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IE 468- Pricing and Revenue Optimization
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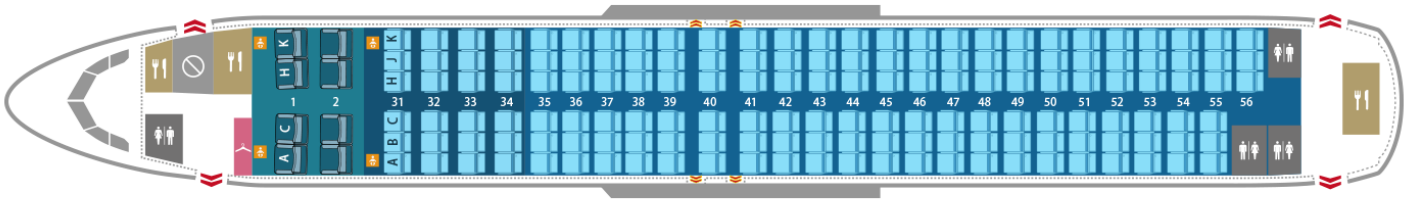
REVENUE MANAGEMENT FOR VUELING

Vueling is a low-fare airline that has been flying lots of vacationers from various countries for over 20 years. Vueling attempts to optimize its bookings for its daily VY1072 flight from İstanbul to Palma de Mallorca that departs at 6:55 pm and arrives at 8:00 pm. The full fare (Classic) for this flight is 129.49 Euros while the discount fare (Eco) is 86.49 Euros. Regardless of the fare in economy cabin, Vueling offers a meal and a drink to all passengers on this flight which cost 4 Euros per passenger. The type of the aircraft that is assigned for this flight is Boeing 737-800(73K) which has 161 seats. (See the seat plan below):



The demand in discount fare (Eco) is usually very high, and if Vueling allows, is sufficient to fill up the entire cabin. The full fare (Classic) bookings for the past 5 years are provided in the spreadsheet Vueling.xlsx.

Question 1: Using the data provided, calculate the optimal booking limits and protection levels for the discount fare (Eco) and the full fare (Classic) for each day of the week June 16-22, 2025. It may be useful to plot the bookings over time and incorporate the seasonality and special day (holiday) effects. Note that, Palma de Mallorca is the main island of the Balearics. It has 550 km of coast, with enchanting bays and beaches. The weather is very pleasant in winter, but the heat may be unbearable for some people in summer. Estimate a distribution for demand and answer the following for each day of the week June 16-22, 2025.

a) What are the booking limits and protection levels that you recommend?
b) What is the expected load factor for this flight if the airline follows the booking limit and protection level you recommend in part a?
c) If this is the only flight of Vueling, what is the expected value of the Revenue Per Available Seat Kilometer metric for Vueling if it follows the recommendations in part a? (İstanbul- Palma de Mallorca is 3200 km).
d) What is the expected number of Vueling customers that will be denied booking because there are no seats left in the flight? (Assume no no-shows, cancellations and overbooking, separately for each day).

Question 2: Using only the data for Thursdays, Fridays and Saturdays, find the optimal booking limit and protection level for the discount fare (Eco) and the full fare (Classic) to be used for June 19-21, 2025 using a sample average approximation method (booking limit and protection level will be same for all three days).

a) What are the booking limits and protection levels that you recommend?
b) Discuss how these booking limits and protection levels are different from those found in Question 1.
c) What is the expected load factor for this flight if the airline follows the booking limit and protection level you recommend in part a? (use sample average approximation).
d) What is the expected number of Vueling customers that will be denied booking because there are no seats left in the flight? (use sample average approximation).

Question 3: Vueling decided to offer a new service for the same flight called Premium. This new service will have a fare of 212.49 Euros and provide a number of benefits to the passengers, including preferred check-in, excess baggage and a full-service meal. These benefits are expected to cost Vueling 3 Euros per passenger (on top of the 4 Euros for meal and drink). Vueling expects that this new service will not affect the current Vueling demand for this flight but take away some demand from a boutique airline. Vueling estimates the demand for this additional service to be normally distributed with mean 13 and standard deviation 3 every day. Calculate the booking limits and protection levels for **all classes** for each day of the week June 17-23, 2025.

a) using EMSR-a heuristic,
b) using EMSR-b heuristic.