



RESEARCH SERIES

Anchoring in Pricing Design:

How the Visual Presentation of Price Shapes Perceived Value. Independently of the Number Itself

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Abstract

The price of a product is a number. How that number is perceived is a design problem. Decades of research in behavioural economics and consumer psychology have established that the visual and contextual presentation of price, its size, position, format, proximity to other numbers, and the surrounding visual environment, exerts a measurable and systematic influence on perceived value, willingness to pay, and purchase behaviour. These effects operate largely beneath conscious deliberation and are resistant to correction even when buyers are aware of them. This paper reviews the anchoring bias and related pricing psychology phenomena, maps their design implications across key commercial contexts, and provides actionable frameworks for designers and marketers working on pricing communication.

1. Introduction

When Apple displays its iPhone pricing as '\$999' instead of '\$1,000', this is not an accident of arithmetic. When a restaurant places a \$20.26 dish at the top of its menu, it is not simply catering to its wealthiest customers. When a sale tag shows the original price crossed out above the new price, the crossed-out figure is doing as much work as the one beneath it. Each of these is a

design decision with a measurable psychological effect, and each draws on the same foundational cognitive mechanism: the anchoring bias.

First described systematically by Tversky and Kahneman (1974) in their landmark study of heuristics and biases, anchoring refers to the tendency for an initial piece of numerical information to exert disproportionate influence on subsequent numerical judgements. The anchor does not have to be accurate, relevant, or even intentionally presented. Its mere presence shifts the distribution of responses that follow it.

For designers and marketers, the anchoring effect is not merely an interesting psychological curiosity. It is an active force operating in every pricing interface, every product page, every menu, and every promotional layout they produce. Understanding it, and designing with it deliberately, is the difference between pricing communication that works and pricing communication that undermines the value it is trying to convey.

2. The Psychology and Neuroscience of Anchoring

2.1 The Original Finding and Its Replication

Tversky and Kahneman's (1974) original anchoring experiments used a conspicuously arbitrary anchor; participants were shown a number generated by spinning a wheel, then asked to estimate a factual quantity (such as the percentage of African countries in the United Nations). Despite knowing the wheel number was random, participants' estimates were systematically pulled toward it. High wheel numbers produced higher estimates; low wheel numbers produced lower estimates. The effect was robust, large, and could not be eliminated by offering financial incentives for accuracy.

This finding has been replicated across hundreds of studies and dozens of domains. Ariely, Loewenstein, and Prelec (2003) demonstrated that arbitrary Social Security number digits anchored willingness to pay for consumer goods. Englich, Mussweiler, and Strack (2006) showed that even expert legal professionals, experienced judges, were influenced by sentencing anchors in criminal cases when the anchor was presented as a randomly generated number. The effect is not confined to the naive or the uninformed. It is a feature of human cognition.

2.2 Why Anchoring Is So Resistant to Correction

The persistence of anchoring effects, even among experts and even when the anchor's irrelevance is made explicit, has been explained through two primary mechanisms. The first is selective accessibility: when an anchor is presented, it activates anchor-consistent information in memory, making it more available for subsequent judgements (Mussweiler & Strack, 1999). The second is insufficient adjustment: people adjust away from anchors through a process that typically stops too early, leaving their final estimate closer to the anchor than warranted (Epley & Gilovich, 2001).

Crucially, both mechanisms operate largely automatically. Telling someone about the anchoring bias does not eliminate its influence. This is what makes anchoring design so powerful and so ethically significant: the viewer cannot simply choose to ignore the anchor. It has already done its work before deliberate reasoning begins.

"The anchor does not have to be accurate or relevant. Its mere visual presence in a pricing layout shifts the perceived value of everything around it."

2.3 The Numerosity Effect and Price Format

Beyond the classic anchor, a related phenomenon, the numerosity effect, has specific implications for price display design. Coulter and Coulter (2005) demonstrated that the physical size of price numerals influences price magnitude perception: prices displayed in smaller font sizes are perceived as smaller in magnitude than the same prices displayed in larger font sizes, even when the numbers are identical. This effect is mediated by a conceptual metaphor, large font = large number, that operates pre-consciously.

