



## TRIP GENERATION FOR AHMEDABAD NEW WEST ZONE

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**Abstract-** The Trip Generation is the most complex and also important model in the urban transportation planning process. This paper gives a Flow of the framework to calibrate a doubly constrained gravity model of the trip distribution stage for the West Zone - Ahmedabad area based on a Household Information Survey (HIS) and Cordon Line Survey (CLS) which is carried out in 2017-2018. Samples are used for the calibration of gravity model. Calibration is carried out for different trip purposes like home, Service, Business etc. trips using Trans CAD software.

**Keywords-** Trip Generation, OD Matrix

### I. INTRODUCTION

Transportation engineering is the application of scientific principles to the planning, design, operation and management of transportation system. The transportation System in the reference to society as a whole because it provides a service for the movements of goods and people from place to place. Population growth and Economic growth seems to have generated levels of demand exceeding the capacity of most transport facilities. Due to the continuing expansion of cities with the development of societies and technology the existing transportation systems are not sufficient to meet the increasing demands. To provide the free and safe flow of traffic from one place to another without encountering any congestion problem, it might be necessary to improve the existing transportation facilities or to construct new facilities. Transportation Planning Process plays an important role in construction of new transport facilities. The basic purpose of transportation planning and management is to match transportation supply with travel demand. For any city like Ahmedabad which already facing the problem of Traffic it is very much important to know about Future Traffic Conditions.

### II. LITERATURE REVIEW

**Study done by Abdel et al in Alexandria (2014)** serves as a framework for calibrating a gravity model for the purpose of analyzing the travel behaviour for different purposes... The proposed model demonstrates the different patterns of trip distribution per purpose. It also shows a considerable shift toward non-compulsory trip purposes in the city of Alexandria. Also, the value for dispersion parameter ranges between 0.12-0.14.

**Study done by Zala K in (2013)** describe the calibration of a gravity model for various trip purposes like business, service and home and also for the same, the value for the deterrence functions ranges between 1 to 3 depending upon travel factors.

**Study done by Guler in Turkey (2014)** aims to calculate the transportation demand of the Marmaray corridor. The model was used to estimate freight and passenger transportation between Istanbul and other Turkish provinces. The estimated results were used to calculate the required train numbers on a daily basis through the Marmaray corridor and some suggestions were put forward to increase the capacity of this corridor.

**Study done by Jin & Yang (2014)** shows that LBSN (Location based social networking) has increased in popularity and sophistication, emerging as a new travel demand data source. Users of LBSN provide location sensitive data interactively via mobile devices, including smartphones and tablets. This data has the potential to provide origin-destination estimates. The proposed methodology is calibrated and comparatively evaluated against the OD matrix generated by gravity model based method as well as a reference matrix from the local metropolitan planning organization. The results of this method illustrate significant improvement in reducing the OD estimation errors caused by the sampling bias from the gravity model based method.

### III. STUDY AREA

New-West Ahmedabad is separated from the other parts of the city by Sabarmati River. There are plenty of residential colonies located in this region. The place also boasts of housing some reputed colleges, which are world renowned. The region also flaunts good network of roads. Sardar Patel Stadium is housed here. This part of Ahmedabad is primarily a residential area with educational institutes. Total area of New-West Ahmedabad is 164.06 sqkm.

