REQUEST EVALUATION PASSENGER TRANSPORT

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Abstract: *The transport is an essential element in the most activities of our society. Therefore, it must be tackled with policy at all levels, from the overall (i.e. United Nations) to the City Councils. A major importance is solving the dilemma between the policies oriented to increase, which tends to generate more transport and the environmental policies, which require the reduction of emissions. These can be difficult to fulfil if technological development to reduce emissions are outweighed by the increase of transport.*

Public transport wants to improve continually his performance by meeting the citizen's need and expectations, through high quality of public transport by implementing, maintaining and improving an integrated management system: quality, environment, health and safety, social responsibility, information security etc.

Keywords: TRANSPORT, NETWORKS, SYSTEM, METHODS, PASSENGER

1.Introduction - Structure of passenger demand

Basic concept on transport demand is the flow of people, which is the number of people moving (or want movement) in one direction at a time that is a subdivision of the cycle - usually half hour or hours. Flow of people is measured in people per hour and direction.

Mobility is the average number of passengers that they carry a resident of a time.

Transport demand patterns people public transport is dependent on the road network, the development of the area served by the transmission system and the nature of population movements.

In general, changes in travel between two cities - monthly, daily or hourly intervals - is presented as in Fig. 1, 2 end 3 [7].

From Figures shown are noted as follows:

- Transport demand is variable according to the months of summer are lower due to holidays and vacations;

- During the week, transport demand is higher on weekdays, especially in the first and last - Monday and Friday, and weekends (Saturday and Sunday it drops to half);

- During the day, the application presents a maximum in the morning, when those assets go to work or school, and one afternoon when they return home.

These features of how transport demand varies throughout the day creates the very complex organization of the transport.

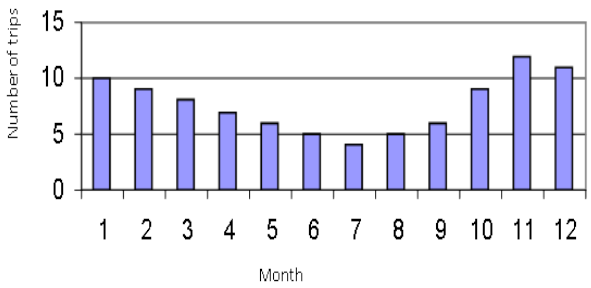


Fig. 1 *Number of trips per month*

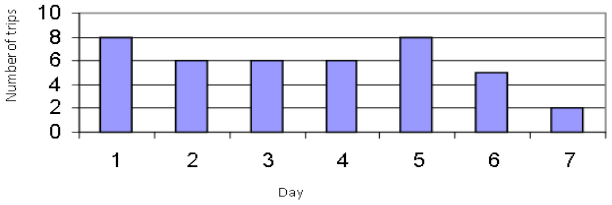


Fig. 2 *Number of trips per day*

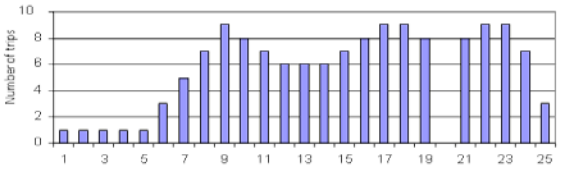


Fig. 3 *Number of trips per hour*

2. Modelling passenger demand

Model formalizes request for driver choice: the decision to make or not moving for a reason or purpose, destination travel, means of conveyance and route travelled in a time reference [12].

The model can be defined as a schematic and simplified representation of a complex reality in order to quantification, representations made by the relationships between relevant variables phenomenon.

Mathematically, such a model can have the following form:

$$d_{sodmkh} = d_{soh} \cdot P_{soh}(d) \cdot P_{sodh}(m) \cdot P_{sodmh}(k) \quad (1)$$

where:

• d_{sodmkh}- number of visits made to a particular purpose (s) of origin (a) bound for (d) using mode of transport (m) and route (k) a reference time (h) .

• d_{soh} - number of trips generated for a particular purpose (s), area of origin (a) the period considered (h).

• P_{soh} (d) - the probability of choosing a particular destination (d), for some reason considered (s), from an origin (a), the time interval (h).

• P_{sodh} (m) - the probability of choosing a particular transport mode (m) to reach the destination (d), starting from the origin (o), the time interval (h).