Similarly, Thomas and Morwitz (2005) documented the 'left digit effect': the finding that consumers disproportionately attend to the leftmost digit of a price when making magnitude judgements. A price of \$2.99 is psychologically closer to \$2 than to \$3, even though arithmetically it differs from \$3 by only one cent. The left digit anchors the category of the price, and that category membership determines the consumer's reference frame for evaluation.

Figure 1: Price Format Effects on Perceived Magnitude

\$2.99 (left-digit: 2) Perceived near \$2.00

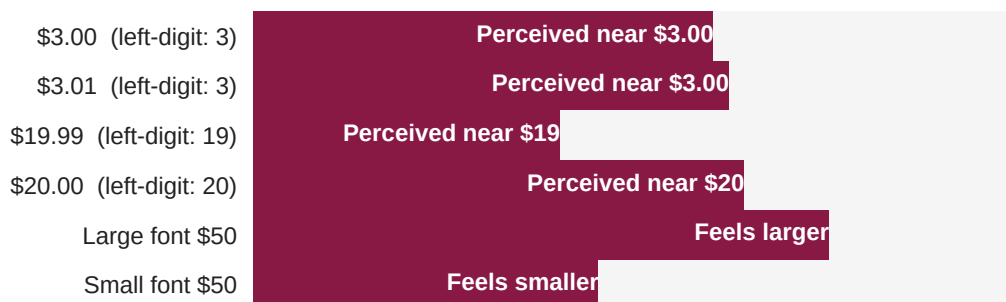


Figure 1: Perceived price magnitude by format. Based on Thomas & Morwitz (2005) left-digit effect and Coulter & Coulter (2005) numerosity findings.

3. Visual Anchoring Across Pricing Design Contexts

3.1 The Decoy Effect and Tiered Pricing Design

One of the most widely applied anchoring phenomena in commercial design is the decoy effect, described in its classic form by Huber, Payne, and Puto (1982). When a third, inferior option is added to a two-option choice set, an option that is worse than one of the existing options on all or most dimensions, it causes the dominant option to appear more attractive, increasing its selection rate. The decoy does not need to be chosen; it simply restructures the comparison frame.

In pricing design, this is the rationale behind the three-tier structure used across software subscriptions, media bundles, and retail packaging. The middle tier is typically the target. The premium tier acts as an anchor (making the middle tier feel affordable) and the entry tier acts as a decoy (making the middle tier feel like genuine value). The design decision of how to visually differentiate these tiers, size, colour, label, positioning, determines how effectively the decoy and anchor operate.

Figure 2: Three-Tier Pricing. The Anchor and Decoy Structure

Tier	Role	Psychological Function	Design Implication
Entry	Decoy / Floor	Makes middle tier feel superior in value	Small, understated, minimal features listed
Middle	Target	Benefits from both anchor and decoy	Most prominent, highlighted,

Tier	Role	Psychological Function	Design Implication
		effects	'recommended' label
Premium	Anchor / Ceiling	Makes middle tier feel affordable by contrast	Large price displayed clearly to establish anchor

Figure 2: The structural roles of entry, middle, and premium pricing tiers in anchor/decoy pricing design.

