# Simulation-Optimization of the Mexico City Public Transportation Network: A Complex Network Analysis Framework

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**Abstract** The urban transport mobility is one of the most important problems for the cities, and involves many aspects that concern to citizens, governments and the economical growth of the countries. Mobility in Mexico City is also a huge problem since the city size makes it insoluble and citizens prefer to use private transportation instead of the public transport network because it offers a poor coverage and a lack of modal transfer centers. With the purpose of analyzing the mobility problems in Mexico City as well as detecting areas of opportunity, the objective of this chapter is to model and simulate the public transportation network from the complex network perspective to asses network structural vulnerability and resilience, considering mobility and accessibility aspects. Firstly, we analyze the urban transport infrastructure in Mexico City taking into account the planning process and sustainability criteria. Secondly, we model and simulate the Mexico City's public transportation network as a complex network. Thirdly, we characterize the complex network topology of the Mexico City's public transportation network, and finally we present the main results.

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