
While research has tackled the hub-and-spoke design problem, that research has overlooked the air-truck modal integration issue which is a common feature of real express delivery systems. This paper devises integer linear programs to represent the mode and route assignment aspects of the operational problem. The model is solved under four different levels of delivery schedule, and the results show that as the promised delivery schedule is relaxed, not only does the use of truck routes become more desirable, but also interesting adjustments in mode and hub assignment occur. Consider the case of hubs in Los Angeles and Dayton. As the time constraints are relaxed, cites such as Minneapolis and New Orleans originally linked by air to Los Angeles, switch to Dayton because cheaper truck routes become feasible.