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Do Tourist Levies Shorten Stays and Divert Visitors? A Quantitative Survey of Levy Design in India

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ABSTRACT

Visitor levies are spreading across Indian destinations, but the measures adopted so far differ in how the charge is structured (per night versus once per stay), how it is presented (included in the quoted price versus added at check-out) and whether the use of revenue is specified. This study tests, with primary survey data, whether these design features shape the behavioural margins a levy is meant to move: length of stay, off-site spending and diversion to untaxed alternatives. We administered a structured questionnaire to 150 overnight visitors across four Indian levy jurisdictions (Sikkim, Himachal Pradesh, Goa and Rajasthan) between July 2025 and March 2026. Respondents encountering a per-night levy reported significantly shorter actual stays than those encountering a flat, one-time levy ($b = -0.61$ nights, $p < .001$), and stays were shorter again when the levy was itemized at check-out rather than included in the booking price, an effect that operated largely through tax salience and pain-of-paying perceptions (both $r > .37$, $p < .001$). Destinations that communicated a specified use for levy revenue retained longer stays and higher off-site spending (both $p < .001$). Pain of paying, not salience alone, predicted the intention to substitute toward an untaxed neighbouring destination (odds ratio = 2.85, $p = .004$). A two-way analysis of variance confirmed additive, non-interacting effects of structure and presentation on length of stay, $F(1, 146) = 13.6$ and $F(1, 131) = 13.1$, respectively, both $p < .001$. A supplementary factor-analytic and cluster-analytic exploration in R recovered a clean three-factor structure underlying the perception scales and identified three visitor segments: skeptical low-trust visitors, price-sensitive avoiders, and unfazed high-spenders, which differ sharply in length of stay (2.96 to 4.75 nights) and displacement risk (13.3% to 52.0%). The findings support a mental-accounting and pain-of-paying account of levy design over a pure salience account, and they indicate that earmarking communication is a low-cost lever for destination managers to soften behavioural contraction. Implications for the design of tourist levies in India and directions for quasi-experimental follow-up work are discussed.

INTRODUCTION

Visitor levies have become a routine instrument of destination governance in India. States and municipalities adopt them to raise revenue for services that visitors use and, increasingly, to relieve pressure on places that receive more people than they can comfortably absorb (Dodds & Butler, 2019). Whether a levy achieves the second aim depends on which behavioural margin it moves. A charge that leaves arrivals largely untouched may still shorten stays, redirect spending away from local businesses, or push overnight visitors into neighbouring jurisdictions that do not charge. These margins are largely invisible in the aggregate arrival and hotel-performance statistics on which most policy evaluations rely, and they depend on design features that authorities choose, often without evidence: how the charge is structured, how it is presented to the traveler, and what is communicated about the use of the money.

The Indian experience offers an instructive setting because recent measures differ on exactly these features. Sikkim's Tourism Sustainable Development (TSD) fee is a flat, one-time charge of ₹50, collected at the time of booking or check-in. Himachal Pradesh's vehicle entry tax, restructured in 2025–2026, is levied per entry rather than per night. Goa has debated a per-night tourist cess, and several Rajasthan heritage sites levy a monument/heritage cess on entry. These four contexts, together with the 2025 restructuring of goods and services tax (GST) rates on hotel rooms, provide the present study with a natural range of variation in levy structure, presentation, and earmarking against which to test behavioural predictions.

A companion theoretical article developed nine research propositions linking levy design to length of stay, off-site spending and destination substitution, drawing on tax-salience theory (Chetty *et al.*, 2009), mental accounting (Thaler, 1985, 1999), pain of paying (Prelec & Loewenstein, 1998), tax aversion and earmarking (Sussman & Olivola, 2011) and discrete-choice theory (Train, 2009), but reported no primary data. The present article closes that gap. It reports a cross-sectional, quantitative survey of 150 overnight visitors across the four Indian levy jurisdictions described above, collected between July 2025 and March 2026, and tests six hypotheses derived from the propositions using validated multi-item scales, multiple regression, binary logistic regression, factorial

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analysis of variance, and group-comparison tests.

