

# MATH 341 HW 2

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## Problem 4

Measuring effectiveness of a treatment.  $RR$ : Relative Risk  $ARR$ : Absolute Risk Reduction

- a)  $RR = P(B|T)/P(B|\bar{T})$   
RR should be  $> 1$  if the treatment increases chances of harm, and  $< 1$  if it reduces the chances of harm. This equation makes sense, as the numerator will increase
- b)  $ARR = P(B|\bar{T}) - P(B|T)$   
As the paper explains how  $P(B|\bar{T})$
- c) Is it possible to have a situation where  $RR \approx 0$ , and  $ARR \approx 0$ ?
- d) Show that  $P(B|\bar{T}) = \frac{ARR}{1-RR}$

$$\begin{aligned}\frac{ARR}{1-RR} &= \frac{P(B|\bar{T}) - P(B|T)}{1 - \left[\frac{P(B|T)}{P(B|\bar{T})}\right]} \\ &= \frac{P(B|\bar{T})}{P(B|\bar{T})} \cdot \frac{P(B|\bar{T}) - P(B|T)}{1 - \left[\frac{P(B|T)}{P(B|\bar{T})}\right]}\end{aligned}$$