apple orchard example 95% confidence intervals for p alpha=.05, p_0=.2

The FREQ Procedure

case=1

outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
infested	35	17.50	35	17.50
notinfested	165	82.50	200	100.00

sample proportion infested

Binomial Proportion	
outcome = infested	
Proportion	0.1750
ASE	0.0269

Confidence Limits for the Binomial Proportion	
Proportion = 0.1750	
Type	95% Confidence Limits
Wilson	0.1286 0.2336

95% confidence interval for p

Test of H0: Proportion = 0.2	
ASE under H0	0.0283
Z	-0.8839
One-sided Pr < Z	0.1884
Two-sided Pr > |Z|	0.3768

Z is the test statistic Z_calc

Pr < Z is the P-value for H_1: p < .20

NOTE the P-value for H_1: p > .20 is 1 - Pr < Z = .8116

Pr > |Z| is the P-value for H_1: p notequal .20

apple orchard example 95% confidence intervals for p alpha=.05, p_0=.2

The FREQ Procedure

case=2

outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
infested	26	13.00	26	13.00
notinfested	174	87.00	200	100.00

sample proportion infested

Binomial Proportion	
outcome = infested	
Proportion	0.1300
ASE	0.0238

Confidence Limits for the Binomial Proportion		
Proportion = 0.1300		
Type	95% Confidence Limits	
Wilson	0.0903	0.1837

95% confidence interval for p

Test of H0: Proportion = 0.2	
ASE under H0	0.0283
Z	-2.4749
One-sided Pr < Z	0.0067
Two-sided Pr > |Z|	0.0133

Z is the test statistic Z_calc

Pr < Z is the P-value for H_1: p < .20

NOTE the P-value for H_1: p > .20 is 1 - Pr < Z = .9933

Pr > |Z| is the P-value for H_1: p notequal .20

apple orchard example 95% confidence intervals for p
alpha=.05, p_0=.2

The FREQ Procedure

case=3

outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
infested	45	22.50	45	22.50
notinfested	155	77.50	200	100.00

sample proportion infested →

Binomial Proportion	
outcome = infested	
Proportion	0.2250
ASE	0.0295

Confidence Limits for the Binomial Proportion		
Proportion = 0.2250		
Type	**95% Confidence Limits**	
Wilson	0.1726	0.2877

95% confidence interval for p

Test of H0: Proportion = 0.2	
ASE under H0	0.0283
Z	0.8839
One-sided Pr > Z	0.1884
Two-sided Pr > |Z|	0.3768

Z is the test statistic Z_calc

Pr > Z is the P-value for H_1: p > .20

Pr > |Z| is the P-value for H_1: p notequal .20

apple orchard example 95% confidence intervals for p
alpha=.05, p_0=.2

The FREQ Procedure

case=4

outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
infested	54	27.00	54	27.00
notinfested	146	73.00	200	100.00

Binomial Proportion	
outcome = infested	
Proportion	0.2700
ASE	0.0314

sample proportion infested →

Confidence Limits for the Binomial Proportion		
Proportion = 0.2700		
Type	**95% Confidence Limits**	
Wilson	0.2132	0.3354

95% confidence interval for p

Test of H0: Proportion = 0.2	
ASE under H0	0.0283
Z	2.4749
One-sided Pr > Z	0.0067
Two-sided Pr > |Z|	0.0133

Z is the test statistic Z_calc

Pr > Z is the P-value for H_1: p > .20

Pr > |Z| is the P-value for H_1: p notequal .20

apple orchard example 95% confidence intervals for p alpha=.05, p_0=.2

The FREQ Procedure

case=5

outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
infested	52	26.00	52	26.00
notinfested	148	74.00	200	100.00

Binomial Proportion	
outcome = infested	
Proportion	0.2600
ASE	0.0310

sample proportion infested

Confidence Limits for the Binomial Proportion		
Proportion = 0.2600		
Type	95% Confidence Limits	
Wilson	0.2041	0.3249

95% confidence interval for p

Test of H0: Proportion = 0.2	
ASE under H0	0.0283
Z	2.1213
One-sided Pr > Z	0.0169
Two-sided Pr > |Z|	0.0339

Z is the test statistic Z_calc

Pr > Z is the P-value for H_1: p > .20

Pr > |Z| is the P-value for H_1: p notequal .20

apple orchard example 95% confidence intervals for p
alpha=.05, p_0=.2

The FREQ Procedure

case=6

outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
infested	45	22.50	45	22.50
notinfested	155	77.50	200	100.00

Binomial Proportion	
outcome = infested	
Proportion	0.2250
ASE	0.0295

sample proportion infested

Confidence Limits for the Binomial Proportion		
Proportion = 0.2250		
Type	95% Confidence Limits	
Wilson	0.1726	0.2877

95% confidence interval for p

Test of H0: Proportion = 0.2	
ASE under H0	0.0283
Z	0.8839
One-sided Pr > Z	0.1884
Two-sided Pr > |Z|	0.3768

