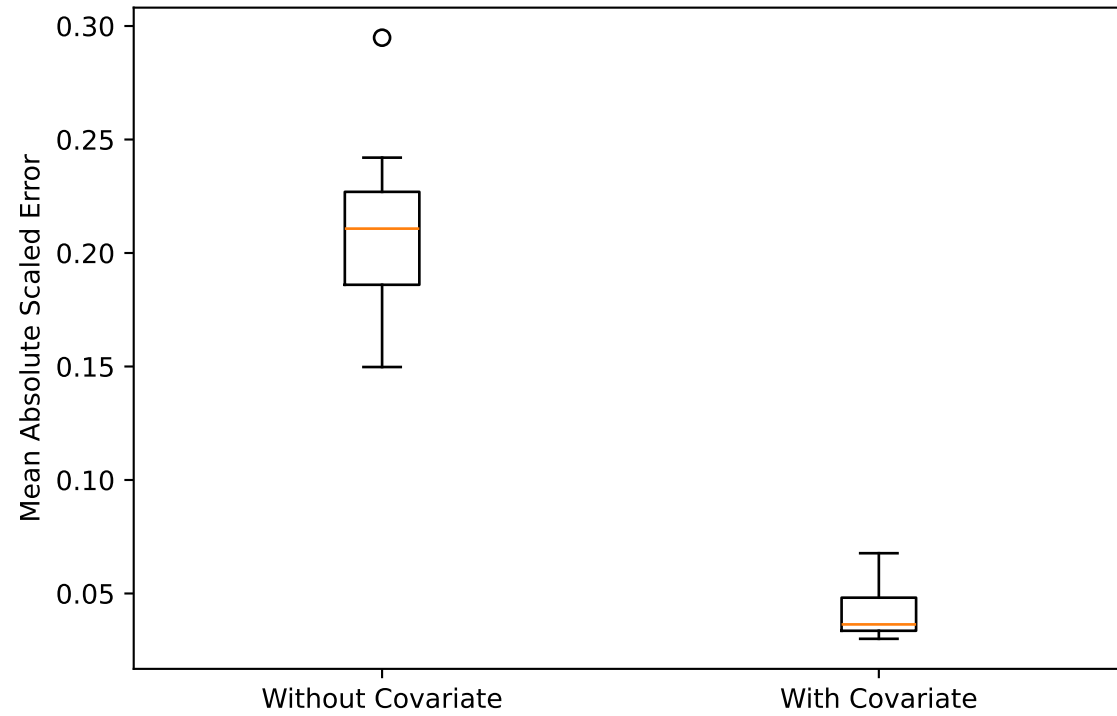
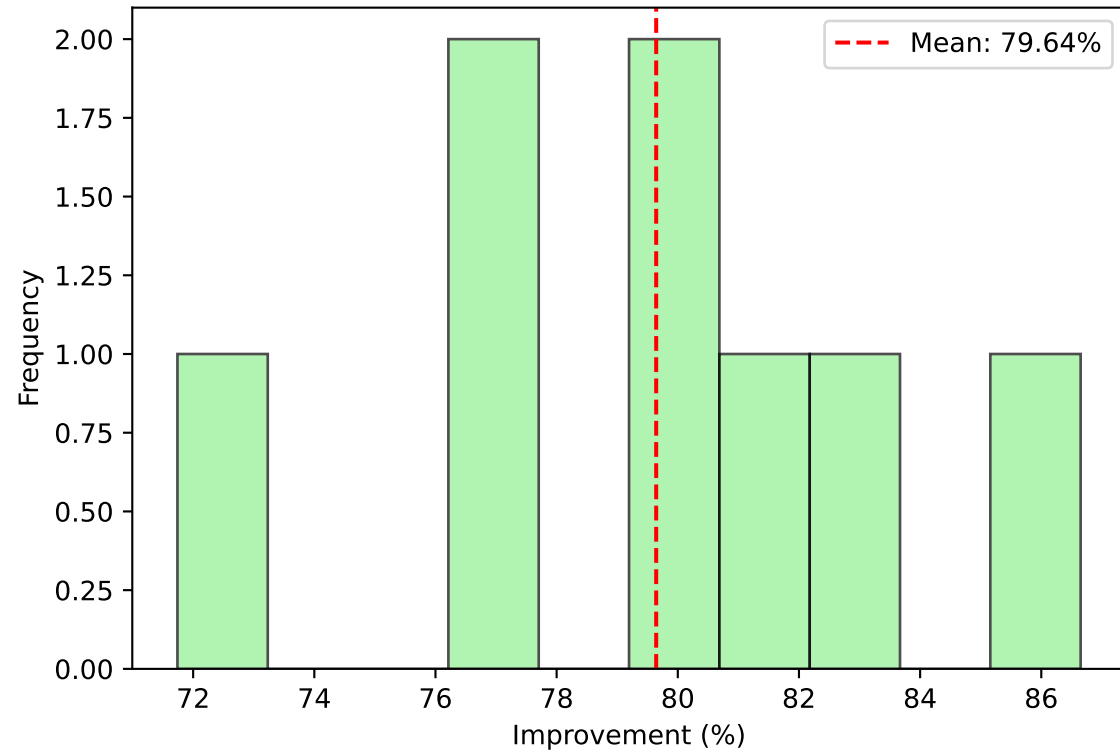


