Squadron Officer School Flight Diversity Model

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Abstract: Every 40 days, Squadron Officer School (SOS) currently uses a basic model and manual computations to create 40-45 flights of students based on their diversity traits. The administration at SOS believes more diverse flights are beneficial to the overall experience and development of their students. The purpose of this project is to develop a user-friendly tool that completely automates the assignment process and assigns students to maximize their respective diversity amongst peers in a flight. The tool provides the user the opportunity to define the parameters of the model such as number of flights, importance of each constraint, and number of accompanied flights. We develop a heuristic model utilizing analytical hierarchy to diversify flights among the various desired traits. Personnel can use the tool eight to nine times a year to create flights at SOS saving around 50 man-hours a year while increasing the overall development and experience of their students.

Keywords: Diversity, VBA, Heuristic, Allocation, Hierarchy

1. Introduction

Squadron Officer College (SOC) at Maxwell Air Force Base, Alabama houses a resident-education program called Squadron Officer School (SOS) that is designed to address the developmental needs of junior officers. Established in 1950, SOS delivers primary developmental education for an estimated 4,500 captains, international officers, and Department of the Air Force civilians per year.

Before a class enters SOS, the Registrar at SOC runs a model that assigns students to a maximum of 45 flights, diversifying them based on students’ gender and military status - active duty, national guard, reserve, or civilian. However, this solution method does not account for all the diversity traits present. According to various studies, diverse organizations produce better results and perform more creatively (Curnell 2016). The method employed by SOC simply ensures that the students are assigned to a flight. After the model is run, the Registrar manually adjusts the assignments to additionally diversify based on individual’s pilot status and Air Force Specialty Code (AFSC). This “by hand” post-processing step, that takes an estimated six-to-seven hours per each new class, could be avoided by utilizing a more robust assignment model. Additionally, we plan to score the diversity of previous solutions from SOC and compare these to our solutions.

1.1 Problem Statement

The purpose of this project is to develop a user-friendly tool that assigns students to flights in order to maximize diversity with respect to certain diversity traits. After creating the flights, the tool will proceed to distribute students among the flights accounting for certain established constraints. The tool will provide the user the opportunity to define the parameters of the model - number of flights, importance of each constraint, and number of accompanied flights.

1.2 Project Goals

Our group will develop a tool that assigns students to different flight and maximizes the diversity of the officers in each group. The model will account for variables such as military status, gender, AFSC, accompanied status, and race. There will also be a weighting system that allows for the user to choose which diversity requirements are the most important before running the model. This creates a scoring system that assigns each individual a combined score composed of how important SOC personnel believe a certain trait should be in conjunction with a person’s specific trait’s rarity in relation to his/her peers. The model will be built for use by the SOC Registrar. We will include multiple troubleshooting guides to account for