

TRENDS AND PERSPECTIVES OF THE ROMANIAN REGIONAL PASSENGER TRANSPORT

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Abstract: *Today, passenger transport has become an indispensable life element, because it offers to the society members many travel possibilities. Modern civilisation, characterised by a massive trade of material and spiritual values, claims a continuous movement of goods and people from a place to another. Transport services are strongly influenced by the transition to the market economy, Romania's geographical position and also by the life standard. The purpose of this paper is to realize a statistical analysis of the main indicators concerning passenger transport for the southern part of Romania, respectively for the historical provinces Muntenia (excluding Bucharest Municipality) and Oltenia.*

Key words: *regional passenger transport, nonparametric methods, ranking method, correlation method, regression method.*

1. Introduction

Nowadays, passenger transport has become an indispensable life element, because provides to the society members opportunities for traveling, communication, perception and assimilation of as much as can offer the civilization. Modern civilization, characterized by a massive exchange of material and spiritual values, requires continuous movement of goods and people from a place to another.

The modernization and the development of transport, by the apparition of improved ways of transport, has eliminated the economic isolation, has allowed the specialization and the exchange of activities, the national and global market

establishment and the internal and international trade development.

Urban transport and, in particular, its main component, public passenger transport, is one of the most important functions of a city because it provides the unity and coherence of all city's activities.

Urban passenger transport must be analyzed in the context of overall development of the city, its political and social-cultural importance, taking account of the extent of the served territory, the number of inhabitants, the volume of transport demand and its variation in time and space.

2. Objectives. Material and Methods

The purpose of this paper is to realize a statistical analysis of the main indicators

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concerning passenger transport for the southern part of Romania, respectively for the historical provinces Muntenia (excluding Bucharest Municipality) and Oltenia, and also to measure the relation between the statistical variables which are characterizing the local public transport for the analyzed areas, using nonparametric methods.

The analysis is realized using the available data concerning the statistical indicators from the Romanian Statistical Yearbook 2009 and 2008, NIS, 2010, respectively 2009 (on CD).

Generally, in order to measure the disparities between counties and to build optimal development strategies is applied the ranking method, used in this case to classify the counties belonging to the two analyzed historical provinces by urban passenger transport criteria.

In order to verify the existence of a relation between the total number of transported passengers or the number of transported passengers with buses and minibuses and the urban population we use linear econometric models.

3. Results and Discussions

In order to characterize the urban passenger transport, we systematized the available data for 14 counties belonging to the historical provinces Muntenia (excepting Bucharest Municipality) and Oltenia for the years 2007 and 2008. Thus, were resulted the following derived indicators:

- *The number of transported passengers by buses and minibuses.* The annual average/county in 2007 was 11896,17 thousands transported passengers by buses and minibuses, having a very low representativeness for the analyzed territory, suggested by the coefficient of variation, which exceeds 100% (137,64%) and by the higher value (2,62) of the asymmetry coefficient. In 2008, the annual average/county was 14416,94 thousands transported

passengers by buses and minibuses/county, the value of the coefficient of variation was exceeding 100% (156,86) and was registered a high asymmetry (3,93) as for the previous year.

- *The total number of transported passengers* is following the same distribution as the number of transported passengers by buses and minibuses, with an annual average/county equal to 108757,22 thousands transported passengers in 2007, which is an insignificant indicator (the value of the coefficient of variation was equal to 132,41% > 100%) because the amplitude variation was high (454228,2 thousands transported passengers-km) and because of a pronounced positive asymmetry (2.34). Regarding the year 2008, the annual average/county was lower (98652,68 thousands transported passengers) which is also an insignificant indicator (the value of the coefficient of variation was equal to 162.41% > 100%) and the asymmetry was high and positive (3,83).

- *The town streets length* depends on the degree of urbanization, with an annual average equal to 506,57 km/county in 2007 and 1110.38 km/county in 2008, but not representative due to Prahova county, with an annual average of 1324 km in 2007 and 2320,6 km in 2008, which is detaching from the remaining counties registering values below 707 km in 2007 and below 2039 km in 2008. This fact is confirmed by the higher value of the coefficient of variation (54,47% in 2007 and 49,16% in 2008) and of the coefficient of asymmetry (3,97 in 2007 and 0,89 in 2008).

