

z-stat functions

```
#one sample z-stat function
zstat=function(y,u0=0){
  y=na.omit(y)
  yb=mean(y)
  n=length(y)
  s=sd(y)
  zstat=(yb-u0)/(s/sqrt(n))
  zstat
}

#two sample z-stat function
#NA values must be removed prior to using this
zstat2=function(y1,y2,u0=0){
  yb1=mean(y1)
  n1=length(y1)
  s1=sd(y1)
  yb2=mean(y2)
  n2=length(y2)
  s2=sd(y2)
  zstat=((yb1-yb2)-u0)/sqrt(s1^2/n1+s2^2/n2)
  zstat
}
```

```
#p-value function for alpha=.05
pval=function(z,twosided=T){
  if (twosided==T) {
    return(2*pnorm(z))
  }
  else
    pnorm(z)
}
```

Mcnemar test stat

```
#takes a 2x2 table (in epid form) and computes the mcnemar test stat
mstat=function(table){
  t2=table[2]
  t3=table[3]
  m=(t2-t3)^2/(t3+t2)
  m
}
```

Epi functions

```
etable=function(exposure,disease){
  t=table(exposure,disease)[2:1,2:1]
  rownames(t)=c('E+', 'E-')
  colnames(t)=c('D+', 'D-')
  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,uennoncases){
  a=ecases
  b=enoncases
  c=uecases
  d=uennoncases
  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)
}

```

```

etable2=function(exposure,disease){
  t=table(exposure,disease)[2:1,2:1]
  rownames(t)=c('E+', 'E-')
  colnames(t)=c('D+', 'D-')
  addmargins(t)
}

```