

# Sensitivity, Specificity, Prevalence Exploration

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```
params <-  
  c(  
    sens = 0.9,  
    spec = 0.8,  
    prev = 0.3  
  )  
  
npv <- function(sens = params[[1]],  
                spec = params[[2]],  
                prev = params[[3]]) {  
  num <- spec*(1 - prev)  
  denom <- spec*(1 - prev) + (1 - sens)*prev  
  out <- num/denom  
  return(out)  
}  
  
ppv <- function(sens = params[[1]],  
                spec = params[[2]],  
                prev = params[[3]]){  
  num <- sens*(prev)  
  denom <- sens*(prev) + (1 - spec)*(1 - prev)  
  out <- num/denom  
  return(out)  
}  
  
range <- seq(0, 1, 0.01)  
  
npv_values <- tibble(  
  trial = c(rep("changing sens", length(range)),  
             rep("changing spec", length(range)),  
             rep("changing prev", length(range))),  
  vals = rep(range, 3),  
  npv = c(npv(sens = range),  
          npv(spec = range),  
          npv(prev = range))  
)  
  
ppv_values <- tibble(  
  trial = c(rep("changing sens", length(range)),  
             rep("changing spec", length(range)),  
             rep("changing prev", length(range))),  
  vals = rep(range, 3),
```

```
ppv = c(ppv(sens = range),
        ppv(spec = range),
        ppv(prev = range))
)
```



