ACTIVITY 1: How to Combat the Age of Misinformation with a Healthy Dose of Skepticism

OVERVIEW: Students will begin this activity with a pre-class assignment where they watch two videos discussing the prevalence of misinformation that circulates on the internet. Following this, they will take a quiz based on the videos, preferably online, to ensure they have watched and understood the content. These videos are intended to underscore the importance of the upcoming in-class lesson. For the in-class portion of the activity, the class will begin with a discussion on the definitions of population and sample to ensure the students understand the difference between them. Students will then be divided into groups and presented with multiple scenarios of poorly conducted studies, which they will discuss. After group discussions on each example, there will be a class-wide discussion. Key terminology such as 'well-defined population', 'representative sample', 'random selection', and 'neutral wording' will be introduced and explored during this discussion.

MATERIALS NEEDED TO CARRY OUT THE LESSON:
- Student access to the internet
- Pre-Class Activity Quiz
- In-Class Activity Worksheet

CONCEPTS TO BE LEARNED/APPLIED:
- Students will understand the difference between a population and a sample, specifically, that a population includes the entire group of units or individuals about which information is desired, and the sample represents the part of the population from which information is gathered.
- Students will understand having a well-defined population is critical because it clarifies the group of units or individuals the results can be extended to.
- Students will understand what a representative sample is and what it is not. For example, just because a sample is representative does not mean you will get 100% accurate results as you are calculating an estimate from the **sample** to use to make inferences about the population.
- Students will understand that bias is a distortion of a statistical result caused by a poor method of sampling, measurement, analysis, or presentation of data.
- Students will understand that bias leads to inaccurate results and that samples must not be selected haphazardly or non-randomly as that introduces bias.
- Students will know what questions to ask when they read statistical data online.
    - Is the population from which the data was selected clearly stated in the study?
    - Is it clear how they selected the sample from the population and is it representative of the entire population?
    - If people were surveyed, were the questions in the survey clear and neutral?
    - Who conducted the survey? Was it a neutral party or someone who has a vested interest in the results?

INSTRUCTIONAL PLAN:
The instructor will begin by emphasizing the importance of developing critical thinking and media literacy skills to ensure that we are not merely passive recipients of information but can think independently. Additionally, the instructor will highlight the abundance of statistics on the web and in the news, emphasizing the need for skills to evaluate statistical claims before accepting them at face value.

The instructor will begin by explaining the distinction between a sample and a population. Following this, groups will receive a handout with one example at a time to discuss among themselves before discussing each example as a whole class. Throughout the class discussion, various types of bias and relevant terminology will be introduced and explored.

At the end of class, students will generate a list of questions that they should consider when reading statistics online.

Definition of Population:
The population includes the entire group of units or individuals about which we desire information.

Definition of Sample:
The sample represents the part of the population from which we collect information.