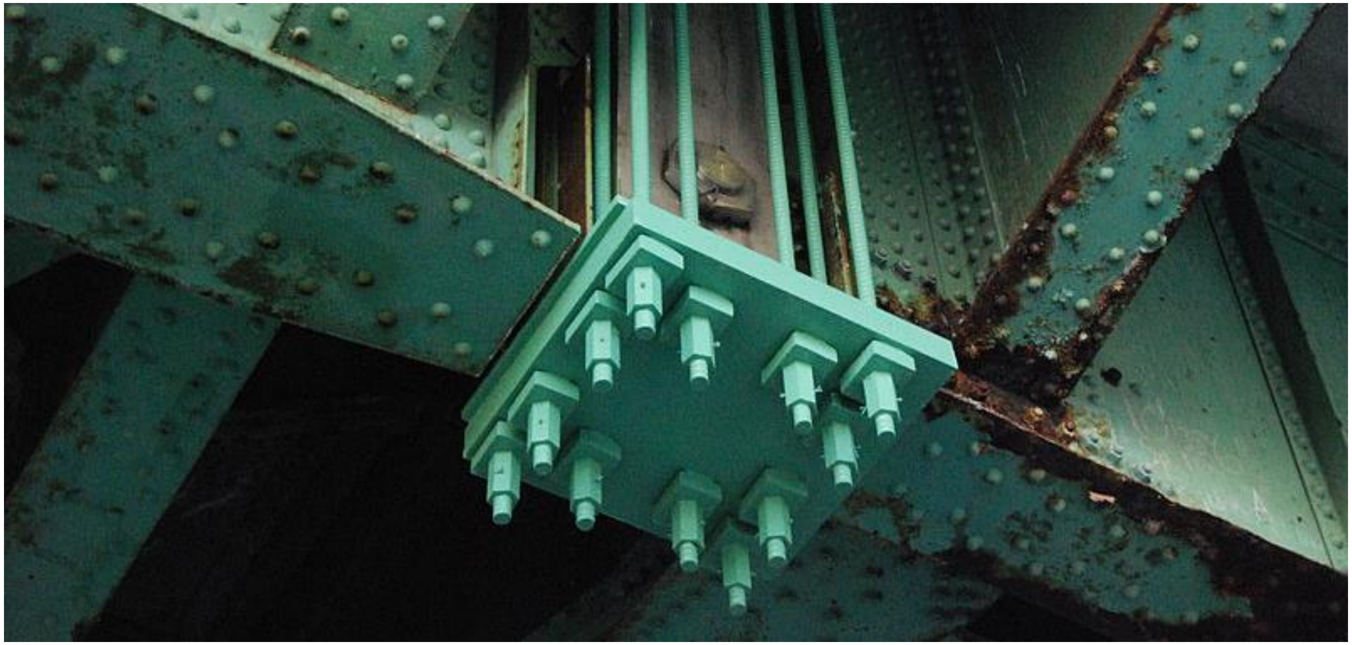
Activity



# Statistical Analysis of Methods to Repair Steel

# Civil Engineering Challenge

Perform a statistical analysis of the effectiveness of the different configurations of CFRP patching to rehabilitate steel structures, comparing the mean fatigue life of slightly cracked steel beams and mean fatigue life of slightly cracked steel beam reinforced with CFRP patches.

