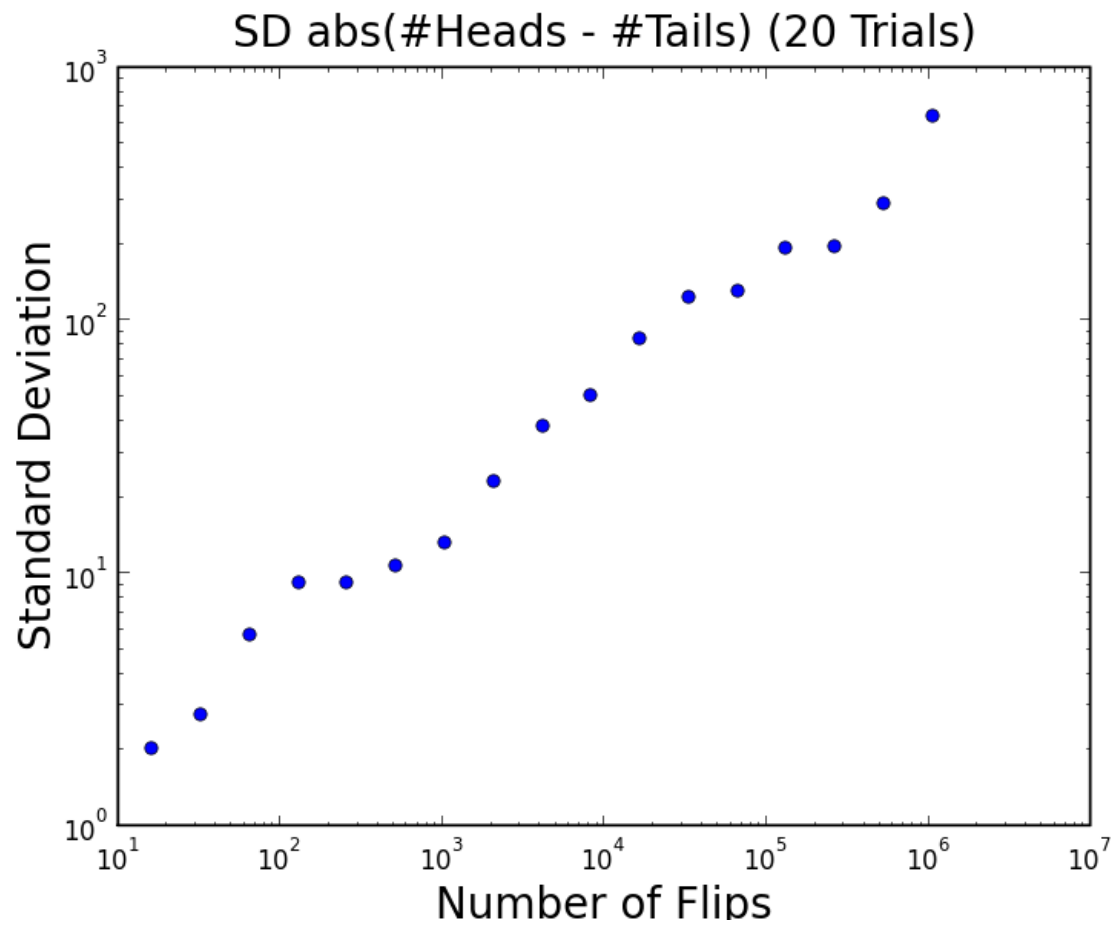


# Standard Deviations and Histograms

Lecturer: John Guttag



6.00x

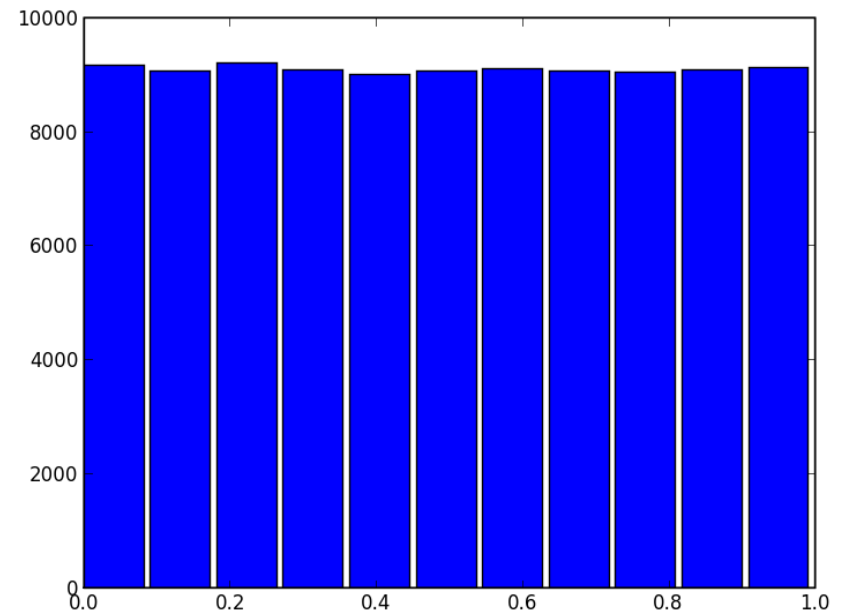
Standard Deviations and Histograms

```
def CV(X):  
    mean = sum(X)/float(len(X))  
    try:  
        return stdDev(X)/mean  
    except ZeroDivisionError:  
        return float('NaN')
```