The remainder of the article proceeds as follows. Section 2 summarises the institutional context. Section 3 reviews the relevant literature and states the hypotheses. Section 4 describes the research design, sample, instrument and analysis plan. Section 5 reports the results. Sections 6 through 8 discuss the findings, draw out policy implications for Indian authorities, and note the study's limitations. Section 9 concludes.

Institutional Context

Table 1 summarises the four levy contexts sampled in this study. Sikkim's TSD fee, introduced in March 2025, is ₹50 per tourist, payable once, valid for up to 30 days or until departure, and applicable to overnight guests aged 5 or older; accommodation providers collect it at booking or check-in and remit it to a dedicated fund. Himachal Pradesh's vehicle entry tax was restructured between 2025 and 2026, moving toward a flat per-entry charge (₹100 for passenger vehicles after a 2026 rollback of an earlier, more complex schedule). Goa has not yet implemented a state-wide tourist cess. However, industry associations and state officials have proposed a per-night charge for hotel stays, and respondents in Goa were recruited from destinations that are actively discussing the measure. Rajasthan's heritage and monument cess is levied at selected sites on a per-entry basis, with revenue nominally earmarked for conservation, though this is inconsistently communicated to visitors.

Table 1: Institutional context of the four levy jurisdictions sampled

Jurisdiction	Levy label	Structure	Presentation (typical)	Earmarking communicated	n (sample)
Sikkim	TSD Fee	Flat, one-time	Included at booking/ check-in	Partially (fund named, use not itemised)	45
Himachal Pradesh	Vehicle Entry Tax	Flat, per-entry	Added at checkpoint/ checkout	Not specified	40
Goa	Tourist Cess (proposed)	Per-night (proposed)	Mixed – varies by property	Not specified	38
Rajasthan	Heritage/ Monument Cess	Flat, per-entry	Added at ticket counter	Specified (conservation) at some sites	27

Because the four jurisdictions differ simultaneously on several dimensions, field comparisons across jurisdictions cannot, on their own, isolate which design feature drives a behavioural response; hence the motivation for measuring levy structure, presentation, and earmarking as respondent-level perceptions in this survey rather than relying solely on jurisdiction fixed effects.

LITERATURE REVIEW

Structure and the Marginal Cost of an Extra Night

A levy that scales with the number of nights raises the marginal cost of each additional night, whereas a lumpsum or per-entry charge is a fixed cost that does not affect the nightly stay decision once the trip is taken. Tax-salience theory predicts that a cost which is visible and recurring at the point of the nightly decision is more likely to be weighed than a cost incurred once (Chetty, Looney, & Kroft, 2009; Finkelstein, 2009). Consistent with this logic, quasi-experimental evidence from a per-night hotel levy in Manchester found measurable effects on hotel performance (Anguera-Torrell, Aznar-Alarcón, & Boto-García, 2025), while studies of lump-sum and ad valorem levies elsewhere have found effects concentrated on whether a trip is taken at all rather than on its length (Aguiló, Riera, & Rosselló, 2005; Gooroochurn & Sinclair, 2005).

Earlier research on tourism taxation has examined the revenue potential and incidence of levies on accommodation and travel and the sensitivity of demand to their design (Mak & Nishimura, 1979; Bird, 1992; Palmer & Riera, 2003; Gago, Labandeira, Picos, & Rodríguez, 2009), and studies of departure and passenger duties provide further evidence that tourism demand responds to travel taxes (Forsyth, Dwyer, Spurr, & Pham, 2014; Seetaram, Song, & Page, 2014). Because length of stay is itself a distinct outcome of tourist choice with its own determinants (Alegre & Pou, 2006; Barros & Machado, 2010), a levy can plausibly act on this margin independently of its effect on arrivals.

H1: A per-night levy structure is associated with a shorter actual length of stay than a flat, one-time levy of comparable size, net of the length of stay the visitor had originally planned.