# Data Analysis

## CFRP Experimental Results


## NiTiNb –CFRP Experimental Results

# Data Analysis

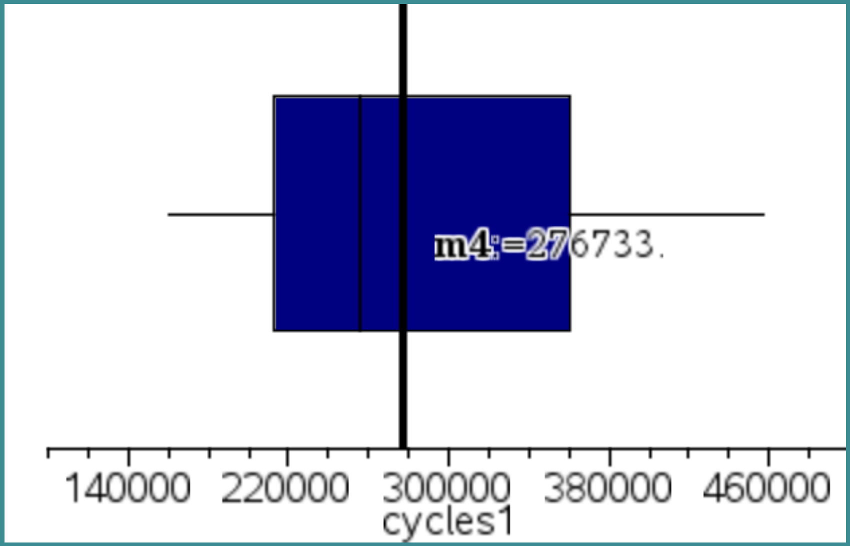
**Five-Number Summary**

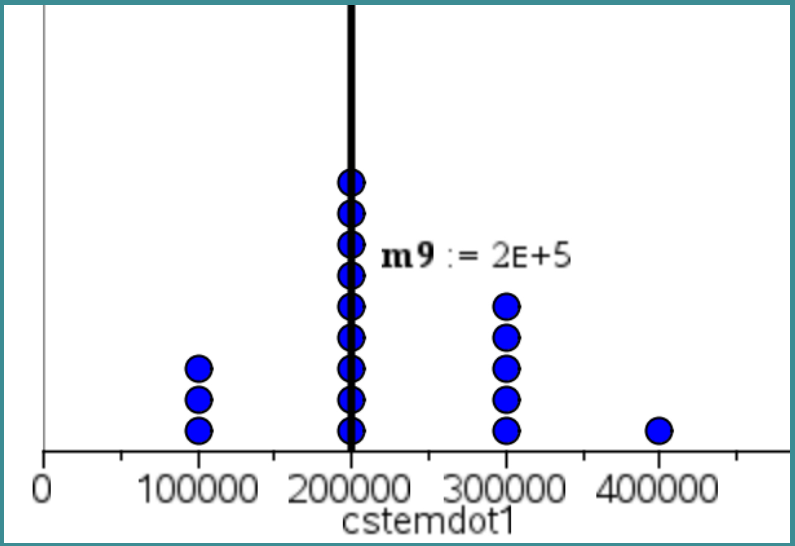
- minimum
- Q1
- median (Q2)
- Q3
- maximum

