

Bland Altman Plot

- ☒ AKA: **Tukey mean-difference** plot

Bland and Altman say that:

any **two methods** that are designed **to measure the same parameter**(or property) should have **good correlation** when a set of samples are chosen such that the **property to be determined varies considerably**.

A **high correlation** for any two methods designed to measure the same property could thus in itself just be a **sign** that one has chosen a **widespread sample**. A high correlation does not necessarily imply that there is good agreement between the two methods.

- The Differences against the averages

$$S(x,y) = (\frac{S_1+S_2}{2}, S_1-S_2)$$

LoA: Limits of Agreement.

The graph displays a scatter diagram of the differences plotted against the averages of the two measurements. Horizontal lines are drawn at the mean difference, and at the limits of agreement. The limits of agreement (LoA) are defined as the mean difference ± 1.96 SD of differences. If these limits do not exceed the maximum allowed difference between methods Δ (the differences within mean ± 1.96 SD are not clinically important), the two methods are considered to be in agreement and may be used interchangeably.

Proper interpretation (Stöckl et al., 2004) takes into account the 95% confidence interval of the LoA, and to be 95% certain that the methods do not disagree, Δ must be higher than the upper 95 CI limit of the higher LoA and Δ must be less than the lower 95 CI limit of the lower LoA:

