HWK solutions to 3-27-17 on confidence intervals

1) given interval notation (8.5, 17.9)

$$p = \frac{8.5+17.9}{2} = 13.2 \qquad E = \frac{17.9-8.5}{2} = 4.7$$

Conjunction Notation $8.5 < p < 17.9$

Tolerance Notation 13.2 ± 4.7

2) given confidence notation $21.9 < p < 23.2$

$$p = \frac{23.2+21.9}{2} = 22.55 \qquad E = \frac{23.2-21.9}{2} = 0.65$$

Interval Notation (21.9, 23.2)

Tolerance Notation 22.55 ± 0.65

HWK solutions to 3-27-17 on confidence intervals

3) given $p = 28.68$ $E = 0.32$

Interval Notation $(28.68-0.32, 28.68+0.32)$

$(28.36, 29.)$

Conjunction Notation $28.36 < p < 29$

Tolerance Notation 28.68 ± 0.32

4) given Tolerance Notation 75.8 ± 7.6

$p = 75.8$ $E = 7.6$

Interval Notation $(75.8-7.6, 75.8+7.6)$

$(68.2, 83.4)$

Conjunction Notation $68.2 < p < 83.4$

HWK solutions to 3-27-17 on confidence intervals

5) n = 90 x = 36 $p=\frac{36}{90.} = 0.4$ $q = 1-0.4 = 0.6$

CL = 90% Famous CV = $\text{invNorm}(0.05,0,1)$ ▸ -1.64485 CV = 1.645

$E = 1.645\cdot\sqrt{\frac{0.4\cdot 0.6}{90}}$ ▸ 0.084947

interval notation $(0.4-0.085, 0.4+0.085)$

$(0.315, 0.485)$

conjunction notation $0.315<p<0.485$

tolerance notation 0.4 ± 0.085

HWK solutions to 3-23-17 on confidence intervals

6) n = 63 x = 45 $p=\frac{45}{63.} = 0.714286$ $q = 1-0.714 = 0.286$

CL = 95% Famous CV = $\text{invNorm}(0.025,0,1)$ ▸ -1.95996 CV = 1.96

$E = 1.96\cdot\sqrt{\frac{0.714\cdot 0.286}{63}}$ ▸ 0.111588

interval notation $(0.714-0.112, 0.714+0.112)$

$(0.602, 0.826)$

conjunction notation $0.602<p<0.826$

tolerance notation 0.714 ± 0.112

6 number 2) n = 250 x = 150 $p=\frac{150}{250.} = 0.6$ $q = 1-0.6 = 0.4$

CL = 99% Famous CV = $\text{invNorm}(0.005,0,1)$ ▸ -2.57583 CV = 2.575

$$E = 2.575\cdot\sqrt{\frac{0.6\cdot 0.4}{250}} \blacktriangleright 0.079783$$

interval notation $(0.6-0.080,\ 0.6+0.080)$

$(0.52,\ 0.68)$

conjunction notation $0.52<p<0.68$

tolerance notation 0.6 ± 0.080

7) n = 66 x = 48 $p=\frac{48}{66.} = 0.727273$ $q = 1-0.727 = 0.273$

CL = 80% NOT Famous ALPHA $1-0.80 = 0.20$ 1/2 alpha $= 0.10$

$CV = \text{invNorm}(0.1,0,1) \blacktriangleright -1.28155$ CV = 1.282

$E = 1.282 \cdot \sqrt{\frac{0.727 \cdot 0.273}{66}} \blacktriangleright 0.070301$

interval notation $(0.727-0.070, 0.727+0.070)$

$(0.657, 0.797)$

conjunction notation $0.657<p<0.797$

tolerance notation 0.727 ± 0.070

9 n = 400 x = 25 $p=\frac{25}{400.} = 0.0625$ $q = 1-0.0625 = 0.9375$

CL = 70% NOT Famous ALPHA = $1-0.7$ ▸ 0.3 1/2 ALPHA 0.15

CV = $\text{invNorm}(0.15,0,1)$ ▸ -1.03643 CV = 1.036

$$E = 1.036\cdot\sqrt{\frac{0.0625\cdot 0.9375}{400}} \blacktriangleright 0.012539$$

interval notation $(0.0625-0.0125\ ,\ 0.0625+0.0125\ )$

$(0.05\ ,\ 0.075)$

conjunction notation $0.05<p<0.075$

tolerance notation 0.0625 ± 0.0125

10) n = 700 x = 35 $p = \frac{35}{700.} = 0.05$ $q = 1 - 0.05 = 0.95$

CL = 50% NOT Famous ALPHA $1 - 0.50 = 0.50$ 1/2 alpha $= 0.25$

$CV = \text{invNorm}(0.25, 0, 1) \blacktriangleright -0.67449$ CV = 0.674

$E = 0.674 \cdot \sqrt{\frac{0.05 \cdot 0.95}{700.}} \blacktriangleright 0.005552$

interval notation $(0.05 - 0.006, 0.05 + 0.006)$

$(0.044, 0.056)$

conjunction notation $0.044 < p < 0.056$

tolerance notation 0.05 ± 0.006