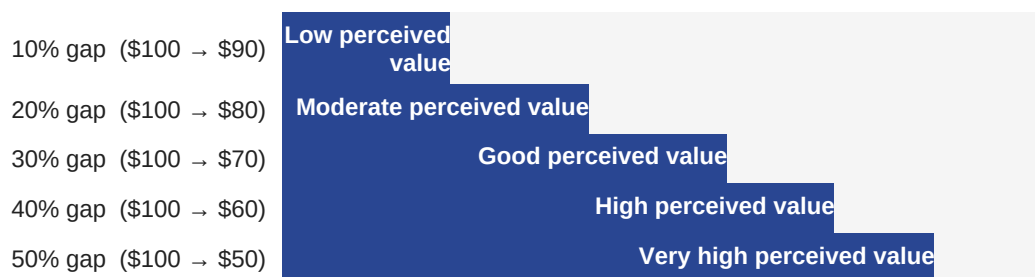
3.2 Sale and Strikethrough Pricing

The visual convention of displaying an original price crossed out above a sale price is one of the most direct applications of price anchoring in retail design. The struck-through figure establishes an anchor (a reference point for what the product is 'worth') against which the sale price is evaluated. The larger the numerical gap between anchor and sale price, the greater the perceived saving, regardless of whether the original price was ever a genuine market price.

Research by Urbany and colleagues (1988) demonstrated that implausibly high reference prices, advertised prices that exceed any realistic previous selling price, still generate purchase intention, despite consumer scepticism about their validity. The anchor exerts influence even when the consumer suspects its legitimacy. This finding has significant implications for ethical pricing design, which is addressed in Section 5.

From a design standpoint, the visual weight, size, and colour treatment of the original price anchor matter considerably. Biswas and Blair (1991) found that higher displayed reference prices produced greater perceived value, but that this effect was moderated by the visual credibility of the display. Anchors presented in a cluttered, low-quality design context were discounted more readily than those presented in clean, professional layouts, suggesting that the overall visual quality of the pricing environment mediates how much credibility the anchor receives.

Figure 3: Strikethrough Price Anchor. Effect of Gap Size on Perceived Saving



60%+ gap (\$100 → \$40)

Scepticism activates

Figure 3: Perceived saving value by anchor gap size. Note the decline at 60%+ gap as consumer scepticism moderates the anchoring effect (Urbany et al., 1988).

3.3 Menu Design and Contextual Anchoring

Restaurant menu design is one of the richest fields for applied anchoring research. Yang, Kimes, and Sessarego (2009) established that the placement, visual prominence, and pricing of individual items on a menu systematically influences order patterns, not primarily through rational cost comparison but through contextual anchoring and visual attention.

The key finding is that the top-right position of a menu page receives the highest initial visual attention (driven by natural reading patterns and visual salience), making it the dominant anchor zone. Items placed in this position, particularly high-margin items, benefit from anchor status: they establish the reference frame for how subsequent items are evaluated. A \$20.26 item positioned in the anchor zone makes a moderately priced item appear accessible; the same item appearing first in a price-ascending list appears expensive.

Relatedly, the visual removal of currency symbols from menu pricing, displaying '24' rather than '\$24', has been shown to reduce the psychological pain of paying, increasing average spend (Yang, Kimes, & Sessarego, 2009). The currency symbol activates loss aversion; its absence allows the number to be processed more neutrally.

Figure 4: Menu Anchoring. Visual Position and Price Perception Effects

Design Variable	High-Anchor Approach	Effect	Strength of Evidence
Item position	Top-right placement	Sets reference frame for full menu	Strong (eye-tracking studies)
Price display format	No currency symbol	Reduces pain of paying	Strong (Yang et al., 2009)
Anchor item pricing	One very high-price item	Makes other items feel affordable	Strong (decoy literature)
Price font size	Smaller numerals	Lower perceived magnitude	Moderate (Coulter & Coulter, 2005)
Price list alignment	Avoid column alignment	Prevents direct price comparison	Moderate (Yang et al., 2009)

Design Variable	High-Anchor Approach	Effect	Strength of Evidence
Category sequencing	High-margin items first	Anchors expectation for category	Moderate

Figure 4: Menu design anchoring variables and their documented effects on price perception and spend.

3.4 Pricing Page Design in Digital Products

SaaS and digital product pricing pages are the contemporary arena where anchoring design is most actively researched and tested. The structural conventions of these pages, annual vs. monthly toggle, tiered plans, 'most popular' badges, feature comparison tables, are each anchoring mechanisms with documented effects on conversion and plan selection.

