PORTFOLIO CASE STUDY

Saturation Curve Explorer

An interactive spend-to-sales curve fitter for marketing channels — fits a Hill/logistic response curve per channel, then lets you simulate any spend level and read the marginal return live.

Built with HTML · CSS · SVG · JS — single file, no backend, no charting library

Available for custom builds — message me on Fiverr

Every channel says it's working — none of them say when to stop

Ad platforms report ROAS on the dollars you already spent. They don't show where the response curve bends — the point where the next dollar starts returning less than the last one.

All channels

each with its own spend/sales relationship, none directly comparable

Isolated ROAS

hides baseline sales and credit stolen from other channels

No stopping rule

budgets get set by feel, not by where returns actually diminish

One curve.
Fit live, per channel.

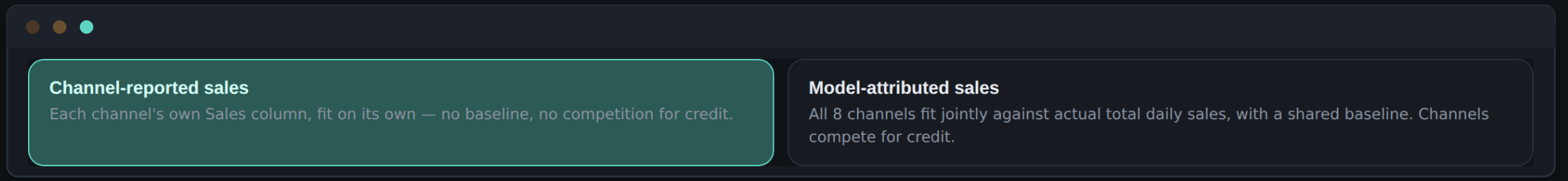
A Hill-function response curve is fit to each channel's daily spend and sales. Dots are real days; the solid line is the fitted curve; the dashed line extrapolates past the highest spend actually tested.

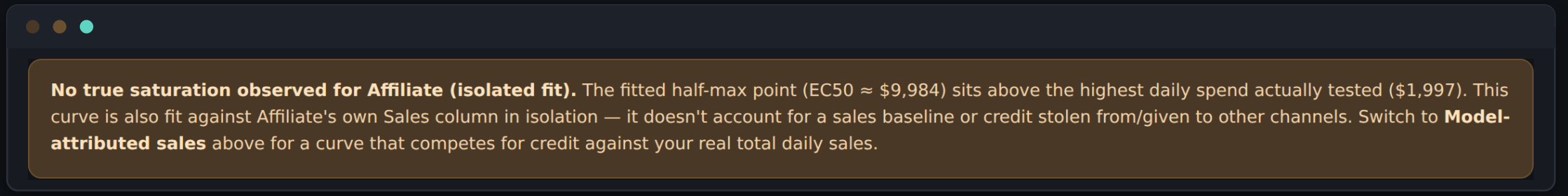
- All channels, each with its own fitted curve
- Days of real spend / sales / impressions
- Solid = observed range, dashed = extrapolated



Two ways to read the same channel

A toggle switches every chart, table, and verdict between two fitting methods — and the tool tells you which one to trust.





Every mode switch rewrites the warning banner in plain language — including when a channel's curve shape hit a search-space bound and its shape shouldn't be trusted.

Drag to a spend level, read the marginal return

The simulate panel projects sales, average ROAS, and marginal ROAS at any spend level — then classifies the zone: accelerating, efficient, or saturating.