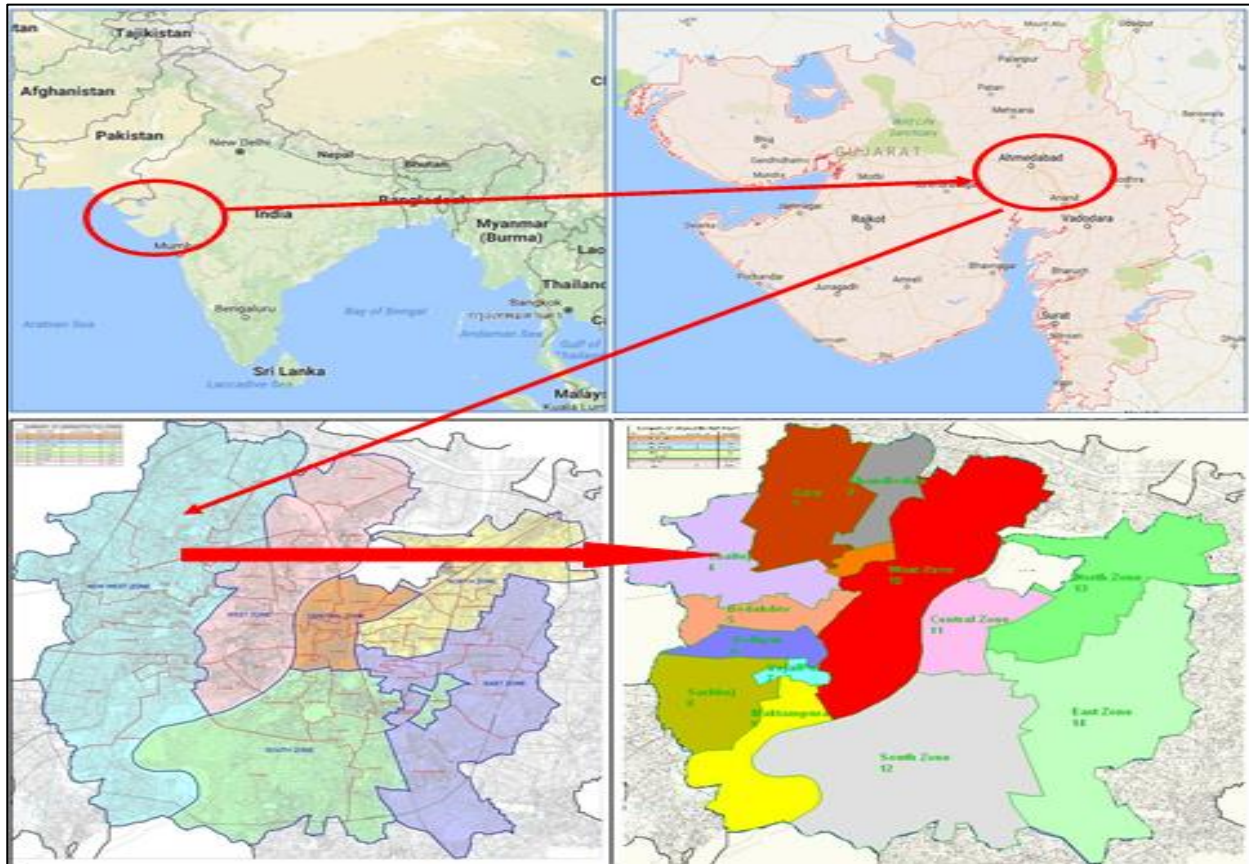
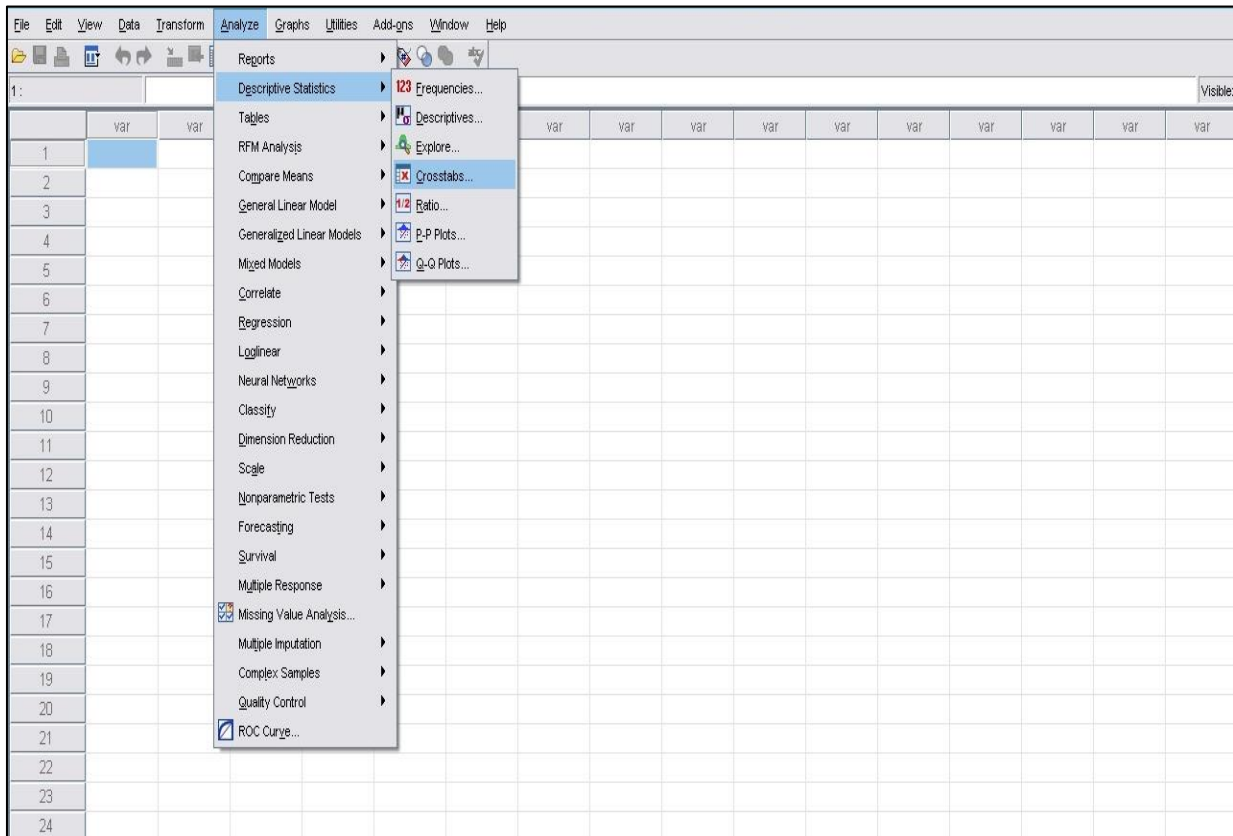


