ASSIGNMENT

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SUBMITED TO:

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SUBJECT:

Transportation Planning & Management

Q.No.01. What is planning; briefly describe the studies carried out in the scope of transportation planning strategies in their modelling with assumptions and limitations. Present your answer in the form of formal technical report?

Planning: An activity or process that examines the potential of future actions to guide a situation or system toward a desired direction. Occurs in present but is oriented towards the future. The purpose of planning is to achieve positive goals and to avoid negative consequences.

Transportation Planning: A methodical process of planning for future transport needs. It is a combination of art (creativity required) and science (solution of highly technical problems). Objective is to provide information necessary to make decision. Leads to decisions on transportation policies and programs. It needs to be coordinated with other aspects of community planning, particularly land use planning.

Abstract

In this report we will study the studies carried out in scope of planning of a transportation project & importance of the planning in a project.

Introduction

All man made projects should start with a plan. The bigger projects will have more intensive & long term planning. Sometimes for large transportation projects the planning starts 20 years before the projects starts.

Objective of Transportation planning

Objective of transportation planning is as under.

- An accessible transport system.
- High level of transport quality.
- Positive regional development.
- Safe traffic.
- A sound environment.
- An equal opportunities road transport system.

Assumptions in Scope of Transportation Planning:

The studies carried out for transportation planning has the following assumptions:

- Travel patterns are tangible, stable and predictable.
- Movements demands are directly related to the distribution, and intensity of land use, which is capable of being accurately determined for some future date.
- Decisive relationship exists between all modes of transport and that the future role of a mode cannot be determined without consideration all other modes.
- Area of continuous urbanization require a region-wide consideration of transport situation.
- The transportation study is an integral part of the overall planning process and cannot adequately be considered in isolation.
- The planning process is continuous, and require continuous updating, validating and amendment.

Transportation Planning Process:

- Transportation survey, data collection and analysis;
- Use of transportation model;
- Future land use forecasts and alternative policy strategies; and
- Policy evaluation.

Studies :

Some of the studies which is used in transportation planning strategies are:

1. **Traffic Volume Counts:** It is the number of vehicles crossing a section of road per unit time at any selected period. In traffic volume counts, we count
   a. Number of vehicles passing a point. Or a specific area/ point.
   b. Counts on screen line(s) which divide a city into two or more parts.

   We sought the following information from these counts;

   a. Traffic volume and direction
   b. Volume of turning traffic at intersections.
   c. Hourly, daily, and seasonal variations of traffic
   d. Proportion of cars, trucks and buses.

2. **Origin and Destination Surveys:** The survey is primarily for transportation planning, particularly the location, design, and programming of new or improved highways, public transport, and parking facilities.
   An origin and destination survey may range from a relatively simple study to determine the amount of traffic that would by-pass a town to a comprehensive transportation survey for planning and design of the transportation system in a large metropolitan area.

- **Methods include:**
  - Recording registration numbers
  - Handing postcards to drivers
  - Roadside interviews
  - Tag-on-vehicle surveys
  - Home interview surveys.

3. **Speed Studies:** Using a radar meter, which gives a direct reading of speed. Taking photographs of a section of road at a predetermined time interval and measuring the distance. Enoscope is also used to measure the speed.

   These may include:
   - Speed distribution and cumulative frequency distribution curves.
   - The mean speed (TMS & SMS)
   - The 85^{th} percentile Speed

4. **Travel Time and Delay Studies:** Travel time measures the average journey time and journey speed on sections. It is:
   - Used in traffic assignment
   - Quality of the traffic route
   - Before and after effect of traffic engineering techniques**.**

   Delay study is by analyzing the delays, the location and cause of the congestion can be identified and remedied.

5. **Parking Studies:** Parking studies are used to determine the demand for and the supply of parking facilities. They are Carried out to;
   - Assist in cordon counts
   - the number and location of existing parking spaces, both kerbside and off-street;
   - existing parking practices, including usage of available spaces, parking duration, illegal parking.
   - the need to impose or vary parking time limits or to install parking meters;

- the adequacy of existing enforcement measures.
- For larger cities, a comprehensive parking demand study is required
- It includes the determination of parking usage, parking habits as well as the origin, destination and purpose of trip of drivers parking in the area.
- It is used primarily in determining the demand for parking space by evaluating the individual parker's desires.
- The actual survey is carried out in the form of questionnaire cards or direct interviews.