• P_{sodmh} (k) - the probability of choosing the route (k), relative to the module (m), originating (a) to destination (d), and the purpose (s).

Although elections are interdependent, each taking place simultaneously, the analytical and statistical treatment considerations are adopted separation of global demand in submodele interconnected, each model referring to a certain level of choice. Model with this structure is known as the "model of partial choice or four-stage model" (see Fig. 4).

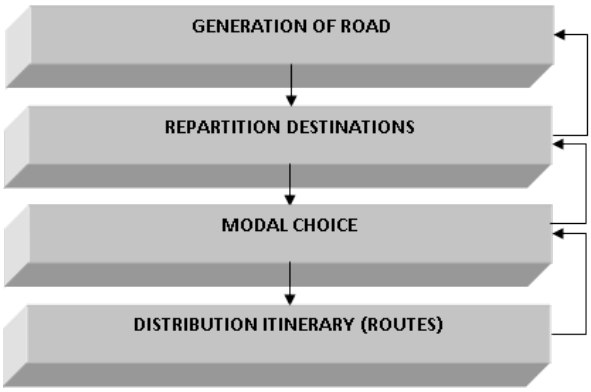


Fig. 4 *Structure model demand „four-step" [12].*

Travel patterns are useful to predict the travel trade in and use the transport system in response to regional development and population.

3. Evaluation of transport demand by Origin-Destination Survey

To assess transport demand in the subject study were used as analytical methods (based on the algorithm presented in Fig. 4, with support from the don `t know) and survey method (also called empirical method, using surveys).

Thus, in 2011 was organized under the research contract „Study on urban transport of people in the metropolitan area and the route Pitesti Pitesti – Pitesti" (beneficiary: Arges County Council, executing: University of Pitesti, director of contract: Professor Univ. Dr. Eng - Eugen Viorel Nicolae,) an Origin-Destination survey on Wednesday, on 01.06.2011 in 8 points to the town, the sense of input [68] to assess flows of vehicles enter the city of Pitesti, throughout the active period of a day (between 06.00 and 20.00 hours).

In this investigation were a total of 100 completed questionnaires in each survey point (25 questionnaires in each interval 3.5 hours).

One of the OD survey was arranged right on National Road 67 Drăgăşani - See-Pitesti, into the neighbourhood kids, next to the General Directorate of Social Assistance and Child Protection Arges, the direction to the town (Fig. 5).

Data obtained through interviews OD at this point can be useful for estimating passenger flow in the suburban areas Pitesti - See, the study subject.

It is found that the most common form of transportation surprised (on statistical principles, the sample considered representative) is, as expected, mode of travel by private car, which is very interesting to analyse because it is one of two ways transport for people in the study subject (I pointed out that population mobility is achieved only by road or by own car or by public transport within the county transportation system by scheduled Arges people) - Fig. 6.

Observe that the origin of travel with the private car transportation is generally very close to the western area of Pitesti (neighbourhood kids, village Smeura) and, generally, villages Moşoaia and Poiana Lacului - explained by the fact that for small distance travel by car personnel is a serious option. The only thing that can temper is only attractive public transport - which is the one aim of this paper!

Fig. 5 *Conduct of the investigation to move the point of investigation Trivale O-D.*

Table 1: *Survey results O-D*

Survey results **O-D**

Calea Drăgăşani, Wednesday 01.06.2011

No trips	***Origin***	***Destination***	**Time interval**	***Purpose (1-7)***	***Mo Mode (1-8)***
1.	Sămara	Calea Buc.	06,00 - 06,29	1	3
2.	Săpata	Depozitelor		1	2
3.	Trivale	Negru Vodă		1	2
4.	Moşoaia	Centru	06,30 - 06,59	1	2
5.	Moşoaia	Negru Voda		1	2
6.	Moşoaia	Trivale		1	3
7.	Făgeţel-Olt	Negru Vodă	07,00 - 07,29	1	1
8.	Trivale	Găvana		4	2
9.	Moşoaia	Craiovei-Ex.		1	2
10.	Moşoaia	Tudor Vlad.		1	2
11.	Another city	Bucureşti	07,30 - 07,59	2	2
12.	Moşoaia	Prundu		1	2
13.	Moşoaia	Centru		1	2
14.	Moşoaia	Altă localitate	08,00 - 08,29	1	2
15.	Trivale	Prundu		1	2
16.	Moşoaia	Altă localitate		1	2
17.	Moşoaia	Trivale	08,30 - 08,59	1	2
18.	Drăgăşani	Ploieşti		2	3
19.	Moşoaia	Prundu		1	2
20.	Trivale	Centru	09,00 - 09,29	1	2
21.	Trivale	Găvana		4	2
22.	Trivale	Centru		1	2
23.	Poiana Lacului	Găvana		1	5
24.	Moşoaia	Altă localitate		2	5

