Today's Project Contribution — Stage 11: Evaluation & Risk Communication

Today you'll complete a piece of your full data project. This task aligns with **Evaluation & Risk Communication**, where you will:

- Analyze model performance, assumptions, and risks, and communicate them clearly.
- Add to your existing project repo (or update prior files).
- It builds directly on what we learned regarding bootstrap CI, scenario comparisons, subgroup diagnostics, and stakeholder summary. Now we integrate those insights into your project repo.

Required Deliverables

- **Model Performance Metrics** At least one relevant metric (e.g., RMSE, MAE, accuracy, AUC, precision/recall).

- **Uncertainty Visualizations**

  - Confidence intervals (parametric or bootstrap)
  - Error bars or residual plots
  - Ensure axes are consistent and clearly labeled
  - Include side-by-side comparisons for at least **two scenarios**.

- **Scenario & Sensitivity Analysis**

  - Compare outcomes under at least **two assumption scenarios** (e.g., mean vs median imputation, Gaussian vs bootstrap residuals, linear vs polynomial model).
  - Document how assumptions affect conclusions.

- **Written Discussion**

  - Key assumptions behind your model
  - Risks and limitations introduced by those assumptions
  - Commentary on scenario/sensitivity results
  - Optional: any subgroup-specific observations

Optional (choose one or more)

- Tailored **business-stakeholder communication**
  - Plain-language summaries
  - Key takeaway charts
  - Decision framing statements
- Advanced **diagnostics**
  - Residual patterns
  - Subgroup analyses
  - Stress tests highlighting when the model may fail

Chain

In your homework, you produced a bootstrap CI, two scenario comparisons, and a stakeholder summary. *Now, you will adapt* that work into your project repo with clean figures, concise text, and reproducible helpers.

Before Next Class

- Save files in `/data/`, `/src/`, `/notebooks/`, and `/outputs/` as relevant.

- Commit with messages:

  - `Add evaluation visuals and scenario sensitivity analysis`
  - `Document model assumptions and stakeholder summary`

- Review assumptions/risks; note any monitoring you'd require in production.

Practical Guidance

- Reuse your **homework bootstrap and scenario workflows**.
- Ensure **reproducibility**: set seeds, clearly label scenarios, use consistent axes.
- Document assumptions and highlight where conclusions are sensitive.
- Consider **production relevance**: what monitoring or follow-up would you implement if this model were live?
- Provide concise, clear **stakeholder commentary** alongside visualizations.