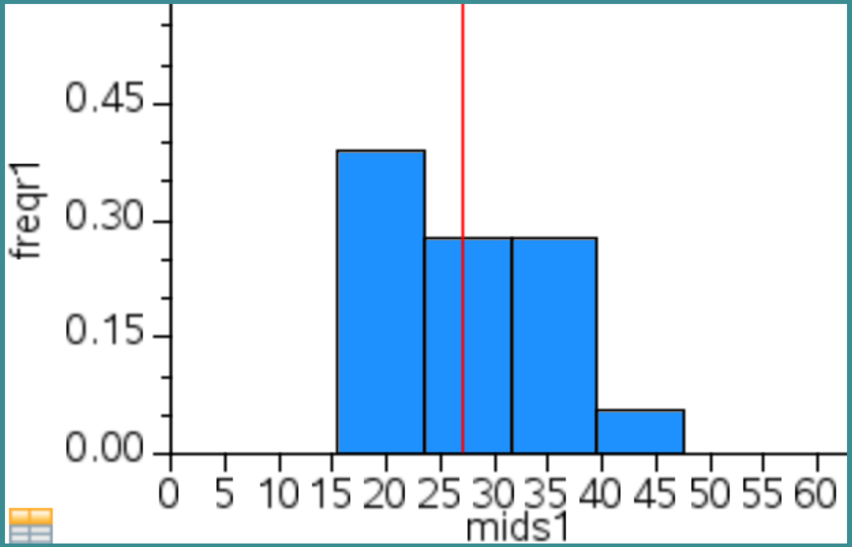
**Central Tendency**

- sample mean
- sample standard  deviation

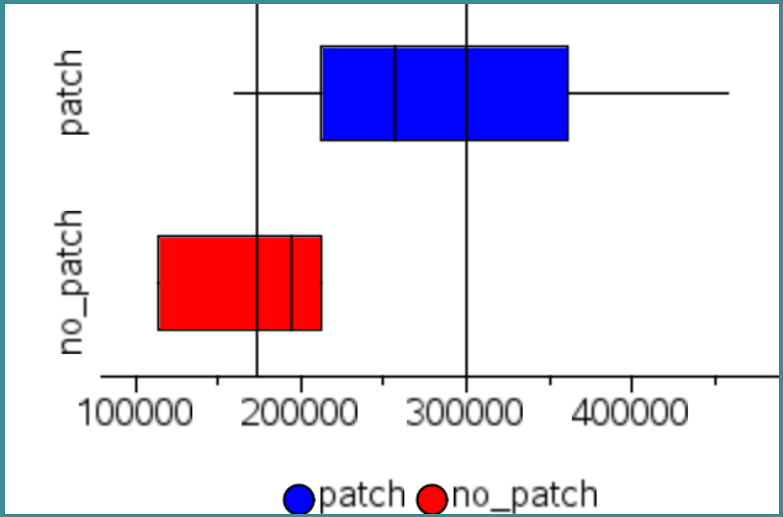
# Data Analysis: Graphs

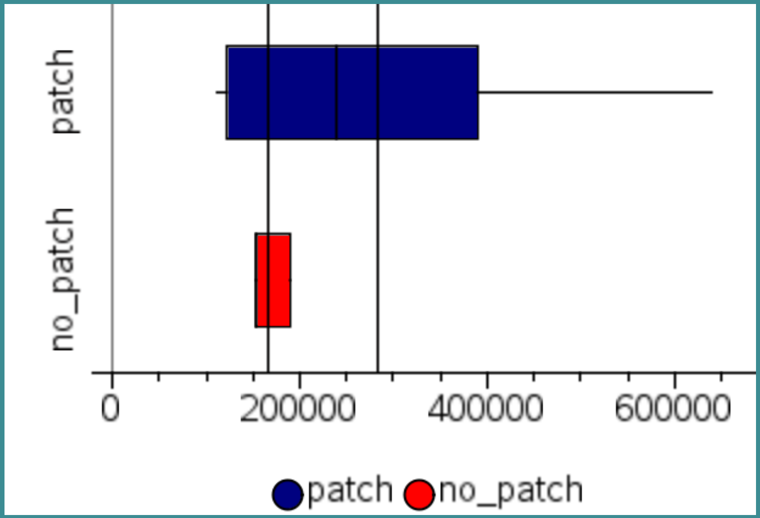


# Data Analysis: Graphs



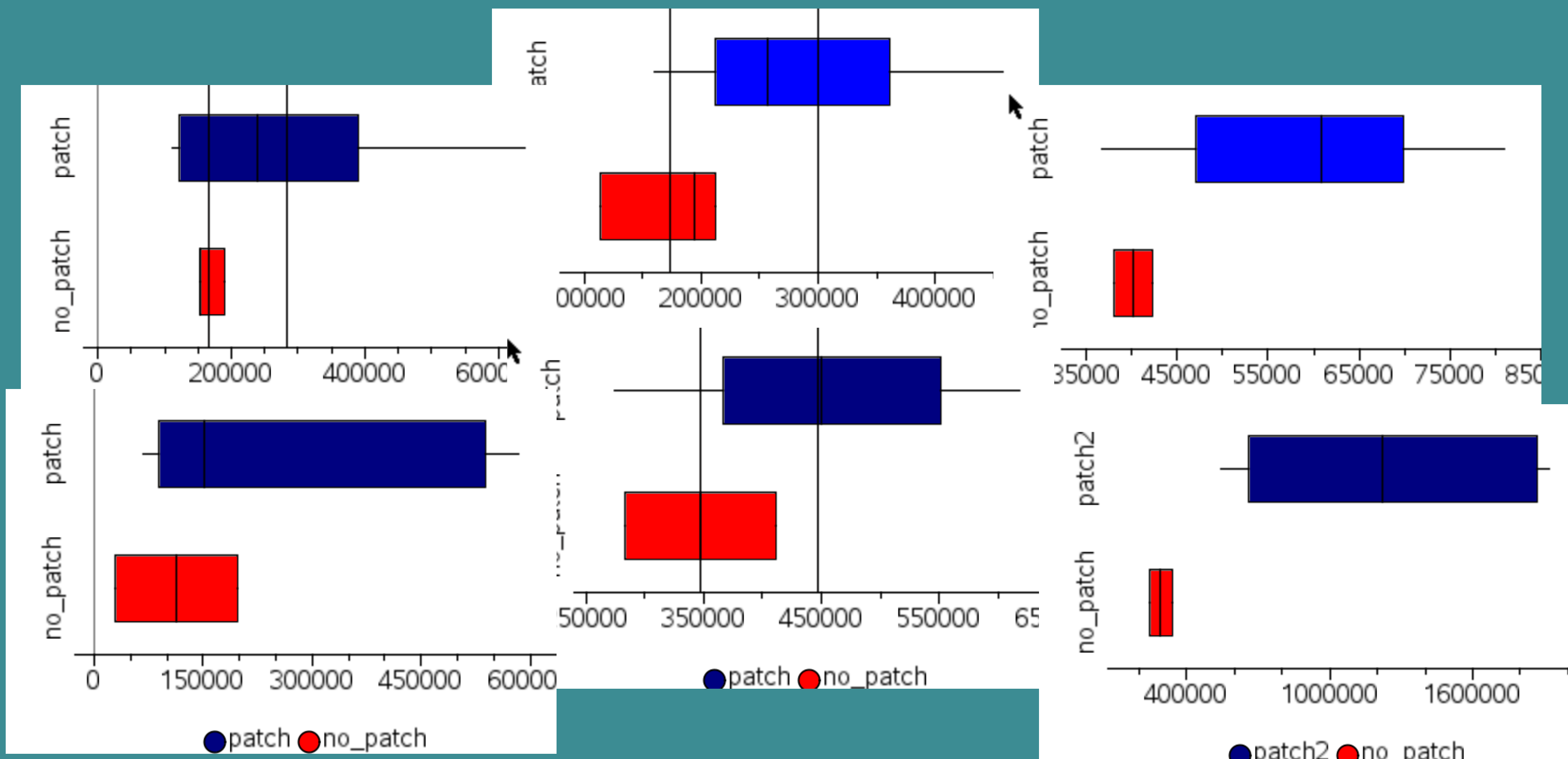




