12-5 – 12-7 – Validation and Verification

* How to build trust in your model
  + Historical data to compare against your model
    - Compare average difference
  + User friendly
  + Robustness
    - Results should hold with small changes in implementation or parameter values
  + Ideally, you’d fit your simulation output to the data
  + If you don’t have numbers for each state at each point in time, use whatever numbers you have
  + If you have no numbers, ask experts whether you reproduce expected characteristics (trends)
* British approach to model quality assessment
  + The Aqua Book – guidance on producing quality analysis for government
  + Internal audit certified the data and code correctness
  + External audit team was able to replicate the findings by following the process to build their own model
  + Four principles
    - Proportionality of response
      * There is no single “quality assurance” activity
      * The approach to quality assurance will vary
      * Novelty of the approach
      * Role and criticality of the analysis to the decision-making process
      * Required precision of the analytical outputs
      * Do quality assurance at all stages
    - Assurance throughout development
      * You won’t have perfect data, so you make assumptions
      * Make sure to track those
    - Uncertainty