

MA123 – Project 1: Probability (Report)

Name: _____

Score: ____ pts.

This project relates to concepts in epidemiology with focus on clinical usefulness of diagnostic tests.

Resources (Make sure to review these resources before starting the project):

- Calculating Sensitivity and Specificity using a 2 x 2 table ([Insert Information/Video Here](#)).
- Calculating Positive and Negative Predictive Values using a 2 x 2 table ([Insert Information/Video Here](#)).
- Sensitivity, Specificity, PPV, NPV ([Insert Information/Video Here](#)).
- How to use COUNTIF and COUNTIFS in Microsoft Excel ([Insert Information/Video Here](#)).

Problem:

A new test to diagnose a Urinary Tract Infection ([UTI](#)) in women (patients) is being assessed. The comparison gold standard is positive urine dipstick plus urine culture. Data collected on this new test are provided in the accompanying Microsoft Excel file.

Your task:

1. (40 points) Use Microsoft excel function “COUNTIFS” to create a confusion matrix (2 x 2 table) showing how many true-positives (TP), false-positives (FP), false-negatives (FN), and true-negatives (TN) are in the study.

Place your confusion matrix here (make sure it is well labeled and it shows the row totals, column totals, and overall total)

2. Use the confusion matrix created in 1) to answer the following questions.
 - i. (15 points) What percentage of women (patients) with a positive urine dipstick plus urine culture who have a positive diagnostic test (TP rate or Sensitivity)?

Provide your answer here (Round your answer to two decimal places)

- ii. (15 points) What percentage of women (patients) without urine dipstick plus urine culture who have a negative diagnostic test (TN rate or Specificity)?

Provide your answer here (Round your answer to two decimal places)

- iii. (10 points) What percentage of women (patients) were correctly diagnosed with a positive test (Positive predictive value)?

Provide your answer here (Round your answer to two decimal places)

- iv. (10 points) What percentage of women (patients) were correctly diagnosed with a negative test? (Negative predictive value)?

Provide your answer here (Round your answer to two decimal places)

3. (10 points) Based on the results in 1, and 2 (i, ii, iii, and iv) state your conclusion about the new test to diagnose a Urinary Tract Infection ([UTI](#)) in women (patients). (No more than two sentences).

Type your summary