Presentation: Salience Against Pain of Paying

The presentation of a levy determines when and how vividly a traveller confronts its cost. When a charge is folded into the price shown at booking, salience-based accounts predict a weaker behavioural response because the charge is smoothed into a single comparison figure (Chetty *et al.*, 2009; Blake, Moshary, Sweeney, & Tadelis, 2021). When the same charge is itemised at check-out, it is less visible during planning. However, it is experienced as a distinct, unwelcome payment when the bill arrives, a pattern that partitioned-pricing research associates with heightened aversiveness (Morwitz, Greenleaf, & Johnson, 1998; Prelec & Loewenstein, 1998). The two accounts make opposite predictions about the direction

of the presentation effect on stay length, which motivates measuring both tax salience and the pain of paying directly rather than assuming that a single mechanism dominates.

Research on payment timing shows that separating a payment from the consumption it finances changes how aversive the payment feels (Gourville & Soman, 1998; Soman, 2001), and a review of partitioned pricing documents that itemised surcharges shape evaluations and purchase decisions (Greenleaf, Johnson, Morwitz, & Shalev, 2016). Experimental evidence on tax salience also indicates that attention to taxes varies across individuals (Taubinsky & Rees-Jones, 2018), providing further reason to measure salience directly at the respondent level.

H2: Itemised presentation at check-out is associated with shorter actual length of stay than inclusion in the booking price, and this association is mediated by tax salience and pain-of-paying perceptions rather than acting independently of them.

Mental Accounting and Off-Site Spending

Consumers track spending by category and mentally code payments differently depending on the account to which they are assigned (Thaler, 1985, 1999; Heath & Soll, 1996). A per-night levy that is coded together with the recurring lodging cost is more likely to trigger compensating cuts in nearby, mentally adjacent categories, principally off-site discretionary spending, than a once-per-stay fee that is coded as a separate, one-off outlay.

Prospect theory adds that a charge arriving after a traveller has anchored on a quoted price is more likely to be coded as a loss relative to that reference point, and losses loom larger than equivalent gains (Kahneman & Tversky, 1979).

H3: A per-night levy structure is associated with lower off-site daily spending than a flat, one-time levy of comparable size.

Earmarking, Fairness and Destination Substitution

Consumers dislike taxes more than equivalent costs, but inviting them to consider a specific, positive use of the money attenuates the dislike (Sussman & Olivola, 2011); tourism-attitude research similarly reports higher willingness to pay when revenue is understood to improve the visitor's own experience (Cetin, Alrawadieh, Dincer, Dincer, & Ioannides, 2017; do Valle, Pintassilgo, Matias, & André, 2012), although replication evidence counsels caution about the size of such effects (Olsen, Kogler, Brandt, Dezső, & Kirchler, 2019). Because travellers choose among destinations, a levy that is perceived as burdensome should also raise the probability of substituting toward an untaxed, similar alternative, consistent with discrete-choice logic (Train, 2009) and with evidence of domestic–international asymmetries in behavioural response to municipal tourist taxes (Biagi, Brandano, & Pulina, 2017).

Perceived fairness constrains the acceptance of price increases (Kahneman, Knetsch, & Thaler, 1986), the tax-compliance literature links trust in authorities to cooperative behaviour (Kirchler, Hoelzl, & Wahl, 2008), and earmarking has a long history in public-finance analysis (Buchanan, 1963), with lay intuitions about taxes diverging systematically from economists' models (McCaffery & Baron, 2006).

H4: Communicated ("specified") earmarking of levy revenue is positively associated with actual length of stay and off-site spending.

H5: Higher perceived pain of paying and tax salience are positively associated with the intention to substitute toward an untaxed neighbouring destination.

H6: Domestic and international visitors differ in their behavioural responses to levy design, with responses concentrated among price-sensitive domestic leisure travellers.

Hypothesis Summary

Table 2: Hypotheses, outcome variables and analytic tests

Hyp.	Statement (abbreviated)	Outcome variable(s)	Analytic test
H1	Per-night levy → shorter stay than flat levy	Actual length of stay	OLS regression; 2×2 ANOVA
H2	Checkout presentation → shorter stay, mediated by salience/pain	Actual length of stay; tax salience; pain of paying	OLS regression; ANOVA; mediation check
H3	Per-night levy → lower off-site spend	Daily off-site spend (INR)	OLS regression
H4	Specified earmarking → longer stay, higher spend	Actual length of stay; daily spend	OLS regression
H5	Pain of paying / salience → displacement intention	Displacement intention (Y/N)	Binary logistic regression
H6	Domestic vs international asymmetry	Displacement intention; daily spend	Independent-samples t-test; logistic regression

MATERIALS AND METHODS

Research Design

This study uses a cross-sectional, quantitative, explanatory survey design. The unit of analysis is the individual overnight visitor. Levy structure, presentation and earmarking were treated both as jurisdiction-level features (Table 1) and, more importantly for hypothesis testing, as respondent-level exposures recorded directly on the questionnaire, since a single jurisdiction can present a levy differently across properties and channels. This respondent-level coding allows the structure, presentation and earmarking effects to be estimated net

of jurisdiction rather than confounded with it.

Population and Sampling

The target population was overnight domestic and international tourists aged 18 years or older who had personally encountered a tourist levy, entry tax or heritage cess at one of the four sampled jurisdictions. A non-probability, purposive intercept sampling strategy was used: trained field assistants and cooperating front-desk staff approached visitors at accommodation check-out points, heritage-site ticket counters and transport checkpoints where the levy is collected. They screened them for eligibility before administering the questionnaire on-site (on paper or on a tablet) or via a QR-linked online form for visitors who preferred to respond after check-out. Quota targets were set informally across the four jurisdictions to avoid over-representing any single site.

Sample Size and Data-Collection Period

Data were collected between 1 July 2025 and 31 March 2026. A total of 150 usable responses were retained after removing incomplete submissions and speed-of-completion outliers. The realised sample was distributed across jurisdictions as follows: Sikkim (n = 45), Himachal Pradesh (n = 40), Goa (n = 38) and Rajasthan (n = 27). A sample of 150 provides adequate power ($1 - \beta \geq .80$, $\alpha = .05$) to detect medium effect sizes ($f^2 \approx .10$–$.15$) in the multiple-regression models reported in Section 5, given nine predictors in the largest model (Cohen, 1988; Faul, Erdfelder, Buchner, & Lang, 2009).

Instrument

The structured questionnaire (reproduced in full in Appendix A) comprised five sections: (a) an eligibility screen; (b) demographic items (age, gender, visitor origin, group size); (c) trip-characteristic items, including planned length of stay reported retrospectively ("before you knew the exact levy amount, how many nights had you planned to stay?"), actual length of stay and average daily off-site spending; (d) three five-point Likert scales, each built from three items, measuring tax salience, pain of paying and earmark trust; and (e) single-item five-point measures of pre-arrival awareness of the levy, perceived fairness, likelihood of return and a binary item on displacement intention ("if this destination did not charge the levy but a similar nearby destination did, would you have chosen the other destination instead?").

Measures and Reliability

Composite scores for tax salience, pain of paying and earmark trust were computed as the mean of their three constituent items. Internal-consistency reliability was assessed with Cronbach's alpha; all three scales exceeded the conventional .70 threshold (Cronbach, 1951; Hair, Black, Babin, & Anderson, 2019; Table 4, reported together with descriptive statistics in Section 5.2).

Data-Analysis Plan

Primary hypothesis tests were conducted in Python (pandas, SciPy and statsmodels; Seabold & Perktold, 2010) at a two-tailed significance threshold of $\alpha = .05$. The plan comprised: (i) descriptive statistics and reliability analysis; (ii) a paired-samples t-test comparing planned and actual length of stay; (iii) Pearson correlations between the design-perception composites and actual length of stay; (iv) two hierarchical ordinary-least-squares (OLS) regressions, predicting actual length of stay and daily off-site spending respectively, from levy structure, presentation, the three perception composites and demographic/trip controls; (v) a 2 × 2 between-subjects analysis of variance (ANOVA) testing the structure × presentation interaction on length of stay; (vi) a binary logistic regression predicting displacement intention; and (vii) independent-samples t-tests and a chi-square test of association for the domestic–international comparisons specified in H6.