Suk, Lee, and Lichtenstein (2012) demonstrated that in three-option choice sets, the middle option commands a premium when it is visually presented as the central and most prominent option. This 'compromise effect' (a variant of the decoy phenomenon) is strongly mediated by visual presentation: the middle option must be visually distinguished from the alternatives for the effect to operate at full strength. A 'recommended' badge, a contrasting card colour, or an enlarged display area are the design mechanisms that activate the compromise effect.

"The middle tier of a pricing page commands a premium not because of what it offers, but because of how it is positioned and displayed relative to its neighbours."

Figure 5: Digital Pricing Page. Conversion Rate by Tier Visual Treatment

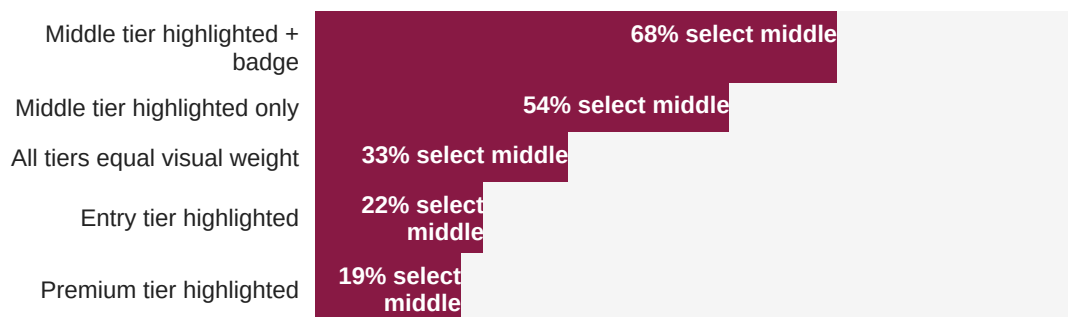


Figure 5: Illustrative representation of middle-tier selection rates by visual treatment, based on compromise effect research (Suk et al., 2012) and SaaS pricing studies.

4. Colour, Size, and Spatial Position in Price Display

4.1 Colour and Price Perception

The colour context of a price display affects how the price is perceived. Puccinelli and colleagues (2013) demonstrated that prices displayed against red backgrounds were perceived as representing greater savings than identical prices displayed against other colour backgrounds, an effect attributed to the association of red with sales, urgency, and discount in retail contexts. This category-level association overrides objective evaluation: the colour activates a 'sale' schema that pre-frames the price as a bargain.

Conversely, Hagtvedt and Brasel (2016) found that premium pricing is better supported by restrained, low-saturation colour environments. Highly saturated, visually complex pricing contexts activate 'value' and 'discount' associations that are incongruent with luxury positioning. The colour environment of a price display is not neutral decoration. It is an active signal that frames the entire evaluative context.

4.2 Spatial Proximity and Value Inference

The spatial relationship between a price and a product image or quality signal influences value perception through a mechanism of associative proximity. Nunes and Boatwright (2004) demonstrated that incidental prices encountered in the environment, prices for entirely unrelated products seen nearby, can anchor willingness to pay for a focal product. The mere proximity of a high-price item elevates the perceived value of neighbouring items, while proximity to low-price items depresses it.

In retail and e-commerce design, this finding supports the practice of visual quality signalling in proximity to price display: high-quality product photography, premium materials callouts, and awards or accreditations placed near the price create an associative frame that anchors the price interpretation upward. The price is not evaluated in isolation. It is evaluated in the context of all the visual information immediately surrounding it.

