

Abstract

Seoul Subway Congestion Costs and Policy Implications

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Currently, reports on roadway congestion costs have been published annually but the Seoul subway(hereafter, subway) congestion costs were excluded in the reports. Yet, the subway also causes social costs, such as increased travel time during the peak hours, like roadway congestions, and also because of train delays and uncomfortable overcrowding on the trains. Thus, this research assessed the crowding valuation and congestion costs of the Seoul subway.

Subway user surveys were conducted to find out what the actual users thought about the overcrowding on the trains and how willing they were to pay for improving the level of crowding. It was revealed that the users experience a higher level of crowding inside the car than the reported level. Subway users also start to perceive discomfort and inconvenience as the crowding level approaches the passenger capacity(i.e. 100% crowding level). According to the research on the subway crowding valuation, subway users will accept 2.2 minutes of an increase in travel time with a 50% reduction of the crowding level. In other words if one converts that finding into a monetary unit, then this implies that subway users are willing to pay an extra 228 won for a 50% reduction of crowding improvement.

In this research, the subway congestion cost was assessed on two bases: 1) cost because of overcrowding on the trains, and 2) cost because of operational delay. For the qualitative aspect of overcrowding, the annual congestion cost was about 232 billion won

while for the quantitative aspect of train delay, the annual congestion cost was about 493 billion won. Therefore, the total congestion cost of the Seoul subway system is about 725 billion won per year. Although this is a small amount (about 9%) of the congestion cost compared with that of roadways, it is reasonable to hypothesize that a large amount of social cost is also being caused also by the subway system.

This research has endeavoured to clarify the thesis that the subway congestion cost should not be overlooked and therefore, the cost ought to be taken into consideration when making various transportation policies.

- The change of social cost needs to be reviewed while taking the subway congestion cost into consideration when the subway share increases because of demand management.
- When assessing the feasibility of railway projects, additional benefits (decrease of crowding level in the other subway lines) should also be factored in.
- Dynamic transit fare schemes for the subway can be set by taking into account to what extent they trigger the shift and change in the crowding level.

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