

## Forecastability analysis for passenger rail network demand during COVID-19

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ABSTRACT. COVID-19 affected socioeconomic level globally. The transportation sector suffered heavily from the reduction in usage and the disturbance on travel behavior which can be long lasting. None of the past events affected transportation sectors in this manner. Fortunately, the data collected during COVID-19 could potentially fill the gap of unseen anomalous events and give insights into the relations between travel demand and socioeconomic level. For these reasons, we conducted an analysis of the case study of Bangkok subway systems. In this study, we used the multinomial model for the estimation of ODM and maximum likelihood estimator for the parameters. Revision to evaluations method for ODM estimation were designed for lower demand segments. Two networks were analyzed as comparison of the intra-cluster networks under deterrent effects of socioeconomic level. We tested the distributions of variance with assumption on base demand and variance using COVID-19 as the minimum socioeconomic factor. The result shows a significant correlation of variance on the macro-scale but found that the actual distribution of variance heavily deviated when comparing the data of gradual changes with the data during COVID-19. Some estimation assessments are expected to be unreliable in case of similar events.