Covid-19-false-positive

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Probability of getting a false positive Covid-19 PCR-test

This code calculates the probability of getting a false positive Covid-19 test using Bayes' rule. In this example the current incidence is set on 150 and the accuracy of the PCR-test is set on 99.9%

```
#Covid-19-Incidence of 150/100000 citizens
prev<-0.00150
#number of people tested
N<-100000

#testing people with probability of getting Covid-19 by Incidence
outcome<-sample(c("Corona","Healthy"),N,replace=TRUE, prob=c(prev,1-prev))
N_C<-sum(outcome==("Corona"))
N_H<-sum(outcome==("Healthy"))

#Accuracy of a Covid-19 Test (99,9%)
accuracy<-0.999

#Calculating the test-outcome with Bayes' Rule
test<-vector("character",N)
test[outcome=="Corona"]<-sample(c("+","-"),N_C,replace=TRUE,prob=c(accuracy,1-accuracy))
test[outcome=="Healthy"]<-sample(c("-","+"),N_H,replace=TRUE,prob=c(accuracy,1-accuracy))
```

Creating a tabel for the results where "-" means a negative test, "+" stands for a positive test and "Corona" and "Healthy" for the actual result.

```
#Creating a table for the outcome
result<-table(outcome,test)
result
```

```
##          test
## outcome       -     +
##   Corona      0   134
##   Healthy 99766   100
```

People who will get a false positive result (This is a random number based on probability and will vary every time this code will be run)

```
#Number of people per 100000, getting a false positive result
result[2,2]
```

```
## [1] 100
```

Probability of being healthy although the test was positive

```
#Probability in percent of being healthy with getting a positive test
(result[2,2]/(result[2,2]+result[1,2]))*100
```

```
## [1] 42.73504
```