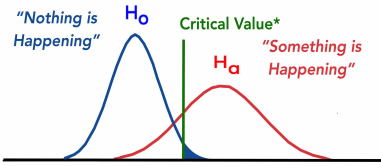
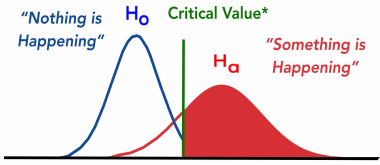
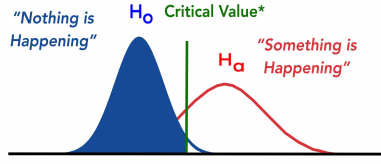
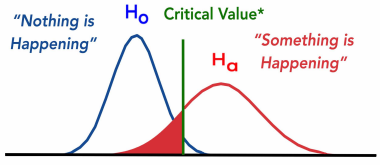


	H_0 True	H_0 False
Reject H_0	 "Nothing is Happening" H_0 Critical Value* H_a "Something is Happening" ☹️ Type I Error False Positive Type I Errors (False Positives, False Alarms) are typically considered LESS serious in medical screening, airport security, manufacturing, fraud detection, military defense, fire alarms, and public health. Examples: 1. Healthy person testing positive for a disease 2. Person with no weapon mistakenly flagged as carrying weapon 3. Food product mistakenly flagged as contaminated 4. Good airplane part mistakenly flagged as defective 5. Fraud suspected but does not exist 6. False alarm of attack by another country 7. False fire alarm 8. Bacteria count mistakenly seen as too high Type I Errors (False Positives, "False Alarms") in criminal law, scientific research, and drug approval are considered MORE SERIOUS than their Type II counterparts: 9. Innocent person found guilty. 10. False discovery (leads subsequent research down wrong path, policy and funding based on incorrect assumptions) 11. Finding that a new medication improves outcomes, but outcomes are better with existing regime (violating the "Do no harm" principle)	 "Nothing is Happening" H_0 Critical Value* H_a "Something is Happening" 😊 Correct
Fail to Reject H_0	 "Nothing is Happening" H_0 Critical Value* H_a "Something is Happening" 😊 Correct	 "Nothing is Happening" H_0 Critical Value* H_a "Something is Happening" ☹️ Type II Error False Negative Type II Errors (False Negatives, Missed Dangers) are typically considered MORE SERIOUS in medical screening, airport security, manufacturing, fraud detection, military defense, fire alarms, and public health. Examples: 1. Sick person testing negative for a disease 2. Weapon missed in airport screening 3. Contaminated product not detected in factory 4. Defective airplane part not detected 5. Fraud missed 6. Real attack by another country not detected 7. Fire not detected 8. High bacteria count not detected Type II Errors (False Negatives, Missed Opportunities) in criminal law, scientific research, and drug approval are not considered as serious as their Type I counterparts: 9. Guilty person going free 10. Missed discovery 11. Finding that a medication does not work when it actually does

* Critical Value: e.g., significance level, α , of 5%
= 5% chance we falsely reject H_0 , given it is true