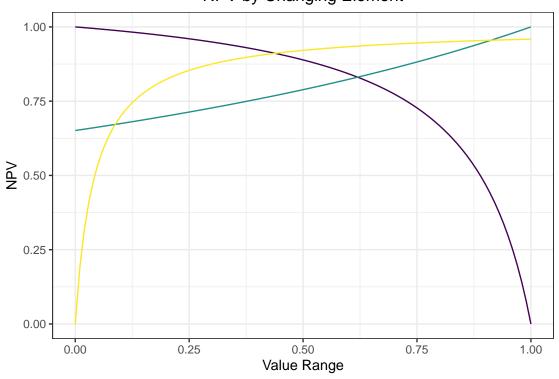
## Sensitivity, Specificity, Prevalence Exploration

Waveley Qiu (wq2162)

2022-06-07

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

## NPV by Changing Element



Changing Element — changing prev — changing sens — changing spec