Survey results **O-D**
Calea Drăgăşani, Wednesday 01.06.2011

No trips	*Origin*	*Destination*	**Time interval**	*Purpose (1-7)*	*Mo Mode (1-8)*
25.	Moşoaia	Tudor Vlad.		3	2
26.	Moşoaia	Mărăcineni	09,30 - 09,59	4	2
27.	Another city	Another city		3	2
28.	Another city	Centru		7	2
29.	Moşoaia	Centru	10,00 - 10,29	4	2
30.	Another city	Trivale		4	2
31.	Another city	Trivale		7	3
32.	Trivale	Bucureşti		2	6
33.	Trivale	Ştefăneşti	10,30 - 10,59	5	2
34.	Moşoaia	Centru		5	2
35.	Trivale	Bradu		5	2
36.	Trivale	Găvana		1	2
37.	Another city	Centru	11,00 - 11,29	2	2
38.	Moşoaia	Another city		4	5
39.	Another city	Trivale		4	2
40.	Trivale	Centru		4	2
41.	Trivale	Trivale	11,30 - 11,59	4	2
42.	Trivale	Trivale		4	5
43.	Trivale	Trivale		5	2
44.	Trivale	Bascov		4	2
45.	Moşoaia	Mioveni	12,00 - 12,29	4	5
46.	Another city	Centru		5	2
47.	Moşoaia	Mărăcineni		5	2
48.	Another city	Mioveni		4	2
49.	Moşoaia	Centru	12,30 - 12,59	4	2
50.	Another city	Trivale		4	2
51.	Another city	Trivale	14,30 - 14,59	7	2
52.	Another city	Trivale		5	2
53.	Another city	Trivale		4	2

Survey results **O-D**
Calea Drăgăşani, Wednesday 01.06.2011

No trips	*Origin*	*Destination*	**Time interval**	*Purpose (1-7)*	*Mo Mode (1-8)*
54.	Another city	Bascov	15,00 - 15,29	6	2
55.	Another city	Găvana		3	2
56.	Another city	Trivale		4	2
57.	Moşoaia	Găvana		2	2
58.	Another city	Prundu	15,30 - 15,59	4	2
59.	Another city	Bucureşti		4	2
60.	Moşoaia	Trivale		3	3
61.	Moşoaia	Trivale		5	2
62.	Trivale	Prundu		2	5
63.	Another city	Craiovei-Exe.		2	5
64.	Trivale	Craiovei-Exe.	16,00 - 16,29	2	2
65.	Trivale	Craiovei-Exe.		3	2
66.	Trivale	Trivale		5	2
67.	Moşoaia	Craiovei-Exe.		3	2
68.	Trivale	Centru		6	2
69.	Moşoaia	Centru		6	2
70.	Moşoaia	Trivale		7	2
71.	Moşoaia	Centru	16,30 - 16,59	4	2
72.	Moşoaia	Centru		1	2
73.	Trivale	Centru		2	2
74.	Trivale	Popa Şapca		2	2
75.	Trivale	Altă localitate		6	2
76.	Trivale	Centru	17,00 - 17,29	1	2
77.	Trivale	Centru		5	2
78.	Trivale	Centru		5	2
79.	Trivale	Centru	17,30 - 17,59	7	2
80.	Trivale	Centru		5	2
81.	Moşoaia	Centru		7	2
82.	Trivale	Centru		6	2
83.	Moşoaia	Craiovei-Exer.	18,00 - 18,29	4	2
84.	Trivale	Centru		7	2
85.	Moşoaia	Craiovei-Exe.		7	5
86.	Trivale	Găvana	18,30 - 18,59	5	2
87.	Another	Trivale		4	2

