Screening for Depression

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What's a Diagnostic Test?

- *Anything* used to help diagnose a person
  - Lab test
  - X-ray
  - Paper-and-pencil test
  - Interview

The Ideal Test (1)

- Correctly identifies all people who have the disorder (i.e., no false negatives)

- Correctly rules out all people who do not have the disorder (i.e., no false positives)

Some (Unpleasant) Facts of Life

- *All* tests make errors
  - False positives (FPs)
  - False negatives (FNs)
- Trade-off between false positives and negatives
  - Decrease FPs, then increase FNs
  - Decrease FNs, then increase FPs

A Touch of Jargon

- *Sensitivity* – the ability of a test to detect true cases

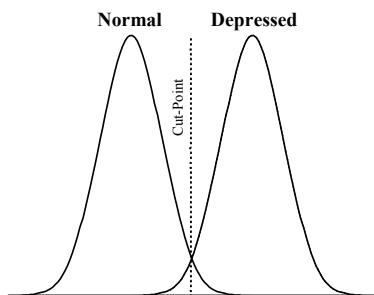- *Specificity* – the ability of a test to rule out true non-cases

The Trade-Off

The Trade-Off

Normal   Depressed

Cut-Point

False Negatives

The Trade-Off

Normal   Depressed

Cut-Point

False Positives

Lowering the Cut-Point

Normal   Depressed
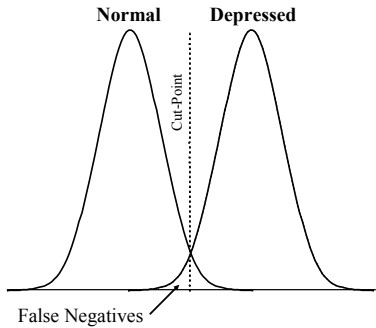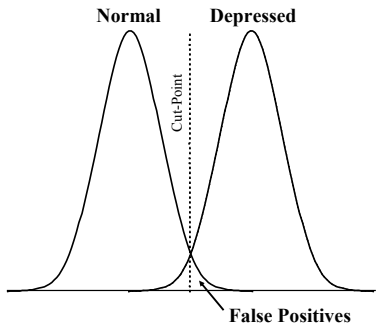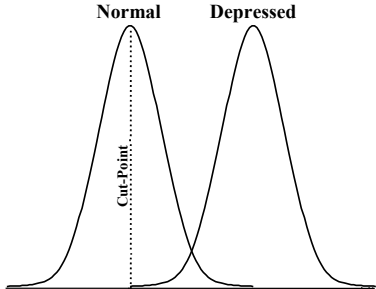
Cut-Point

Lowering the Cut-Point

Normal   **Depressed**

Cut-Point

No False Negatives

Lowering the Cut-Point

Normal   **Depressed**

Cut-Point

Many False Positives
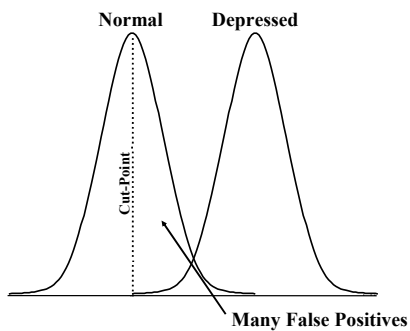
Lowering the Cut-Point

- When we lower the cut-point, we:
  - Pick up more true positive cases, *but*
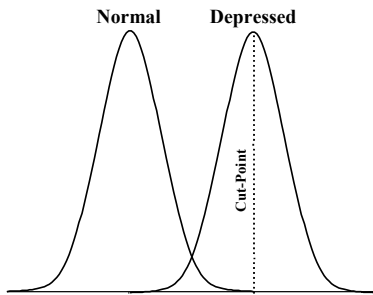 - Also pick up more false positive cases

Raising the Cut-Point

Normal   Depressed

Cut-Point

Raising the Cut-Point

Normal   Depressed
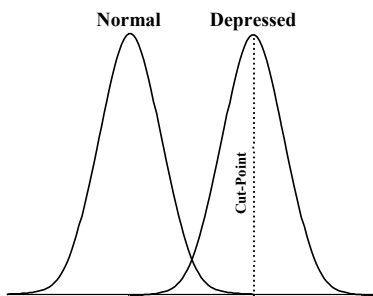
Cut-Point

No False Positives

Raising the Cut-Point

Normal   Depressed
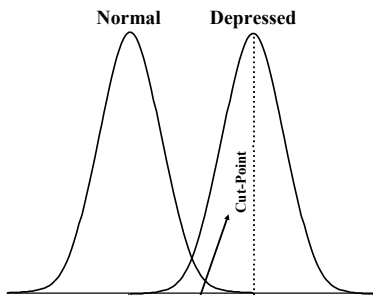
Cut-Point

Many False Negatives

Raising the Cut-Point

- When we raise the cut-point, we:
  - Rule out more true negative cases, *but*
  - Also rule out more true positive cases

Effects of the Errors

- Low False Negatives, High False Positives
- (A very *sensitive* test)
  - Miss fewer people with depression
  - Many non-depressed people called 'positive'
    - Labelling effects
    - Increased costs to screen them out

Effects of the Errors

- Low False Positives, High False Negatives
- (A highly *specific* test)
  - Mislabel fewer non-depressed people
  - Miss many people who should be seen
    - Cost of untreated depression

Preferably …

- Two (or more) tests used in sequence
    1) High sensitivity (pick up the cases)
    2) High specificity (rule out the false positives)
- People *must* be told after 1st test that test over-diagnoses to reduce labelling effects

The Ideal Test (2)

- Reliable
- Valid
- Self-administered
- Brief
- Self-scored

Who Should Be Assessed?

- What are the alternatives?
    – Mass screening (e.g., in shopping malls)
    – Case finding (everyone in GP's office)
    – Targetted (those whom GP suspects may be depressed)

Mass Screening

- Have experience from blood pressure and glaucoma screening
- Doesn't work
- Those who come already know they have the disorder; looking for second opinion
- Detect few new cases

Case Finding

- Person assessed during visit, irrespective of presenting complaint
- Done successfully with BP
- Assumptions:
  – Most people have a physician
  – Most people visit physician
- May miss those most in need
- Because prevalence is low, high false positive rate

Targetted

- Advantages
  – Because people more likely to be depressed, fewer false positives
  – More efficient use of resources
- Disadvantages
  – Many GPs poor at identifying those at risk

The Bottom Line

- Looking for depression is a risky business
  - No matter what method is used, we'll miss a lot of cases
  - If the prevalence is low, we'll falsely label a lot of people as depressed
- Be careful what you wish for