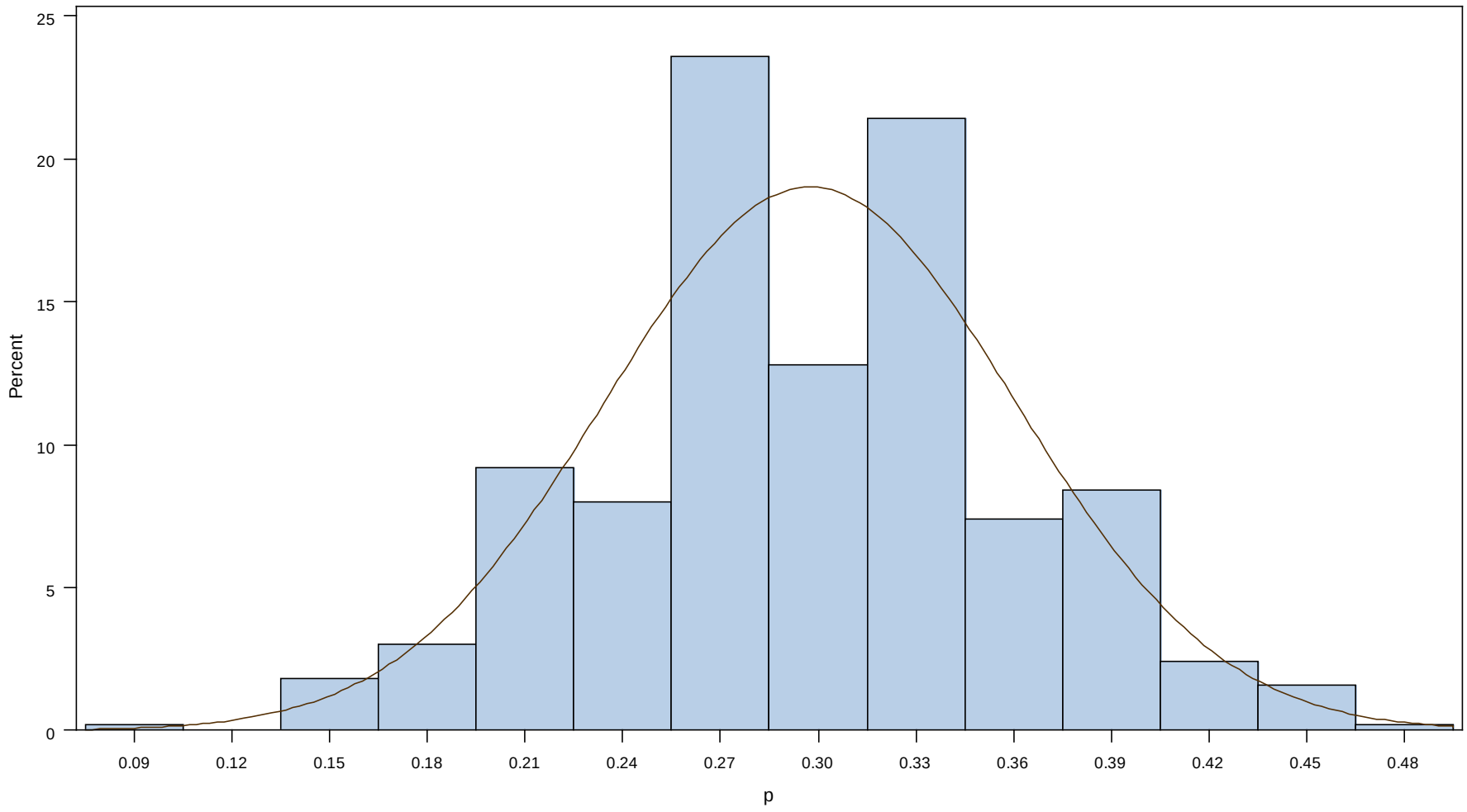
Sampling Distribution

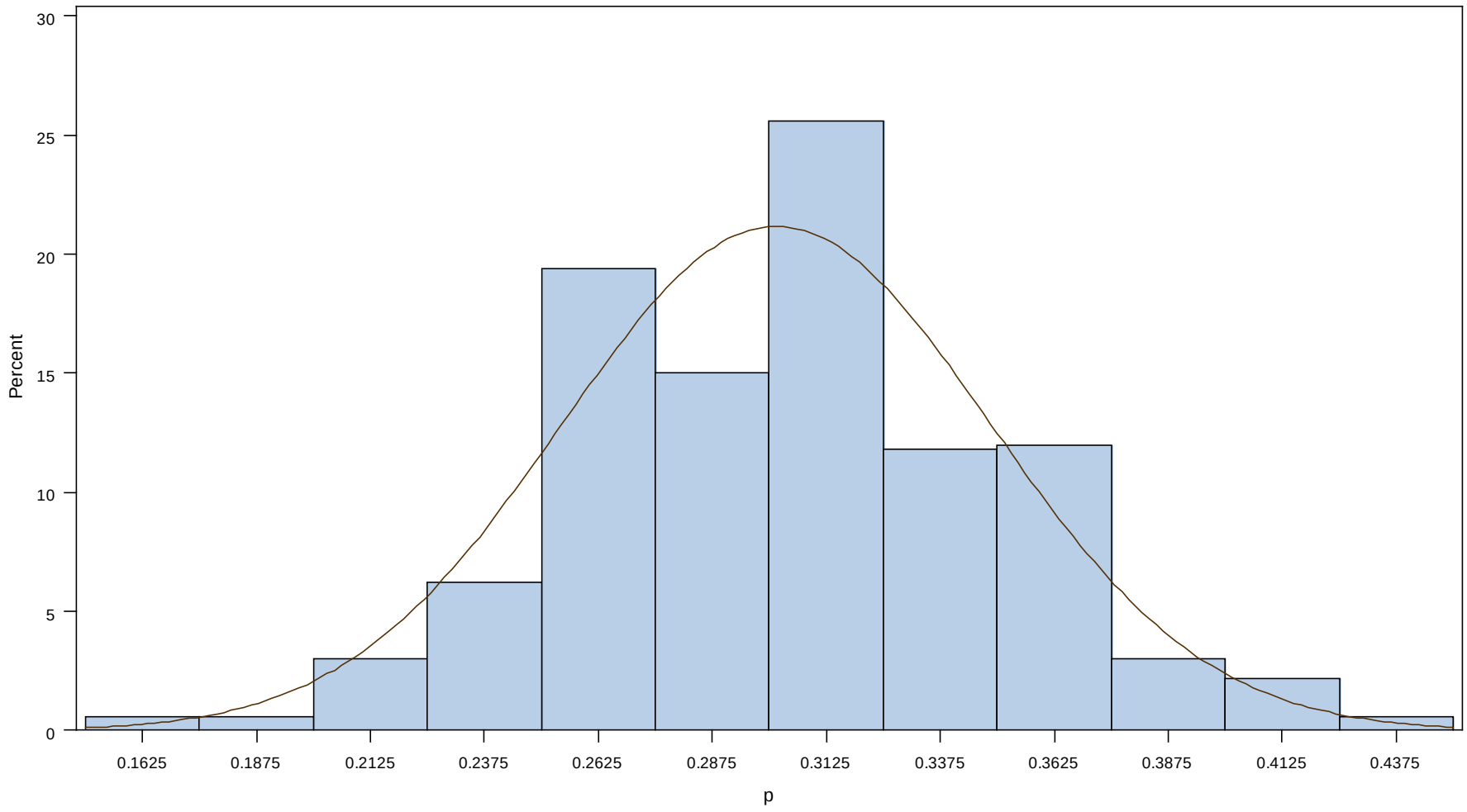
Sampling Distribution

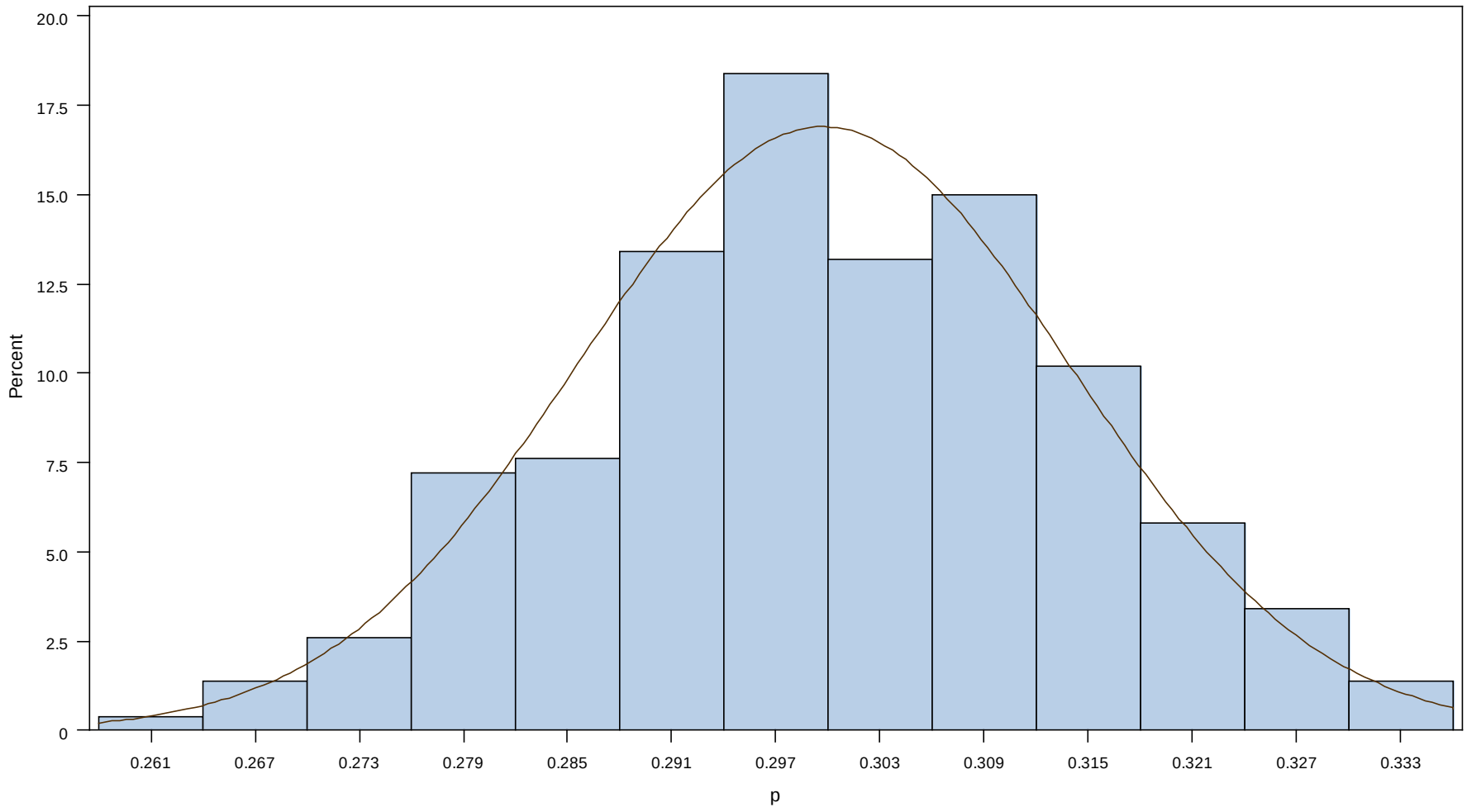
- Distribution of results from many studies similar to one study at hand
- Can be empirically described by re-sampling techniques (e.g. Bootstrap)
- Often described by theoretical properties

Example: Sampling Distribution of a Proportion (P)

- Approximately Normal
- Estimated Mean = sample proportion (p)
- Estimated Standard Deviation
  $= \sqrt{(p(1-p))/n}$
