

WWS 508b

Precept 1

John Palmer

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Preliminary Matters

precept time

Tuesdays, 6:30-7:30

office hours

Wednesdays, 1:30-3:30 in 235B Corwin

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Binary Outcomes

coin toss examples

If I flip a quarter five times, what is the probability that I will get all heads?

Binary Outcomes

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If I flip a quarter five times, what is the probability that I will get all heads?

$$\Pr\left\{\bigcap_{i=1}^5 A_i\right\} = \prod_{i=1}^5 \Pr\{A_i\}$$

Binary Outcomes

coin toss examples

If I flip a quarter five times, what is the probability that I will get all heads?

$$\Pr\left\{\bigcap_{i=1}^5 A_i\right\} = \prod_{i=1}^5 \Pr\{A_i\}$$

$$= .5 \times .5 \times .5 \times .5 \times .5 = .5^5 = .03125$$

Binary Outcomes

coin toss examples

How about exactly 3 heads?

Binary Outcomes

coin toss examples

How about exactly 3 heads?

$$\frac{5!}{3!(5-3)!} 0.5^3 (1-0.5)^{5-3} = .3125$$

Binary Outcomes

coin toss examples

How about at least 3 heads?

Binary Outcomes

coin toss examples

How about at least 3 heads?

$$1 - \sum_{i=0}^2 \frac{5!}{i!(5-i)!} 0.5^i (1-0.5)^{5-i}$$

Binomial Distribution

probability density function

$$\Pr\{K = k\} = \binom{n}{k} p^k (1 - p)^{n-k}$$

Binomial Distribution

cumulative probability function

$$\Pr\{X \leq x\} = \sum_{i=0}^x \binom{n}{i} p^i (1-p)^{n-i}$$

Binomial Distribution

Stata command

```
. bitesti 5 3 .5
```

N	Observed k	Expected k	Assumed p	Observed p
5	3	2.5	0.50000	0.60000

Pr(k >= 3) = 0.500000 (one-sided test)

Pr(k <= 3) = 0.812500 (one-sided test)

Pr(k <= 2 or k >= 3) = 1.000000 (two-sided test)

Online Stata Tutorial by Professor German Rodriguez

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Stata help files and books

Stata

setting up your do-file

```
cd "[insert working directory path]"  
capture log close  
log using P1.txt, text replace
```


Stata

setting up your do-file

```
cd "[insert working directory path]"  
capture log close  
log using P1.txt, text replace  
  
set more off
```

(use this last command to stop Stata from prompting you to scroll through each page of the output when it is lengthy; if you want to be prompted again, use `set more on`)

Stata

loading data

```
use nes2004.dta, clear
```

Stata

loading data

```
use nes2004.dta, clear
```

```
insheet using data.csv, clear
```

Stata

exploring your data

```
codebook  
summarize  
describe
```

Also try scrolling the variables pane (usually in the bottom left of the Stata interface), and playing with the filter option in the Variables Manager found under the Data menu in Stata 11.

Stata

managing data

```
gen VeryAttent=1 if attent==1  
replace VeryAttent = 0 if attent==3 | attent==5
```

Stata

managing data

```
gen VeryAttent=1 if attent==1
replace VeryAttent = 0 if attent==3 | attent==5

label variable VeryAttent "Very Interested in Campaigns?"
label values VeryAttent VaryAttentlbl
label define VaryAttentlbl 1 "Yes" 0 "No"
```

Stata

analyzing data

```
tab VeryAttent gender, col chi2
```

Stata

analyzing data

```
tab VeryAttent gender, col chi2
```

```
prtest VeryAttent, by(gender)
```


Stata

analyzing data

```
tab VeryAttent gender, col chi2
```

```
prtest VeryAttent, by(gender)
```

```
reg VeryAttent gender
```