STATS 528: HW6

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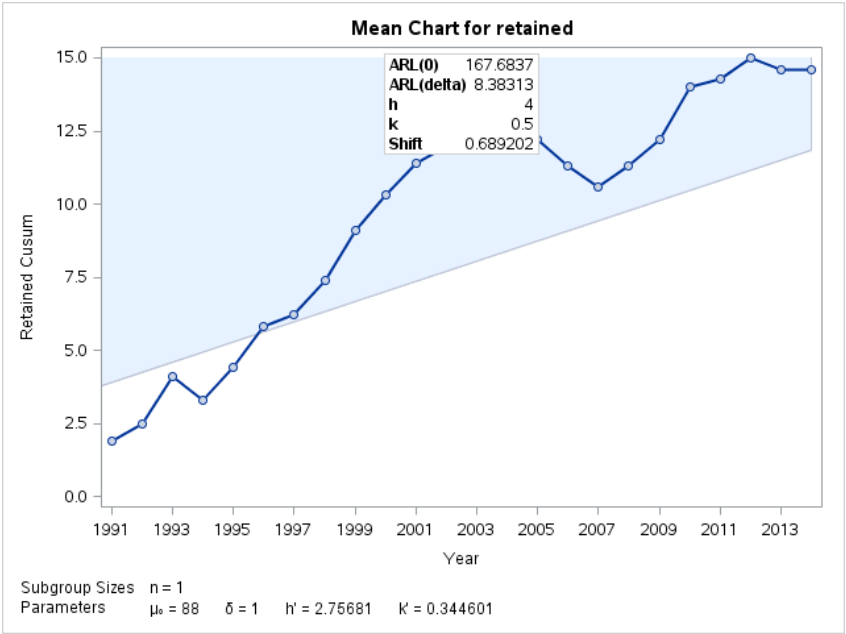
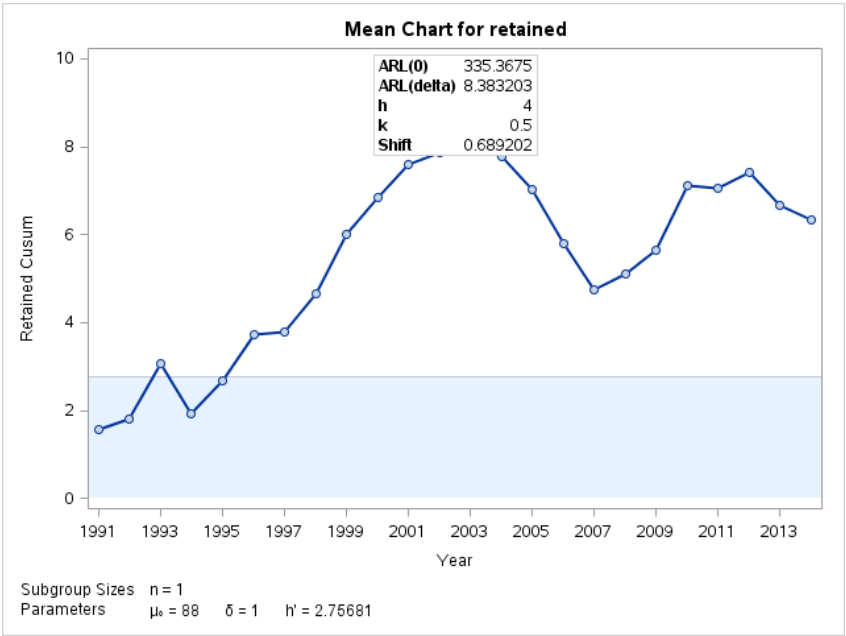
1. Enrollment Problem

   (a) We have that $\hat{\sigma} = MSSD = 0.689$.