6. **Some other traffic studies are:**
   - Turning movement counts
   - Vehicle delay studies
   - Saturation flow rate
   - Queue lengths
   - Gap study
   - Vehicle occupancy study
   - Commercial vehicle survey
   - Trip generation study.

Limitations:

- Traffic counts give the amount of traffic passing specified points on the road, but they do not indicate where traffic desires to travel, i.e. Its origin and its destination.
- It is very difficult to stop the cars for an interview and collect data because it causes delay in vehicular movement.
- Large number of observers are needed.
- Analysis of the results can be complicated.
- Response may not good to postcards.
- This survey requires more manpower.
- There is a possibility of human error.
- Data collected may not show the complete features of the road and may not be accurate because of fluctuating traffic flow time to time.

Conclusion & recommendation:

- To sum up, it is concluded that road network in a city should be planned in an integrated manner.
- Transportation planning is a particularly important component in the overall planning for what we want our communities to be.
- All the studies carried out in transportation planning are compiled and evaluated for further improvement.
- An independent study from third party can help in cross verification of the studies.
- Forecasting for future land use should be done in coordination of respective administration of the area.

Q2. What activities are carried out in planning a four-step conventional transportation modelling?

Transportation planning is a complex process that involves a basic sequence of steps. Several can take place at once and it is not unusual to repeat some of the steps several times. Travel demand models are used in the forecasting step of the process as the means to predict how well alternative plans perform in meeting goals. The basic steps in the transportation planning process are the following:

Problem definition: This step identifies the key transportation, socio-economic and land use issues and problems facing the community. This step may also involve definition of the size of an area to be studied, determination of the scope of the study and the establishment of a committee structure to oversee the planning process.

Define goals, objectives and criteria: A consensus should be developed by elected officials and citizens about the future of the community and its transportation system. Goals are developed for the quality of transportation service, environmental impacts and costs. Some of these will likely be in conflict. A good planning effort will identify the trade- offs between these factors among alternatives in a clear, concise way to help make decisions. Along with goals it is important to identify more specific objectives and criteria which can be used to specifically measure how well alternative plans perform in meeting the more general goals.

Data collection: Data must be compiled about the present status of the transportation system and its use. This could include traffic data, transit ridership statistics, census information and interviews of households about their travel patterns. Data are also gathered on land use, development trends, environmental factors, and financial resources. This will assist in problem definition and in developing methods to forecast future travel patterns. Good data are essential to the planning process. The statement 'garbage in/garbage out' applies in transportation planning. Without good data, the results of the planning process have little real meaning and can lead to the wrong projects selected and a wrong direction for the region.

Forecasts (Modeling): Data from existing travel is used to make forecasts of future travel using travel demand models. This requires forecasts of future land use and economic conditions as well as understanding of how people make travel choices. Forecasting requires large amounts of data and is done under many assumptions. The basics assumptions and procedures used for travel demand forecasting are set out in section II of the primer.

Develop alternatives: Forecasts are used to determine the performance of alternative future land use and transportation systems. Alternatives normally include different land use and transportation systems and mixtures of highway and transit services and facilities. Since land use affects travel and travel affects land use, both must be considered.

Evaluation: Results of forecasts are used to compare the performance of alternatives in meeting goals, objectives and criteria. This information may be extensively discussed by interested citizens, elected officials, different government agencies and the private sector. Ultimately decisions are made by appropriate elected or appointed groups for future transportation projects.

Implementation plan: Once decisions are made, plans should be further developed and refined for implementation. This may include more detailed analysis for design and evaluation following the same are process as above.

Q3.Calculate Trip Generation and Attraction for each Below Given Zone.

