

The Correlations of Literacy with Nativity

at Different Levels of Aggregation*

Robinson 1950

| Description of Units | Value of r Literacy and Nativity | Ex 1 Literacy, R _{acc} |
|----------------------|-------------------------------------|---------------------------------------|
| 97,272,000 persons | .12 | .203 |
| 48 states | -.53 | .773 |
| 9 geographic regions | -.62 | .946 |

2x2 table
of coeff.

Pearson
on prop's

*The correlations are Pearsonian fourfold correlations (phi coefficients) based on data from the 1930 U.S. Census. The attributes are dichotomous (Literate vs. Illiterate; Native-born vs. Foreign-born).

Handout (top)

```
> #####2x2 Tables Review , Robinson (1950) Table 1 data re Stat141
>
> litrace = matrix(c(1512,7780,2406,85574), nr = 2, dimnames =
  list("Literacy" = c("No", "Yes"), "Race" = c("B", "W")))
```

```
> litrace
      Race
Literacy  B      W
No      1512  2406
Yes     7780  85574
```

```
> chisq.test(litrace, correct = FALSE)
      Pearson's Chi-squared test
data:  litrace
X-squared = 3984.29, df = 1, p-value < 2.2e-16
```

```
> phicoeff = sqrt(3984/97272)
> phicoeff # vs Robinson reported corr = .203
[1] 0.2023791
```

```
get conditional probabilities (cond'l on column)
> prop.table(litrace,2)
      Race
Literacy  B      W
No      0.1627206 0.02734712
Yes     0.8372794 0.97265288
```

```
Relative risk of illiteracy (B/W)
> relrisk = prop.table(litrace,2)[1,1]/prop.table(litrace,2)[1,2]
> relrisk
[1] 5.950191
> #ratio of conditional probabilities
> .1627/.02735
[1] 5.948812
```

```
Same via Odds Ratio
> library(vcd)
> or = oddsratio(litrace, log = F)
> summary(or)
      Odds Ratio
[1,]      6.9122
> confint(or)
      lwr      upr
[1,] 6.455426 7.401367
```