and 28.7% did not change their transport habits. In both cases, when petrol prices are high, 44.9% prefer a two-wheeler and 33.1% prefer public transport (A10). With regards to savings behaviour (A14), 25.7% cut back on their savings, 21.3% cut back on their investments, and 17.6% used existing savings.

One-sample t-test

The three null hypotheses are that the price increases in petrol have no significant effect. One sample t-tests were used to test each index against the appropriate mid-point of the scale (3 for moderate impact). A mean greater than 3 means

that there is a significant impact. Similar conclusions were reached with the Wilcoxon signed-ranked tests that do not assume normality.

Table 3. One-sample t-tests against the scale mid-point (test value = 3)

Index	Mean	SD	95% CI	t (df = 135)	p	Cohen's d	Decision
Spending (H_{01})	3.89	0.66	3.77–4.00	15.65	<.001	1.34	Reject H_{01}
Transportation expenses (H_{02})	3.42	1.15	3.22–3.61	4.22	<.001	0.36	Reject H_{02}
Savings (H_{03})	3.35	0.95	3.19–3.51	4.36	<.001	0.37	Reject H_{03}

Cohen's d: 0.2 small, 0.5 medium, 0.8 large.

The mean score is significantly above 3 for all three indices. The effect is very large for household spending (d = 1.34) and small to moderate for transportation expenses (d = 0.36) and savings (d = 0.37). Therefore H_{01}, H_{02} and H_{03} are rejected.

Correlation analysis

Table 4. Pearson correlations between indices and household characteristics (n = 136; n = 98 for pairs with income)

	SI	TI	VI	PS	UF	INC	FS
SI	1						
TI	.761**	1					
VI	.694**	.706**	1				
PS	-.028	-.051	-.111	1			
UF	.184*	.129	.184*	.205*	1		
INC	-.308**	-.242*	-.317**	.262**	-.070	1	
FS	-.086	-.005	-.122	-.104	-.183*	.066	1

*SI = Spending Impact Index; TI = Transportation Expense Impact Index; VI = Savings Impact Index; PS = monthly petrol spend; UF = frequency of vehicle use; INC = income; FS = family size. * p < .05; ** p < .01 (two-tailed).*

The three impact indices, spending and transportation, and transportation and savings, are highly and positively correlated with each other (spending and transportation r = 0.76; transportation and savings r = 0.71; spending and savings r = 0.69); and households reporting a greater increase in spending and transportation costs also report a greater decrease in savings. Income is significantly inversely related with each of the three indices (r = -0.31, -0.24 and -0.32) indicating that higher income households report less impact. On the other hand, the monthly petrol spend is not meaningfully related to any of the indexes, while frequency of vehicle use is positively related with the spending and savings indexes, albeit weakly.

Tests of independence using chi-square

Chi-Square tests look at if the response of households is related to the characteristics of the households. The very small counts in categories were consolidated to meet the requirement that at most 20% of cells contain an expected frequency

less than 5 (symbols were placed in between the cells). The income based tests exclude respondents who did not report income. Each test sets up the null hypothesis as the independence of the two variables.

Table 5. Chi-square tests of association

Test	n	χ^2	df	p	Cramér's V	Result
Monthly income × change in overall spending pattern (A5)	96	9.54	4	.049	.223	Significant
Residence × change in transport habits (A8)	136	2.99	6	.810	.105	Not significant
Monthly petrol spend × change in savings/investments (A14)	136	10.06	6	.122	.192	Not significant
Daily use of petrol vehicle × effect on monthly savings (A11)	136	11.42	3	.010	.290	Significant
Monthly income × change in savings/investments (A14)	98	16.82	6	.010	.293	Significant
Residence × preferred mode when petrol is costly (A10)	136	3.65	4	.455	.116	Not significant

All expected cell count was 2.4 or more, and no expected cell count had a value below 5 and more than 17% of the cells was below 5 cells. The Monte Carlo (permutation) p-values (Table 1, 5,000 simulations) are .047, .818, .122, .008, .009 and .476 (in order) and are close to the asymptotic p-values.

