

Historical Analysis of Road Infrastructure Accessibility in Colombia

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SUMMARY

In the post-conflict context, the Colombian government has developed special interest on the improvement of the national road network to generate access to areas typically affected by the armed conflict and to boost the national economy. As a reaction to this determination, it was considered necessary to develop an indicator of accessibility to the road infrastructure network, through a historical analysis of the Colombian road network from the 1940s to the present, to determine quantitatively the areas of the country that historically have had limited or no access to the national road network.

In this research, accessibility was defined as the distance from a point of interest to the nearest road within the national network, considering a cost factor based on the difficulty implied by the effects of the landform and land cover for moving in space. To quantify an indicator that condensed this definition, an analysis using geographic information systems (GIS) was made. In this process, historical maps of the road network were digitized for the entire study period, and the cost surface that defined the difficulty of accessing the road network was obtained. An accessibility indicator was developed for the entire country based on distance to the national road network from each point within the Colombian continental shelf, for every decade of the study period.

Furthermore, an accessibility indicator was computed for every population center obtaining a historical data series, classified by administrative regions, which reflected the evolution of road infrastructure in the country in most of its territory. According to these results, certain factors that were analyzed could explain the stagnation in the road development of the critical areas according to their geographical conditions, on which it was concluded that for some regions accessibility could not be defined solely according to the road network since this did not represent the main transportation mode amongst the regions. Finally, a discussion on the accuracy, extension and source of the historical data is given based on some incongruencies found.

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