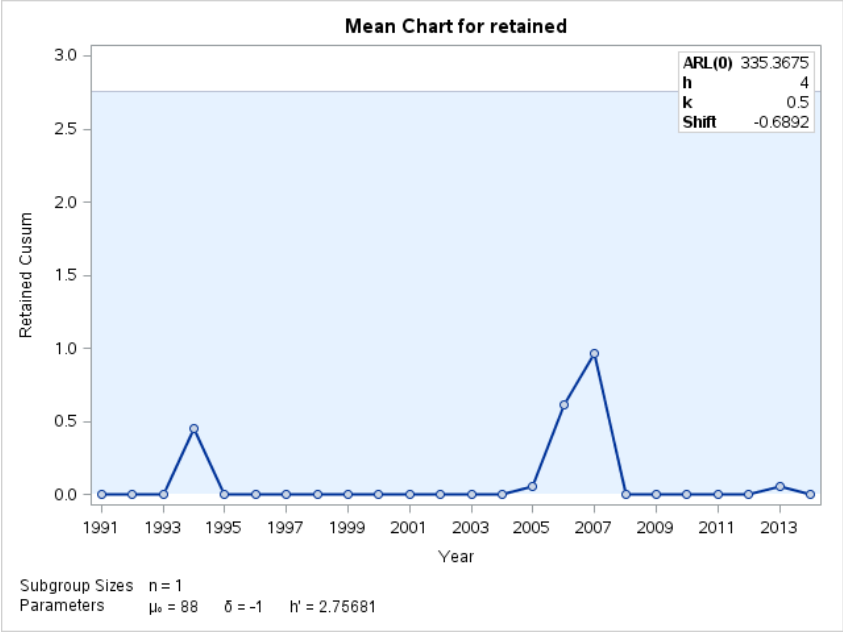
   (b) Two-sided cusum plot:



   Upper one-sided cusum plot:



   Lower one-sided cusum plot:



(c) An out-of-control signal is flagged on the upper side in 1993 and again in 1999 (if the cusum is reset after an out-of-control signal).

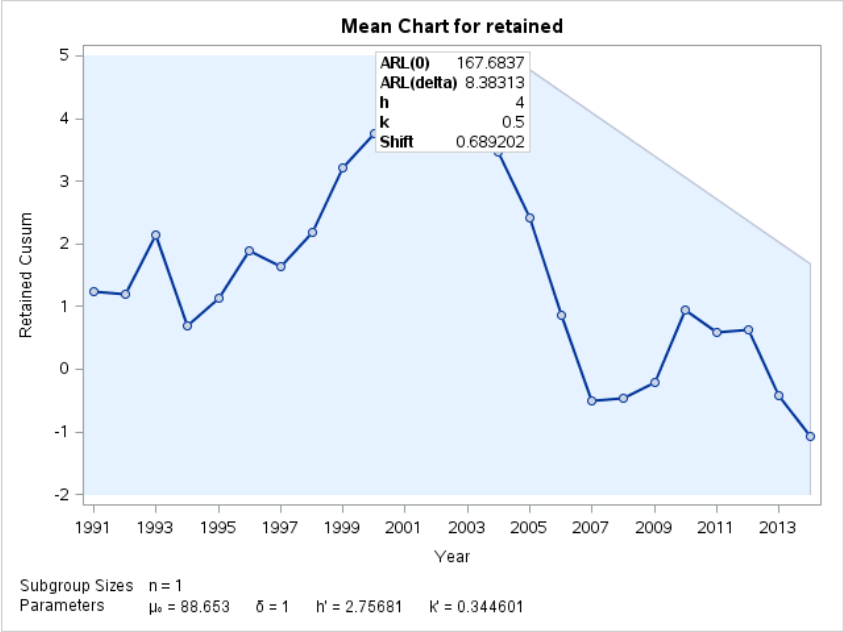
(d) It's clear from investigating the un-reset cusum data that the provided $\mu_0 = 88\%$ is likely off. Thus, since the first out-of-control signal is in 1993, we can pretend that a shift occured sometime between 1991 and 1993. Using the formula provided on page 406 of the text we have that

$$\hat{\mu} = \mu_0 + K + \frac{C_i^+}{N^+} = 88 + .5 + \frac{3.066}{3} \approx 89.522\%$$

