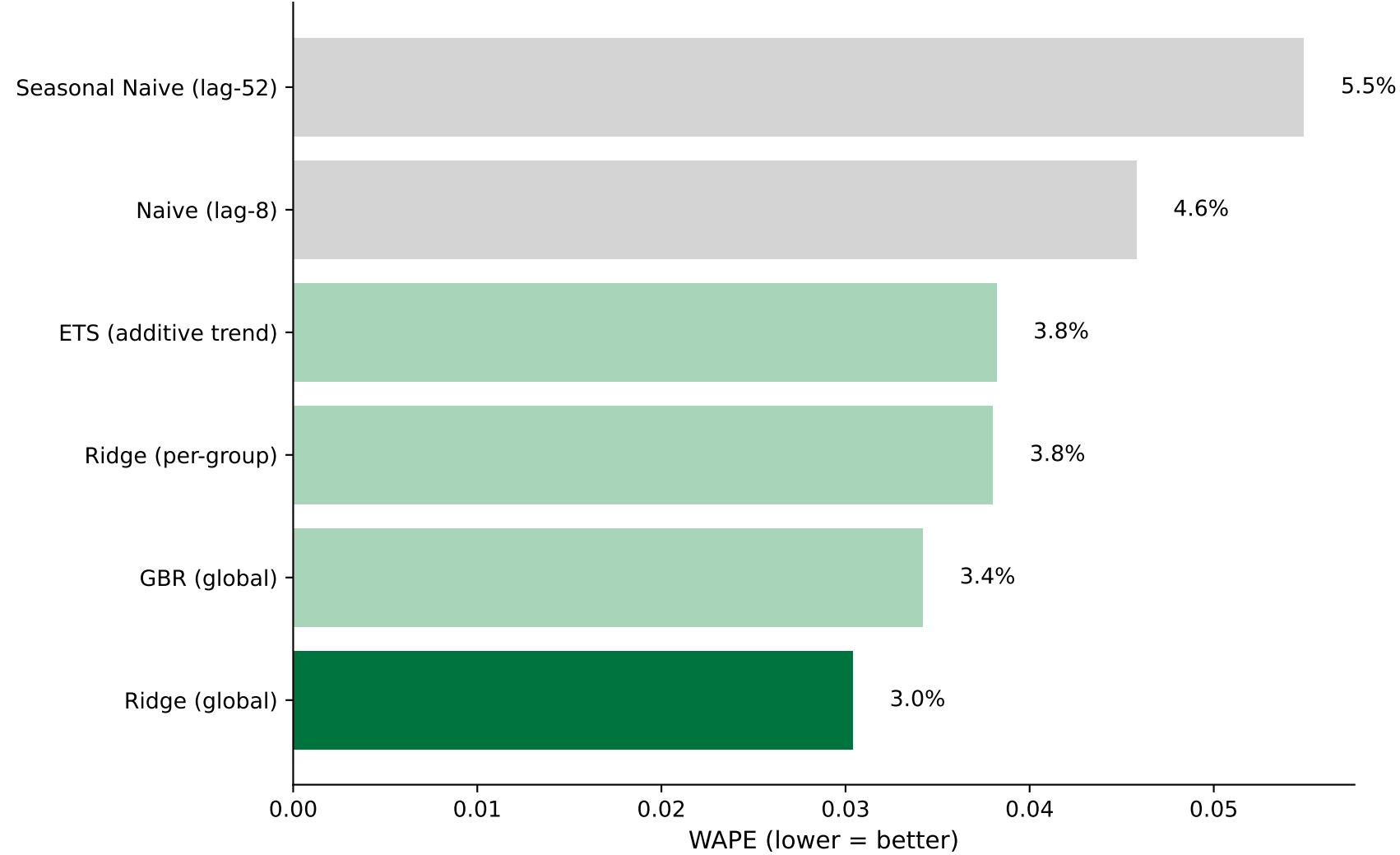# Can We Predict 8 Weeks Ahead Well Enough to Reduce Stock-Outs and Write-Offs?

YES — Our best model (Ridge (global)) achieves 3.0% WAPE, a 34% improvement over naive forecasting.

Forecast Accuracy by Model

Seasonal Naive (lag-52): 5.5%
Naive (lag-8): 4.6%
ETS (additive trend): 3.8%
Ridge (per-group): 3.8%
GBR (global): 3.4%
Ridge (global): 3.0%

WAPE (lower = better)

Key Drivers

1. Recent demand history (lags 8–12 weeks)

   explains the majority of forecast variance

2. Promotions increase weekly demand

   (signal is sparse — only 29 promo weeks in 3 years)

Next Steps

1. Deploy weekly automated forecast pipeline

2. Expand promotion history & integrate

   inventory data for safety-stock optimization

3. Add drift monitoring with automatic

   retraining triggers