6.1 Large Samples ~ C.I

$\bar{x} \pm z_c\left(\frac{s}{\sqrt{n}}\right)$ $\quad n = \left(\frac{sz_c}{E}\right)^2$

6.2 Small Samples ~ C.I

$\bar{x} \pm t_c\left(\frac{s}{\sqrt{n}}\right)$

Proportion of a population

6.3 $\frac{x}{n} \pm z\sqrt{\frac{\hat{p}\hat{q}}{n}}$ $\quad n = \hat{p}\hat{q}\left(\frac{z_c}{E}\right)^2$

if no $\hat{p}, \hat{q}$ use (.5)(.5)

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6.3 $\hat{p} \pm E$ $\quad \hat{p} = \frac{x}{n}$ $\quad E = z_c\sqrt{\frac{\hat{p}\hat{q}}{n}}$

$\hat{p}$ = success %

$\hat{q}$ = failures %

3) $n = 1002$, $x = 752$ $\quad \frac{752}{1002} = \hat{p} = .75$, $\hat{q} = .25$

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6) $n = 1003$

$x = 110$

$\hat{p} = \frac{110}{1003} = .11$

$\hat{q} = .89$

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7) (.905, .933)

.905 + .933 = 2|1838

$\bar{x} = .919$

$\hat{p} = .919$

.905 .919 .933 (.014)

.919 − .905 = .014 Margin of Error

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11) $C = 90\%$ $\quad z_c = 1.64$ $\quad C = 95\%$, $z_c = 1.96$

$\hat{p} \pm z_c\sqrt{\frac{\hat{p}\hat{q}}{n}}$

$n = 674$, $x = 396$ $\quad \hat{p} = \frac{396}{674} = .588$, $\hat{q} = .412$

$.588 \pm 1.64\sqrt{\frac{(.588)(.412)}{674}}$ $\quad$ (.557, .619) 90%

$.588 \pm 1.96\sqrt{\frac{(.588)(.412)}{674}}$ $\quad$ (.551, .625)

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11-16 Pick a # $\quad C = .99$

$\frac{1-.99}{2} = .005$ $\quad z_c = 2.58$

14) $n = 4013$, $x = 722$ $\quad \hat{p} = \frac{722}{4013} = .18$, $\hat{q} = .82$

$.18 \pm 2.58\sqrt{\frac{(.18)(.82)}{4013}}$

$.18 \pm .0156$

(.164, .196)

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17) $C = .95$

$\frac{1-.95}{2} = .025$

$z_c = 1.96$

$E = 4\%$

a) $\hat{p} = .5$

$\hat{q} = .5$

No Preliminary Estimate

Use .5 for $\hat{p}$ & $\hat{q}$

$n = \hat{p}\hat{q}\left(\frac{z}{E}\right)^2$

$n = (.5)(.5)\left(\frac{1.96}{.04}\right)^2$

600.25

Round Up = 601

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12) $C = 90\%$

$z_c = 1.64$

$x = 279$ $\quad \hat{p} = \frac{279}{420} = .664$

$n = 420$ $\quad \hat{q} = .336$

$\hat{p} \pm E$

$\frac{x}{n} \pm z_c\sqrt{\frac{\hat{p}\hat{q}}{n}}$

$.66 \pm 1.64\sqrt{\frac{(.66)(.34)}{420}}$

$.66 \pm .038$

$(.622, .698)$

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13) C 99%

$\frac{1-.99}{2} = .005$

$z_c = 2.58$ $\quad \hat{p} = \frac{1435}{3110} = .46$

$n = 3110$ $\quad \hat{q} = .54$

$x = 1435$

$.46 \pm 2.58\sqrt{\frac{(.46)(.54)}{3110}}$

$(.438, .484)$

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18) No Preliminary Estimate

$\hat{p} = .50$

$\hat{q} = .50$

$C = 99\%$ $\quad z_c = 2.58$

$E = 2\%$

$n = \hat{p}\hat{q}\left(\frac{z}{E}\right)^2$

$n = (.5)(.5)\left(\frac{2.575}{.02}\right)^2$

Round Up 1414.5

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