There are three important associations. (1) Overall spending pattern and change in it with income: 44.1% of households with income up to ₹40,000 reported significant changes in their overall spending pattern as compared to 24.0% of the households with income above ₹1,00,000 ($p = 0.049$, $V = 0.22$; only just significant). A significant reduction in savings was reported by 21.6% of the daily users of a petrol vehicle versus 10.3% of the less frequent users ($p = 0.010$, $V = 0.29$). (3) Change in savings and/or investments by households: With reference to change in savings and/or investments, 40.0% households in the lowest income group decreased their savings; 53.8% of the highest income group did not change their savings ($p = 0.010$, $V = 0.29$). There is no relationship between residence and any change in transport habits ($p = 0.81$) or preferred mode of transport ($p = 0.46$) and no relationship between amount spent on petrol and change in type of saving ($p = 0.12$). Hence, the three associations listed above are those that reject the null hypothesis of independence.

One-way ANOVA

One-way ANOVA tests to determine if there is a significant difference in the mean impact index among the groups. The grouping variables were monthly household income (five groups: up to ₹2,000, ₹2,001–₹3,000 and above ₹3,000) and

residence (urban, semi-urban, rural) and monthly petrol spend (up to ₹2,000, ₹2,001–₹3,000 and above ₹3,000). These are Levene's test which tests the equal-variance assumption, and Kruskal–Wallis test is a non-parametric test.

Table 6. One-way ANOVA of the impact indices by grouping variable

Index	Grouping variable	F (df)	p	η^2	Levene p	Kruskal–Wallis p
Spending	Monthly income	3.04 (4, 93)	.021	.116	.995	.024
Transportation	Monthly income	3.70 (4, 93)	.008	.137	.972	.003
Savings	Monthly income	3.40 (4, 93)	.012	.128	.904	.008
Spending	Residence	0.31 (2, 133)	.730	.005	.150	.832
Transportation	Residence	1.34 (2, 133)	.264	.020	.602	.313
Savings	Residence	1.23 (2, 133)	.295	.018	.804	.390
Spending	Monthly petrol spend	0.24 (2, 133)	.790	.004	.427	.726
Transportation	Monthly petrol spend	0.68 (2, 133)	.510	.010	.340	.531
Savings	Monthly petrol spend	1.54 (2, 133)	.218	.023	.020	.233

Income-based ANOVAs exclude respondents who did not state their income (n = 98). Significant results (p < .05) are the three income rows only. Levene's test was significant only for savings by petrol spend; the Kruskal–Wallis results agree with the ANOVA in every row.

Table 7. Mean impact index by monthly household income

Monthly income	n	Spending M (SD)	Transportation M (SD)	Savings M (SD)
Below ₹20,000	17	4.34 (0.59)	4.12 (1.15)	3.99 (0.89)
₹20,001–₹40,000	18	4.15 (0.56)	3.83 (1.04)	3.58 (0.80)
₹40,001–₹60,000	18	3.82 (0.57)	3.03 (0.88)	3.40 (0.79)
₹60,001–₹1,00,000	19	3.90 (0.58)	3.76 (0.95)	3.58 (0.86)
Above ₹1,00,000	26	3.79 (0.62)	3.25 (1.00)	3.03 (0.93)

Scale: 1 = lowest impact to 5 = greatest impact.

