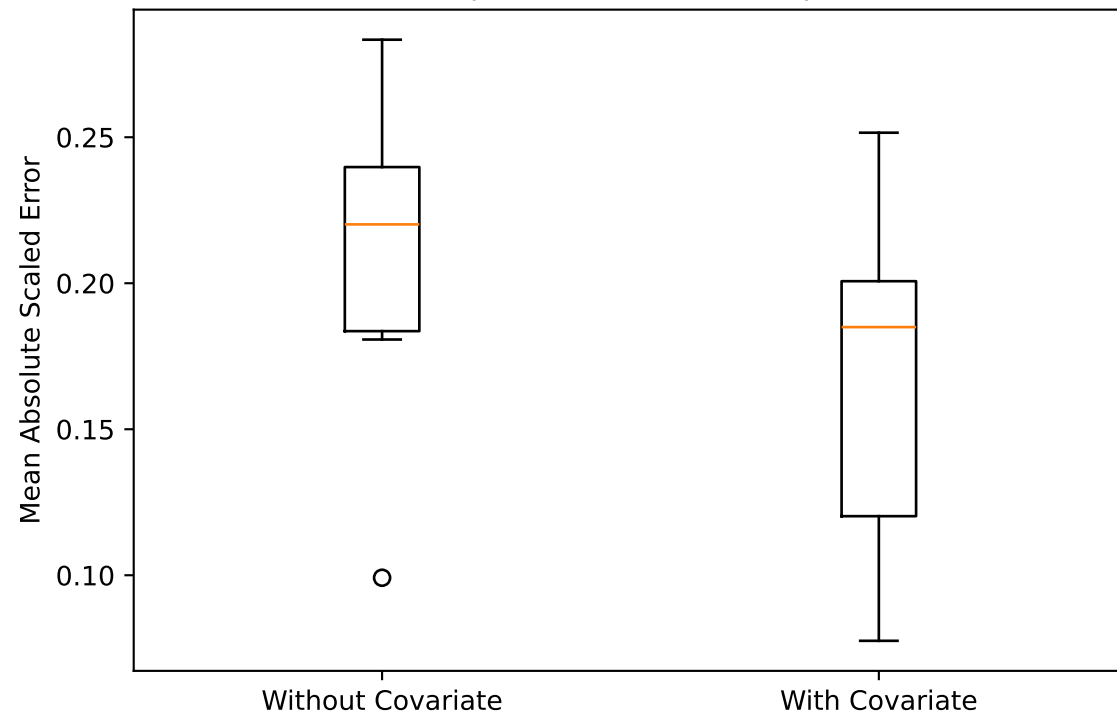
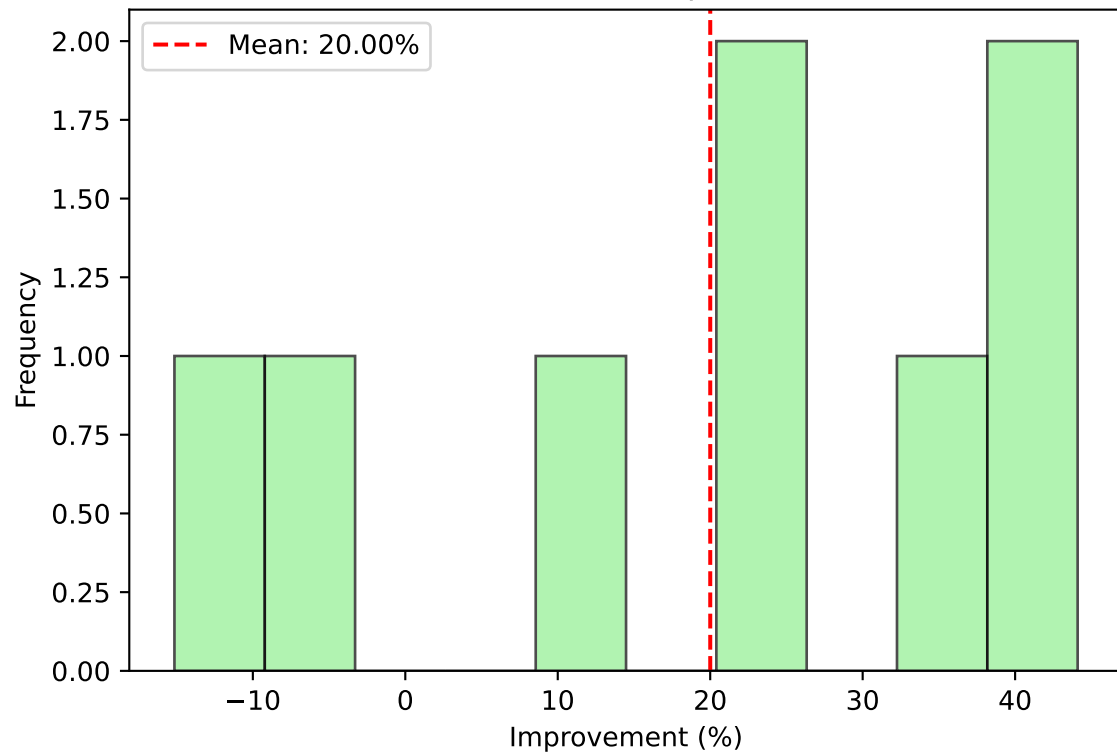