**Patched vs. Unpatched Fatigue Life Comparison**

**Interpretation of the graphs**

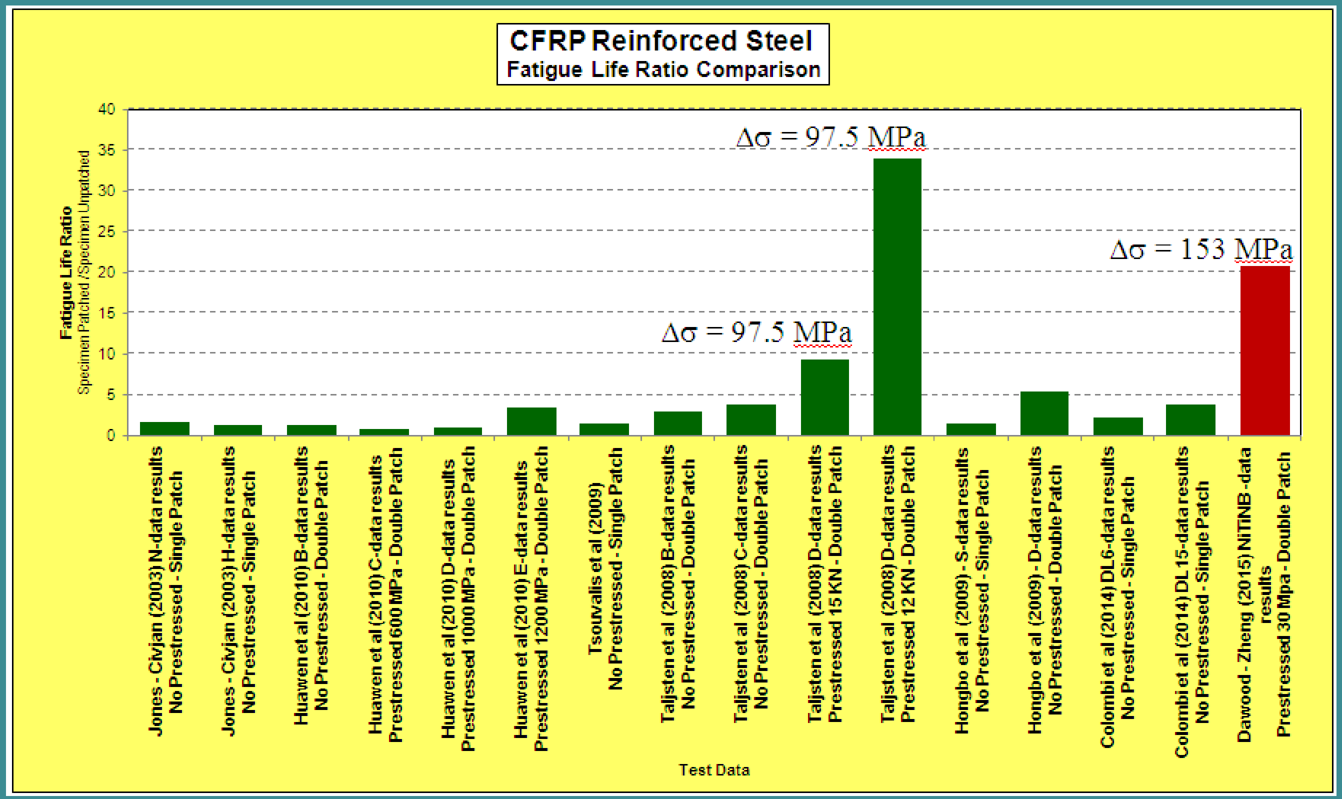
# Data Analysis: Graphs

**How to compare all the available data when coming from different experimental setups?**



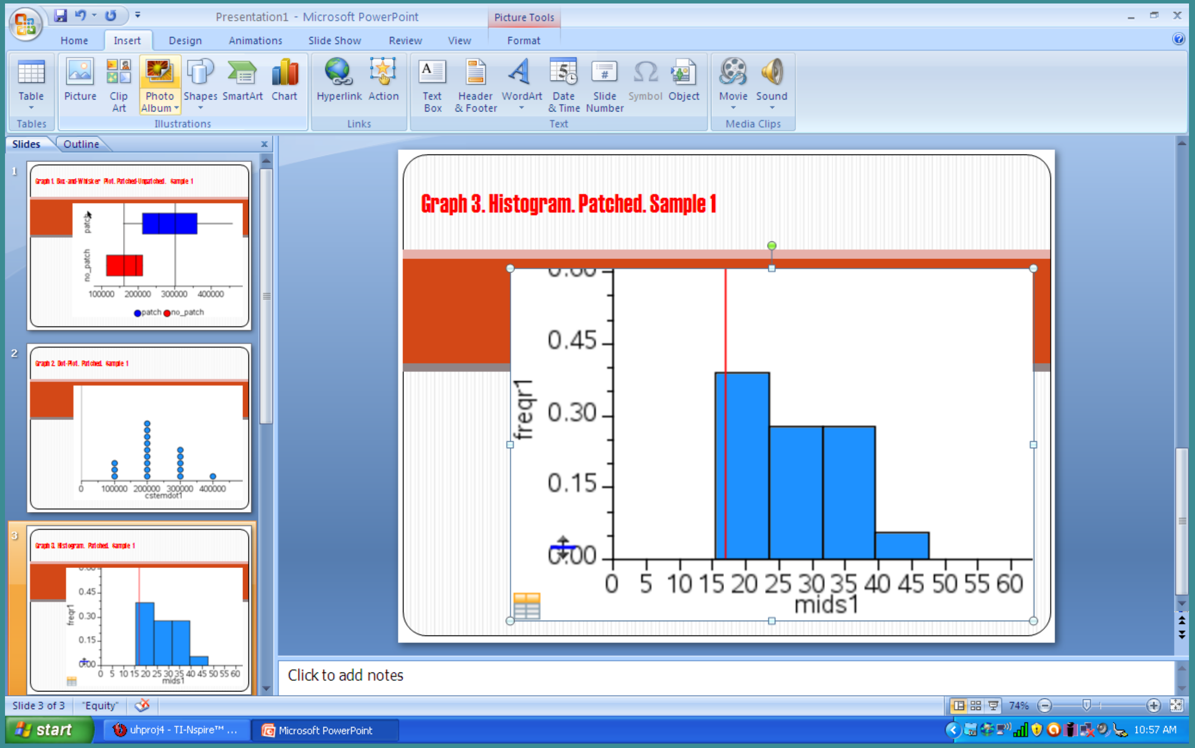
# Data Analysis: Graphs

**Using the fatigue life ratio:** $\frac{\text{patched specimen mean fatigue life}}{\text{unpatched specimen mean fatigue life}}$



# Student Results Presentations

## PowerPoint + in-class presentation—or video (wmv, mp4)




- Background
- Procedure
- Data
- Graphs
- Stat analysis
- Conclusions