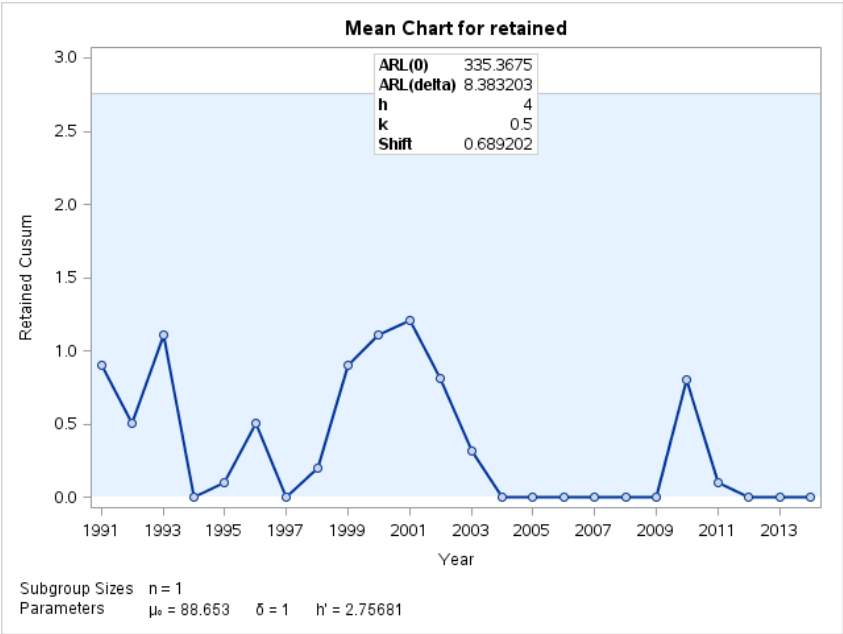
2. Enrollment Problem using $\mu_0 = 88.653\%$

(a) We have that $\hat{\sigma} = MSSD = 0.689$ (no change).

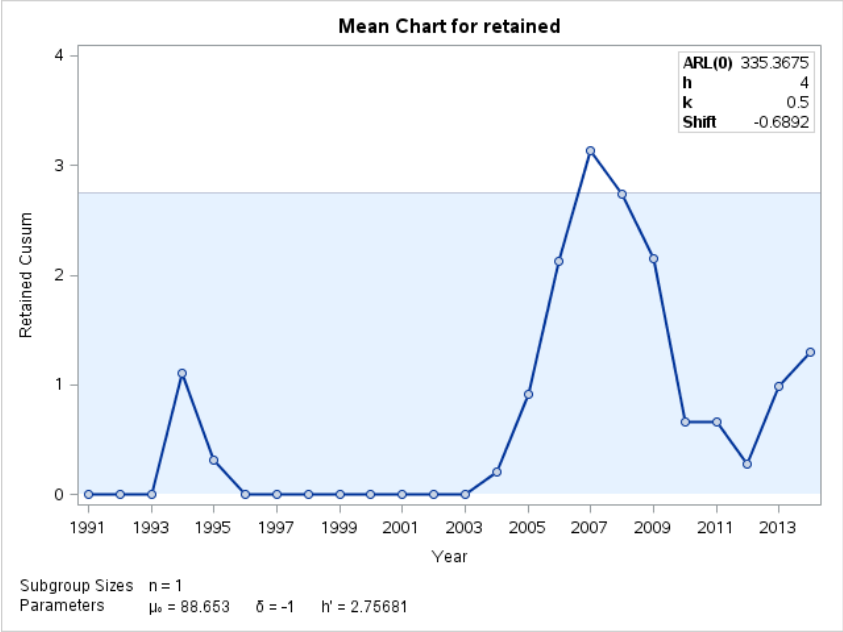
(b) Two-sided cusum plot:



Upper one-sided cusum plot:



Lower one-sided cusum plot:



(c) An out-of-control signal is flagged on the lower side in 2007 (assuming the cusum is reset after an out-of-control signal).

(d) Using the reset cusum data, it appear that there was a shift sometime between 2003 and 2007. Using the formula provided on page 406 of the text we have that

$$\hat{\mu} = \mu_0 - K - \frac{C_i^-}{N^+} = 88.653 - .5 - \frac{3.134}{4} \approx 87.37\%$$

3. ARL_0 and ARL_1 and other stuff

4. h and k values for cusum

Ex 9.9 (a)

(b)

(c)

Ex 9.14