Figure: Study Area Ahmedabad NEW West Zone

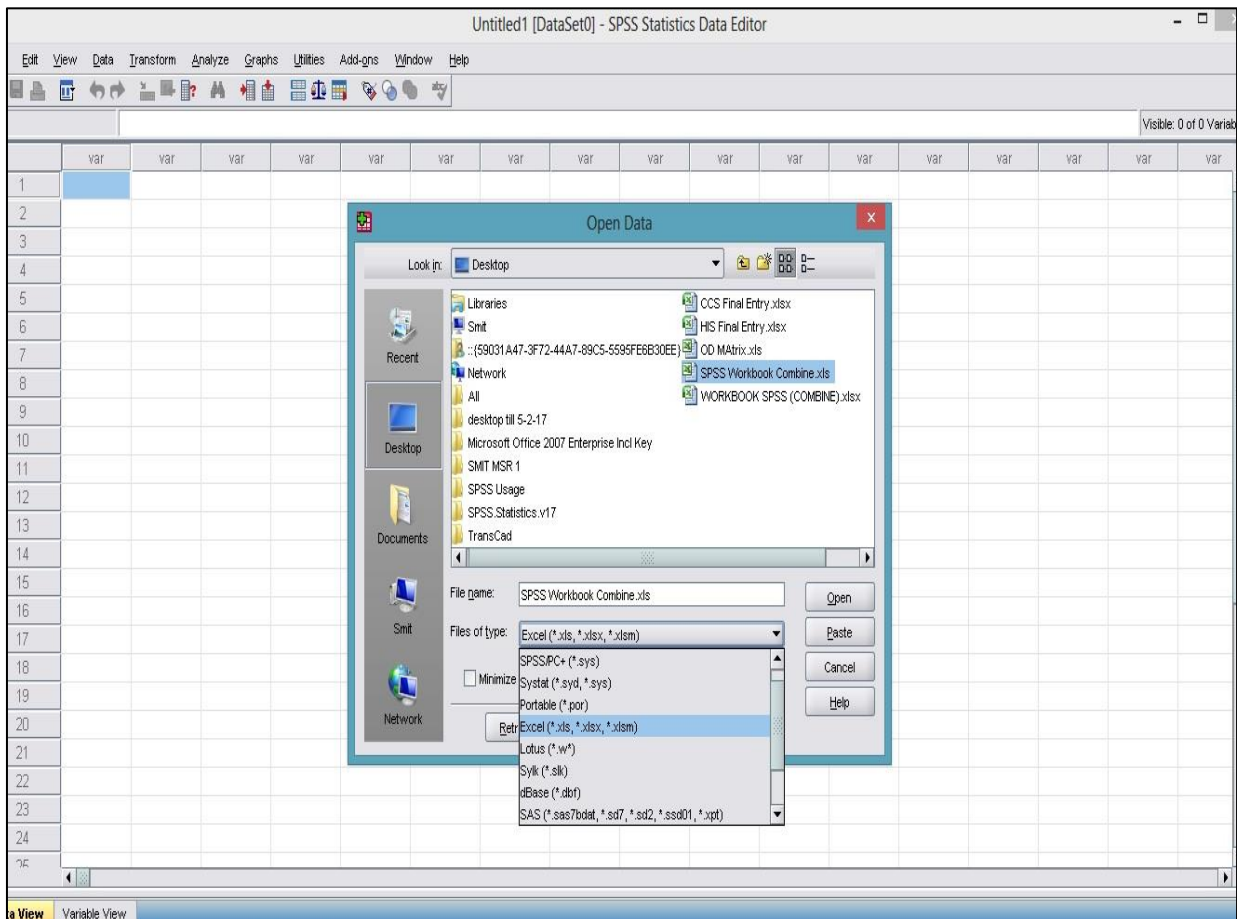
### IV. DATA COLLECTION AND ANALYSIS

Data Collected in the 2 phases one as the House Hold Interview Survey (HIS) and Second Phase is Cordon Line Survey (CLS). 1703 House Hold Surveyed During HIS and 1610 Survey Conducted at the Different Entries of Ahmedabad New West Zone. Using Home Interview Survey will only Give Internal to Internal and Internal to External Trips but there is the another big amount of Trip Originate from other Zone rather than New West Zone i.e. West