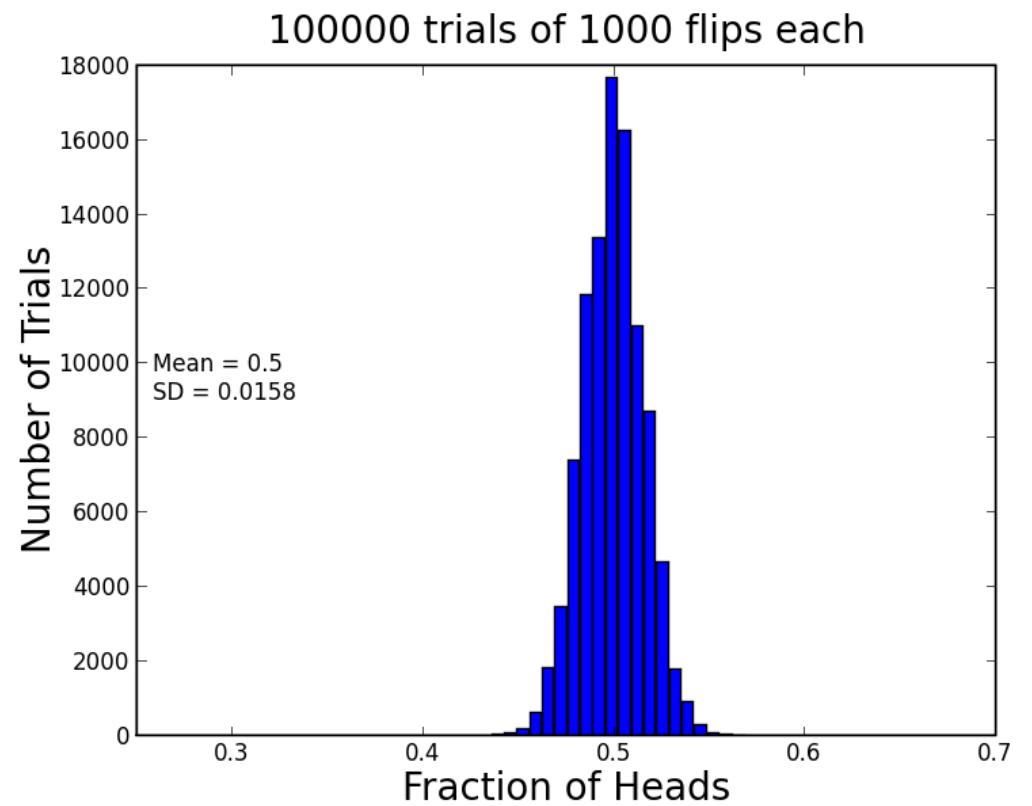
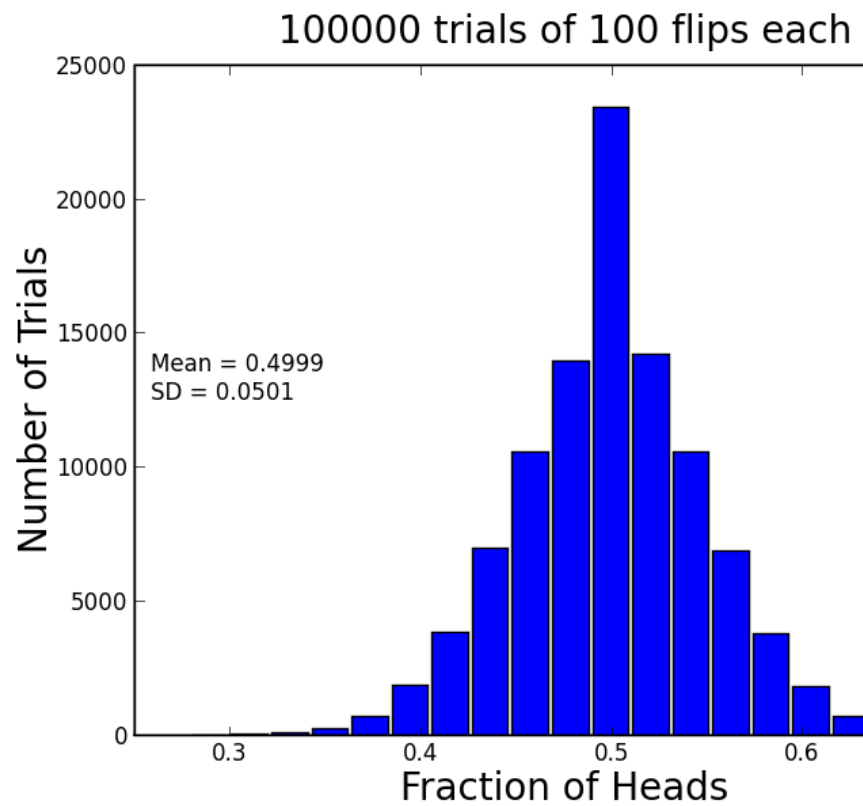
```
def flip(numFlips):  
  
def flipSim(numFlipsPerTrial, numTrials):  
  
def labelPlot(nf, nt, mean, sd):  
  
def makePlots(nf1, nf2, nt):  
    """nt = number of trials per experiment  
       nf1 = number of flips 1st experiment  
       nf2 = number of flips 2nd experiment"""
```

```
def makePlots(numFlips1, numFlips2, numTrials):  
    val1, mean1, sd1 = flipSim(numFlips1, numTrials)  
    pylab.hist(val1, bins = 20)  
    xmin, xmax = pylab.xlim()  
    ymin, ymax = pylab.ylim()  
    labelPlot(numFlips1, numTrials, mean1, sd1)  
    pylab.figure()  
    val2, mean2, sd2 = flipSim(numFlips2, numTrials)  
    pylab.hist(val2, bins = 20)  
    pylab.xlim(xmin, xmax)  
    ymin, ymax = pylab.ylim()  
    labelPlot(numFlips2, numTrials, mean2, sd2)
```

```
vals = []  
for i in range(100000):  
    num = random.random()  
    vals.append(num)  
pylab.hist(vals, bins = 11)
```



```
vals = []
for i in range(100000):
    num = random.random()
    vals.append(num)
pylab.hist(vals, bins = 11)
xmin, xmax = pylab.xlim()
ymin, ymax = pylab.ylim()
print 'x-range =', xmin, '-', xmax
print 'y-range =', ymin, '-', ymax
pylab.figure
pylab.hist(vals, bins = 11)
#pylab.xlim(-1.0, 2.0)
```



6.00x

Standard Deviations and Histograms