

Impact of Bus Rapid Transit efficiency on vehicle traffic of a Brazilian city

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Abstract

Sorocaba is a Brazilian city with almost seven hundred thousand people, which inhabitants are facing growing issues related to urban mobility. This is caused by an increasing growth of population, number of light vehicles, motorcycles and even buses, which have increased to attend the population's demand of mobility. Combined with the lack of an urban planning, Sorocaba's residents are facing a chaotic traffic in the peak hours.

In response to a massive population growth in the north area of the city, the local government developed the Bus Rapid Transit (BRT) project, an attempt to decrease the traffic and the travel time, mainly in the peak hours. This project is currently in the implementation phase, with civil works scattered around the main avenue of the north area. The purpose of this study is to present a simulation, using the FlexSim software, of the BRT's route and its integration with other buses lines, analyzing the current situation of public transportation and measuring the impacts of BRT construction. Due to the complex analysis, simulation is useful to check the improvement of the vehicles flow, regarding current traffic in the city and the investments projects presented by the governments.

Keywords

Traffic. Public transportation. Population. Mobility.

Biographies

Augusto Ghiraldi is a Brazilian Industrial Engineering student at FACENS. Augusto already had some experience with the multinational Schaeffler Group in a partnership with SENAI (a Brazilian school that the focus is teaching its students how an industry or a factory really works), and at the moment is trying his best to improve his acknowledges above Industrial Engineering.

Felippe K. Sousa Pereira is a Brazilian Industrial Engineering student at FACENS. He has works experience in multinational companies, including Enel X, Schaeffler and currently as an intern at Robert Bosch, related to the professional past, he has experiences with customer management, leadership, production engineering, continuous improvement and lean manufacturing. He is also the actual president of the IEOM Student Chapter at FACENS, in Sorocaba.

Henrique Ewbank de M. Vieira is Professor in Industrial Engineering at FACENS. He earned B.S. in Industrial Engineering from Estácio de Sá University, Brazil, Graduate Certificates in Logistics & Supply Chain Analysis and in Systems & Supportability Engineering from Stevens Institute of Technology, New Jersey, USA, PhD in Management from Federal University of Rio de Janeiro, Brazil, and Post-Doc in Environmental Sciences from Paulista State University, Sorocaba, Brazil. He has published journal and conference papers. He has taught courses in operations research, management and data science for undergraduate and graduate students. His research interests include demand planning, inventory management, supply chain, and multi-criteria decision making.

Rodrigo Luiz Gigante is currently a fulltime Professor at the Faculty of Engineering of Sorocaba (FACENS), Bachelor of Applied Mathematics and Scientific Computing from the University of São Paulo (2007) and Master in Production Engineering from the University of São Paulo (2010)., with experience in the area of Production Engineering, with emphasis on Operational Research, acting on the following subjects: Scheduling, Queue Theory, Production Programming and Project Management.