

A COMPARATIVE STUDY OF DIESEL AND PETROL CAR IN UTTARAKHAND REGION

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ABSTRACT

Diesel and Petrol are strategic commodities; they play a vital role in the socioeconomic development of a country. Any uncertainty about their supply can impact the functioning of the economy. In order to reduce this uncertainty, it is important to plan and use the resources judiciously. But, before planning, it is essential to understand the consumption pattern of these products. Tentative information pertaining to category-wise overall consumption is available with different sources but there is no correct picture available on category-wise retail sales of Diesel / Petrol, as it is not maintained by dealers operating the retail outlets. It is important to note that during the last decade, retail share in total diesel sale has gone up from 78.5 to 82.1 per cent in 2011-12. Keeping in mind with the above scenario, Petroleum Planning and Analysis Cell (PPAC), an attached office of the Ministry of Petroleum and Natural Gas, engaged Nielsen India to conduct in-depth research covering over 2000 retail outlets (RO) spread across 150 districts in 16 states in India.

KEYWORDS: Strategic Commodities, Petroleum Planning and Analysis,

INTRODUCTION

The study was focused to estimate the share of different consuming segments within the transport and non-transport sector for diesel and petrol sold through retail outlets of Public Sector Undertaking (PSU) Oil Marketing Companies (OMCs) on a state-wise, zone-wise and All India basis. To give a more realistic picture, an attempt was also made to put together the direct sales figures (diesel sold directly by the Oil Marketing Companies (OMCs) to bulk consumers like industry, railways, defense, etc.) and retail sales figures to arrive an all India estimate share of different consuming segments within the transport and non transport sector.

Research Objectives

The research objective was to know the impact of types of car preference in Uttarakhand state both rural and urban, by type we meant petrol and diesel cars.

Hence we formulated the following hypothesis

Hypothesis

H₀ There is no significant difference between types of cars both in rural and urban sectors.

H₁ There is a significant difference between types of cars both in rural and urban sectors.

RESEARCH METHODOLOGY

We gathered the data from both primary and secondary sources; primary source consisted of a structured questionnaire that was given to 100 respondents 50 to rural and 50 to urban people. Secondary source included data from books, websites, magazines, etc. After deciding the topic the objective was made and based on that we designed a questionnaire, we used convenience sampling technique and then the data was inputted in SPSS software, the results were then interpreted which included tests like crosstabs and ANOVA. For urban we took Dehradun and for rural we took Baniyawala.

Data Collection and Research Methodology

The basic idea was to compare petrol and diesel cars preference among consumers of Uttarakhand state. Environmental Life Cycle Assessment (LCA) is used to compare the impacts, damages, and benefits of products and services while taking into account all the associated emissions, both direct and indirect. The process takes into account every emission and raw material that is used throughout the different product stages-manufacture, use stage, and end of life. The advantage of separating the different product life stages enables the identification of the causes of specific impacts and emissions per stage in the product's value-chain. The four main stages of an LCA method are applied in this paper and consist of a goal and scope definition, a life cycle inventory, the impact assessment and the reporting of results. A thorough comparison between conventional technologies (i.e., petrol and diesel) and electric vehicles requires the inclusion of both real-world regulated and non-regulated pollutants. In order to obtain these data, the real-world test data available in the literature were compared with the emission factors (EF) which are used for emission inventory reporting tools such as COPERT (Computer Programme to calculate Emissions from Road Transport) and the HandBook for Emission Factors (HBEFA). At the time of the latest update of COPERT, little data were available for Euro 6 diesel vehicles. This is why the results of PEMS campaigns, as well as dynamometer results from more realistic driving cycles such as the Common Artemis Driving Cycle (CADC) and WLTC, are included for this article.

Data were analyzed using SPSS, in which we used cross tabs and graphs to represent our findings since we had to compare the preference level we adopted an analysis of variance technique to get results from our data. Since we had experimental The ANOVA table had

Since the study is experimental in nature ANOVA technique is used as it is very common. It lets us compare the means of more than two conditions

Table 1

ANOVA						
	Sum of Squares	df	Mean Square	F	p	η^2p
Kind of Car	833.57	1	833.57	67.9697	< .001	0.654
Rural_Urban	312.48	1	312.48	25.4799	< .001	0.414
KindOfCar * Rural_Urban	108	1	54.2	4.11	0.022	0.132
Residuals	441.50	36	12.26			

The main effect for kind of car and rural and urban both are statistically significant since the p-value for both is below 0.05 see table 1 and the interaction of both is also statistically significant, the column labelled η^2p is the effect size eta squared since we had more than one factor so we use the partial eta squared and the value 0.654, 0.414 and 0.132 all are high meaning that kind of car accounts for 65.4% variance in car preference followed by 41.4% variance accounted for by rural and urban in car preference and the interaction is also 13.2%.

