

# A food-process test a partner can act on

Proposed discussion brief · ARA6 · No project or partner commitment yet

## Question and decision

Can a defined process change reduce batches failing an agreed product or process specification, under the same assay and sampling rules? The first decision is whether a processor and research team can agree a credible test. Adoption or a larger trial comes after the evidence.

## Why this is worth discussing

The retained 2025 QCEW data show 51,799 private food-manufacturing jobs in Arkansas, with about 3.5 times the national private-employment concentration. Reviewed patents include food cutting and antimicrobial monitoring equipment. These establish context and technical leads, not a partner's demand or a demonstrated safety benefit.

## Proposed test

Choose one product, process, operating line and specification with the processor. Record eligibility, assay version, sampling schedule, comparison and exclusion rules before seeing outcomes. Compare concurrent conditions or matched production windows with the same product mix and measurement rules. The team must explain which differences the design can reasonably attribute to the change.

**Main measure:**  $100 \times \text{failed eligible batches} \div \text{all eligible tested batches}$ . Report numerator and denominator, invalid/missing tests, eligible untested batches, sampling coverage, product mix and throughput. An empty or incomplete register is not a zero failure rate. A quality/process result does not establish a nutrition or integrative-health benefit.

## Information and access needed

- Batch identifier; product/process and line; production/test dates; eligibility and sampling status.
- Specification and assay versions; pass/fail result; invalid/missing-test reason; comparable operating conditions.
- A named problem owner, authorized data steward, qualified measurement lead and a host able to confirm equipment, staff, scheduling and terms.
- Written agreement on permitted records, who can see results, publication/IP terms and who will act on the result.

## What needs a partner answer

Which recurring failure or operating constraint matters? Which baseline and comparison can be observed? What improvement would justify a trial or adoption without reducing sampling or throughput? Baseline, numeric target, accepted owner, budget and dates remain unset until agreed.

**Possible discussion route:** official University of Arkansas Division of Agriculture pages describe food-innovation and pilot-plant services. Availability, assay fit, fees and any willingness to host this test still need confirmation. No service booking or partner approach has been made.

**Sources:** retained QCEW NAICS2022 311/private employment; USPTO US10244769B2 and US9289001B1; [official food-innovation services](#). Patent review uses the abstract and first independent claim; a patent does not validate operating performance.

# A forecasting test tied to an ordering decision

Proposed discussion brief · ARA7 · No project or partner commitment yet

## Question and decision

Can a frozen forecasting method improve an existing ordering forecast on identical held-out items, locations and dates? The initial decision is whether a partner-approved backtest supports a prospective ordering trial. Forecast accuracy alone cannot establish profit, avoided stockouts or an operating benefit.

## Why this is worth discussing

The retained evidence shows research in operations and analytics and patent subjects in checkout, product ordering and delivery. These are leads for applied work. The industry's employment counts do not enumerate analytics jobs, and patents do not establish an existing university partnership or permission to use operating records.

## Proposed test

Choose one decision, item/location cohort and forecast horizon with the operating user. Freeze the existing comparator and candidate method before the outcome window. Use identical evaluation records and record issue times, missing observations, promotions and assortment changes. Historical evaluation must prevent training leakage. A live trial requires a separate agreement before ordering changes are made.

**Main measure:**  $WAPE = 100 \times \text{sum of absolute differences between observed sales and frozen forecasts} \div \text{sum of observed sales}$ . An all-zero-sales denominator leaves WAPE undefined. Include zero-sales rows in the agreed cohort; disclose missing records and stockout-censored sales. Observed sales are not unconstrained demand. Report item/location/time variation and the user's service and cost criteria alongside forecast error.

## Information and access needed

- Item and location identifiers; outcome dates; forecast issue times and horizons; frozen comparator and candidate forecasts.
- Observed sales; stockout/availability flags; missing-record reasons; promotions and relevant assortment or operating changes.
- A named ordering decision owner, authorized data steward, evaluation lead and security/access requirements.
- Agreement on permitted records, disclosure, model/results ownership, the acceptance threshold and the decision after the backtest.

## What needs a partner answer

Which ordering decision is costly enough to test? What records and existing forecasts can be shared? What service/cost conditions would justify a prospective trial? Baseline, numeric target, accepted owner, budget and dates remain unset until agreed.

**Possible discussion route:** Walton College's Supply Chain Management Research Center publicly describes industry collaboration and applied research. Staff availability, a specific partner, usable data and any agreement to support this test still need confirmation.

**Sources:** retained research/industry context; USPTO US10028599B2 and US12100387B2; [official supply-chain center](#). Public service descriptions establish a route for discussion, not accepted responsibilities.