

Statistics 305/605: Introduction to Biostatistical Methods for Health Sciences

R Demo for Chapter 15, part 3: McNemar's Test

Jinko Graham

McNemar's Test for the Smoking Data

- ▶ We have $r = 97$ and $s = 76$. The test statistic with continuity correction is

$$\frac{(|97 - 76| - 1)^2}{97 + 76} = 2.31$$

and the corresponding p-value is 0.128:

```
X2 <- (abs(97-76)-1)^2/(97+76)
X2
```

```
## [1] 2.312139
```

```
pval<-pchisq(X2,df=1,lower.tail=FALSE)
pval
```

```
## [1] 0.1283673
```

McNemar's test on T1D Data

- Read in the data and cross tabulate:

```
uu<-url("http://people.stat.sfu.ca/~jgraham/Teaching/S305_17/Data/tdt.csv")
tdtex <- read.csv(uu)
head(tdtex,n=8)
```

```
##      transmitted untransmitted
## 1              1              X
## 2              1              X
## 3              1              X
## 4              1              X
## 5              1              X
## 6              1              X
## 7              1              X
## 8              1              X
```

```
tt <- table(tdtex)
tt
```

```
##              untransmitted
## transmitted  1  X
##              1  0 78
##              X 46  0
```

- Now apply McNemar's test *without* the continuity correction to the cross-tabulated data:

```
mcnemar.test(tt,correct=FALSE)
```

```
##  
## McNemar's Chi-squared test  
##  
## data:  tt  
## McNemar's chi-squared = 8.2581, df = 1, p-value = 0.004057
```

- Apply McNemar's test *with* the (default) continuity correction:

```
mcnemar.test(tt)
```

```
##  
## McNemar's Chi-squared test with continuity correction  
##  
## data:  tt  
## McNemar's chi-squared = 7.75, df = 1, p-value = 0.005371
```