Example

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Loading data

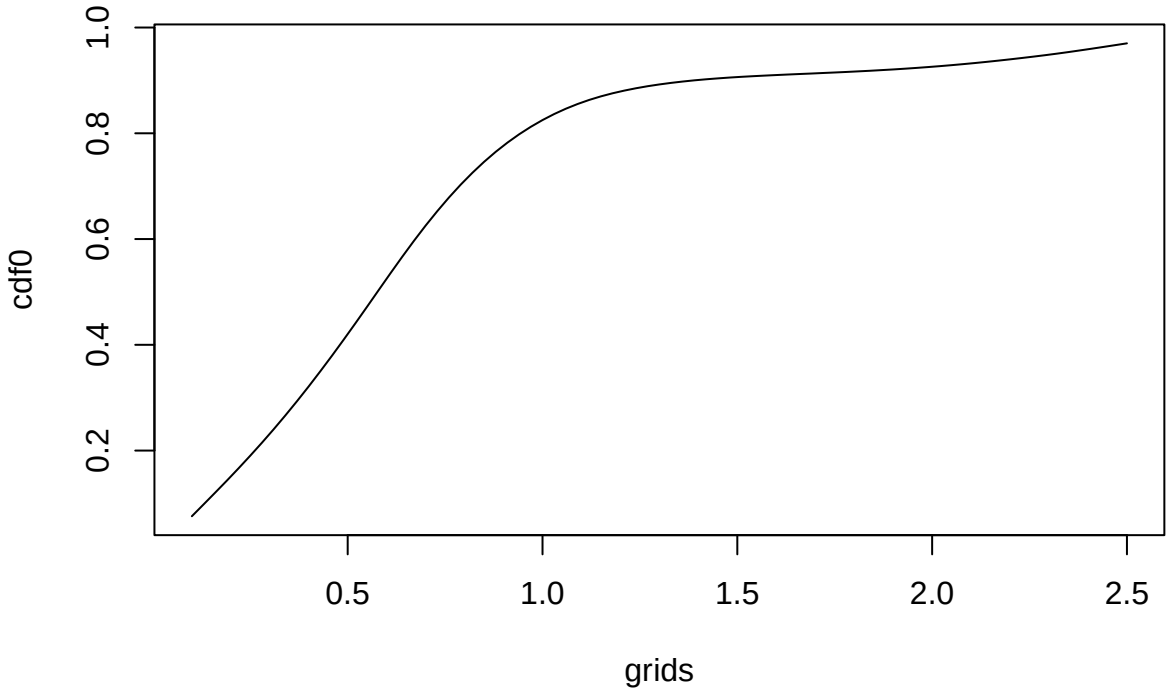
```
setwd("~/Desktop")  #I saved the Data.csv to my Desktop
data <- read.csv("Data.csv")
X1 <- data$X1
X2 <- data$X2
X <- cbind(X1,X2)
y <- data$test.result
c <- data$observed.time
```

Loading RegPO_MCSD function

1.when sensitivity (alpha) and specificity(beta) are both known, you should use this code and get below outputs:

```
RegPO_MCSD(X=X,y=y,c=c,alpha=0.9,beta=0.9)
```