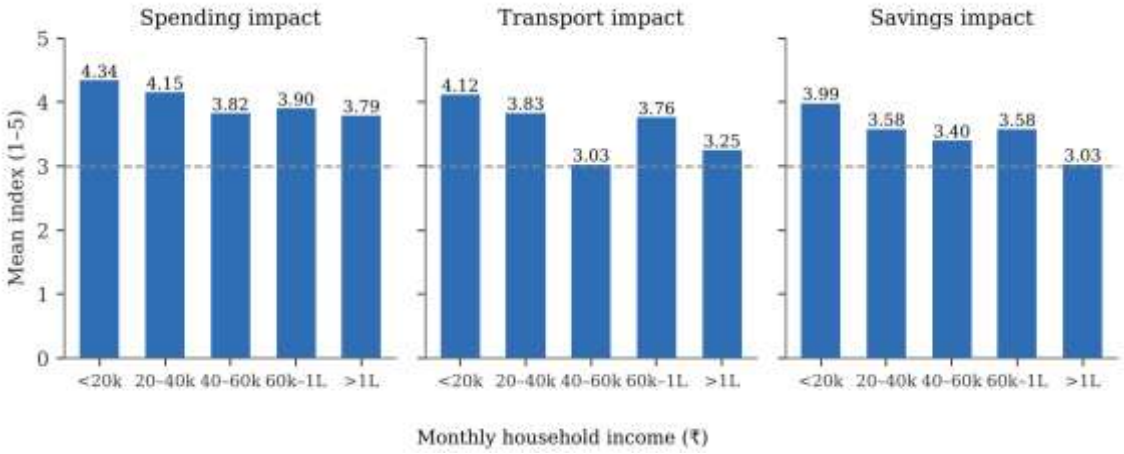


Figure 3. Mean impact index by monthly household income

Income produced significant differences for all three indices: spending $F(4, 93) = 3.04$, $p = 0.021$, $\eta^2 = 0.12$; transportation $F = 3.70$, $p = 0.008$, $\eta^2 = 0.14$; savings $F = 3.40$, $p = 0.012$, $\eta^2 = 0.13$. Income, then, accounts for 12-14% of the variance in each index. The mean difference between the spending impact for households earning less than ₹20,000 and more than ₹1,00,000 is 0.55 ($p = 0.029$) and the mean difference between the savings impact for the former and the latter is 0.96 ($p = 0.005$) (Tukey post hoc comparisons). The lowest income group had significantly different transport costs than the group with income between ₹40,001 and ₹60,000 ($p = 0.016$). The effect is strongest in the poorest 10% and weakest in the wealthiest 10%, with the middle groups not necessarily falling in between. There were no significant differences in any index for residence or in monthly petrol spend (all $p > .05$).

Multiple linear regression

Multiple linear regression was used to find which household characteristics predict the size of the impact. The size of the household's exposure to petrol was calculated as monthly petrol spend and frequency of vehicle use, where family size and residence were used as control variables (Table 8). In the conceptual framework, income was included in a second set of models (Table 9) due to the fact that it decreased the sample size to 98 participants. The variance inflation factors are all less than 1.2 and do not suggest multicollinearity; Durbin–Watson values (1.88–2.10) indicate that there is no autocorrelation of the residuals.

Table 8. Regression of the impact indices on household characteristics (b with p in brackets)

Predictor	Spending index	Transportation index	Savings index
(Constant)	3.644 (<.001)	3.018 (<.001)	3.368 (<.001)
Monthly petrol spend (1–5)	−0.036 (.421)	−0.066 (.394)	−0.115 (.069)
Vehicle-use frequency (1–5)	0.117 (.037)	0.158 (.105)	0.175 (.027)
Family size (1–4)	−0.068 (.451)	0.013 (.935)	−0.174 (.170)
Semi-urban (vs urban)	−0.110 (.423)	−0.379 (.115)	−0.307 (.114)
Rural (vs urban)	0.008 (.962)	−0.144 (.606)	0.031 (.891)
R^2 / adjusted R^2	0.047 / 0.010	0.042 / 0.005	0.087 / 0.052
F (5, 130); p	1.28; .275	1.13; .345	2.48; .035
n	136	136	136

Dependent variables: Spending, Transportation Expense and Savings Impact Indices.

Table 9. Effect of income after adding it to the regression models (other predictors as in Table 8)

Dependent variable	Income b	Std. β	p	R^2	F (6, 91); p	n
Spending index	−0.130	−0.309	.005	0.118	2.04; .069	98
Transportation index	−0.210	−0.288	.010	0.077	1.26; .283	98
Savings index	−0.187	−0.302	.005	0.141	2.49; .028	98

Std. β = standardised coefficient. Income coded 1 (below ₹20,000) to 5 (above ₹1,00,000).