Table 1

Land Use Category		Area (ha)						
		zone 1	zone 2	zone 3	zone 4	zone 5	zone 6	zone 7
Residential		7740	24900	17064	40204	29317	576419	53445
Comercial	Retail	6972	5688	26220	6172	126091	15270	1290
	Whole Sale	14940	10744	20976	7715	90065	7635	1935
	Services	5976	2528	1748	6172	162117	10180	1720
Manufacturing		1290	4980	1264	1748	4629	36026	12725
Transportation		1935	8964	5688	5244	4629	90065	10180
Public Buildings		2580	9960	4424	6992	3086	252182	30540
Public Open Space		3010	22908	15800	71668	92580	468338	114525

Table 2

Land Use Category		Trip Generation Rate(personnel Trips Per Hectare)						
		zone 1	zone 2	zone 3	zone 4	zone 5	zone 6	zone 7
Residential		128	108	95	75	55	45	38
Comercial	Retail	850	423	563	670	463	485	380
	Whole Sale	135	90	115	73	60	48	40
	Services	445	258	505	385	365	338	328
Manufacturing		353	183	83	73	55	53	35
Transportation		73	25	35	25	13	18	15
Public Buildings		595	265	375	245	90	48	10
Public Open Space		5	3	10	5	5	3	3

Table 3

Land Use Category		Trip Genration							
		zone 1	zone 2	zone 3	zone 4	zone 5	zone 6	zone 7	Total Land UseTrips
Residential		990720	2689200	1621080	3015300	1612435	25938855	2030910	37898500
Comercial	Retail	5926200	2406024	14761860	4135240	58380133	7405950	490200	93505607
	Whole Sale	2016900	966960	2412240	563195	5403900	366480	77400	11807075
	Services	2659320	652224	882740	2376220	59172705	3440840	564160	69748209
Manufacturing		455370	911340	104912	127604	254595	1909378	445375	4208574
Transportation		141255	224100	199080	131100	60177	1621170	152700	2529582
Public Buildings		1535100	2639400	1659000	1713040	277740	12104736	305400	20234416
Public Open Space		15050	68724	158000	358340	462900	1405014	343575	2811603
Total Trips generated in		13739915	10557972	21798912	12420039	125624585	54192423	4409720	242743566
Total Trips Generated fr		242743566							242743566

Table 4

	Attractions	Productions
Zone 1	10602420	3137495
Zone 2	4025208	6532764
Zone 3	18056840	3742072
Zone 4	7074655	5345384
Zone 5	122956738	2667847
Zone 6	11213270	42979153
Zone 7	1131760	3277960
Total	175060891	67682675
Average	208902228.5	

Table 5

Modified Attractions	Modified Productions
12651993	9683862
4803328.24	20163342.51
21547440.4	11549885.99
8442269.355	16498500.24
146725727.4	8234296.053
13380927.51	132654934.8
1350542.573	10117406.69
208902229	208902229

Table 6

		Origin							Modified Attractions
		zone 1	zone 2	zone 3	zone 4	zone 5	zone 6	zone 7	
Destinations	Zone 1	586495	1221176	699509	999218	498703	8034138	612752	12651993
	Zone 2	222663	463620	265569	379353	189333	3050160	232631	4803328
	Zone 3	998852	2079769	1191325	1701755	849335	13682833	1043571	21547440
	Zone 4	391349	814852	466760	666746	332769	5360923	408870	8442269
	Zone 5	6801611	14162037	8112242	11587978	5783486	93172256	7106118	146725727
	Zone 6	620286	1291533	739811	1056787	527436	8497018	648056	13380928
	Zone 7	62606	130355	74669	106662	53234	857608	65409	1350543
Modified Productions		9683862	20163343	11549886	16498500	8234296	132654935	10117407	208902229

Comments:

In Table 1 Area of Each Zone in Hectare is Given

In Table 2 Trip Generation Rate per Hectare is Given

in Table 3 Trip Generation is calcuated.Trip Generated in Each zone as well as AS per the Land Use is Calculated

In table 4 Attaraction and Productions from Each Zone is Calculated

In Table 5 productions and Attractions are modified

In Table 6 Trip Origination from each zone and trip detination for each zone is calculatecd