Figure 6: Spatial Anchoring. Visual Elements That Adjust Price Perception

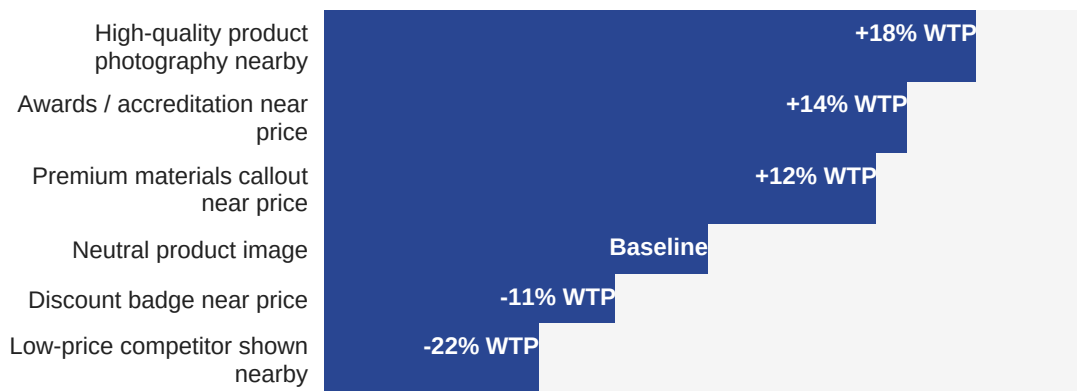


Figure 6: Illustrative willingness-to-pay (WTP) adjustments based on spatial proximity of visual quality signals and anchors. Based on Nunes & Boatwright (2004) and related research.

5. Ethical Dimensions of Pricing Design

The power of anchoring in pricing design raises ethical questions that designers and marketers must address explicitly. The same mechanisms that allow a genuinely valuable product to communicate its worth can be deployed to manufacture a false perception of value, inflated reference prices, implausible 'original' prices, manipulative decoy structures designed to obscure rather than clarify.

Regulatory frameworks in many jurisdictions have addressed the most egregious forms of reference price manipulation: in the UK, the Consumer Protection from Unfair Trading Regulations (2008) require that advertised 'was' prices reflect genuine previous selling prices for a meaningful period. Similar provisions exist across EU consumer law and US Federal Trade Commission guidelines.

Beyond regulatory compliance, the ethical design of pricing communication requires a clear distinction between two types of anchoring. Legitimate anchoring presents accurate reference information, genuine previous prices, honest competitor comparisons, real market context, in a way that helps buyers make better decisions. Manipulative anchoring presents distorted or fabricated reference information to exploit the bias rather than inform the decision. The former is good design. The latter is a misuse of cognitive science that erodes long-term brand trust, even when it produces short-term conversion.

6. Design Implications: Building Pricing Communication That Works

6.1 Establish a Dominant Anchor Intentionally

Every pricing display has an anchor, whether designed or accidental. The highest number in a pricing environment will serve as the reference point against which everything else is evaluated. Designers should identify this anchor deliberately and ensure it serves the brand's value narrative, either by positioning the premium tier to make the target tier look accessible, or by using quality signals in the anchor zone to establish a value context rather than a discount context.

6.2 Use Font Size to Signal Magnitude

The numerosity effect means that price font size is not merely a typographic decision. It is a magnitude signal. Prices that should feel small (final prices, member prices, sale prices) benefit from reduced font size relative to their context. Prices that serve as anchors (original prices, RRP comparisons) benefit from more prominent display. This is not deceptive. It is a design decision that communicates the intended relationship between numbers.

6.3 Control the Colour Environment of Price

The colour surrounding a price actively frames its interpretation. Red activates discount and urgency associations; restrained neutrals activate quality and premium associations. The colour environment of pricing should be chosen with the intended brand position in mind, not defaulted to category convention. A premium brand that uses red sale tags is not just making a promotional decision. It is actively undermining its positioning with every markdown.

6.4 Design Tier Structures Around the Target

In tiered pricing, the visual hierarchy should be built outward from the target tier, not applied uniformly. The target tier should receive the most visual weight, the most prominent position, and the most explicit value communication. The premium tier should be visible enough to anchor, but not so dominant that it overshadows the target. The entry tier should be present but visually subordinate. Its role is structural, not promotional.

