

# Change Log — Proposal → Implementation Mapping

This change-log links each item from the project proposal to the implementation files and artifacts in this repository.

- Feature engineering additions:
  - `weather_severity, weather_severity_cat`: `src/transport_analysis/feature_engineer.py`
  - `route_frequency, route_frequency_norm`: `src/transport_analysis/feature_engineer.py`
  - `is_weekend, day_type, scheduled_hour`: `src/transport_analysis/feature_engineer.py`
- Outlier handling:
  - Winsorization (1%/99%) applied to `passenger_count` and `delay_minutes`:  
`src/transport_analysis/feature_engineer.py`, enabled in `scripts/export_data_view.py` and  
`scripts/rebuild_outputs.py`.
- Modeling:
  - `RandomForestRegressor` and `LinearRegression` training:  
`src/transport_analysis/model_builder.py`.
  - Saved artifacts: `results/model_RandomForest.pkl`, `results/model_LinearRegression.pkl`.
  - Cross-validation & evaluation:
    - K-fold CV and CV summaries: `src/transport_analysis/model_builder.py`, included in  
`results/model_performance_comparison.csv`.
    - Time-series CV (`TimeSeriesSplit`) and per-model TS-CV plots:  
`src/transport_analysis/model_builder.py`, generated by `scripts/rebuild_outputs.py` as  
`results/*_tscv_plot.png`.
    - Temporal holdout method and test: `src/transport_analysis/model_builder.py`  
(`perform_temporal_holdout`) and `tests/test_temporal_holdout.py`.
  - Explainability:
    - SHAP-based explainability with fallback importances: `src/transport_analysis/explainer.py`.
    - Multi-model explainability report and per-model SHAP images:  
`results/model_explainability_report.html`, `results/*_shap_*.png`.
  - Reproducibility & deliverables:
    - Rebuild pipeline: `scripts/rebuild_outputs.py` (orchestrates cleaning, engineering, training,  
explainability).
    - Final report + slides: `docs/final_report.pdf`, `slides/final_deck.pptx`, `docs/exec_summary.pdf`.
    - Deliverables ZIP: `docs/deliverables.zip`.
  - Tests & CI:
    - Tests added/updated: `tests/*` (`feature_engineer`, `winsorization`, `model_builder`, `explainer`, `temporal  
holdout`).
    - CI workflow: `.github/workflows/ci.yml` (runs tests and `scripts/rebuild_outputs.py`).

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If you want a PDF of this change-log, I can export it to `docs/change_log.pdf` and add it to the deliverables ZIP.