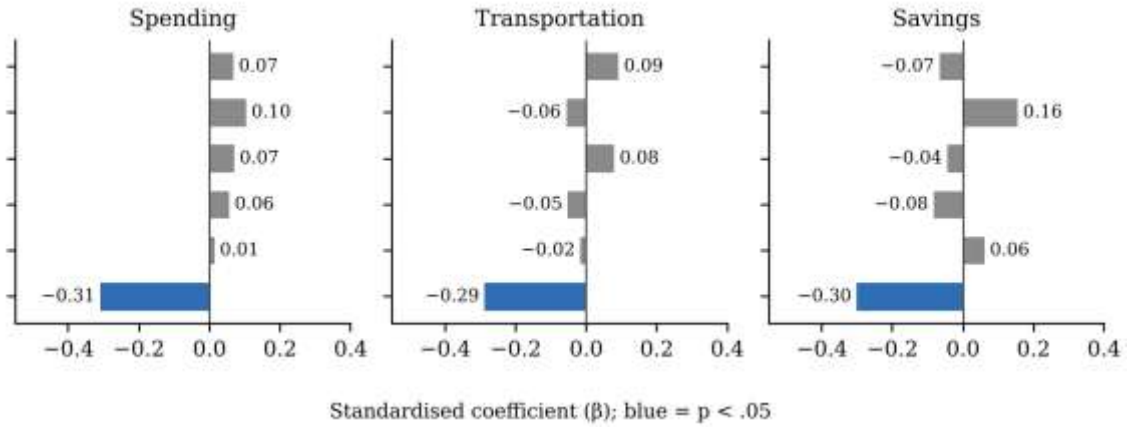


Figure 4. Standardised regression coefficients (models including income)

The exposure of house hold petrol can account for only a small portion of the effect. The model for the spending index is not significant ($R^2 = 0.047$, $F = 1.28$, $p = 0.275$) and neither is the model for the transportation index ($R^2 = 0.042$, $p = 0.345$). The savings model is significant but weak ($R^2 = 0.087$, $F = 2.48$, $p = 0.035$); its only significant predictor is frequency of vehicle use ($b = 0.175$, $\beta = 0.19$, $p = 0.027$). The frequency of vehicle use has a small positive effect on the spending index ($b = 0.117$, $p = 0.037$). Insignificant predictors in any model include the monthly amount spent on petrol, family size and residence. When income is added (Table 9 and Figure 4), it is a significant negative predictor of all three indices ($\beta = -0.31$, -0.29 and -0.30; all $p < .05$): each step up the income scale lowers the impact score by about 0.13 to 0.21 points. After income is controlled for, vehicle-use frequency no longer matters, indicating that the effect of vehicle-use frequency is partially a function of income differences. The magnitude of R^2 is quite low (0.08–0.14) which means that there is considerable variability in the impact that is not accounted for by the model.

Table 10. Regression of the Savings Impact Index on spending and transportation impact (n = 136)

Predictor	b	SE	Std. β	t	p	VIF
(Constant)	0.280	0.376	-	0.74	.458	-
Spending-impact index	0.539	0.127	0.376	4.23	<.001	2.38
Transport-impact index	0.342	0.073	0.415	4.67	<.001	2.38
Monthly petrol spend (1–5)	−0.058	0.042	−0.079	−1.37	.173	1.00

Dependent variable: Savings Impact Index. $R^2 = 0.563$, adjusted $R^2 = 0.553$, $F(3, 132) = 56.63$, $p < .001$.

Another model (Table 10) looked at the impact of the impacts on spending and transport on savings. This is because the spending and transport indices account for 56.3% of the variation in the spending impact index if combined with the monthly spending on petrol. Monthly petrol spend is not a significant predictor ($p = 0.17$), both are strong and significant predictors (spending $\beta = 0.38$; transportation $\beta = 0.42$; both $p < .001$). Those households that perceive a higher increase

in their overall and transport costs are thus those that experience a decrease in their savings. This is an correlation between perceptions, and shouldn't be interpreted as causation.

