Sampling Distributions

Lecture 7

example

Women x10

21-35

21-35

Houston

Texas

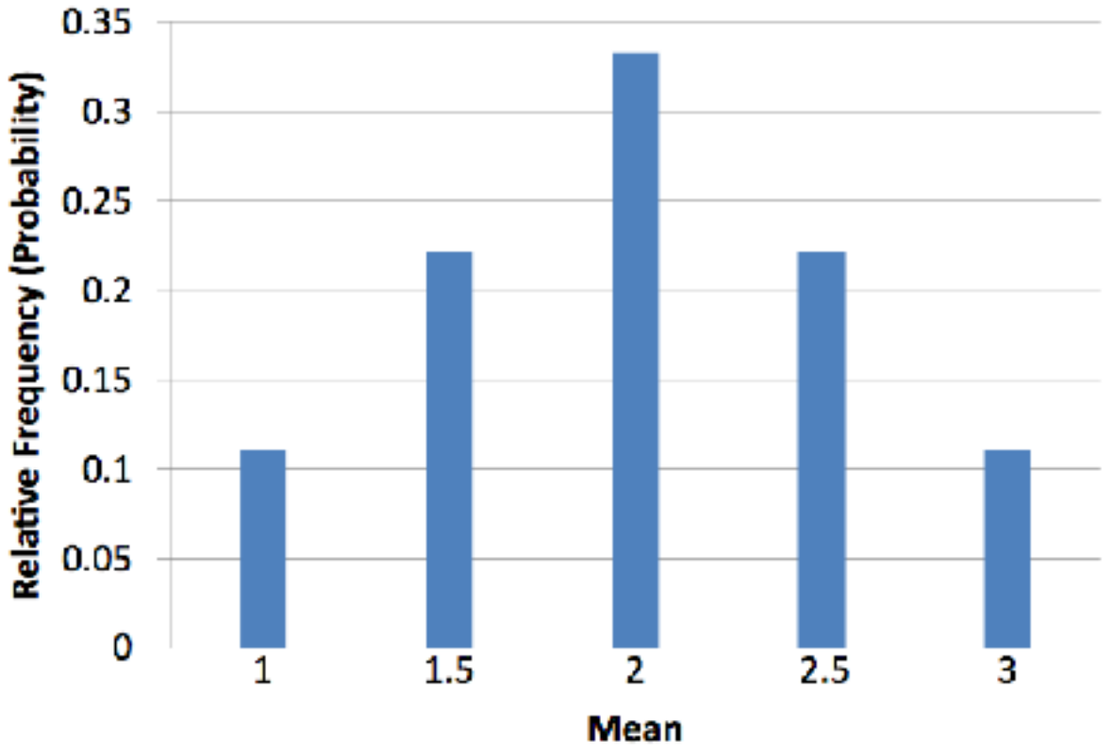
Discrete distributions

Outcome	Ball 1	Ball 2	Mean
1	1	1	1
2	1	2	1.5
3	1	3	2
4	2	1	1.5
5	2	2	2
6	2	3	2.5
7	3	1	2
8	3	2	2.5
9	3	3	3

frequencies of means for N=2

Mean	Frequency	Relative Frequency
1	1	0.111
1.5	2	0.222
2	3	0.333
2.5	2	0.222
3	1	0.111

