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It is generally assumed that there is a statistically valid correlation between the length of a roadway network, in addition to other factors such as its classification and/or average travel speed, and economic indicators such as Gross Domestic Product (GDP) and the Municipal Relative Weight (MRW), considering that the roadway network and transport development generate economic development in a region. This study reports the results of correlating several variables which are economic indicators of

roadway networks, both at a municipal and a departmental level, in Colombia; it was concluded that at the level of municipalities, there is no valid correlation between MRW, as a dependent variable, and the average travel speed and the sum of the length (in kilometers) of the roadways that connect villages, as independent variables. There was a correlation with neither the MRW as an independent variable nor the traveling distance and time for each municipality concerning the capital city of each respective department. Finally, it was found that the department agribusiness GDP was associated with the length of the tertiary roadway network and with the primary network, with an R2 of 0.7. This study concludes that activities in rural zones are the ones that generate the greatest impact on roadway investment within a region. © 2022 by the authors.

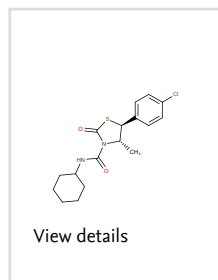
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Relationship between the national road network and national economic development. Case of Latin America and the Caribbean

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doi: 10.1111/1468-0297.00562

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Article

Correlation Analysis between Roadway Networks and Economic Ranking—Case Study: Municipalities and Departments of Colombia

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Abstract: It is generally assumed that there is a statistically valid correlation between the length of a roadway network, in addition to other factors such as its classification and/or average travel speed, and economic indicators such as Gross Domestic Product (GDP) and the Municipal Relative Weight (MRW), considering that the roadway network and transport development generate economic development in a region. This study reports the results of correlating several variables which are economic indicators of roadway networks, both at a municipal and a departmental level, in Colombia; it was concluded that at the level of municipalities, there is no valid correlation between MRW, as a dependent variable, and the average travel speed and the sum of the length (in kilometers) of the roadways that connect villages, as independent variables. There was a correlation with neither the MRW as an independent variable nor the traveling distance and time for each municipality concerning the capital city of each respective department. Finally, it was found that the department agribusiness GDP was associated with the length of the tertiary roadway network and with the primary network, with an R^2 of 0.7. This study concludes that activities in rural zones are the ones that generate the greatest impact on roadway investment within a region.

Keywords: Gross Domestic Product; tertiary roadway network; Municipal Relative Weight



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1. Introduction

Colombia is a country that has an urgent need to revitalize rural activity, making it more productive. The adequate transportation of agricultural products is essential for this development, and this is why it is necessary to deepen the study of the variables by which economic investment in improving rural roads is decided.

When studying the relationship between the economic development of a country's regions and the condition and quality of the road network, it is found that several studies show the existence of a relationship between roadway networks and the economic condition of a region or territory, especially in rural areas. However, few studies present a relationship between the condition of a roadway network and a macroeconomic variable such as Gross Domestic Product (GDP). Urazan et al. (2017) [1] concluded that for a sample of countries that are representative of Latin America and the Caribbean, there was a statistically valid correlation between the length of a primary-level roadway network of the analyzed countries with their GDP. Contrary to the above, the independent variables, the second-level roadway network, and the paved network did not statistically correlate with GDP.

Jacoby (2000) [2] described the important role of roadways in rural development. In the case of Nepal, he concludes that providing extensive roadway connections to agricultural markets leads to important benefits to poor homes located in the area. However, he clarifies

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