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Title and Abstract

Title	Characterizing Travel Time Reliability and Passenger Path Choice in a Metro Network
Abstract	This paper characterizes network travel time reliability by estimating link cost and its variability. To quantify metro travel time in-depth, we reconstruct a metro network with four types of links (waiting, on-board, transfer and walking) and apply an iterative method to estimate the mean and standard deviation of link costs using real-world travel time observations from smart card data. In a complex metro network, a crucial problem is to identify the paths that passengers choose when multiple alternatives exist. This is important for understanding travel behavior and characterizing assignment models for metro networks. Using the estimated link costs, the proportions of passenger choosing each alternative path are estimated by applying the Expectation-Maximization (EM) algorithm. In general, the proposed methodology could be applied to other metro systems with travel time data available, serving to better understand spatial-temporal demand patterns and passenger choice behavior.