

Propensity Modelling

Estimating which customers are more likely to take a defined action so that decisions can be prioritised more effectively.

THE BUSINESS PROBLEM

When resources or customer attention are limited, treating every customer as equally likely to respond is inefficient. Propensity modelling estimates the probability of a specific outcome - such as purchase, renewal or product adoption - and supports prioritisation. The model must be tied to a clear decision and evaluated beyond predictive accuracy alone.

Three questions guide the analysis

01
What action are we predicting?
Define one observable outcome, time window and eligible customer population.

02
Which signals are available beforehand?
Use only information that would genuinely exist at decision time.

03
How will the score be used?
Translate probability into a ranking, threshold or treatment strategy.

What evidence could we use?

Customer	Recent activity	Products	Tenure	Outcome
C041	High	3	42 mo	1
C117	Medium	1	9 mo	0
C286	Low	2	25 mo	0

Illustrative data only. The exact variables, definitions and observation windows should be determined by the business decision and available evidence.

How the analysis works

1
Define outcome
What exactly counts as the target action?

2
Create features
What pre-decision evidence may help predict it?

3
Train & validate
Does the model generalise to unseen data?

4
Rank customers
How should probabilities support prioritisation?

5
Measure impact
Does using the score improve business outcomes?

Possible analytical approaches

Logistic regression	Interpretable baseline for binary outcomes.
Tree-based models	Capture nonlinear relationships and interactions.
Calibration	Check whether predicted probabilities reflect observed rates.
Lift / gains	Assess whether high-score groups concentrate more outcomes.

From Analysis to Business Action

The analytical output is only useful when it changes a decision, can be interpreted responsibly and has a measurable outcome.

WORKED EXAMPLE

The example below is illustrative rather than a claim about a real dataset. It shows how analytical output can be translated into business interpretation and action.

Illustrative propensity bands

SCORE BAND	OBSERVED RATE	INTERPRETATION
High	31%	Outcome is concentrated; strong candidate for prioritised testing.
Medium	14%	Some opportunity; treatment economics matter.
Low	4%	Lower expected response; broad outreach may be inefficient.
Very low	1%	Usually deprioritised unless intervention cost is minimal.

Illustrative results only. Definitions, thresholds and recommendations should be validated in the context of the organisation, decision and available data.

Potential business applications

PRIORITISATION Focus limited capacity on higher-probability customers.	NEXT BEST ACTION Use scores as one input to decision rules.	CAMPAIGNS Create testable targeting strategies.	CAPACITY Allocate sales or service effort more efficiently.
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How success should be measured

Lift / conversion	Does targeting higher scores concentrate more outcomes?
Incrementality	Does treatment cause additional outcomes rather than simply identify likely buyers?
Economics	Does incremental value exceed modelling and treatment cost?

DELIVERABLES

Analysis framework · Business interpretation · Prioritised actions · Measurement approach

APPLICABLE ACROSS INDUSTRIES

Banking · Insurance · Retail · SaaS · Marketing