Hypothesis testing summary

Table 11. Summary of hypothesis tests (primary test: one-sample t-test against the mid-point, α = .05)

Hypothesis	Index	Mean	t	p	Decision	Supporting evidence
H_{01} / H_{11}	Spending	3.89	15.65	<.001	Reject H_{01} (H_{11} supported)	ANOVA by income, chi-square by income
H_{02} / H_{12}	Transportation expenses	3.42	4.22	<.001	Reject H_{02} (H_{12} supported)	ANOVA by income, income regression
H_{03} / H_{13}	Savings	3.35	4.36	<.001	Reject H_{03} (H_{13} supported)	ANOVA by income, chi-square, regression

Decisions refer to the impact of petrol price hikes as reported by respondents compared with the scale mid-point; the supporting tests show that the size of the impact differs by income.

6. Findings

Three areas studied are affected by the higher prices of petrol.The price of petrol has a great effect in all the three areas studied. Household spending, transportation costs and savings had mean values of 3.89, 3.42 and 3.35, which were significantly higher than 3 ($p < .001$) respectively, and reject H_{01}, H_{02} and H_{03} (Objectives 1–3).

Nearly all respondents are seeing increased household costs: 88.2% said that their total monthly cost of living has increased, while no one reported that it has decreased. 61.0% of households spent more on food and grocery, and 61.0% reduced their entertainment and shopping (Objective 1) spending.

32.4% of households have made fewer unnecessary journeys using their vehicle and 27.9% use public transport more (Objective 2), but the provision of these is not enough to stop many households having difficulties reducing their petrol consumption (49.3%).

4. Savings are coming under strain: 64.0% reported that they have cut their monthly saving, 39.0% said they used their savings often or very often to pay fuel costs and 80.9% believe their savings will be lower in the future if they are not reduced, if prices continue to increase (Objective 3).

5. Income is the most important differentiating factor. Households with incomes below ₹20,000 per month have the highest impact scores for spending, transportation and savings, with scores for the other households being lowest for these three groups (ANOVA $p < .05$), and income is a significant, negative predictor of all three indices, in the regression models ($\beta \approx -.29$ to $-.31$).

The impact is not significantly different by place of residence or monthly expenditure on petrol, and seems to be fairly uniform across all urban, semi-urban and rural households, and across light and heavy petrol users.

Daily petrol car use is significantly associated with a significant drop in savings among households ($p = .010$), but not when controlling for income.

The Savings Impact Index is also driven by the two indices of damage to spending and transportation expenses: the two indices together account for 56% of the variation in the Savings Impact Index.

7. Discussion

The findings agree with literature findings that the increase in fuel prices increases the cost of living and decreases purchasing power of households. Nearly everyone reported an increase in monthly expenses due to the rising prices of fuel, which was reported by Shwetha S (2026). The finding that income plays the major role in dividing more affected

households from less affected households corroborates the findings of Kpodar (2006) and Anand et al. (2013) which find that the impact of changes in fuel prices varies across income groups and that targeted support is more sensible than blanket subsidies. The saving result is also in line with Srivastava (2025) who had concluded that rising costs of living cause drop in saving and prompts households to trim their non-essential spending.

One outcome warrants nurturing. Monthly petrol expenditure was not a good predictor of strength of the impact. A likely reason is that the price hike is passed on to all households through higher transport and food costs, as well as through direct costs of petrol, as mentioned in the introduction, meaning that this effect is felt by all households, even those with low levels of petrol consumption. The other explanation is that the same amount of petrol expenditure is a larger proportion of income of a poor household than of a rich household with the same fuel expenditure, so the groups are divided by income and not fuel bill. The following explanations are plausible but have not been tested in this study.

The results for the items on frequency of vehicle use (A7) and non-essential spending (A2) should be interpreted with caution due to their weak and sometimes inconsistent relationship with the other items. The households that reported using their vehicle as much or more often than in the past also reported larger impacts, indicating that the large impacts are not the result of not being affected by the change but, rather, of being able to do little else due to the change.

8. Implications

8.1 For policymakers

The relief measures, like targeted transfers or assistance to transport, should be given to the poor and not as a general cut; as the burden is the maximum on the poor earning less than ₹40,000 per month.

Public transport would be a viable alternative to petrol-based travel for many households, if it was both better and cheaper; and in many cases, encouraging people to pool would be a much more effective option than offering public transport.