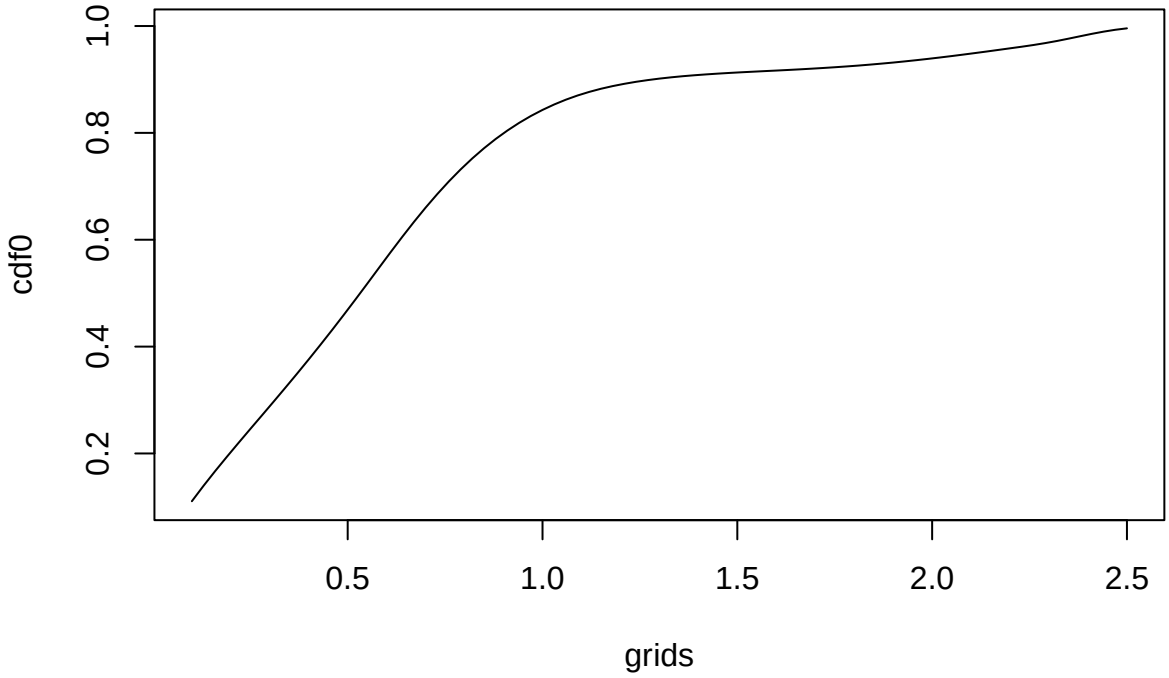
```
## Warning: package 'coda' was built under R version 4.2.3
```




```
## $theta
## [1]  1.126153 -1.106634
##
## $se
## se.theta1 se.theta2
## 0.5080219 0.5440666
##
## $plot
## NULL
```

2. when sensitivity (alpha) is known but specificity(beta) is unknown, you should use this code and get below outputs:

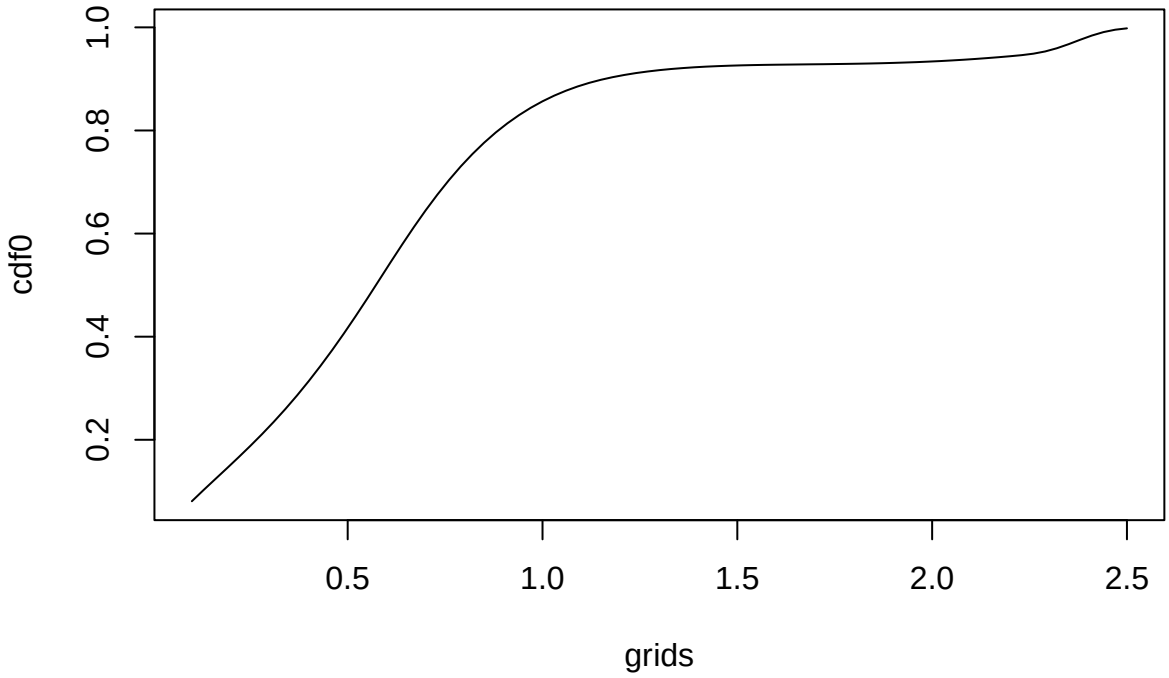
```
RegPO_MCSD(X=X,y=y,c=c,alpha=0.9,beta=FALSE)
```




```
## $theta
## [1]  1.0470972 -0.9947418
##
## $beta
## [1] 0.9447904
##
## $se
## se.theta1 se.theta2   se.beta
## 0.4950692 0.5328397 0.1134698
##
## $plot
## NULL
```