Zone, Central Zone, South Zone, East Zone and North Zone. It observed that Boundary Sharing Zone like Central Zone, New West Zone and South Zone Contributed higher External to Internal Trip for West Zone.

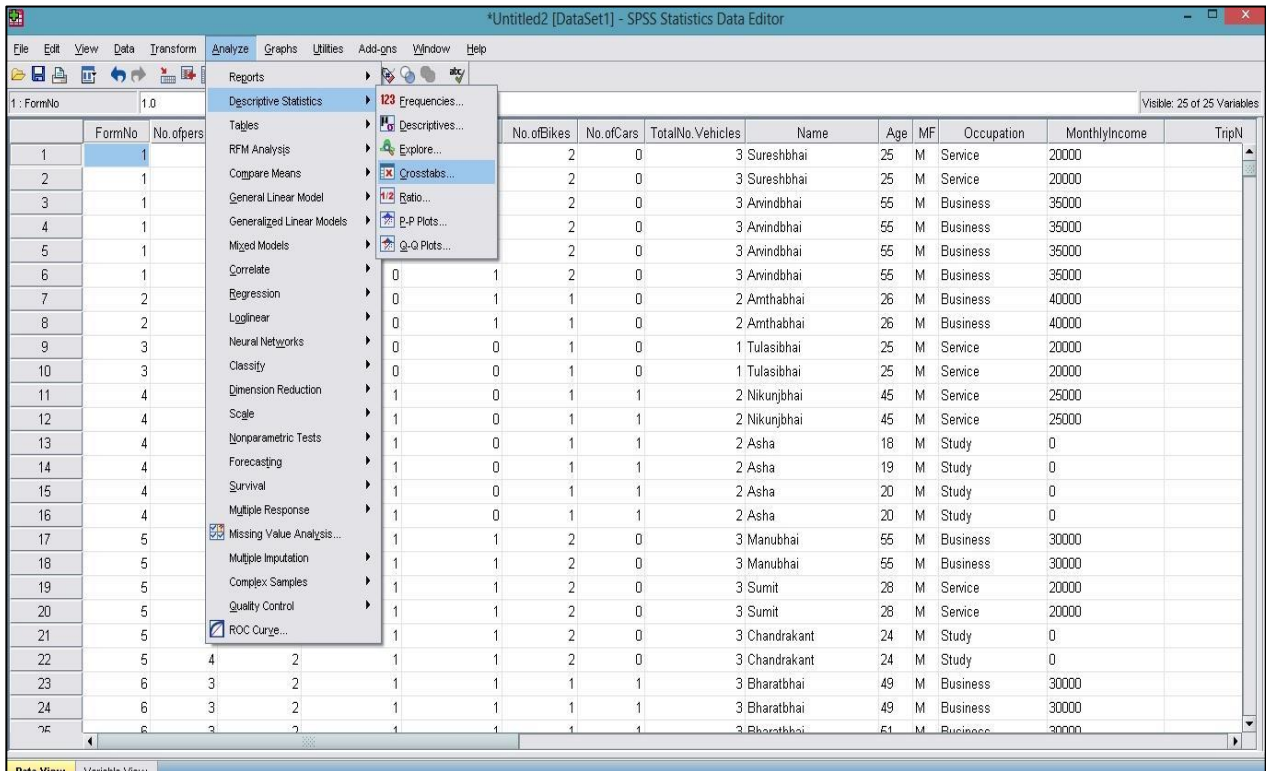
Primary O-D Matrix where generated in the SPSS Statistical 17.0 with help of these data we can find out Trip Generation Model with it. Open SPSS Static-17.0 select Analysis tab then go to the Descriptive Statistics find Crosstabs in the same option and select it and select the Worksheet which already prepared before.



