data3 appendix

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etable=function(exposure,disease){  
 t=table(exposure,disease)[2:1,2:1]  
 rownames(t)=c('E+','E-')  
 colnames(t)=c('D+','D-')  
 kable(t)  
}  
  
riskratio=function(a,b,c,d){  
 e=a/(a+b)  
 f=c/(c+d)  
 c(e,f,e/f)  
}  
  
ciriskr=function(ecases,enoncases,uecases,uenoncases){  
 a=ecases  
 b=enoncases  
 c=uecases  
 d=uenoncases  
 e=a/(a+b)  
 f=c/(c+d)  
 rr=e/f  
 z=c(-1.96,1.96)  
 se=sqrt(1/a-1/(a+b)+  
 1/c-1/(c+d))  
 ci=exp(log(rr)+z\*se)  
 c("Risk Ratio"=rr,"95 CI"=ci)  
}  
  
rateratio=function(cases,noncases,pyrcases,pyrnoncases){  
 a=cases  
 b=noncases  
 p=pyrcases  
 q=pyrnoncases  
 (a/p)/(b/q)  
}  
  
cirater=function(cases,noncases,pyrcases,pyrnoncases){  
 a=cases  
 b=noncases  
 p=pyrcases  
 q=pyrnoncases  
 rr=(a/p)/(b/q)  
 se=sqrt(1/a+1/b)  
 z=c(-1.96,1.96)  
 ci=exp(log(rr)+z\*se)  
 c("Rate Ratio"=rr,"95 CI"=ci)  
}  
  
cioddsr=function(ecases,enoncases,uecases,uenoncases){  
 a=ecases  
 b=enoncases  
 c=uecases  
 d=uenoncases  
 or=(a/c)\*(d/b)  
 se=sqrt(1/a+1/b+1/c+1/d)  
 z=c(-1.96,1.96)  
 ci=exp(log(or)+z\*se)  
 c("Odds Ratio"=or,"95 CI"=ci)  
}

cc <- read\_excel("casecontrol.xlsx")

ctab=etable(cc$VIRUS,cc$CANCER)

men=cc%>%filter(SEX==0)  
women=cc%>%filter(SEX==1)  
mtab=etable(men$VIRUS,men$CANCER)  
wtab=etable(women$VIRUS,women$CANCER)  
mtab

|  |  |  |
| --- | --- | --- |
|  | D+ | D- |
| E+ | 12 | 6 |
| E- | 15 | 18 |

wtab

|  |  |  |
| --- | --- | --- |
|  | D+ | D- |
| E+ | 20 | 4 |
| E- | 10 | 15 |

cOR=4.22  
y = glm(CANCER ~ VIRUS+SEX, family=binomial,data = cc)  
(a=round(exp(cbind(coef(y), confint(y))),digits=2))

## 2.5 % 97.5 %  
## (Intercept) 0.70 0.37 1.32  
## VIRUS 4.13 1.75 10.39  
## SEX 1.19 0.51 2.78

aOR=a["VIRUS",1]  
pchange1=(cOR-aOR)/cOR  
round(pchange1,digits=2)

## [1] 0.02

x = glm(CANCER ~ VIRUS+RACE, family=binomial,data = cc)  
round(exp(cbind(coef(x), confint(x))),digits=2)

## 2.5 % 97.5 %  
## (Intercept) 0.49 0.19 1.11  
## VIRUS 3.67 1.51 9.37  
## RACE 1.41 0.86 2.59

pchange2=(cOR-3.67)/cOR  
round(pchange2,digits=2)

## [1] 0.13