

An Algorithm for Airplane Seating

This seating algorithm begins after all the priority customers (who were willing to pay extra) have already chosen a seat. It does not place anyone in business or first class, those have to be bought or upgraded to.

Now for those who have elected to save their \$50 and allowed the system to choose your seats for you, this is how it works:

- The economy seats are divided into 4 quadrants and it is the goal of the program to maintain equilibrium between those 4 quadrants to better balance the airplane for flight.
 - On planes with an odd number of seats in a row, that middle seat will be filled last – most people don't want to sit in a middle seat next to strangers.
- Starting 24 hours before the flight, passengers will be able to check-in. As they check-in, they are automatically assigned a seat in the quadrant with the least number of passengers.
 - If there is a tie between quadrants, the 2 quadrants in the back of the plane will be filled first.
 - If there is a tie between the left and right side of the plane, one side will be randomly selected.
 - Passengers that booked their flights together will be seated together if possible*.
 - If a group cannot fit in one row, the algorithm will attempt to find a group of adjacent rows to seat them in.
 - If a group cannot be seated together, then the group will be divided into as few subgroups as possible while ensuring that any minors are paired with an adult or at least 1 seat away in any (of 8 possible) directions.
 - Passengers flying solo will be placed in an aisle or window seat if possible. Middle seats will fill in last. The goal being to leave open seats between passengers whenever possible to give people more room and spread people out throughout the plane.
- To implement the algorithm, seats will have a few different values attached to it.
 - A desirability ranking – for example:
 - Window and aisle seats have a higher ranking than a middle seat.
 - As adjacent seats fill in, the desirability ranking would decrease.
 - Seats near the bathroom also have a lower desirability ranking.
 - *A largest-group-possible number – calculated from the total number of continuously open seats adjacent to that seat ignoring quadrant boundaries. This number would be used to help seat larger groups within (and across) quadrants.