Finding the Path to Smart Mobility: Design of Bike Routes for University Districts

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Abstract

The transportation sector is one of the sectors with the highest energy consumption in Mexico, which produces large concentrations of pollutants that affect human health. The mobility laws of the state of Nuevo León seek to increase the use of non-motorized means of transport, including bicycles. Therefore, one of the approaches to encourage the use of bicycles is the design and implementation of cycling infrastructure, i.e, bike paths. Hence, the objective of this project is to design a methodology for the layout of bicycle lanes in a university district, Distrito Tec, to satisfy travel needs with maximum energy as well as environmental benefits, this through a vehicular traffic model implemented in a simulator called Eclipse SUMO (Simulator of Urban MObility) on a microscopic scale calibrated from real-world measurements of vehicle flow, origin and destination surveys and transport characterization. The partial results show that in the current scenario there are 1% trips made by bicycle, 7% in public transport ,71% in private vehicle and 21% walking. While the proposed bike path design scenarios increase the bicycle trips between 4% and 10%, reducing trips in private vehicles with a tentative reduction of CO2 emissions, allowing this way to select the optimum bike paths in Distrito Tec. These results could be considered for the establishment of public policy as well as intervention of infrastructure through civil works.

Keywords

Traffic simulation, Distrito Tec, SUMO, bike paths, bicycle, transport.