**Paper Structure**

* Objectives:
  + TFR forecasts for Nordic countries up to 2050 with emp. PIs
  + Quantification of distribution of TFR forecasts errors in the Nordic Countries
    - Based on extrapolative models
    - Based on a scenario model
    - Based on published forecasts
  + Comparison of three kinds of PIs:
    - Model-based
    - Empirical based on cross-validation
    - Empirical based on published forecasts
  + Emp. PIs for TFR are important because trends are changing and the error distribution is long-tailed meaning a non-neglectable prob. Of huge forecasting errors, when trend change happens
* Messages:
  + Example how to cross-validate a scenario based forecast model (Julia’s model)
  + How to apply empirical prediction intervals for fertility forecasts
  + Expert errors from past published forecasts to get distribution of errors and prediction intervals for comparison with the other PIs
* Forecast models:
  + ARCH for TFR (extrapolative)
  + Lee-Carter for age-specific (extrapolative)
  + Julia’s model (scenario based)
* PIs:
  + Model-based from GARCH, Lee-Carter und Julia’s
  + Empirical PIs from the models modeled with:
    - Empirical distribution
    - Historical expert opinion distribution (because it is even more objective)