Projected sales

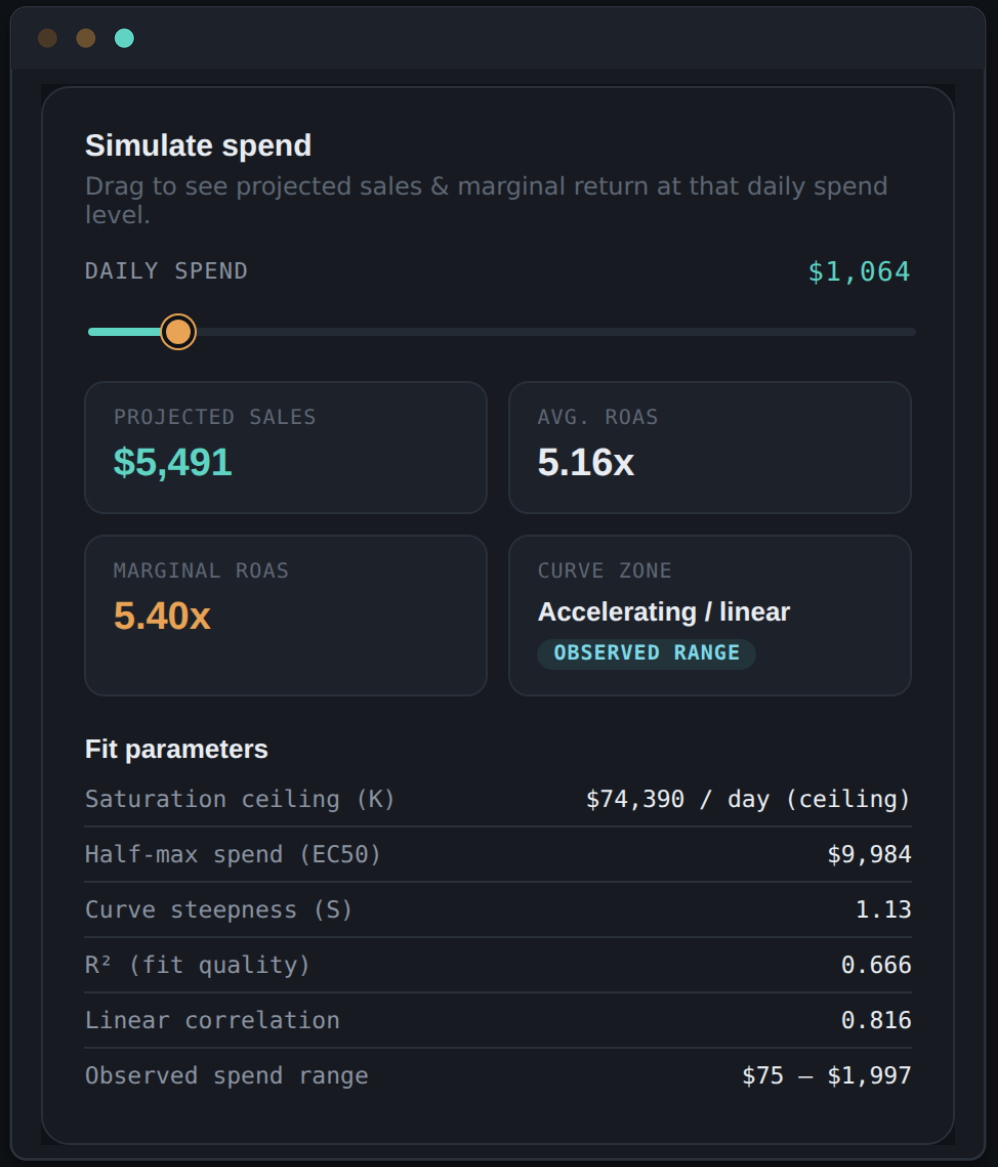
what the curve predicts at that spend

Marginal ROAS

return on the next dollar, not the average one

Curve zone

linear / efficient / saturating, read off live



Every channel, ranked and comparable

One sortable table rolls every channels spend, sales, blended ROAS, half-max spend, and fit quality into a single view — click a row to load it above.

All channels

Click a row to load it above. Sorted by observed correlation.

CHANNEL	TOTAL SPEND	TOTAL SALES	BLENDED ROAS	EC50	R^2
Affiliate	$226.2k	$1168.6k	5.17x	$9,984	0.67
Display	$232.5k	$1159.8k	4.99x	$2,290	0.65
Email	$228.2k	$1143.4k	5.01x	$9,996	0.63
Google Search	$211.5k	$1085.8k	5.13x	$9,972	0.69
TikTok	$223.0k	$1082.3k	4.85x	$9,976	0.60
Meta	$209.7k	$1062.9k	5.07x	$4,681	0.65
YouTube	$221.6k	$1031.5k	4.65x	$9,995	0.61
Programmatic	$211.5k	$1004.6k	4.75x	$9,887	0.64

The math is real — and the limits are stated up front

$$Sales = K \cdot Spend^s / (EC50^s + Spend^s)$$

K = saturation ceiling · EC50 = half-max spend · S = curve steepness — fit independently per channel, or jointly with a shared baseline in attributed mode.

- No adstock, lag, seasonality, promo, or macro controls in either mode
- Not validated against a holdout period or a lift test
- Flags channels whose curve shape hit a parameter search bound

The tool says this out loud on every screen — "treat as diagnostic, not final budget guidance." That honesty is the feature, not a caveat bolted on after.

WANT ONE FOR YOUR DATA?

I build tools like this

Custom curve fitting, spend simulators, and analytics dashboards — built around your real data, with the model's limits stated as clearly as its results.

- Live curve fitting in the browser, no backend needed
- Built on your real spend/sales export
- Honest about assumptions, bounds, and confidence

Message me on Fiverr to start your build