

# 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.