There is an ongoing discussion about the various LRT systems and BRT systems in terms of their advantages, their differences, and the impact of their particular characteristics like travel time, headway, capacity, and the so-called rail factor.

System characteristics can be viewed as a means to obtain the main objective of introducing a Rapid Transit System, to increase the number of passengers. Variations in the system characteristics have a direct impact on ridership. However, it is difficult to predict the impact of implementing or altering the characteristics. A Rapid Transit system should display sufficient service already in the planning phase. That is why pre-acquired knowledge of the impact of the characteristics on the system performance is valuable. Such knowledge could provide a firm basis for planning the service and operation of a Rapid Transit system.

This article focuses on the performance of LRT and BRT systems by investigating core characteristics for these systems, characteristics that are computable through traffic models and are known to differ somewhat from system to system. The article has a case-oriented traffic modeling approach to the investigation of these characteristics. It focuses on the following characteristics for Rapid Transit systems: rail factor, travel time, headway and capacity. It evaluates how the implementation and variation of these characteristics affected the ridership of a case project. It evaluates the magnitude of the impacts for the various characteristics – both individually and in comparison to each other.

The findings offer a theoretical base for managing the impact of various characteristics when LRT or BRT are considered in urban regions where the effects of such systems are unknown – to show what can be expected and what magnitude the impacts will have. The dependencies between system characteristics and ridership can be used to configure LRT or BRT systems to meet specific ridership objectives.