CAUSAL
INCREMENTALITY

DETERMINISTIC MEASUREMENT OF *INCREMENTAL LIFT* VIA COUNTERFACTUAL MODELING AND SYNTHETIC CONTROL GEO-CALIBRATION.

Ⓝ ⓘ **INCREMENTAL DISCOVERY PROTOCOL**

DETERMINING THE TRUE IMPACT OF MARKETING SPEND BY CONSTRUCTING A MATHEMATICAL 'COUNTERFACTUAL'—WHAT WOULD HAVE HAPPENED WITHOUT THE SPEND.

CONTROL STRATEGY

The system selects a weight-optimized group of 'Control' geographies that perfectly mirror the 'Treatment' group during a pre-test calibration period.

CAUSAL CONTEXT

Used to prove the true efficiency of Growth spend to the CFO. It bypasses the confusion of multi-touch systems by focusing on aggregate revenue-lift at the region level.

SYNTHETIC ENGINE

Difference-in-Differences (DiD) estimator enhanced with Synthetic Control Method (SCM) weights. Standard errors recovered via block-bootstrap in 80ms.

INCREMENTAL LIFT ◎	P-VALUE INTEGRITY ∿	CAUSAL IROAS ⬀	MATCH QUALITY ⊕
METRIC_STABLE	METRIC_STABLE	METRIC_STABLE	METRIC_STABLE
12.3%	**0.002**	**3.45x**	**0.92**
ABOVE_BASELINE	STATISTICAL_PROB	PER_AD_DOLLAR	R_SQUARED_FIT
⤴ +2.1% ALPHA	⤴ HIGHLY_SIGNIFICANT	⤴ OPTIMAL_YIELD	⤴ MAP_VALIDATED

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CAUSAL IMPACT ANALYSIS

TIMESERIES_DECOMPOSITION::ACTIVE
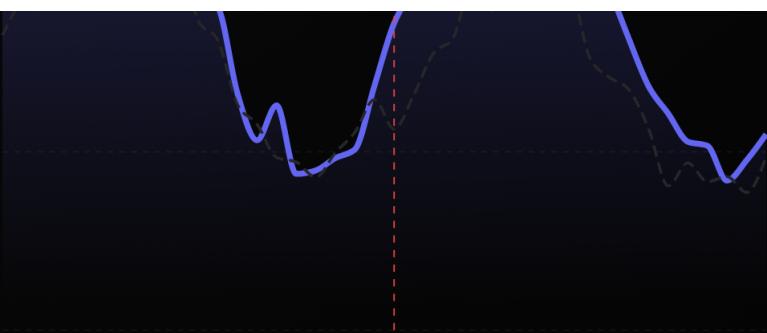
● ACTUAL_TREATED   ● COUNTERFA...

TEST_LAUNCH

MATCH_PRECISION_V4

0.92

R-SQUARED FIT

EXCELLENT_FIT_STABLE

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[10:41:02] GEO_SYNC

SYNCHRONIZING 25 TREATMENT NODES WITH SYNTHETIC BASELINE

LOCKED

[10:41:45] CALIBRATION

SYNTHETIC CONTROL MATCHING SCORE: 0.94 R-SQUARED

OPTIMAL

[10:42:15] INFERENCE

INCREMENTAL LIFT IDENTIFIED AT +12.3% (P=0.002)

STABLE

GENERATE_EXECUTIVE_DOSSIER

PARALLEL TRENDS

PASSED

PRE-PERIOD ASSUMPTION VERIFICATION.

PLACEBO TESTS

PASSED

ROBUSTNESS CHECK AGAINST RANDOM NOISE.

SPATIAL DECAY

LOCKED

CROSS-GEO CONTAMINATION FILTERING.

BOOTSTRAP CI

NOMINAL

95% CONFIDENCE INTERVAL CONVERGENCE.