# ASQ CRE Prep course

## Lesson II. A. 7. d.

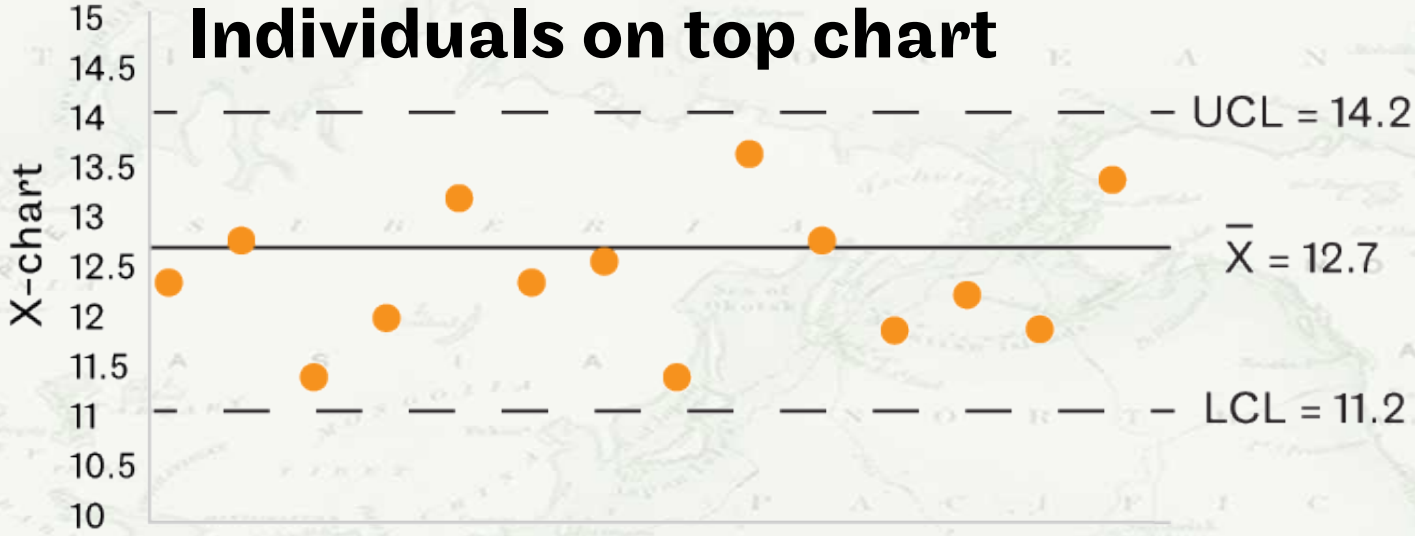
## SPC and Process Capability

## Individual & Moving Range Charts

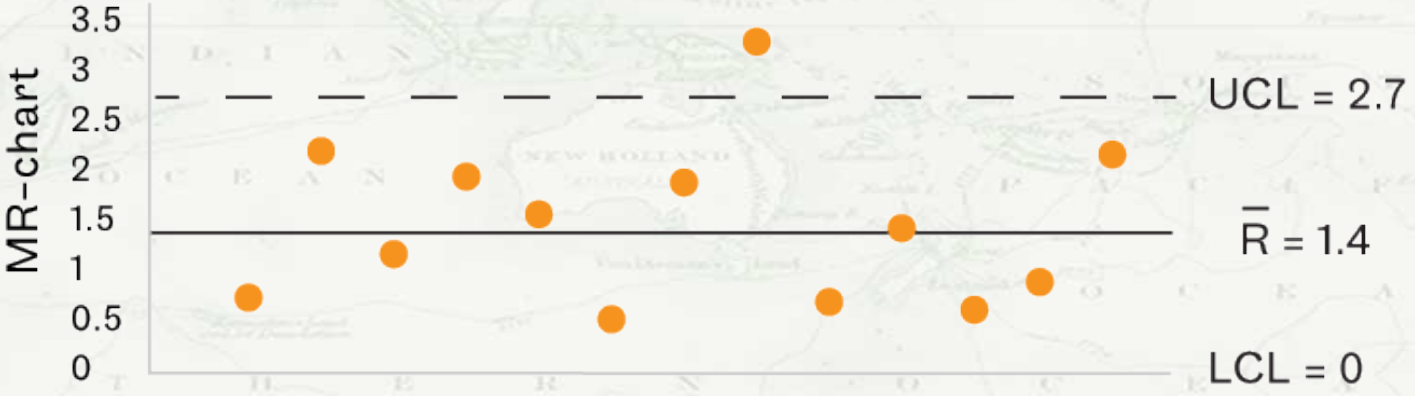
We just don’t have enough data

# INDIVIDUALS & MOVING RANGE CHART

## Individuals on top chart




## Range between last point and new point



# X and MR chart

- **Data should be normally distributed**
- **Averages and limits will have variability**
- **Not as sensitive as X-bar & R charts**

$$UCL_x = \bar{\bar{X}} + E_2 \overline{MR}$$

$$LCL_x = \bar{\bar{X}} - E_2 \overline{MR}$$

$$UCL_{MR} = D_4 \overline{MR}$$

| n | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| $D_4$ | 3.27 | 2.57 | 2.28 | 2.11 |
| $D_3$ | 0 | 0 | 0 | 0 |
| $E_2$ | 2.66 | 1.77 | 1.46 | 1.29 |

# MX-bar and MR Chart

- **A variation of X-bar and R chart**
- **Suitable when less data is available**

- **Moving groups of n readings provide the averaging. n=3 is common.**

- **Use X-bar and R chart formulas to define limits**

# What are a few applications?

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Lesson II. A. 7. e.

SPC and Process Capability

Attribute Charts