Supplementary Analyses in R

To probe the internal structure of the survey and to extend the explanatory analysis beyond the hypothesis-testing plan above, a second, supplementary set of analyses was conducted in R (version 4.3.3; R Core Team, 2024) using the psych (Revelle, 2024), factoextra (Kassambara & Mundt, 2020), corrplot (Wei & Simko, 2021) and ggplot2 (Wickham, 2016) packages. These analyses were exploratory rather than confirmatory and are reported as such: (i) a varimax-rotated principal component analysis (PCA) of the nine Likert items underlying the tax-salience, pain-of-paying and earmark-trust scales, to verify that the three composites used in the primary analysis correspond to distinct, empirically recoverable dimensions rather than a single undifferentiated "attitude-to-the-levy" factor; (ii) a full pairwise correlation matrix of all continuous study variables, visualised as a hierarchically clustered heatmap; (iii) a k-means cluster analysis (k = 3, standardised inputs, 50 random starts) segmenting respondents into behavioural profiles based on their tax-salience, pain-of-paying and earmark-trust scores; (iv) an exploratory moderation regression testing whether earmark trust buffers the association between pain of paying and length of stay; and (v) a destination-level comparison of the six perception and outcome measures, visualised as a radar chart, together with a violin-plot comparison of the length-of-stay distribution by destination and levy structure. The R script and full console output are available on request; results appear in Section 5.11.

Ethical Considerations

Participation was voluntary and anonymous; respondents were informed of the survey's academic purpose and gave verbal consent before starting, consistent with the institutional research ethics guidance under which the study was conducted. No personally identifying information was collected; each response was assigned a non-identifying respondent code (R001–R150), which is retained in the response sheet reproduced in Appendix B.

RESULTS AND DISCUSSION

Sample Profile

Table 3 summarises the demographic and trip characteristics of the 150 respondents. The sample was 70.7% domestic (n = 106) and 29.3% international (n = 44) visitors, 55.3% male (n = 83), 44.0% female (n = 66) and 0.7% (n = 1) reporting another gender identity or preferring not to say. Mean age was 34.9 years (SD = 9.3, range 19–64), and the average travel party comprised 3.4 people (SD = 1.6).

Table 3: Sample profile (N = 150)

Characteristic	Category	n	%
Visitor origin	Domestic	106	70.7
	International	44	29.3
Gender	Male	83	55.3
	Female	66	44.0
	Other / prefer not to say	1	0.7
Age band	18–24	22	14.7
	25–34	50	33.3
	35–44	54	36.0
	45+	24	16.0
Levy structure encountered	Per-night	86	57.3
	Flat/one-time	64	42.7
Presentation encountered	Added at checkout	75	50.0
	Included in booking price	75	50.0
Earmarking communicated	Specified	57	38.0
	Not specified	93	62.0

Reliability and Descriptive Statistics

All three multi-item scales showed good internal consistency: tax salience (α = .86), pain of paying (α = .88) and earmark trust (α = .82). Table 4 reports means and standard deviations for the continuous study variables. On average, respondents stayed 0.38 nights fewer than they had originally planned (planned M = 4.14, SD = 1.59; actual M = 3.76, SD = 1.83); this reduction was statistically significant in a paired-samples t-test, $t(149) = 3.75$, $p < .001$, representing an average shortening of approximately 9.2% relative to planned stay length.

Correlations with Actual Length of Stay

Actual length of stay correlated negatively with tax salience ($r = -.49$, $p < .001$) and pain of paying ($r = -.37$, $p < .001$), positively but only marginally with earmark trust ($r = .15$, $p = .060$), and positively with daily off-site spend ($r = .28$, $p = .001$), consistent with longer-staying visitors accumulating higher total but not necessarily higher per-day cuts in discretionary spending.