Survey results **O-D**
Calea Drăgăşani, Wednesday 01.06.2011

No trips	*Origin*	*Destination*	**Time interval**	*Purpose (1-7)*	*Mo Mode (1-8)*
	city				
88.	Trivale	Războieni		6	2
89.	Another city	Găvana	19,00 - 19,29	1	2
90.	Trivale	Mioveni		4	2
91.	Trivale	Craiovei-Exe.		4	1
92.	Trivale	Centru		1	2
93.	Moşoaia	Centru	19,30 - 19,59	1	7
94.	Moşoaia	Trivale		1	3
95.	Trivale	Găvana		6	2
96.	Trivale	Albota		7	2
97.	Trivale	Centru		5	2
98.	Trivale	Centru		5	2
99.	Trivale	Negru-Vodă		4	2
100	Trivale	Budeasa		5	2

Legend:
• Travel Purpose (1-7):
1 - Commuting to work;
2 - Business (other than commuting);
3 - Commuting to school;
4 - Return Home;
5 - Shopping;
6 - Approval;
7 - Other.
• Mode shift (1-8):
1 - Bicycles, mopeds, scooters, motorcycles;
2 - Cars, taxis, SUV (4 WD), with or without a trailer;
3 - Minibus (9-15 seats);
4 - Buses (25-70 seats);
5 - Pick-up, trucks;
6 - Two-axle trucks and;
7 - Articulated Vehicles, trucks with 3 or more axles;
8 - Other types of vehicles.

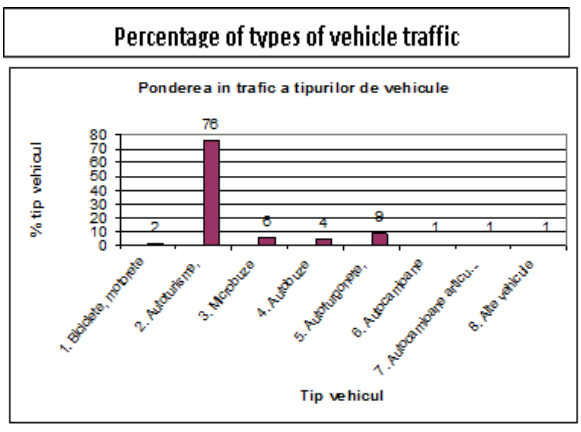
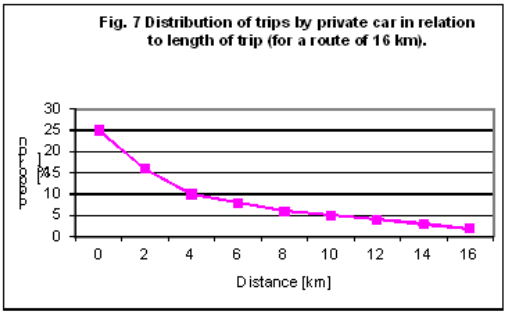


Fig. 6 *Types of vehicles share the sense of input in Pitesti in the Trivale.*

Thus, one can appreciate the usefulness of this investigation by revealing the fact that in localities near the city of Pitesti / suburban area population has a good social status, with a higher income per family member (which is explained by higher engine index, as data from local councils of the communes of the subject study). Thus, it may be available by distance travel distribution as having exponential pace, according to the literature [12] - Fig. 7



4. Evaluation of road traffic by counting vehicles

Also, the contract research ,,study on urban transport of people in the metropolitan area and the route Pitesti – Pitesti" an investigation was conducted manually counting cars in traffic on 01.06.2011 in 14 points of entry into city or within the city (using a special form, included in the sentence), from which point the investigation NM (Manual Count of vehicles) arranged in the neighborhood Trivale Drăgăşani Avenue, opposite the Water Tower / pumping station Smeura [17].

Data recorded in special form are presented in the table below (and attached Annex sentence).

For data processing we used the equivalence coefficients indicate the STAS 10144/5-88: Calculation of street traffic capacity, specify the following table.