# Covariate Study Summary: Pulses

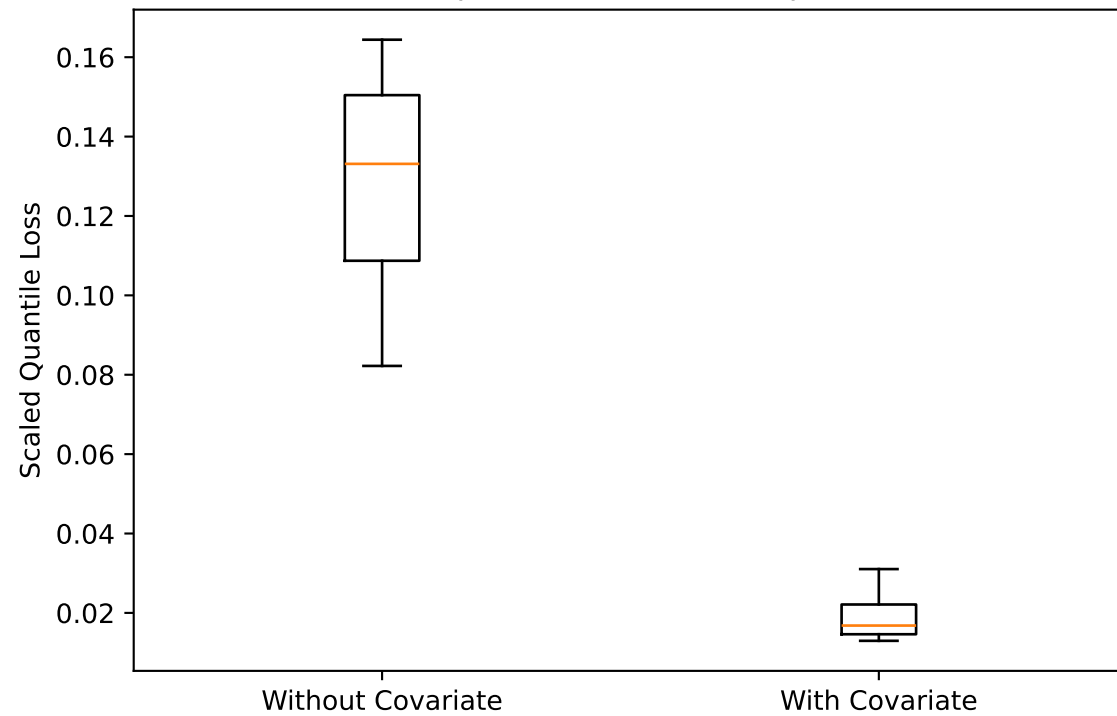
## MASE Comparison Across All Experiments



