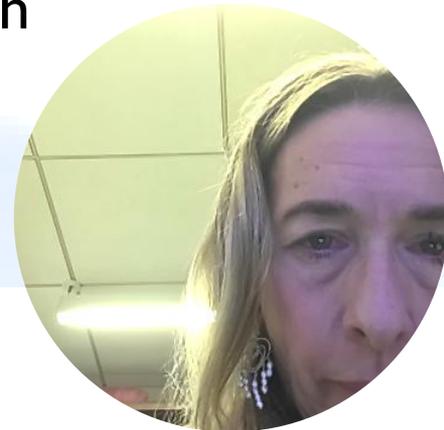


V22 - Estimation – Part 5

- Why we pair data
- Paired data setup for statistical analysis

Course: Statistical Testing & Regression
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Why Pair?

❖ _____
❖ Same _____ both _____ & _____



❖ If test same child's ability before & after new teaching method:

- Better than testing method using 2 independent groups (with & without)
- Control for variables between students such as prior knowledge, capability, parental oversight, socio-economic status, etc.

Person	Before (x1)	After (x2)

❖ Eliminates/controls for **other sources** of variability

- Experimental units same on variables *not* being tested

❖ Pairing reduces variance

$$\text{Var}(d) = \text{Var}(X - Y) = \sigma_X^2 + \sigma_Y^2 - 2\text{Cov}(X, Y)$$

because subtracting _____



Paired Data Setup

n rows, subjects, pairs

$n = \underline{\hspace{2cm}}$

sample differences
 $(x_1 - x_2)$

i	X1 (Before)	X2 (After)	d_i	
1	1	2	1	
2	3	5	2	
3	4	7	3	
4	5	9	4	
5	6	11	5	
6	7	13	6	
			3.5	AVG = <u> </u>
			1.9	STDEV = <u> </u>

- \bar{d} is average of all differences d_i 's
- s_d is standard deviation of all differences





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THE END