# Covariate Study Summary: Pulses

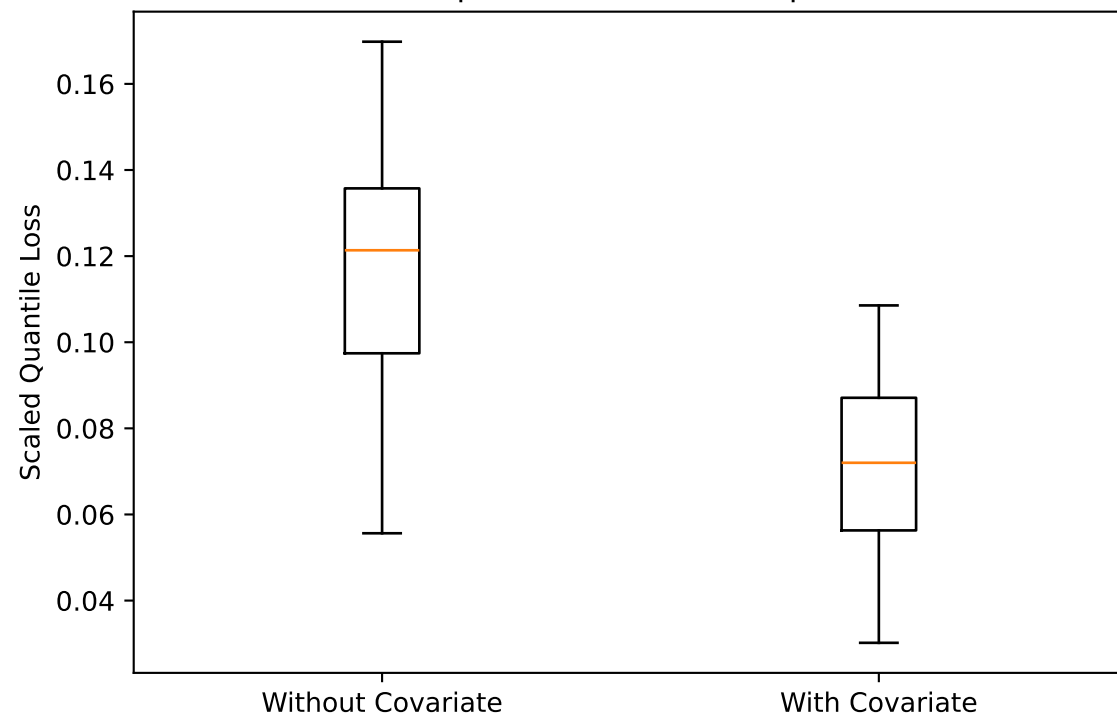
## MASE Comparison Across All Experiments



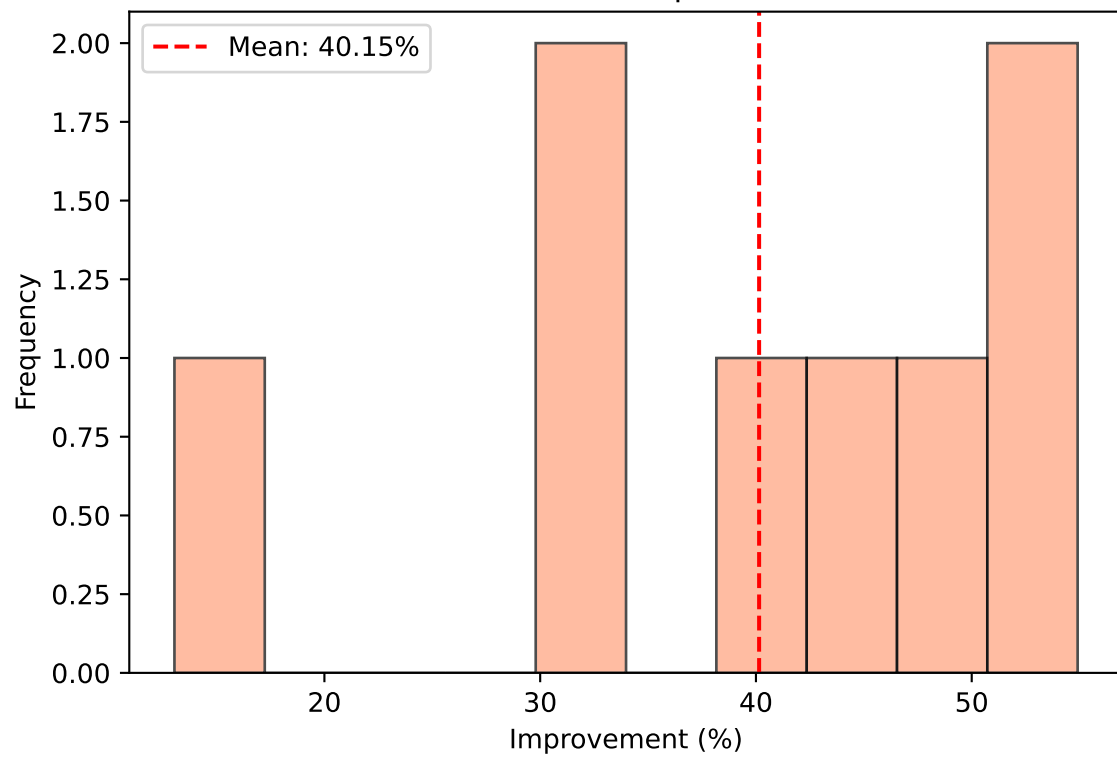
## Distribution of MASE Improvements (%)



## 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:  $0.2097 \pm 0.0525$
- With Covariate:  $0.1665 \pm 0.0548$
- Average Improvement: 20.00%
- Median Improvement: 21.73%

#### SQL Results:

- Without Covariate:  $0.1177 \pm 0.0329$
- With Covariate:  $0.0704 \pm 0.0235$
- Average Improvement: 40.15%
- Median Improvement: 43.45%

#### Study Parameters:

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

#### Best Performing Experiment (MASE):

- Experiment 7: 44.10% improvement

#### Worst Performing Experiment (MASE):

- Experiment 8: -15.14% improvement