# Lab 2.1 – Computing the league-wide ERA and slugging percentage

In this lab, we continue our previous work aimed at comparing the MLB leagues based on the status of the DH rules. Here we will create visualizations and write a summary of our findings, with all your work added to the previous repository.

Search engines have become an integral part of programming and in this lab, you will be asked to practice this skill be researching some tasks not covered in the lectures.

**Tasks.**

1. We are continuing work from **Lab 1.2** and your Python code should be added to the notebook/repo from that assignment.
2. Use plotnine to create an annotated plot like the one shown below. Be sure to add reference lines and annotations (use Google to figure out how this is done in plotnine).
3. Create an analogous plot comparing the league-wide slugging percentages, again adding appropriate reference lines and annotations.
4. Write each visualization to a PNG file stored in an img folder in the repository. (again consult Google).
5. Create a WORD document containing both visualizations, along with a paragraph or two summarizing your findings. Add this document to the root folder of your repository.

**Comparing league-wide ERA**



**Deliverables.** Submit completed copy of this document that includes

1. A screenshot of the head of each final table, and
2. The link to your data repository.

A graph with different colored lines

Description automatically generated

A graph with lines and numbers

Description automatically generatedWhen looking directly at the ERA for the AL and NL league you don’t really see a huge difference as the lines are close together and seem to follow the same pattern over the years. However, when you take the difference (AL\_minus\_NL) of the AL era and the NL era, you can see that there is a difference throughout the years. Before 1973 when the designated hitter rule was added to the AL allowing for designated hitters to hit for pitchers, the era in the AL was all over the place compared to era in the NL (some years higher era, some lower era). However, after the DH rule was introduced in the AL, the era in the AL has been higher (worse) than that in the NL, other than some recent years.

The slugging percentage pretty much has the same story as the era. Can’t really see a huge difference when you just look at the AL and NL line next to each other. If you look at the AL\_minus\_NL line you can see before the DH rule was introduced, there was no real way to tell which league was going to have the better slugging percentage as you look at the difference on the bottom, some years the AL was higher and some years it was lower. After the DH rule was introduced, the AL saw years with a higher slugging percentage (better) in the coming years however dropping around the year 2000 and having a couple of years where it was lower (worse) than the NL. After those years in the 2000’s it the slugging percentage increased again for the AL, until the recent years where it got worse again.