

SYS660 Decision and Risk Analysis
Assignment 6

Q1. This week, we discussed many heuristics and biases people exhibit when considering uncertainty and risk. Find three examples of cognitive bias with respect to uncertainty/risk within the open press: newspapers, magazines, opinion pieces, blogs, etc. For each example:

- Identify the source (and provide a link if possible). Briefly (1-3 sentences) summarize the situation and its uncertainty/risk.
- Correctly identify the type of heuristic/bias exhibited. This must be one of those we discussed in the Cognitive Bias lecture.
- Briefly (1-3 sentences) explain why you think the article exhibits that bias. Note: You should include at least two different types of bias among your three examples.

Cognitive bias, sometimes referred to as psychological bias, is the propensity to act or make decisions that are erroneous without realizing it. For instance, you might unconsciously use data selectively or experience peer pressure to make a choice.

A group of recurring mental mistakes brought on by our imperfect capacity for impartial information processing is called cognitive bias. It can cause people to make unreasonable and nonsensical actions and to misjudge threats and hazards.

Cognitive bias was characterized by the researchers as the propensity to behave or make decisions that lack rationality because of our personal traits, memories, socialization, values, and other factors. Many behaviours, such as judgment, decision-making, beliefs, and social relationships, are influenced by biases.

Human perception, interpretation, and behaviour are all impacted by cognitive bias, a phenomenon with profound psychological roots. Personal experiences, social influences, and innate brain shortcuts are some of the causes. An outline of the things you brought up is provided below:

1.Data Selection: Using data in a biased way is a common sign of cognitive bias. It is possible for people to unintentionally ignore contradicting facts and selectively choose information that confirms their thoughts or ideas. By warping how information is interpreted, this bias affects how decisions are made.

2.Constraints from Influential Colleagues: Cognitive biases can also be brought on by outside influences, such as constraints from powerful colleagues or authorities. Irrational judgments might be made even against one's better judgment if one feels pressured to follow the decisions or opinions of those in authority.

3.Processing Information Objectively Is Limited: The ability of our minds to process information objectively is innate. These limits give rise to cognitive biases, which lead to mistakes in judgment and decision making. From personal to professional judgments, they might appear in a variety of settings.

4.Values, memory, and socialization all have an impact: The influence of personal beliefs, memories, and socialization is profound, as cognitive biases are closely linked to these factors. These elements affect how we see the world and may unintentionally cause us to perceive events or information in a biased way.

5. Conduct Impact: A number of different facets of human conduct are greatly impacted by cognitive biases. Their impact extends to judgments, beliefs, decision-making processes, and social relationships. These prejudices can cause one to make poor or illogical decisions and frequently cause one to deviate from reason.

It is essential to identify cognitive biases in order to lessen their effects. People can lessen the effects of cognitive biases and make more informed and logical decisions by using techniques like critical thinking, searching out different viewpoints, being conscious of their own biases, and using structured decision-making frameworks.

Confirmation Bias:

When you look for evidence to support your preexisting opinions and ignore information to the contrary, you are engaging in confirmation bias. You could make biased conclusions as a result of not taking into account all relevant information. This bias entails looking for, analyzing, or remembering facts in a way that supports preconceived notions or ideas while minimizing or dismissing opposing data.

For instance, a member of police searching for outward indicators of deception can wrongly identify other behaviours as proof of lying. When looking for outward manifestations of deceit, confirmation bias may cause a police officer to mistakenly interpret benign activities as symptoms of lying. The officer's inclination to validate their assumptions may cause them to ignore indications of sincerity.

Gambler's Fallacy:

This misconception captures our tendency to think that just because something hasn't happened yet, it will eventually happen. This is the fallacy that, in circumstances where every event occurs independently and randomly, previous occurrences have an impact on future outcomes.

For instance, if we wager on a roulette table and the prior results have been red, we might erroneously assume that the next result will be black; yet, these events are unconnected, meaning their respective probabilities of occurring do not influence one another.

Gender Bias :

The propensity to assign particular traits and behaviours to one gender over another without sufficient evidence is known as gender bias. Gender bias occurs when people attribute particular behaviours, characteristics, or skills to others based only on their gender, frequently without any factual basis or supporting data.

Men's pain complaints are treated more seriously than those of women, for instance; women are thought to be superior caregivers than men; women are more likely than men to diagnose certain clinical syndromes; and students tend to give female lecturers lower ratings than male lecturers.

Samples from the media:

<https://www.allsides.com/story/cory-booker-unveils-gun-control-plan>

Different perspectives were offered by the Left, Center, and Right about the same political conduct. In contrast to the Left's bold portrayal and the Center's impartial attitude, the Right purposefully emphasized the most divisive claim in order to create prejudice in the minds of the public.

