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How to model willingness to pay

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A practical guide to research design, demand estimation, uncertainty, and pricing decisions.

Abstract

Willingness to pay is conditional on an offer, an alternative, a buyer, and a purchase situation. A single average answer to "What would you pay?" cannot describe all four. It also cannot tell a business which price will produce the best revenue or contribution.

A useful model estimates how the probability of choosing a defined offer changes as its price and other attributes change. It makes the outside option visible, distinguishes customer groups that can be reached commercially, and carries uncertainty through to the decision. Research supports a price range and a testable recommendation; it does not remove the need to observe actual buying behavior.

This paper sets out a practical sequence: define the commercial decision, recruit the right decision makers, select a method, estimate demand, translate demand into economics, and validate the recommendation. The sophistication of the statistical model should follow the decision and the evidence available.

The decision this paper supports

Select a price or offer menu using expected contribution across plausible buyer responses. Treat survey results as evidence about a defined choice setting and calibrate them before forecasting actual sales.

1 Define what is being valued

Consider two questions: "What would you pay for advanced analytics?" and "At an annual subscription of $18,000, which of these three offers would your team choose for the workflow described, including continuing with your current process?" The second creates a more specific decision. It identifies a scope, a price period, a choice set, and an alternative to purchase.

Write an offer specification before designing the questionnaire. Include entitlements, billing unit, included volume, implementation cost, contract term, service level, and the conditions under which the price applies. Omitting these terms can leave respondents valuing different imagined products.

Define the buying occasion. A current user at renewal faces switching costs and a history of delivered value. A new prospect may be choosing whether to adopt the category at all. Their responses are not

interchangeable. A model intended for new-logo acquisition should not depend entirely on satisfied incumbents.

The relevant buyer may be an organization rather than an individual. A user can assess workflow benefit; a budget owner can assess affordability and priority; procurement can describe commercial constraints. Recruit the people whose decisions the model is meant to represent and identify the perspective of every response.

2 Use qualitative work to construct the quantitative test

Begin with interviews that explain the problem, alternatives, purchase triggers, and language buyers actually use. The purpose is to discover the attributes and tradeoffs that belong in the study. Starting with an internal feature list risks precisely measuring preferences for an offer buyers do not recognize.

Investigate recent decisions. Ask what initiated evaluation, which alternatives were considered, how the budget was approved, and what caused hesitation. Distinguish an objection to price from an objection to implementation risk, missing capability, or lack of urgency. Lowering price may not resolve those other barriers.

Use cognitive interviews to test the questionnaire. Ask respondents to explain what they believe an offer includes and how they interpreted the bill. If two respondents read "active user" differently, a model built on their answers has a measurement problem before it has a statistical problem.

Qualitative evidence can identify a plausible range and reveal segmentation hypotheses. It generally cannot establish the prevalence of those segments or the shape of market demand. Preserve that distinction when translating interview findings into management recommendations.

3 Match the method to the decision

Method	Useful question	Important limit
Open-ended elicitation	What prices and alternatives are salient?	Strategic answers, unfamiliarity, and hypothetical context
Price-perception questions	What range appears credible or concerning?	Perceived acceptability is not a demand curve
Randomized single-price concept test	How does stated purchase choice vary across prices?	Between-person noise and hypothetical purchase
Sequential price questions	How does one respondent react across a range?	Anchoring, order effects, and correlated answers
Choice-based conjoint	How do buyers trade features, packages, and price?	Design and model assumptions; external calibration needed
Incentive-compatible purchase task	What do people choose with real consequences?	Feasibility and realism in organizational buying
Commercial experiment	What happens when an actual offer changes?	Sample size, execution, and scope of the tested population

Methods are not interchangeable. Wertenbroch and Skiera found that an incentive-compatible procedure produced lower willingness-to-pay estimates than selected hypothetical methods in their studies.[1] Miller

and colleagues compared several approaches against actual purchases and evaluated both statistical performance and decision relevance.[2] These findings motivate cross-checking; they do not establish one correction factor or a universally best method for B2B research.

Choose the least complex design that can answer the decision. If the offer is fixed and only price changes, a well-designed price test may suffice. If packaging and price change together, a choice experiment is better suited to estimating substitution among offers. A more elaborate model cannot compensate for an unrealistic choice set.

4 Recruit for the population you intend to serve

Specify eligibility before fielding: company characteristics, relevant workflow, role in purchase, category experience, and an actual time horizon for buying. Verify respondents' familiarity through concrete questions. A broad panel of nominal job titles may include people unable to evaluate the offer.

Plan coverage across important segments. Use quotas to avoid letting the easiest respondents dominate, then apply weights only when there is a defensible population target. Weights do not fix an absent segment or a fundamentally unrepresentative recruitment channel. Report the sampling frame and recruitment method alongside the result.

There is no universal sample size that makes a willingness-to-pay study valid. Required size depends on the effect worth detecting, response variation, design, subgroup comparisons, and decision stakes. Simulate the proposed design where possible. For a rare enterprise audience, a small but relevant sample may be more informative than a large unrelated one, but its uncertainty must remain visible.

Repeated tasks create more observations, not more independent people. A respondent's choices share unobserved preferences and response habits. Cluster uncertainty at the respondent or buying-account level as appropriate. Multiple employees from one account may add insight without representing independent demand units.

5 Estimate a model with a visible outside option

For a choice-based study, a simple starting model defines utility for buyer i and offer j as:

$$U_{ij} = \alpha_j + \boldsymbol{\beta}^{\mathsf{T}}\mathbf{x}_{ij} + \beta_p p_{ij} + \varepsilon_{ij}.$$

The vector $\mathbf{x}_{ij}$ describes the offer, p_{ij} is price, and ε_{ij} captures unobserved influences. Under the standard multinomial-logit assumptions, systematic utility V_{ij} produces choice probability:

$$P_{ij} = \frac{\exp(V_{ij})}{\sum_{k \in \mathcal{J}_i} \exp(V_{ik})}.$$

The choice set $\mathcal{J}_i$ should contain a credible outside option: retaining the incumbent, using an internal process, or making no purchase. Without it, a respondent can be forced to select an unattractive offer and the business can overstate demand.