Distribution of means for N=2



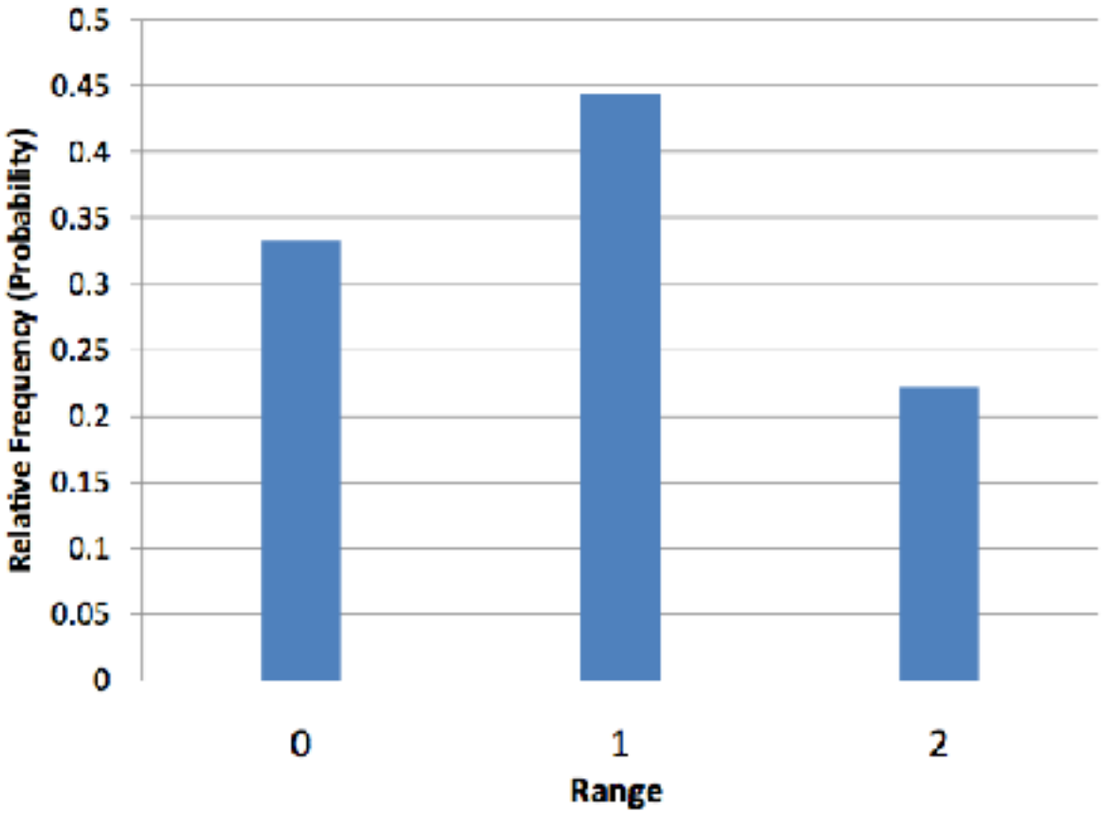
All possible outcomes when two balls are sampled with replacement

Outcome	Ball 1	Ball 2	Range
1	1	1	0
2	1	2	1
3	1	3	2
4	2	1	1
5	2	2	0
6	2	3	1
7	3	1	2
8	3	2	1
9	3	3	0

