Drury University

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December 5, 2013

Chuck Magill

Southwest Airlines

P.O. Box 36647-ICR

Dallas, TX 75235

Mr. Magill,

For my senior research project I have been studying the most efficient method for people to board an airplane in terms of both time and feasibility. I would like to take a brief moment to share my results with you and ask for any feedback that you would be willing to offer.

On the second page is a brief description of my analysis and simulation results. Please contact me if you have any comments on these results or would like a complete report of my results.

I would appreciate having responses to these questions:

1. Have you or your company researched the best way to board an airplane? If so, can you share your approach or results with me?
2. What method do you currently use to board your passengers? What factors were considered in making this selection?

My advisor, Dr. Carol Browning, and I thank you for your time

Sincerely,

Jordan Mason, senior

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Advisor: Dr. Carol Browning, cbrownin@drury.edu

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**Research Summary**

My research mainly focused on different methods by which groups of people can board an airplane and compared those times to determine which was the fastest. I tried to make my research as legitimate and realistic as possible, by factoring in several outside variables and characteristics of human behavior including, but not limited to, passengers with carry-on bags, movement time for passengers, and small groups of passengers that would be traveling together. After I had created my initial simulations, I tested my data against real world events by going to multiple airports and recording the relevant data for different flights as passengers were boarding. I then reanalyzed my time variables to generate results that were consistent with my real world findings and then created a report comparing six different boarding method options. Those options were: Front to Back, Back to Front, Random, Random within Zones, Window/Middle/Aisle, and Random within Window/Middle/Aisle.

In order to have figures that represent a very broad sample size, I ran 10,000 simulations of each method and took the average time of those runs,. After an analysis of the results it was clear that assigning passengers a seat on the plane and then allowing them to board in a random order was the most efficient in terms of passenger approval, crowd control, and time. While there were some methods that performed better than Random in terms of time, like Window/Middle/Aisle, they were disqualified on the assumption that customers would not approve of methods that force them to separate from the group they might be traveling with. Based on my results I have concluded that if an airline would choose to board their passengers in a random order, average load times would decrease by 38% if currently boarding randomly within zones.