



Project Title: Impacts of Dependent Flight Delay on Cabin Crew Pairing Reliability in Airlines

研究項目: 研究非獨立性航班延誤對機艙服務員勤務組合可靠性的影響

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Abstract

Reliability of crew pairing for cabin crew is one of the most critical issues in airline operations. According to aviation regulations, for the sake of aviation safety, the maximum working hour of crew in each duty shift is governed by the civil aviation department. Violation of which is strictly prohibited. Thus, if any crew member is expected to be overtime at the completion of the coming flight, this member is not allowed to serve it. As a result, airline has to find a replacement, e.g. by standby crew at hub, or by “deadhead” to go oversea. These disruption recovery activities are remarkably costly and would seriously jeopardize the normal scheduled flight operations. Therefore, crew pairing reliability is critical and significant in airline business. For a crew pairing, in general, crew members should be able to complete all the assigned flights (tasks) within their maximum working hour. However, because of uncertainties, e.g., flight delay, this causes longer completion time than expected, which may lead to violation of the regulations. In common airline practice, buffer time is assigned between two connected flights to absorb the effect of flight delay. In most of the buffer time assignment studies, the determined buffer time is analyzed based on the delay probability of the concerned flight, which is deemed to be independent of its previous connections. However, in fact, departure delay can be caused by either the arrival delay of the previous connected aircraft or crew members. The objective of this project is to develop a new modeling for the relationship of departure and arrival flights in crew pairing studies, and a new optimization methodology to improve the reliability of crew pairing.