- 95% Confidence Interval for P
  $= p \pm 1.96(\sqrt{(p(1-p))/n})$


Prevalence = .30 , N = 50
Percent
25
20
15
10
5
0
0.09
0.12
0.15
0.18
0.21
0.24
0.27
0.30
0.33
0.36
0.39
0.42
0.45
0.48
p


Prevalence = .30 , N = 100
Percent
30
25
20
15
10
5
0
0.1625
0.1875
0.2125
0.2375
0.2625
0.2875
0.3125
0.3375
0.3625
0.3875
0.4125
0.4375
p


Prevalence = .30 , N = 1000
Percent
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0
0.261
0.267
0.273
0.279
0.285
0.291
0.297
0.303
0.309
0.315
0.321
0.327
0.333
p

Prevalence (P)	Number of People	Mean of 1000 Studies	Standard Deviation of 1000 Studies	If p = .30, $\sqrt{(p(1-p)/n}$
.30	50	.299	.065	.065
.30	100	.301	.045	.046
.30	1000	.300	.014	.014

Standard Error

- Estimate of Standard Deviation of Sampling Distribution
- Measure of Precision of Estimate from one study at hand
  - Reflects width of confidence interval
  - Small SE $\rightarrow$ Small SD of Sampling Distribution $\rightarrow$ Result from one study at hand is good estimate from other similar studies $\rightarrow$ good precision