

Evaluation of the Impact of Reducing the Traffic Light Cycle for Cars to Improve Non-Vehicular Transportation: A Case of Study in Lima

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Abstract : In big urbanized cities of Latin America, motor vehicles have priority over non-motor vehicles and pedestrians. There is an important problem that affects people's health and quality of life; lack of inclusion towards pedestrians makes it difficult for them to move smoothly and safely since the city has been planned for the transit of motor vehicles. Faced with the new trend for sustainable and economical transport, the city is forced to develop infrastructure in order to incorporate pedestrians and users with non-motorized vehicles in the transport system. The present research aims to study the influence of non-motorized vehicles on an avenue, the optimization of a cycle using traffic lights based on simulation in Synchro software, to improve the flow of non-motor vehicles. The evaluation is of the microscopic type; for this reason, field data was collected, such as vehicular, pedestrian, and non-motor vehicle user demand. With the values of speed and travel time, it is represented in the current scenario that contains the existing problem. These data allow to create a microsimulation model in Vissim software, later to be calibrated and validated so that it has a behavior similar to reality. The results of this model are compared with the efficiency parameters of the proposed model; these parameters are the queue length, the travel speed, and mainly the travel times of the users at this intersection. The results reflect a reduction of 27% in travel time, that is, an improvement between the proposed model and the current one for this great avenue. The tail length of motor vehicles is also reduced by 12.5%, a considerable improvement. All this represents an improvement in the level of service and in the quality of life of users.

Keywords : bikeway, microsimulation, pedestrians, queue length, traffic light cycle, travel time

Conference Title : ICUNNU 2021 : International Conference on Urban Networks and Network Urbanism

Conference Location : London, United Kingdom

Conference Dates : February 15-16, 2021