Gravity Model Calibration And It's Use In Trip Distribution For Ahemadabad South Zone

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Abstract- *The Trip Distribution 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 South Zone - Ahmedabad area based on a Household Information Survey (HIS) and Cordon Line Survey (CLS) which is carried out in 2016-2017. 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 CADsoftware.*

Keywords- Trip Distribution, Gravity Model, Future Trips, Calibration of Gravity Model

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 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.

III. STUDY AREA

The study was carried out on South Zone of Ahmedabad, Gujarat. South 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 region with prominent educational institutes. Total area of South zone Ahmedabad is 94.26 sqkm.

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). 1578 House Hold Surveyed During HIS and 1450 Survey Conducted at the Different Entries of Ahmedabad South 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 South Zone i.e. New West Zone, Central Zone,

West Zone, East Zone and North Zone. It observed that Boundary Sharing Zone like Central Zone, New West Zone and West Zone Contributed higher External to Internal Trip for South Zone.

Primary O-D Matrix where generated in the SPSS Statistical 17.0 after that same will be prepared in TransCAD. Expanded Matrix and Future OD Matrix where found with help of Current OD Matrix and Expand Factors with help of current and future Population. After Preparing all 3 OD Matrix Prepare Desire Line Diagram in TransCAD for Current and Future.

V. CONCLUSION

Followings are the major conclusion of the study

1. The population growth rate in the last decade (2001-2011) is 1.48%.
2. The trip rate observed is 5.5 trips/HH/day
3. The proportion of purpose based trip types is 54.4% Work, 41.6% Educational trips, 0.62% Social trips, 2% Shopping trips, 1.42% Recreational trips.
4. The derived final O-D Matrix can be used for transportation corridor planning.

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