When changing fuel prices, the indirect effect on food and grocery prices should be taken into account as well; that is, whether petrol is used or not.

8.2 For households and Financial educators

Financial literacy programmes may assist families to plan their budgets, and ensure that they are able to save a minimum amount of funds when fuel prices go up, as many households depend on saving to cover fuel costs.

Households can limit their exposure by making multiple trips or sharing vehicles, or by using public transport when possible; this is already happening for a few households.

9. Limitations and scope for future research

Convenience sampling and involvement by only 89% of respondents (undergraduate students age 18-23) who responded on behalf of their households mean that perceptions of the financial situation of their household may differ from that of the household members who pay for petrol, and results may not be generalisable to all households in Telangana. The impact was not measured by actual spending records but by perceptions on a 5-point scale and the data are cross sectional, meaning that the relationships are associative, not causal. 28% of the respondents did not report their income, so that income-based tests were limited to 98 respondents. These regression models only account for a small proportion of the variation (R^2 between 0.04 and 0.09 before income was added, and between 0.08 and 0.14 after income was added), suggesting that other factors in the conceptual framework, not measured, could be included in future studies. Household expenditure data could be used in future studies, and rural and non-student samples could be incorporated and indirect impacts of fuel prices tested more directly in other goods.

10. Conclusion

This study investigated the impact of gasoline price increases on household spending, transportation costs and savings of 136 participants from Telangana. All of the reliability analysis, one-sample t-tests, chi square tests, ANOVA and

regression lead to the same overall conclusion. The three null hypotheses are rejected because petrol price hikes have a significant impact on all three areas. Households report higher monthly expenses and higher transport and food costs, lower discretionary spending and lower savings. But the impact is not equal for all households: There is greater impact among lower income households and little difference in impact by petrol spending and location. The results justify specific measures for lower income households, improved public transport and measures that safeguard household savings. These findings need to be replicated in a larger and more representative sample of household decision-makers as these findings are based on a small convenience sample, which was dominated by students.

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Appendix A. Item-level descriptive statistics (n = 136)

Item	Statement	Mean	SD	% scoring 4–5
A1	Household's overall monthly expenses increased because of petrol price hikes	4.36	0.69	88.2
A2	Spending on non-essential items was reduced	3.39	1.14	47.8
A3	Monthly spending on food and groceries increased	3.76	0.90	61.0
A4	Spending on entertainment and shopping was reduced	3.77	0.73	62.4
A5	Household spending pattern changed overall	3.65	1.07	54.9
A6	Monthly transportation expenses increased	3.54	1.13	55.1
A7	Personal vehicle is used less frequently after the increase	2.60	1.03	14.0
A9	Regular travel expenses were affected	3.29	1.34	44.9
A11	Monthly household savings decreased	3.15	1.20	38.2
A12	Savings are used to meet increased fuel expenses	3.21	1.30	39.0

Item	Statement	Mean	SD	% scoring 4–5
A13	Ability to achieve the monthly savings target was affected	3.46	1.11	43.7
A15	Savings are expected to decrease if petrol prices continue to rise	3.65	1.16	54.4

Items scored 1–5 with 5 = greatest impact (for A2, 5 = reduced significantly; for A7, 5 = much less frequently). A3, A4, A5 and A13 exclude respondents who answered "Not applicable", "Cannot say" or "I do not have a savings target". A2 and A7 are not part of the indices.

Appendix B. Categorical response items

Item	Response	n	%
A8. Change in transportation habits	Reduced unnecessary trips	44	32.4
	No change	39	28.7
	Increased use of public transport	38	27.9
	Started car/bike pooling	9	6.6
	Switched to a more fuel-efficient vehicle	6	4.4
A10. Preferred mode when petrol prices are high	Two-wheeler	61	44.9
	Public transport	45	33.1
	Shared/carpool transport	11	8.1
	Walking/cycling	10	7.4
	Car	9	6.6
A14. Change in savings or investments	No change	43	31.6
	Reduced savings	35	25.7
	Reduced investments	29	21.3
	Used existing savings	24	17.6
	Increased savings	5	3.7