check_code.R

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```
library(rjags)
```

```
## Loading required package: coda
```

```
## Linked to JAGS 4.3.0
```

```
## Loaded modules: basemod,bugs
```

```
library(afdx)
```

Estimate the AF for the malaria_df1 dataset using different categories

```
estimate_af <- function(ncat) {
  model_af = afdx::get_latent_model()
  model_aft = substring(model_af, 114) # removing the part that defines the data
  cutpoints = c(0,
                with(
                    malaria_df1,quantile(
                      density[density > 0],
                      probs = seq(0, 1, 1/ncat))))
  K = length(cutpoints)-1
  cat = dplyr::mutate(malaria_df1, cats = cut(density, breaks = cutpoints) )
  df = data.frame(table(cat$cats,cat$fever))
  n=df$Freq[1:K]
  n[is.na(n)] <- 0
  m=df$Freq[K+1:K*2]
  m[is.na(m)] <- 0
  data_af = list(n=n,m=m,K=K,Sn=sum(n),Sm=sum(m))
  requiredVars = c('lambda','sens','spec')
  jags_af = rjags::jags.model(
    textConnection(model_aft),
    data=data_af,
    inits = list(.RNG.name = "base::Wichmann-Hill"),
    n.adapt=1000)
  jagssamples_af = coda.samples(jags_af,
                                  variable.names = requiredVars,
                                  n.iter = 10000,
                                  n.burnin=2000,
                                  n.thinning = 5)
```

```
  stats_af <- summary(jagssamples_af)
  # Return the lambda row
  data.frame(t(cbind(stats_af[[1]], stats_af[[2]])["lambda",]))
}

library(plyr)
af_cats <- ldply(5:25, estimate_af)
```

```
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 13
##    Total graph size: 201
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 15
##    Total graph size: 231
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 17
##    Total graph size: 261
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 19
##    Total graph size: 291
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
```

```
##    Unobserved stochastic nodes: 21
##    Total graph size: 321
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 23
##    Total graph size: 351
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 25
##    Total graph size: 381
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 27
##    Total graph size: 411
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 29
##    Total graph size: 441
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 31
##    Total graph size: 471
##
## Initializing model
```

```
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 33
##    Total graph size: 501
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 35
##    Total graph size: 531
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 37
##    Total graph size: 561
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 39
##    Total graph size: 591
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 41
##    Total graph size: 621
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
```

```
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 43
##    Total graph size: 651
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 45
##    Total graph size: 681
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 47
##    Total graph size: 711
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 49
##    Total graph size: 741
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 51
##    Total graph size: 771
##
## Initializing model
##
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2
##    Unobserved stochastic nodes: 53
##    Total graph size: 801
```

```
##
## Initializing model
```

```
af_cats$ncats = 5:25

library(ggplot2)
ggplot(
  af_cats,
  aes(x=ncats, y = Mean, ymin = X2.5., ymax = X97.5.)
) +
  geom_ribbon(color = NA, alpha = 0.3) +
  geom_line() +
  scale_y_continuous("Estimated Attributable fraction") +
  scale_x_continuous("Number of categories of positive values") +
  ggtitle("Dependency of the AF estimation with the number of categories")
```