Section 6.2: One-Sided Confidence Bounds, cont'd

Monday, March 5, 2018 8:32 AM

Confidence coefficient $1-\alpha$	z_α
0.90	1.28
0.95	1.645
0.98	2.05
0.99	2.33

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example: Forty samples of pollutants in Victoria's Inner Harbour yielded a mean concentration of the $[NO_3^-]$ ion (nitrate ion) to be 25 ppm, with a standard deviation of 5 ppm. Calculate a 98% upper confidence bound for the mean concentration of this pollutant in the Inner Harbour.

$$UCL = \bar{x} + z_\alpha \frac{\sigma}{\sqrt{n}}$$

← large sample, so approximate σ by s

$$= \bar{x} + z_\alpha \frac{s}{\sqrt{n}}$$

$$= 25 + 2.05\,(5)$$

$\sqrt{40}$

$= 25 + 1.628$

$= 27$ ppm (26.6 acceptable)