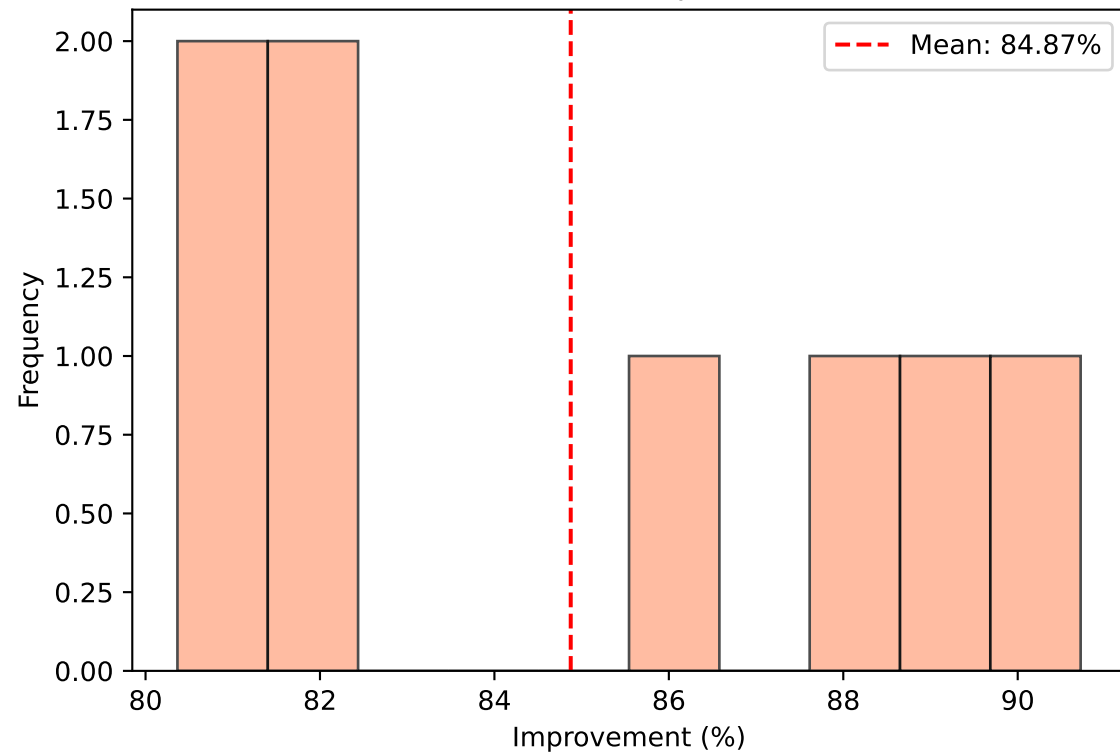
## Distribution of MASE Improvements (%)



## SQL Comparison Across All Experiments



## Distribution of SQL Improvements (%)



## Detailed Statistics

### Covariate Study Detailed Results

Covariate Types: pulses

Number of Experiments: 8

#### MASE Results:

- Without Covariate:  $0.2098 \pm 0.0443$
- With Covariate:  $0.0426 \pm 0.0129$
- Average Improvement: 79.64%
- Median Improvement: 79.96%

#### SQL Results:

- Without Covariate:  $0.1292 \pm 0.0274$
- With Covariate:  $0.0192 \pm 0.0062$
- Average Improvement: 84.87%
- Median Improvement: 83.99%

#### Study Parameters:

- Weight: 1.0
- Relation: additive
- Train Ratio: 0.6
- Covariate Weights: Randomized per experiment (Dirichlet distribution)

#### Best Performing Experiment (MASE):

- Experiment 6: 86.65% improvement

#### Worst Performing Experiment (MASE):

- Experiment 8: 71.74% improvement