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### **How do you think data can be used to solve problems in materials?**

- Data can be used to draw patterns about materials
- Patterns can be used to draw conclusions / improve the material / understand it better
  - Eg: using data about microstructures to determine macro properties of the material
- Collecting data as a reference to compare other materials to (data library)
- Compare different experimental results (reproducibility across projects)
- Use data of small groups of materials to help predict properties of all materials (we can't do experiments on all materials)
- Example on XRD: huge library of data → used to identify materials
- Help draw conclusions on experimental phenomena using the data we have from computations for example
  - Computations can tell us what experiments should be done.
- Publicly accessible data sets help reduce variances on computational work (eg: monte Carlo experiments) → cheaper for many lab groups
  - Example: Materials project website
  - Example: proteins dataset website