Train explains both the usefulness and restrictive substitution assumptions of standard logit, as well as alternatives that accommodate preference heterogeneity.[3] Start by checking whether the simple model describes the intended choice setting. Consider mixed logit or other specifications where justified, rather than adding complexity automatically.

With linear price and an appropriate attribute specification, an incremental willingness-to-pay estimate can be written $-\beta_k/\beta_p$. This is a marginal tradeoff within the model, not an unconditional reservation price for the whole product. An imprecisely estimated or near-zero price coefficient can make the ratio unstable. Inspect its uncertainty and avoid averaging ratios without examining their distribution.

Randomizing offer attributes can identify effects on choices inside a survey experiment under the design's assumptions. Hainmueller and colleagues formalize such conjoint estimands.[4] That internal causal interpretation does not automatically establish the effect on real-world purchases. External validity remains a separate question.

6 Turn demand into a commercial objective

For a fixed offer with price p, choice probability $q(p)$, a population of N eligible buying opportunities, and variable cost c per sale, expected contribution before fixed expense is:

$$\Pi(p) = Nq(p)(p - c).$$

Expected revenue is $Nq(p)p$. The price maximizing revenue may differ from the one maximizing contribution. If acquisition, onboarding, or servicing costs vary with the type of buyer attracted, include those differences as well.

For multiple packages, calculate the sum of package contributions using their joint choice shares. Test the whole menu. A premium offer can take buyers from a more profitable incumbent package, and a low entry price can increase demand that is expensive to serve. Optimize the business outcome subject to operating and customer constraints, rather than maximizing one package's apparent appeal.

Illustrative study. Suppose a randomized concept test assigns 60 qualified respondents to each of four prices for one fixed offer. The following are hypothetical stated-choice estimates, rounded for exposition. Assume a $40 variable cost per purchase.

Price	Choice rate	Revenue per opportunity	Contribution per opportunity
$100	60%	$60.00	$36.00
$125	48%	$60.00	$40.80
$150	35%	$52.50	$38.50
$175	22%	$38.50	$29.70

The $125 candidate produces the highest point estimate of contribution, even though the first two prices tie on revenue. It has not been established as the uniquely best price. At a choice rate near 48 percent and 60 independent respondents, a rough normal-approximation 95 percent interval has a half-width of about 13 percentage points. Model and recruitment uncertainty add further limits.

The practical recommendation may therefore be to validate a range around $125–$150, especially if both prices produce similar expected value after uncertainty. A wide, flat economic plateau is a different decision from a sharply identified optimum.

7 Validate and calibrate before extrapolating

Reserve holdout choice tasks to assess predictive performance within the study. Examine implausible signs, dominant options, excessive opt-out, inconsistent responses, and subgroup instability. Do not remove respondents merely because they dislike the offer. Quality exclusions should follow defined criteria.

Compare the model with known market behavior where comparable evidence exists. A calibration adjustment may be defensible if a similar offer has both stated and actual purchase observations. State the adjustment and test its stability. One arbitrary multiplier applied to every segment can conceal rather than correct error.

Then test a commercial offer where feasible. Observe actual accepted price, concessions, conversion, sales cycle, activation, and subsequent retention. Record the offer version: a pilot with intensive services and special terms may not validate a standard product at the same headline price.

8 Deliver a decision range and an evidence record

A useful report contains the offer definition, target population, recruitment and exclusions, questionnaire, experimental design, model specification, diagnostic results, and economic simulations. It also states which assumptions drive the recommendation and what evidence could change it.

Present uncertainty in the business result as well as the coefficients. Show contribution across candidate prices, plausible calibration factors, and relevant cost scenarios. Explain which differences are decision-relevant and which the study cannot resolve. The output should tell an operator what to quote or test next, with whom, and why.

Willingness-to-pay modeling becomes valuable when it disciplines a commercial decision. The aim is an offer customers can understand, a price the business can defend, and an evidence trail that improves as actual purchases accumulate.

9 Commission the study your pricing decision requires

Knowing the available methods does not supply the missing buyer observations. A defensible recommendation requires the right respondents, a realistic offer and outside option, a design that identifies the relevant tradeoffs, and a model calibrated to the commercial decision. A larger survey cannot repair the wrong buyer or an ambiguous bill.

Before fielding, specify the candidate prices or menus, buyer population, economically important segments, cost assumptions, and the decision the analysis must resolve. Require the research deliverable to include uncertainty and economic simulations, not simply an average willingness-to-pay number. Ask how the recommendation will be checked against actual purchase behavior.

Curly's Consulting's **Pricing Transformation** includes buyer research and willingness-to-pay analysis, pricing and packaging design, size-of-prize economics, and direct support with execution. The work is scoped to the commercial question rather than to selling a particular survey method. A Pricing Upside Report can first establish whether a broader opportunity warrants that investment, but it does not include original buyer research.

The next commercial step

Request a Pricing Transformation quote for a willingness-to-pay study connected to an actual offer and decision. Include the target buyer, candidate offer, and choice the management team needs to make.

Sources and methodology

This paper combines the cited published work with Curly's Consulting's analytical framework. The commercial examples, thresholds, and calculations are illustrative; they are not client results or findings from a new empirical study. Published studies support the specific claims beside their citations. Their results should not be treated as universal benchmarks for a portfolio company.

References

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