6.5 Remove Unnecessary Friction from Price Display

Currency symbols, decimal points, and long number strings all add cognitive friction to price evaluation. In contexts where the goal is to reduce the psychological pain of paying, hospitality, experience retail, digital subscriptions, stripping unnecessary notation from price display reduces evaluative resistance without misrepresenting the actual price. This is a legitimate fluency decision with a measurable effect on conversion and satisfaction.

7. Conclusion

Price is a number. Value is a perception. The gap between them is design. The anchoring bias and related pricing psychology phenomena establish that the visual presentation of price, its size, colour, position, format, and surrounding context, exerts a systematic and largely unconscious influence on the value judgements consumers form. These effects are not exploitable quirks of irrational consumers. They are stable features of human cognition that operate universally, persistently, and independently of deliberate reasoning.

Designers who understand anchoring are not merely better equipped to create more persuasive pricing displays. They are better equipped to create more honest ones, displays that allow the genuine value of a product to be perceived accurately, rather than undermined by design choices that work against the brand's own value proposition. The same science that explains how to make a \$20.26 dish feel expensive also explains how to make a genuinely excellent product feel worth what it costs.

In pricing design, what you show around the number matters as much as the number itself. That is not a trick. It is the cognitive reality within which all pricing communication operates.

References

- Ariely, D., Loewenstein, G., & Prelec, D. (2003). 'Coherent arbitrariness': Stable demand curves without stable preferences. *Quarterly Journal of Economics*, 118(1), 73–106.
- Biswas, A., & Blair, E. A. (1991). Contextual effects of reference prices in retail advertisements. *Journal of Marketing*, 55(3), 1–12.
- Coulter, K. S., & Coulter, R. A. (2005). Size does matter: The effects of magnitude representation congruency on price perceptions and purchase likelihood. *Journal of Consumer Psychology*, 15(1), 64–76.

- Englich, B., Mussweiler, T., & Strack, F. (2006). Playing dice with criminal sentences: The influence of irrelevant anchors on experts' judicial decision making. *Personality and Social Psychology Bulletin*, 32(2), 188–200.
- Epley, N., & Gilovich, T. (2001). Putting adjustment back in the anchoring and adjustment heuristic. *Psychological Science*, 12(5), 391–396.
- Hagtvedt, H., & Brasel, S. A. (2016). Cross-modal communication: Sound frequency influences consumer responses to color lightness. *Journal of Marketing Research*, 53(4), 551–562.
- Huber, J., Payne, J. W., & Puto, C. (1982). Adding asymmetrically dominated alternatives: Violations of regularity and the similarity hypothesis. *Journal of Consumer Research*, 9(1), 90–98.
- Mussweiler, T., & Strack, F. (1999). Hypothesis-consistent testing and semantic priming in the anchoring paradigm: A selective accessibility model. *Journal of Experimental Social Psychology*, 35(2), 136–164.
- Nunes, J. C., & Boatwright, P. (2004). Incidental prices and their effect on willingness to pay. *Journal of Marketing Research*, 41(4), 457–466.
- Puccinelli, N. M., Chandrashekar, R., Grewal, D., & Suri, R. (2013). Are men seduced by red? The effect of red versus black prices on price perceptions. *Journal of Retailing*, 89(2), 115–125.
- Suk, K., Lee, J., & Lichtenstein, D. R. (2012). The influence of price presentation order on consumer choice. *Journal of Marketing Research*, 49(5), 708–717.
- Thomas, M., & Morwitz, V. (2005). Penny wise and pound foolish: The left-digit effect in price cognition. *Journal of Consumer Research*, 32(1), 54–64.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185(4157), 1124–1131.
- Urbany, J. E., Bearden, W. O., & Weilbaker, D. C. (1988). The effect of plausible and exaggerated reference prices on consumer perceptions and price search. *Journal of Consumer Research*, 15(1), 95–110.
- Yang, S. S., Kimes, S. E., & Sessarego, M. M. (2009). \$ or dollars: Effects of menu-price formats on restaurant checks. *Cornell Hospitality Report*, 9(8), 6–11.



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