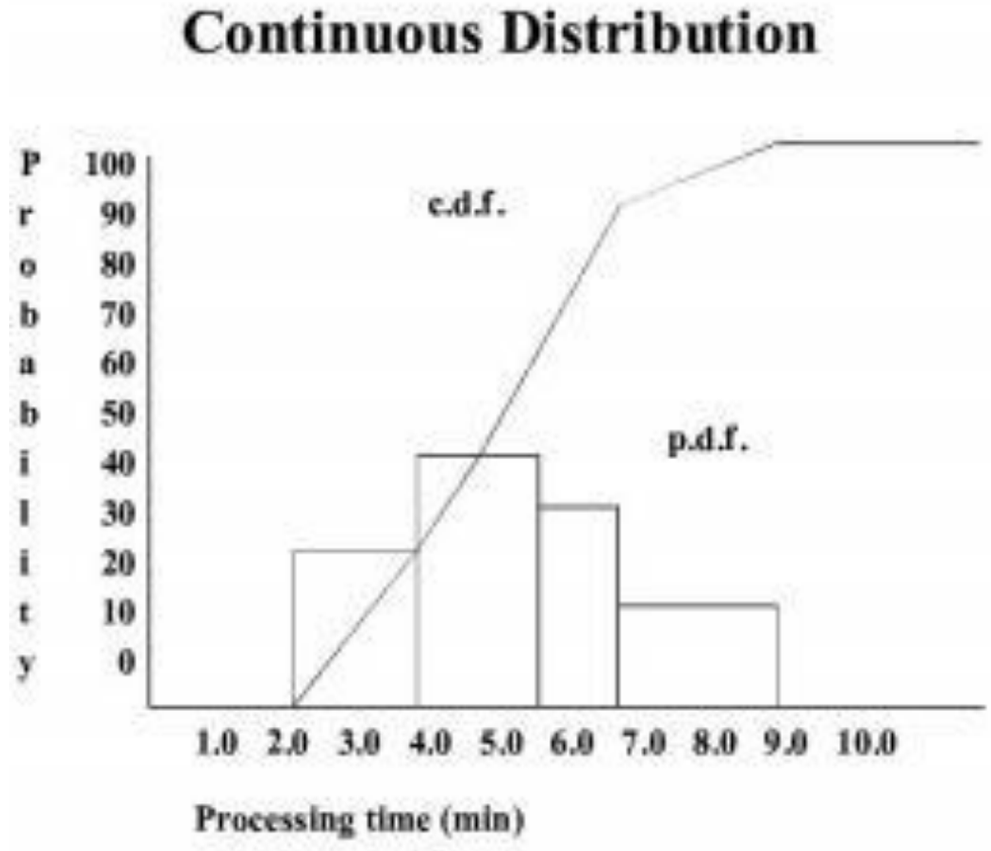
frequencies of means for N=2

Range	Frequency	Relative Frequency
0	3	0.333
1	4	0.444
2	2	0.222

Distribution of means for N=2



Continuous distributions



Sampling distribution of the mean

- Mean

$$\mu_M = \mu$$

Sampling distribution of the mean

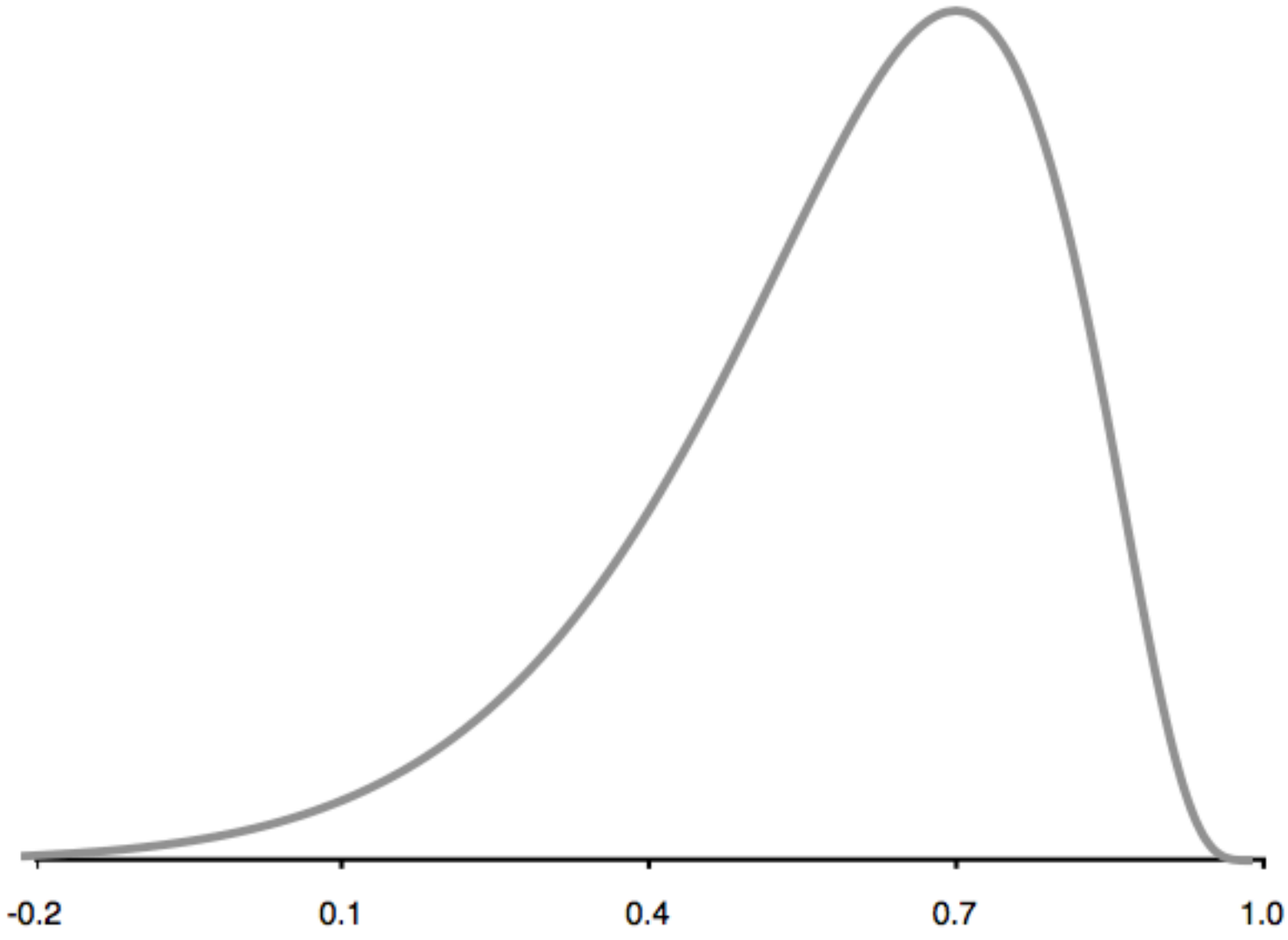
- Variance