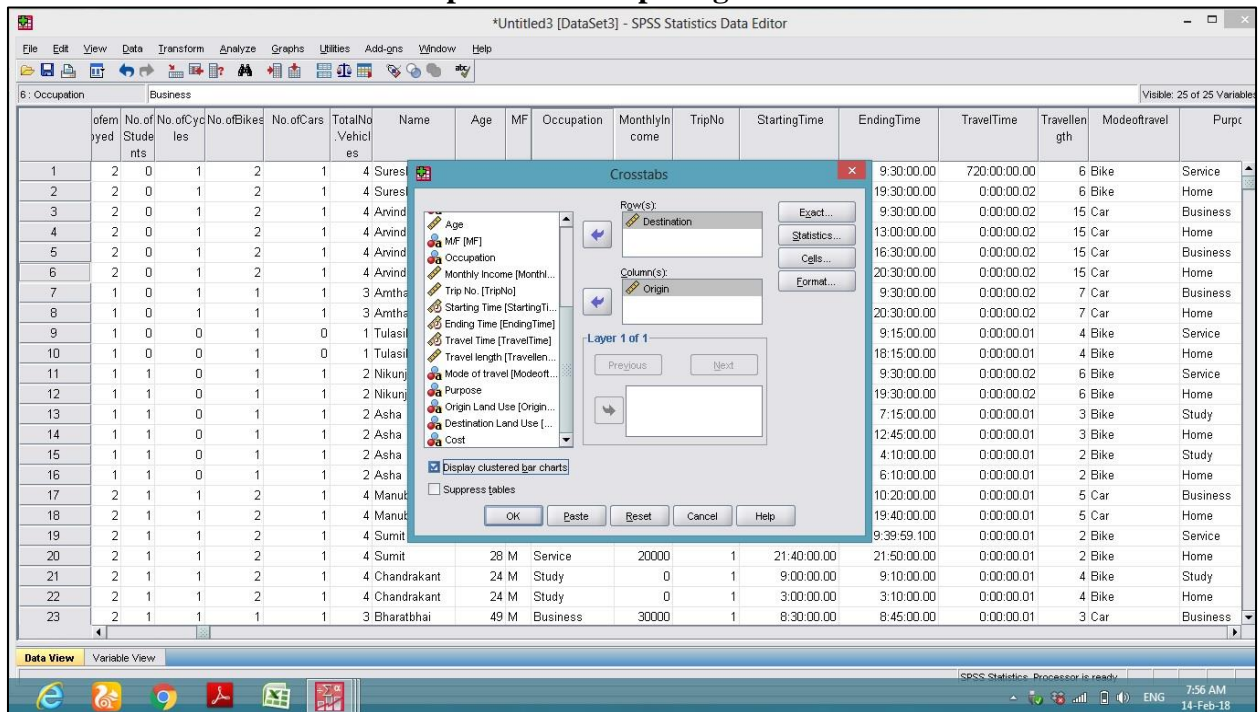
Screen shot of process of importing Data in SPSS



