M3 Decision Analysis Project Group 1 – Deliverable 1

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SYST 573

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A local Virginia high school senior from a middle-class family wants to attend college to study data science, but also has been considering a math degree. He applied to 5 schools and received admissions from all 5 schools (Rochester Institute of Technology, Carnegie Mellon, University of Michigan – Ann Arbor, Georgia Tech, George Mason University, and Virginia Tech). He needs assistance on deciding which college will give him the best education, student experience, and preparation for his career. He is unsure about where to start in the decision-making process. He has some evaluation concerns that he would like to implement into the decision analysis. He cares about:

- Quality of teaching (Niche ranking)
- Access to state-of-the-art laboratories (R&D budget per student, research space per student)
- Spectator athletics (Division? I.e. D3, D2, D1)
- Accessible professors (student/faculty ratio)
- Student support [networking/career services (grad. rate, job placement rate, # internships)
- Personal/mental health(student healthcare budget?, rec center/facilities budget?)
- Extracurricular activities (# clubs, speakers, student life)
- School prestige/alumni network ($ alumni giving)
- Total tuition costs (after fin. aid)
- School size (exponential value function)

The first step will be to identify clear objectives and construct the value hierarchy according to the decision maker's goals for his college choice. In this process we will classify the objectives and avoid overlapping categories such that each objective is independent of the others. We will also check in with the decision maker to eliminate unnecessary categories or add.

Working with the decision maker, we will check in to make sure that the objectives align with his goals for his education and experience as a student. We will prepare a short five slide presentation with a fact sheet with the relevant data for each school to show our decision maker. The team will use the rank sum and rank reciprocal methods for eliciting weights through a consultation with the decision maker. Our group of Mitch Breeden, Gregg Rich, Micaela Teets, and Henry Wu will use these to calculate the value functions for each alternative and present the results to the decision maker to show the value of each alternative.