Practice Assignment: More Conditional Probabilities

1) In a certain hospital's emergency room, 10% of admitted patients are initially listed in critical condition, and 90% of admitted patients who are initially listed in critical condition must stay in the hospital overnight. Only 8% of admitted patients who are not initially listed in critical condition must stay in the hospital overnight.

   Tala (who is a nurse at this hospital) randomly selects a patient who is staying in the hospital overnight. What is the probability that this patient was initially listed in critical condition? Round to 3 decimal places.

   Hint: Construct a table with 1,000 hypothetical patients.

2) A hospital uses the Emergency Severity Index[1] to classify its patients. This classification scheme has five categories from Level 1 (the patient requires resuscitation or other highly emergent care) to Level 5 (the patient requires non urgent care).

   At this hospital, 2% of patients are classified as Level 1, 7% are classified as Level 2, 30% are classified as Level 3, 10% are classified as Level 5, and the remaining percentage of patients are classified as Level 4.

   At this hospital, 99% of Level 1 patients stay overnight, 90% of Level 2 patients stay overnight, 30% of Level 3 patients stay overnight, 10% of Level 4 patients stay overnight, and 1% of Level 5 patients stay overnight.

   Kennedy (a nurse at this hospital) randomly selects a patient who is staying in the hospital overnight. What is the probability that this patient was initially classified as Level 1? Round to the three decimal places.

   Hint: Construct a table with 10,000 hypothetical patients.

[1] Gilboy, N., Tanabe, T., Travers, D., & Rosenau, A. M. (2011). Emergency severity index (ESI): A triage tool for emergency department care, Version 4. Implementation Handbook 2012 Edition, Agency for Healthcare Research and Quality.
https://emscimprovement.center/documents/107/ESI_Handbook2125.pdf