Screen shot of process of Selecting Data in SPSS

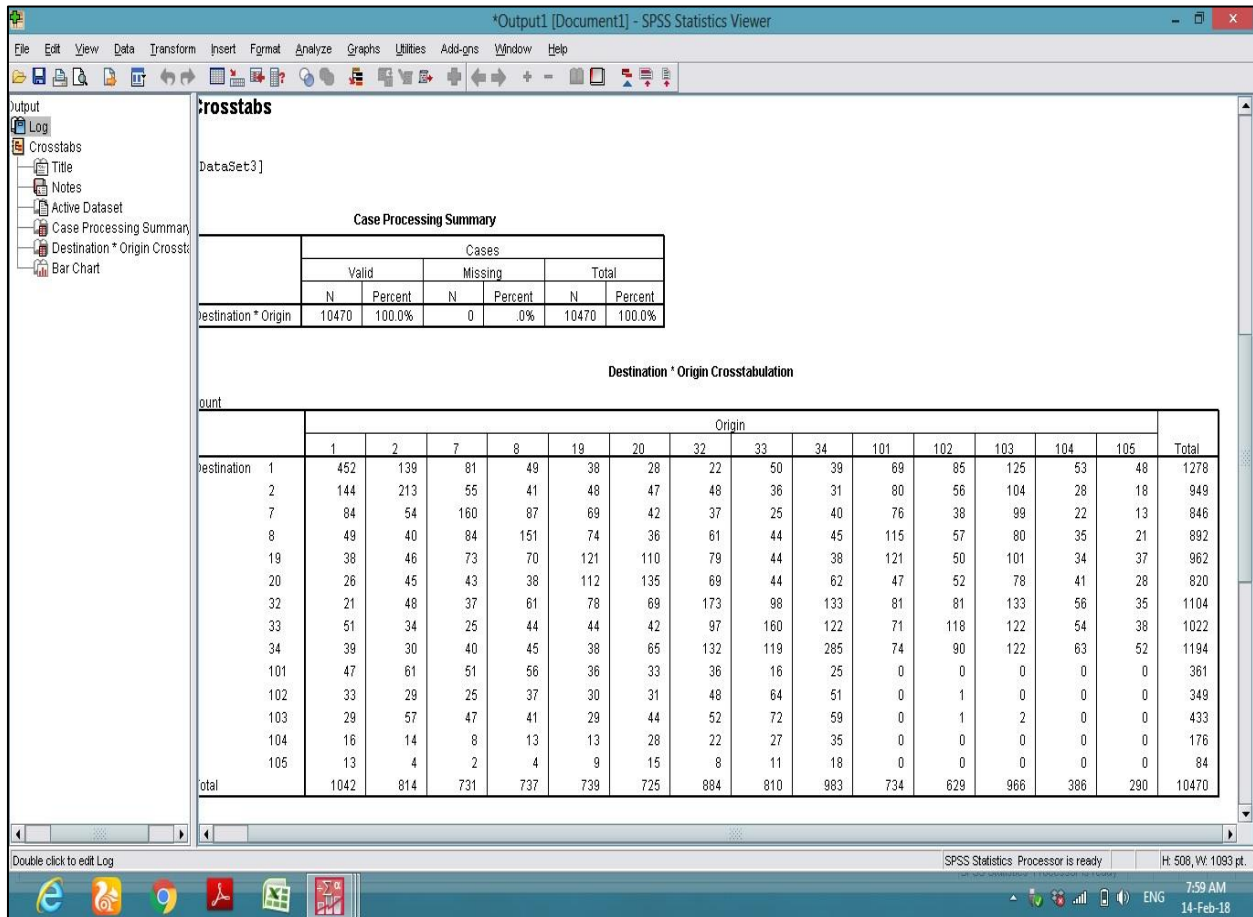


Screen shot of process of Preparing O-D Matrix in SPSS



Screen shot of process of Selection Data for O-D Matrix in SPSS

Then again select Analysis option and go for Descriptive Statistics in SPSS and select Origin as Rows and Destination as Column and Press OK and generate O-D Matrix for current given Data. Final Generated O-D Matrix saved\Exported in Excel Sheet. Prepare the Same Sheet in the Form of the Matrix in the TransCad. Which will be Use full in the Preparation of the Desire Line Diagram.