$$\sigma_m^2 = \frac{\sigma^2}{N}$$

Difference between mean

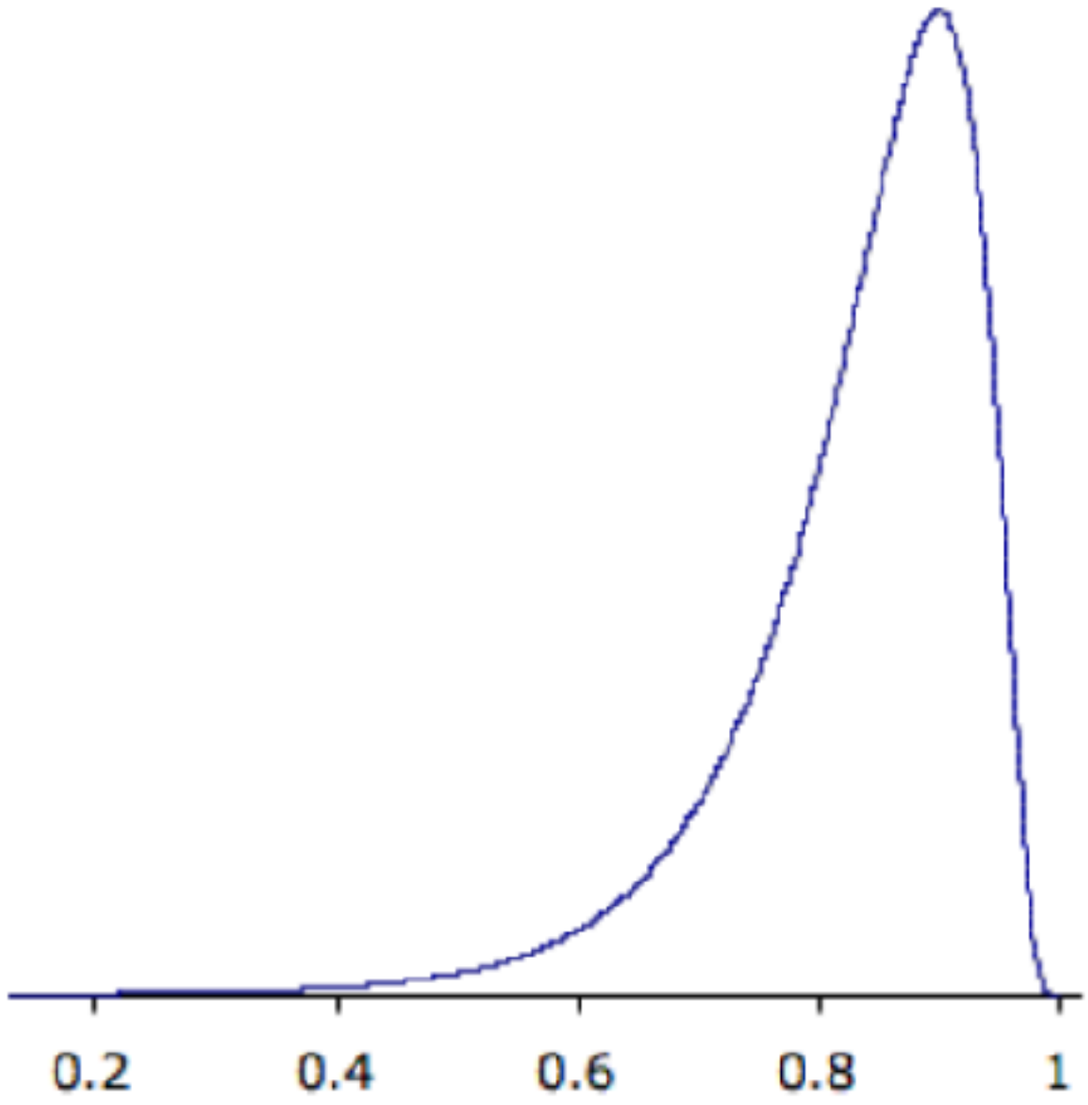
$$\mu_{M_1 - M_2} = \mu_1 - \mu_2$$

Sampling distribution of Pearson's r



The sampling distribution of r for N = 12 and ϱ = 0.60.

Sampling distribution of Pearson's r



The sampling distribution of r for N = 12 and ρ = 0.90.

- Thanks for attention