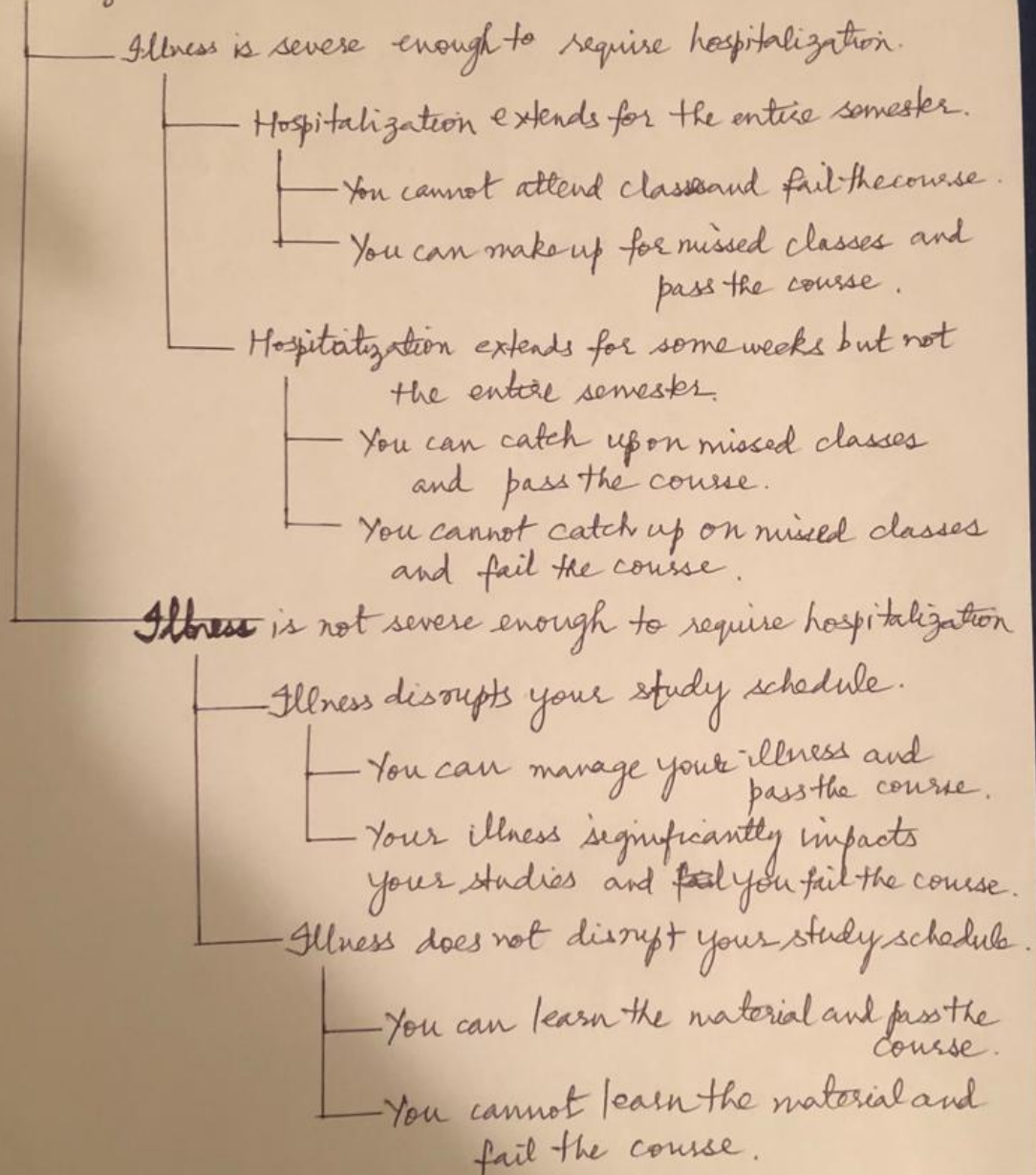
Q2. Assume that you decided to take the course SYS 660 in Spring 2024. Identify one initiating event (e.g., a snowstorm) and draw an event tree with at least four potential outcomes. Evaluate each undesirable outcome of the event tree using the ordinal risk matrix. Not every potential outcome is undesirable, and you should briefly explain/clarify if you do not evaluate all the outcomes. Note: Solutions will vary from person to person. You should not plagiarize.

Scroll down for the answer

Initiating Event: Unexpected illness during Spring 2024

Event Tree:

Initiating Event: Unexpected Illness.



Ordinal Risk Matrix:

	Outcome	Likelihood	Impact	Risk
1.	Hospitalization extends for the entire semester.	Low	High	Medium.
2.	Hospitalization extends for some weeks but not the entire semester.	Medium	Medium	Medium.
3.	Your illness significantly impacts your studies and you fail the course.	Medium	High	Medium.
4.	You cannot catch up on missed classes and fail the course.	Low	High	Medium.

Explanation of undesirable outcome:

1. Hospitalization extends for the entire semester: This would mean that you would be unable to attend classes for the entire semester, which is an unacceptable outcome. Passing the course would become extremely challenging as a result.

2. Your illness significantly impacts your studies and you fail the course: This is an undesired result since it would need you to retake the course in order to demonstrate that you did not learn the subject. You would be wasting money and time on this.

3. You cannot catch up on missed classes and fail the course: This is not what you want to happen because it would need you to retake the course in order to make up for the material you missed. You would be wasting money and time on this.

It is good to have the remaining two results. If the scenario "Hospitalization does not disrupt your study schedule" occurs, it would indicate that you will be able to fully recover from your illness and resume your coursework without any issues. Since it would indicate that you have finished the course successfully, the desired outcome is "You can learn the material and pass the course."

