**Loading a Plane: A Simulation in Processing**

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In every decision, airlines try to optimize, yet balance customer satisfaction and financial benefit. However, the relationship between customer satisfaction and profits is not always easily understood. An airline’s boarding procedure plays a substantial role in customer satisfaction. Boarding quickly will satisfy customers and lead to more business, but is in direct conflict with the procedure’s efficiency and thus, profits.

Airlines currently employ a variety of boarding strategies without an efficiently generalized one. They range from loading according to seat section to loading according to row order2. Each technique attempts to account for aisle disturbances (when one passenger’s progress to her seat is blocked by another passenger) that require more time for loading. These small disturbances add up and often lead to delays where researchers found that for one major airline, “every extra minute at the gate added $30 in costs.”[[1]](#footnote-1)

Airlines choose to load families, first class, and the remaining customers separately: Is this always optimal?

I have built a simulator with the programming language, Processing, that allows the user to enter any boarding strategy and vary the number of passengers. My program visually displays the succession of each simulation and the time needed.

My simulator demonstrates that a new boarding method that results in satisfaction for each customer rather than favoring a certain group (first class, families, etc.) is still highly efficient. I found a procedure that orders the plane in three sections in order to load the passengers simultaneously. With each group having separate sections on the plane, the time to board Rear-to-Front will be faster. This still accommodates for each groups’ satisfaction as well as time-efficiency for the airline.

1. Koenig, D. *Airlines keep searching for perfect boarding process*. USA Today. Aug. 1, 2013.

   2 *Guide to Airline Boarding Procedures*. SeatGuru. TripAdvisor, n.d. Web. 17 Feb. 2015. [↑](#footnote-ref-1)