Table 2

Test for Homogeneity of Variances (Levene's)			
F	df1	df2	p
2.55	3	36	0.071

We also did the assumption checks to see if the homogeneity of variance is not violated and this is done with Levene’s test in which we see that our null hypothesis must be accepted meaning that the p-value must be greater than 0.05 which is the case with us as the p-value is 0.071, meaning that both kinds of car and rural and urban means were different from each other

Q-Q Plot

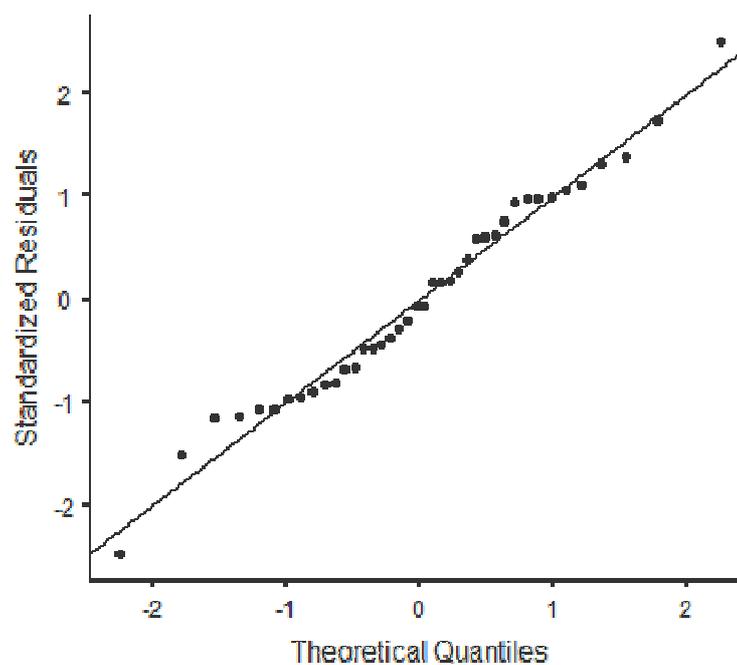


Figure 1

The quantile plots are the plot of the residual and what we check in this is that the dots of residuals must be in the line since some dots are in the line and the others are not but they are not massively away from the line so we are good to go. The idea is that over data was normally distributed.

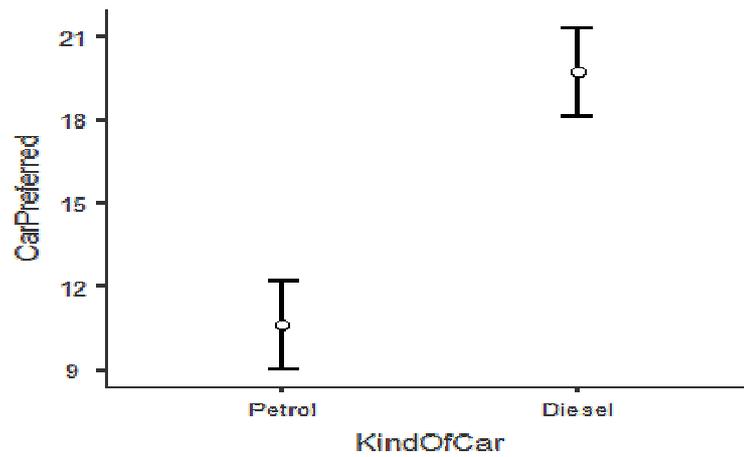


Figure 2

The next figure 2 shows the estimated marginal mean which tries to show that Petrol cars are less preferred than their Diesel counterparts. As the mean of petrol is 10 and that of diesel is 19. So this clearly shows that the sale of petrol cars are less as compared to diesel cars.