- *Total Population.* The average of total population was 459645,78 persons/county in 2007 and 456705,35 persons/county in 2008, indicator quite representative, fact confirmed by the

value of the coefficient of homogeneity (36.24% in 2007 and 36.43% in 2008) and by the low and positive value of the asymmetry coefficient (0,18 for both years).

- *Urban population* registered an average value equal to 197430 persons/county in 2007 and 204931,64 persons/county in 2008, which is an insignificant indicator (the value of the coefficient of variation was equal to 54.72% in 2007 and 47.35% in 2008) and the value of the asymmetry coefficient was positive and equal to 0,09 in 2007 and 0,55 in 2008
- *Rural population* had an average equal to 252620,78 persons/county in 2007 and 251773,71 persons/county in 2008 which is higher than the urban population in 2007 from nine counties and from seven counties in 2008. The counties presented homogeneity (34.13% in 2007 and 34.35% in 2008) and the value of the asymmetry coefficient was negative for both years (- 1.04).

In order to measure the relation between the two statistical variables which are characterizing the local public transport for the analyzed areas, respectively the number of transported passengers by buses and minibuses and the total number of transported passengers, we used nonparametric methods.

By using the Yulle coefficient of association and the coefficient of contingency, we measured the relation between the two above mentioned indicators and it resulted a strong and direct relation between those ones both for 2007 and 2008, confirmed by the positive and high value of the coefficient of association (0,93) and by the average intensity of the coefficient of contingency (0,65), the registered values being the same for both years.

The statistical analysis of the correlation between the number of transported passengers by buses and minibuses and the total number of transported passengers was

realized using Spearman and Kendall rank correlation coefficients.

Thus, in 2007 were registered positive and significant values of Spearman (0,92) and Kendall (0,82) rank correlation coefficients, which are indicating a direct and strong relation between the two analyzed variables. The values registered by these coefficients in 2008 (0,79 and, respectively 0,65) are indicating a direct relation, having an average intensity.

By applying the ranking method for each macroeconomic indicator used we observed that, in the case of urban passenger transport, in 2007, the first three ranks were occupied by Prahova, Dolj and Arges counties and the last ones by Mehedinti and Giurgiu counties. In 2008, the first three ranks were occupied by Prahova, Arges and Dolj counties and the last one by Giurgiu county.

This fact can be explained by the more developed transport infrastructure existent in Prahova, Dolj and Arges counties. Prahova county has also a richer and diversified range of transport ways due to the mountain tourism area.

In order to verify the existence of a relation between the number of transported passengers with buses and minibuses and the urban population or between the total number of transported passengers and the urban population for the analyzed area we used linear econometric models, which were estimated using EViews software. Thus, we obtained the following results in the case of the first model:

$$\hat{y}_i = -28722,89 + 0,2105 x_i; \quad R^2 = 0,816 \quad (1)$$

$$(6500,18) \quad (0,0289) \quad s_u = 10097,97$$

The values presented between the parentheses represent the standard errors corresponding to the parameters, R^2 – the coefficient of determination, d represents Durbin –Watson statistics and s_u - standard error of the regression.

The estimation results are statistically significant at the 5 percent level of significance.

In the case of the second model were obtained the following results:

$$\begin{aligned} R^2 &= 0,444 \\ \hat{y}_i &= -126404,9 + 1,0982 x_i; d = 2,29 \\ &(79840,31) \quad (0,3544) \quad s_u = 124020,1 \end{aligned} \quad (1)$$

The estimation results are statistically significant at the 5 percent level of significance, excepting the intercept which is insignificant.

4. Conclusions

Trends registered in urban passenger transport services in our country are the result of the transition to the market economy and of population behavior and lifestyle change and also because Romanian society is gradually turning into a consumer society.

The knowledge of factors that determine and promote transport services or that can generate relative breakings on their evolution becomes necessary especially for a market economy at the level of regional and national development planning, in promoting passenger transport activities, in transport stimulation to achieve international standards imposed by the European Union, which involve the promotion of new and non polluting ways of urban passenger transport.

During the last years, it can be observed a new focus of these services, which consist in paying a special attention to the passengers. Thus, among others, citizens' consultation in decision making has become an increasingly widespread practice, being also supported by European legislation. This one is considered one of the new influence factors on decision making for the development of transport services. Recently, an increased attention

has been given to the public transport accessibility. Thus, for public passenger transport in territorial profile, is provided an overall orientation to the infrastructure investments, focusing, particularly, on access to stations and information systems.

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