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APPLICATION OF STOCHASTIC PROGRAMMING TECHNIQUES TO AIRLINE SCHEDULING

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ABSTRACT

The goal of this project was to evaluate the effectiveness of stochastic programming techniques when applied to the airline scheduling process to reduce the effect of stochastic flight delays. A variety of traditional and stochastic programming models were developed for generating flight schedules. The resultant flight schedules were tested using simulations to evaluate their performance in real-world conditions with regard to flight delays, and their effects on the schedule's operations. It was found that stochastic programming techniques were able to improve the delay recovery performance of the schedules at the cost of decreasing the schedule's profit; and that flight schedules which are more dense with flight activity are affected more by the stochastic programming techniques. The use of stochastic programming techniques is recommended for the cases where an airline's flight schedule has a high density of activity and the negative effects of flight delays needs to be minimized.