No. crt.	**Category car equivalence factor**	**Equivalence ratios**
1.	Motorcycles, Scooters	0,5
2.	Car	1,0
3.	Minibus	1,2
4.	Bus	3,5
5.	Autocamionete, trucks up to 4 axles	2,5
6.	Heavy trucks (more than 4 axles)	4,0

Since traffic data were collected on intervals for 0.5 hours, were made graphics for input traffic intensity in the way Drăgăşani Pitesti, in order to evaluate the capability artery road in relation to existing traffic and demonstrate the possibility of line fitting end for a distance of the neighbourhood Trivale analysed. The very aim of demonstrating capability in perspective, estimating traffic flows increase due to population growth in the peripheral / suburban areas, as well as engine index (sustainable public transport by people in the analysis).

Resulting in the conclusion of this analysis is as follows: in the street capacity is still sufficient Drăgăşani way traffic taking any time of day, because, being two lanes wide in each direction, so the capacity is approx. 2000 vehicles - which does not exceed the maximum recorded (max. 1000 veh. Ech. / 0.5 hours).

The creation of the upstream end of the route intersection roundabout (where it already operates the route terminus Pitesti - Glade Lake - See) will be even a factor in reducing traffic in the

roundabout junction downstream (the artery which observation point was set).

In addition, the roundabout junction arranged in kids, the horses Drăgăşani intersection with main road in the neighbourhood, is a good opportunity to end the route before setting them the advantage that this intersection is the only type of intersection that allows handling of return (for means of transport).

So, making public transport attractive people in the Pitesti - Vedea, with a transportation program harmonized with the routes that extend from the center of Pitesti municipality neighbourhood kids, will be an important factor in maintaining traffic within the neighbourhood Trivale traffic congestion will be avoided during peak hours.

5. Conclusions-Evaluation of passenger demand in the suburban areas Vedea- Pitesti, by counting travellers

To assess demand for public passenger transport route Pitesti - Vedea we analysed the possibility of creating two types of surveys:

- Conducting a survey as an observer fixed in one working day and a non-profit station in Pitesti, because this is the station on the outskirts of the neighbourhood kids, where he got all travellers leaving from city to country, or travel down who came from country to city (this is because there is one pole of transport - Pitesti municipality) to develop the study will note time of arrival / departure of means of transport to / from the station and the number of travelers who have climbed or down to / from the vehicle.

- A study as an observer mobile journey by public transport from end to end of route and noting the number of passengers and number of passengers climb down at each station, resulting in passenger volume interstaţii.

To assess demand for public passenger transport route Pitesti - Vedea a study conducted as an observer fixed in a day (Tuesday, on 24.05.2011) and the business day (Sunday, on 05/29/2011) the station Pitesti-kids, in both directions of travel (route is unipolar, Pitesti is the pole of attraction for travellers in both directions of transport). We used a special form designed for this investigation, attached to the work.

Data were recorded for all routes in the Pitesti - Vedea, so the route Pitesti – Poiana Lacului - Vedea and 8 routes

The main observations from the results obtained in the investigation of counting passengers on the route Pitesti – Poiana Lacului - Vedea are:

- Daily passenger volume of about Oneness. 1000 passengers / day on days (ZL) and approx. 500 passengers / day in non-working days (ZNL), the ratio between the two sizes is 2:1;

- Number of passengers registered in one working day is quite large, almost the entire capacity of transport networks in the county program, but in fact operators have won auctions and operates vehicles with capacities greater than those specified in the county program transport by scheduled (these values are minimum values) is found such as in the Pitesti - Vedea transport capacity was undersized, and that operators use only vehicles of larger capacity transport made the request to be satisfied , this observation requires reconsideration of transport capacity in the future program of scheduled passenger transport by the Arges county.

Therefore, following are proposed amendments to the program of transport: for transit will become the main route (Pitesti – Poiana Lacului - Vedea) and connects the other routes and municipality Pitesti weekdays (ZL) to ensure capacity transport by about 20% higher than that measured, and holidays (ZNL) transport capacity is the half-day (ZL). It is envisaged that this capacity is added and the route Pitesti - Hinţeşti, which will remain in the new transportation program.

Since all routes are unipolar (have as a starting point and return Pitesti), was not the case to be made and a survey of travellers interstaţii counting because the interstate is first loaded from Pitesti (Trivale - Smeura), where passengers have already been counted and conclusions were formulated on the number of passengers on interstate.

He also notes that there are cases where more than the number of passenger seats (not standing passengers), so does not violate legal provisions on this issue.

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