Session 5 – PubAfrs 4010 – 03 September 2024
Workshop: Consequences Tables

Instructions:

In today's class, we will be exploring consequence matrices with a particular application to selecting a path after high school. This workshop will hopefully take a real question that everyone had to make and consider it with the tools that we have begun to learn in this class using real (i.e. non-contrived) data. A secondary outcome of this workshop is hopefully an enhanced ability to employ data for decision-making purposes. This work should be completed independently because the subject of the analysis should be yourself (or at least yourself as a senior in high school). You should feel free to talk with your neighbor, but everyone should submit his own work. Do not worry too much about whether your estimates are perfect. I am evaluating this based on your ability to make a critical decision based on logic and available data.

Part 1: Creating your set of alternatives

Before considering what factors that you would likely use to make your decision, let's first explore your set of alternatives. This should be personally-tailored to you as a high school student. What colleges were you considering? What other options could you have pursued? Create a set of 5 colleges or universities that you could have considered (or did), and 1 additional alternative.

Part 2: Create your set of objectives

Take a step back now and consider what factors would be important in making a decision about what to do after high school. Below I will provide a list of a few common factors, but feel free to personalize this list to fit your situation.

   a. For many high school students, college attendance is almost more of an expectation by their parents than a choice. Still, at its heart, a decision to attend college or not is still inherently a choice. One way

to understand this is perhaps by calling the first objective "**Making your parents proud**". As a parent, I know that I will always be proud of my children, and so in some ways this is mis-labeled concept, but the heart of this is to capture the spirit of being expected to attend college. This also allows you to create a scale or a ranking across different colleges based on competitiveness or **academic prestige**. This scale or ranking should be personal to you.

b. Perhaps the most immediate point of consideration is "what sort of job will I get after I graduate?". At the heart of this, maybe, is really a question of "What job will make me the most money?". The reality is that attendance at different colleges implies different salaries after college. While this is not true, for simplicity, we will consider that every student who graduates from a particular college makes the mean income of that college, and that income grows at a linear rate of 3% regardless of your college (that is, if you start at $50,000 in your first year from College A, you should expect to make $51,500 in year 2, $53,045 in year three, and so on. Additionally if you start at $75,000 in your first year from College B, you will still only expect a 3% raise in all your future years).

   i.   For each of the colleges that you selected, go to the following website and **calculate the total wage income** that you would earn over 36 years. Hint: use the following formula:

   $$Total\ Earnings = Initial\ Salary * \frac{(1.03)^{36} - 1}{0.03}$$

   https://www.payscale.com/college-salary-report/bachelors

   ii. Estimate your total wage income over 40 years for jobs that do not require college. Do this by searching for entry level earnings for your specific job. If you're required to make an assumption to estimate yearly income, assume that you work 40 hours per week for 50 weeks per year. Instead of a 3% raise, assume an annual 1% raise. Use the sample formula as above, slightly modified:

   $$Total\ Earnings = Initial\ Salary * \frac{(1.01)^{40} - 1}{0.01}$$

c. Next, estimate the **cost of attending different colleges**. For simplicity, just assume that non-college jobs have no costs (again, this is not necessarily true, but we'll assume this for simplicity). Also for simplicity, just estimate the cost of tuition across 4 years for college. Do not worry about room and board or other college expenses. You may need to Google search the cost of attending college.

   i. To make this better match reality, do your best to estimate the cost of attending college for you. That means, if your parents were willing to pay for any college you wanted, then the cost of all colleges would be $0. If your parents were unable to pay for college, then you would pay the tuition listed online. If your parents could pay for some of college or you received a partial scholarship, then subtract that from tuition. [I do want to underscore that every family is in a different financial situation, and this is only for workshop purposes. Every student should be proud of where they are today regardless of how much or little financial support they received].

d. Estimate the value of **extra curricular activities** that different college campuses offer to you. Large colleges like Ohio State have fantastic 'Game Day' experiences and expensive recreation centers for students, but you are often a small fish in a big pond. Other things you might consider are the opportunity to join clubs, access to off-campus events, or the beauty of campus. These are all personal to your preferences, but create a value for each. One way to do this is to consider 100 as being the absolute best option that you even imagine, and 0 as being the worst possible option. You may create an objective for each, or aggregate them. For your non-college alternative, either score it a 0, or generalize the objective to fit the alternative.

e. One final consideration might be **distance from home.** Again, you might normalize this in the following way: Based on your preferences, what is the ideal distance from home (consider that 100)? What is the furthest that you would ever consider (consider that and anything further 0)?

f. If there are other important considerations for you, place them below.

Part 3: Organize your matrix. I will start this for you to give you a general structure, but you should modify to fit your specific situation with specific numbers. You may do this in excel for more space, but your choice.

	Alternatives					
	College 1	College 2	College 3	College 4	College 5	Alt 1
Making your parents proud / reputation						
Total wage income in 40 years						
Total cost of tuition						
Selection of extra curriculars						
Location beauty						
Number of similarly-aged people						
Urban or ruralness						
Distance from home						

(Objectives)

Part 4: Choose appropriate weights for each of your objectives. Of everything that you listed that is a factor in your decision, are there any that are especially important to you? Are some relatively unimportant? Are they all equal? Create a column of weights.

Part 5: Choose a utility function. The standard utility function that you will likely employ is additive, but feel free to consider any sort of utility function. Perhaps you want to function that chooses the alternative that simply has the highest [weighted] value across the matrix. Perhaps you want a function that ignores choices where there both highly-scored and low-scored objectives. This is your choice, so pick wisely! You should feel free to use the additive utility function since it is likely the most fitting.

Part 6: Evaluate. What did you decide? Did your choice surprise you? Does it match your decision to go to Ohio State? Did you learn something about what mattered to you when you made decision, even if you only knew it implicitly when you were a senior in high school? Describe your reaction in a few sentences.