IDS 702 Pre-course Assessment

Fall 2025

First name: _____ Last name: _____
Net ID: _____

I hereby state that I have not communicated with or gained information in any way from my classmates or unauthorized materials during this assessment, and that all work is my own.

Signature: _____

The purpose of this assessment is for me to understand your current knowledge of statistical principles and statistical models. This will not factor into your course grade at all.

For each question, indicate both your answer **and** your confidence in that answer. For example, in the question below, if I am somewhat confident that the answer is "simple random," I would circle **B2**. **Only one letter/number combination should be circled for each question.**

Example question: Many statistical methods assume that data come from a _____ sample.

	Not at all confident	Somewhat confident	Very confident
Stratified	A1	A2	A3
Simple random	B1	B2	B3
Cluster	C1	C2	C3
Multistage	D1	D2	D3

Multiple Choice

Circle the letter to mark your answer choice.

1. Let X be a random variable that represents the number of red-flowering plants in 100 crosses of pink flowering plants. Which distribution best fits X?

	Not at all confident	Somewhat confident	Very confident
Normal	A1	A2	A3
Hypergeometric	B1	B2	B3
Poisson	C1	C2	C3
Binomial	D1	D2	D3

2. I take repeated samples of size 100 from a left skewed distribution and calculate the mean of each sample. How will those sample means be distributed?

	Not at all confident	Somewhat confident	Very confident
Left skewed	A1	A2	A3
Normal	B1	B2	B3
Right skewed	C1	C2	C3
Cannot be determined	D1	D2	D3

3. Increasing the confidence level _____ the width of a confidence interval and increasing the sample size _____ the width of a confidence interval.

	Not at all confident	Somewhat confident	Very confident
increases; increases	A1	A2	A3
increases; decreases	B1	B2	B3
decreases; increases	C1	C2	C3
decreases; decreases	D1	D2	D3

4. What is the dimension of the product of a 3x4 matrix and a 4x5 matrix?

	Not at all confident	Somewhat confident	Very confident
3x5	A1	A2	A3
5x3	B1	B2	B3
4x4	C1	C2	C3
4x5	D1	D2	D3

5. A p-value is the _____ of observing _____ as or more extreme than the observed, assuming the _____ is true.

	Not at all confident	Somewhat confident	Very confident
statistic; point estimate; alternative hypothesis	A1	A2	A3
statistic; hypotheses; null hypothesis	B1	B2	B3
probability; data; alternative hypothesis	C1	C2	C3
probability; data; null hypothesis	D1	D2	D3

6. Which type of question can NOT be answered with a linear model?

	Not at all confident	Somewhat confident	Very confident
On average, how much does Y change per increase in X?	A1	A2	A3
On average, per increase in Y, how much does X change?	B1	B2	B3
What is the predicted value of Y for a given value of X?	C1	C2	C3
What is the average value of Y when X=0?	D1	D2	D3

7. Which of the following statistical models would be most appropriate to assess the impact of student loan debt (measured in $) on home ownership status (measured as yes/no), accounting for other financial variables such as income?

	Not at all confident	Somewhat confident	Very confident
Linear regression	A1	A2	A3
Logistic regression	B1	B2	B3
Ordinal regression	C1	C2	C3
Poisson regression	D1	D2	D3

8. Calculate the following:

$$\frac{d}{d\theta}(4\theta^3 + 2\beta)$$

	Not at all confident	Somewhat confident	Very confident
$12\theta^2$	A1	A2	A3
$4\theta^2 + 2$	B1	B2	B3
$12\theta^3 + 2\beta$	C1	C2	C3
$4\theta + 2\beta$	D1	D2	D3

9. How would you describe your experience with statistics and confidence in fundamental principles of statistics (e.g., probability distributions, sampling distributions, hypothesis testing)

10. Finally, a question purely for fun: what's a movie that you wholeheartedly recommend?