3. when sensitivity (alpha) is unknown but specificity(beta) is known, you should use this code and get below outputs:

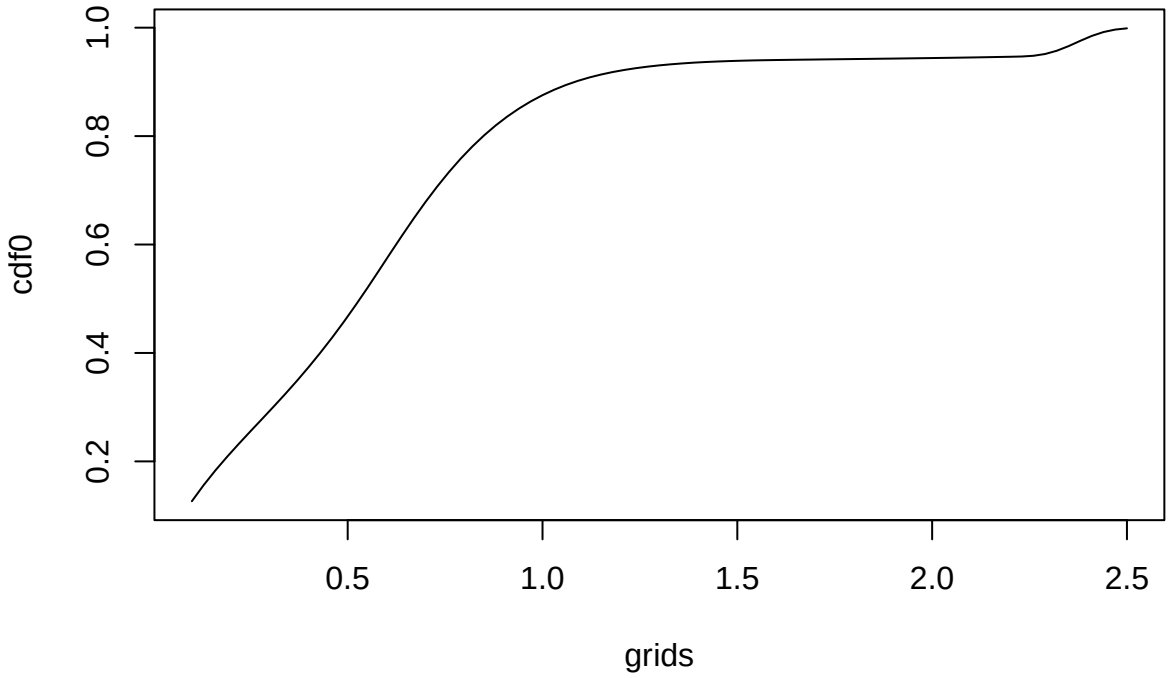
```
RegPO_MCSD(X=X,y=y,c=c,alpha=FALSE,beta=0.90)
```




```
## $theta
## [1]  1.168489 -1.131433
##
## $alpha
## [1] 0.8828892
##
## $se
##  se.theta1  se.theta2   se.alpha
## 0.53340213 0.56715894 0.07457592
##
## $plot
## NULL
```

4.when both sensitivity (alpha) and specificity(beta) are unknown, you should use this code and get below outputs:

```
RegPO_MCSD(X=X,y=y,c=c,alpha=FALSE,beta=FALSE)
```




```
## $theta
## [1]  1.0498993 -0.9777479
##
## $alpha
## [1] 0.894976
##
## $beta
## [1] 0.9573778
##
## $se
## se.theta1 se.theta2  se.alpha   se.beta
## 0.4896957 0.5279053 0.0725202 0.1167902
##
## $plot
## NULL
```

Besides, you can also adjust the m.knots, even though our method is robust to m.knots.