

Hw_1

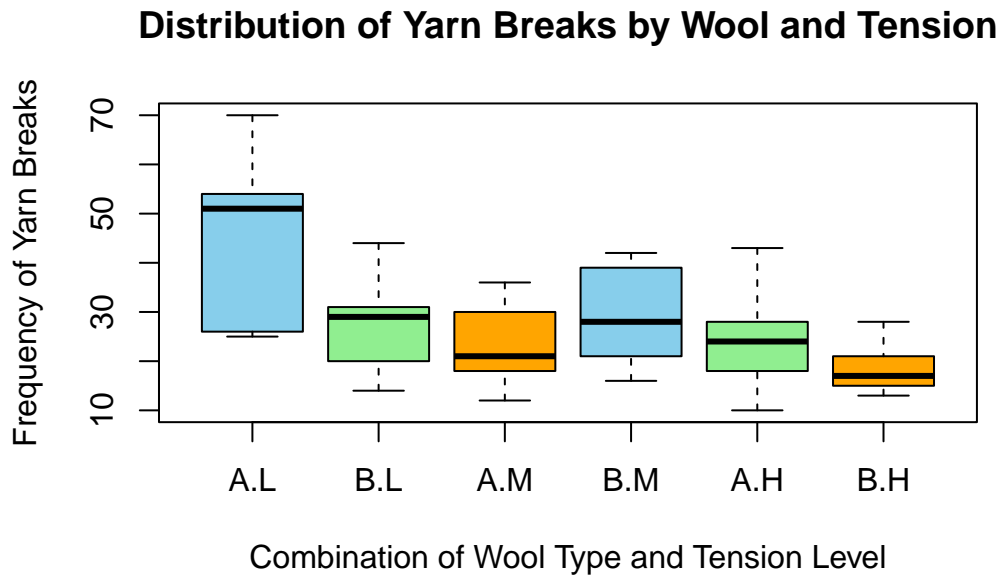
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The **warpbreaks** dataset originates from an experiment in textile manufacturing. It records how many times yarn breaks occurred on a loom, depending on the **type of wool** used and the **tension level** applied during the weaving process.

Dataset Description

- **breaks**: Count of yarn breaks observed.
- **wool**: Wool category used in weaving (A or B)
- **tension**: Applied tension level during weaving (Low, Medium, or High)

	breaks	wool	tension
1	26	A	L
2	30	A	L
3	54	A	L
4	25	A	L
5	70	A	L
6	52	A	L
7	51	A	L
8	26	A	L
9	67	A	L
10	18	A	M



The boxplot shows that:

Wool A with low tension (A.L) has the highest median number of yarn breaks (~50), with a wide range and maximum close to 70.

In contrast, **Wool B under low tension (B.L)** performs better, with a lower median (~28) and less variability. Under **medium tension**, both wool types show reduced breaks, with **Wool B (B.M)** slightly outperforming **Wool A (A.M)**.

At **high tension**, both wools result in the fewest breaks overall, and **Wool B with high tension (B.H)** stands out with the lowest median (~16) and the most consistent performance.

Interpretation:

- Increasing the tension level tends to **reduce the number of yarn breaks**, showing a negative relationship between tension and breakage.
- **Wool B** performs more reliably than Wool A across all tension levels, with the **best results under high tension**.
- The combination of **Wool B and high tension** appears to be the most effective setup for **minimizing yarn breaks** during the weaving process.