Screen Shot of O-D Matrix in SPSS

Here for Developing Trip Generation Model is done by Linear Regression in SPSS Statistical 17.0. For Developing T.G. Model Firstly we have to select data from Analysis tab in SPSS than Select Regression. Here Dependent Value is taken as the Cost of the Trip and Independent Value is taken as Monthly Income.

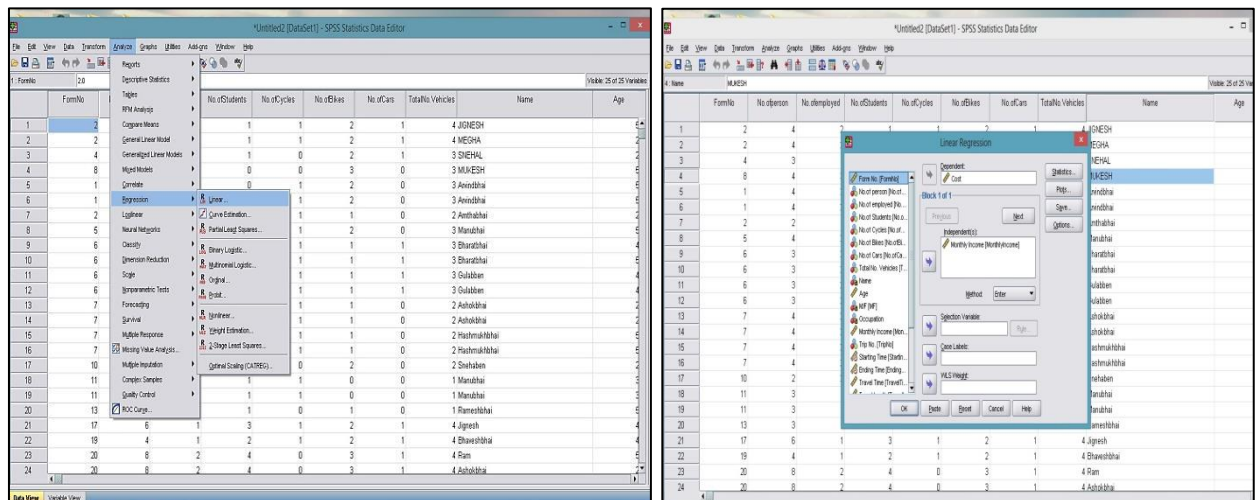


Figure 6.14: Screen Shot of Regression Process in SPSS

Variables Entered/Removed <sup>a</sup>		Variables Entered	Variables Removed	Method			
Model		Monthly Income <sup>a</sup>		Enter			
a. All requested variables entered.							
b. Dependent Variable: Cost							
Model Summary							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate			
1	.403 <sup>a</sup>	.163	.158	19.774			
a. Predictors: (Constant), Monthly income							
ANOVA <sup>a</sup>							
Model		Sum of Squares	df	Mean Squares	F	Sig.	
1	Regression	13740.615	1	13740.615	35.140	.000 <sup>a</sup>	
	Residual	70774.904	181	391.022			
	Total	84515.519	182				
a. Predictors: (Constant), Monthly income							
b. Dependent Variable: Cost							
Coefficients <sup>a</sup>							
Model		Unstandardized Coefficients			Standardized Coefficients		
		B	Std. Error		Beta	t	Sig.
1	(Constant)	-6.738	4.137			-1.629	.105
	Monthly Income	.001	.000	.403		5.928	.000
a. Dependent Variable: Cost							

## V. CONCLUSION

Followings are the major conclusion of the study

1. The population growth rate in the last decade (2001-2011) is 1.68%.
2. The trip rate observed is 5.5 trips/HH/day.

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