Research Reaches for the Friendly Skies

Paul College professor helps to solve the problem of designing a unified flight system

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Airline scheduling consists of several major planning challenges: building a flight schedule, assigning aircraft to each flight leg, assigning routes to fly and assembling cockpit and cabin crews to staff each flight. Any one of these tasks poses a challenge, but integrating them into a monthly, unified system can frustrate the best of planners.

But not if they adopt the solution outlined by Melda Ormeci Matoglu, assistant professor of decision sciences, and her co-authors, who neatly solve the integrated problem using “heuristic and exact methods in combination.”

In other words, employ her algorithm and you will quickly find a good fleet assignment and crew schedule at a much lower cost than traditional methods.

Matoglu’s study measured countless combinations and, accounting for all complex aviation rules — ranging from minimum connection times to maximum landings a crew member can do in a day, to rules governing location and flight patterns — arrived at a formula for getting planes and crew in the air, keeping them there and saving money.

Says Matoglu, “While most problems in the literature deal with a flight schedule of 1,000 – 2,000 legs or fewer, we solve one consisting of approximately 27,000 flights, two aircraft families and more than 100 aircrafts and airports. Our methodology helps address a very large scale and difficult problem and achieves significant savings for airlines that use it.”

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PAUL PERSPECTIVES

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