Z is the test statistic Z_calc

Pr > Z is the P-value for H_1: p > .20

Pr > |Z| is the P-value for H_1: p notequal .20

**apple orchard example 95% confidence intervals for p
alpha=.05, p_0=.2**

Obs	case	N	phat	lowerbound	upperbound
1	1	200	0.175	0.12861	0.23364
2	2	200	0.130	0.09028	0.18366
3	3	200	0.225	0.17262	0.28774
4	4	200	0.270	0.21323	0.33543
5	5	200	0.260	0.20414	0.32491
6	6	200	0.225	0.17262	0.28774

case

sample proportion

95% confidence intervals for p

acceptance sampling example 95% confidence intervals for p
alpha=.05, p_0=.06

The FREQ Procedure

case=1

outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
defective	16	8.00	16	8.00
notdefective	184	92.00	200	100.00

Binomial Proportion	
outcome = defective	
Proportion	0.0800
ASE	0.0192

sample proportion defective

Confidence Limits for the Binomial Proportion		
Proportion = 0.0800		
Type	95% Confidence Limits	
Wilson	0.0498	0.1260

95% confidence interval for p

Test of H0: Proportion = 0.06	
ASE under H0	0.0168
Z	1.1910
One-sided Pr > Z	0.1168
Two-sided Pr > |Z|	0.2337

Z is the test statistic Z_calc

Pr > Z is the P-value for H_1: p > .06

Pr > |Z| is the P-value for H_1: p notequal .06

acceptance sampling example 95% confidence intervals for p
alpha=.05, p_0=.06

The FREQ Procedure

case=2

outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
defective	20	10.00	20	10.00
notdefective	180	90.00	200	100.00

Binomial Proportion	
outcome = defective	
Proportion	0.1000
ASE	0.0212

sample proportion defective

Confidence Limits for the Binomial Proportion		
Proportion = 0.1000		
Type	**95% Confidence Limits**	
Wilson	0.0657	0.1494

95% confidence interval for p

Test of H0: Proportion = 0.06	
ASE under H0	0.0168
Z	2.3820
One-sided Pr > Z	0.0086
Two-sided Pr > |Z|	0.0172

Z is the test statistic Z_calc

Pr > Z is the P-value for H_1: p > .06

Pr > |Z| is the P-value for H_1: p notequal .06

acceptance sampling example 95% confidence intervals for p
alpha=.05, p_0=.06

Obs	case	N	phat	lowerbound	upperbound
1	1	200	0.08	0.049841	0.12599
2	2	200	0.10	0.065670	0.14941

case

sample proportion

95% confidence intervals for p

machine parts example 95% confidence interval for p
alpha=.05, p_0=.35

The FREQ Procedure

case=1

outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
unacceptable	54	27.00	54	27.00
acceptable	146	73.00	200	100.00

Binomial Proportion	
outcome = unacceptable	
Proportion	0.2700
ASE	0.0314

sample proportion unacceptable

Confidence Limits for the Binomial Proportion		
Proportion = 0.2700		
Type	**95% Confidence Limits**	
Wilson	0.2132	0.3354

95% confidence interval for p

Test of H0: Proportion = 0.35	
ASE under H0	0.0337
Z	-2.3720
One-sided Pr < Z	0.0088
Two-sided Pr > |Z|	0.0177

Z is the test statistic Z_calc

Pr < Z is the P-value for H_1: p < .35

Pr > |Z| is the P-value for H_1: p notequal .35

**machine parts example 95% confidence interval for p
alpha=.05, p_0=.35**

Obs	case	N	phat	lowerbound	upperbound
1	1	200	0.27	0.21323	0.33543

sample proportion

95% confidence interval for p

Mendel pea flower color example 95% confidence interval for p
alpha=.05, p_0=.75

The FREQ Procedure

case=1

outcome	Frequency	Percent	Cumulative Frequency	Cumulative Percent
red	705	75.89	705	75.89
white	224	24.11	929	100.00

Binomial Proportion	
outcome = red	
Proportion	0.7589
ASE	0.0140

sample proportion red

Confidence Limits for the Binomial Proportion	
Proportion = 0.7589	
Type	**95% Confidence Limits**
Wilson	0.7303 0.7853

95% confidence interval for p

Test of H0: Proportion = 0.75	
ASE under H0	0.0142
Z	0.6251
One-sided Pr > Z	0.2660
Two-sided Pr > |Z|	0.5319

Z is the test statistic Z_calc

Pr > Z is the P-value for H_1: p > .75

Pr > |Z| is the P-value for H_1: p notequal .75

Mendel pea flower color example 95% confidence interval for p
alpha=.05, p_0=.75

Obs	case	N	phat	lowerbound	upperbound
1	1	929	0.75888	0.73034	0.78529

sample proportion

95% confidence interval for p