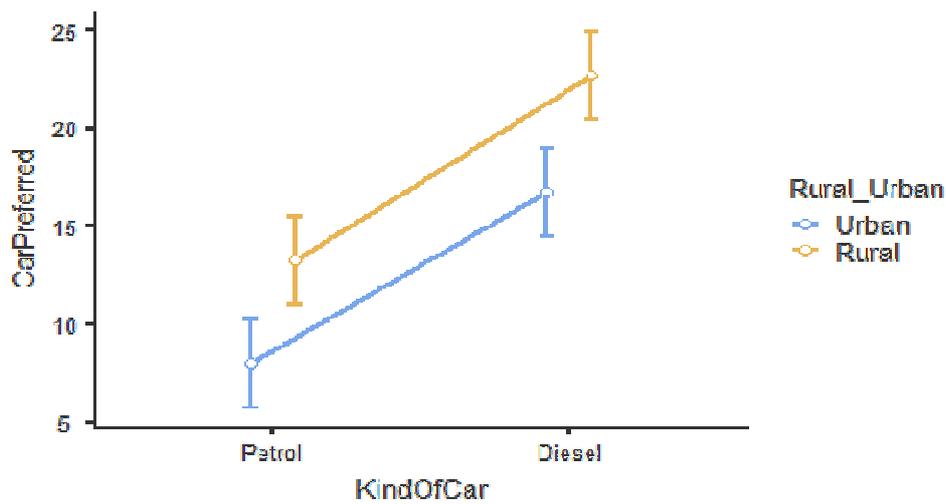


Figure 3

The most interesting is the interaction graph that shows all effect at one place let us see this in figure 3 the orange line is for rural and the blue line is for urban, sale of petrol cars have low preference than diesel cars in both urban and rural sectors but petrol cars have a higher preference in rural area than urban and also diesel cars have higher preference in rural area than urban sectors.

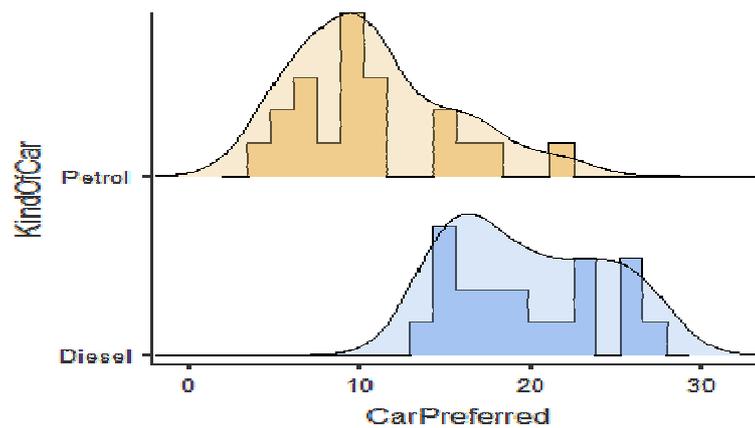


Figure 4

In the last figure that is 4th figure, it can be seen that data for both petrol and diesel cars are not that much evenly distributed and both of them are slightly non evenly distributed.

FINDING AND CONCLUSIONS

Our findings showed that respondents of rural were inclined to buy more petrol and diesel cars but diesel cars were preferred more than petrol cars and for the urban sector, the preference was again diesel cars as compared to petrol cars. The conclusion was that since diesel cars were preferred over petrol cars more emphasis can be given to diesel cars by manufacturers, since our respondents were done using convince sampling and there was limitation of time and money was also a constrain, we are sure if this study is conducted at a larger sample the results can be different.

RECOMMENDATIONS

The recommendations for a marketer will be to focus on diesel cars as compared to petrol cars also with the government being strict on environmental issues implementation of BS 6 norms will be very soon. The prices of diesel cars are a bit less than petrol cars but the overall maintenance of diesel cars are more than petrol cars. But since our results show the preference for diesel cars are more than petrol cars in both rural and urban sectors. So marketers can give more importance to diesel cars than petrol cars.

CONCLUSIONS

Non-exhaust emissions require active regulation. Either this is achieved by using alternative materials during the production of both tyres, brakes, and pavements, or by introducing alternative technologies such as regenerative braking in ICEs. Tyres should be subject to technological pushes in order to mitigate wear and tyre composition. EVs contribute to an enhancement of urban air quality, and consequent health benefits can be associated with their use (opposed to ICEs). , Policymakers should enforce further stringent regulations in the transportation sector regarding emissions as well as promote the usage of alternative means of passenger transport. Such a change would highlight the benefits, both environmental, economic and social of these alternative means (such as human powered and electric two-wheelers)

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