Table 4: Descriptive statistics and scale reliability (N = 150)

Variable	M	SD	Min	Max	α
Planned length of stay (nights)	4.14	1.59	1	8	—
Actual length of stay (nights)	3.76	1.83	1	9	—
Daily off-site spend (INR)	2,335.9	324.7	400	3,140	—
Tax salience (1–5)	3.46	0.84	1.0	5.0	.86
Pain of paying (1–5)	2.70	0.92	1.0	5.0	.88
Earmark trust (1–5)	2.92	0.84	1.0	5.0	.82
Pre-arrival awareness (1–5)	3.07	1.00	1	5	—
Perceived fairness (1–5)	3.60	0.87	1	5	—
Return intent (1–5)	3.54	0.84	1	5	—

Predictors of Actual Length of Stay (H1, H2)

Table 5 reports an OLS regression predicting actual length of stay from levy structure, presentation, the three design-perception composites, and demographic/trip controls. The model explained 83.9% of the variance in actual length of stay (adjusted $R^2 = .829$), $F(9, 140) = 81.05$, $p < .001$. Consistent with H1, encountering a per-night levy was associated with 0.61 fewer nights than a flat levy, net of planned stay and other controls ($b = -0.612$, $p < .001$). Tax salience ($b = -0.515$, $p < .001$) and pain of paying ($b = -0.412$, $p < .001$) were both independently

associated with shorter stays, while earmark trust was associated with longer stays (b = +0.363, p < .001), consistent with H4. The direct effect of checkout presentation was in the predicted negative direction but did not reach significance once salience and pain of paying were included in the model (b = −0.255, p = .114); Section 5.6 examines this pattern as evidence of mediation, consistent with H2.

Table 5: OLS regression predicting actual length of stay (nights). R^2 = .839, adj. R^2 = .829, F(9, 140) = 81.05, p < .001, N = 150

Predictor	b	SE	t	p
Intercept	2.322	0.529	4.39	< .001
Levy structure (1 = per-night)	−0.612	0.143	−4.27	< .001
Presentation (1 = checkout)	−0.255	0.160	−1.59	.114
Tax salience	−0.515	0.124	−4.15	< .001
Pain of paying	−0.412	0.107	−3.86	< .001
Earmark trust	0.363	0.075	4.82	< .001
Visitor origin (1 = domestic)	0.068	0.141	0.49	.628
Age (years)	0.006	0.007	0.82	.414
Group size	−0.016	0.040	−0.41	.683
Planned length of stay	0.860	0.040	21.75	< .001

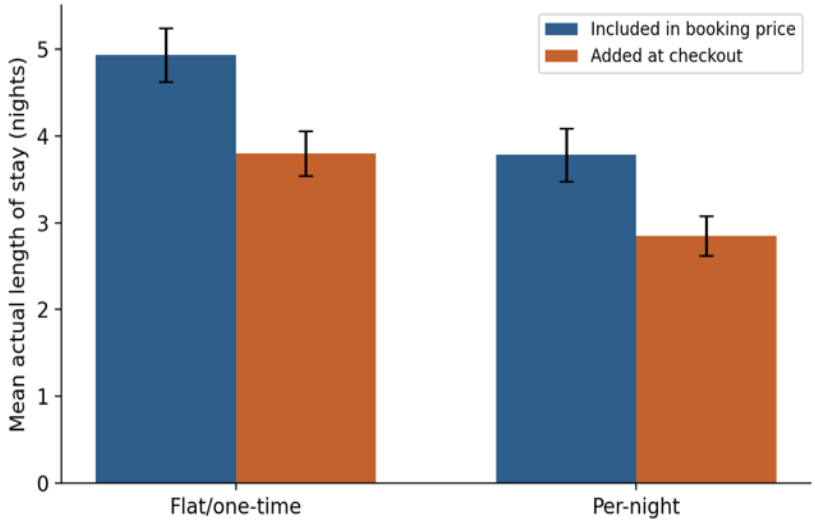


Figure 1: Mean actual length of stay by levy structure and presentation, with standard-error bars.

2×2 Analysis of Variance: Structure × Presentation

A two-way ANOVA on actual length of stay confirmed additive main effects of levy structure, F(1, 146) = 13.61, p < .001, and presentation, F(1, 146) = 13.13, p < .001, with no significant interaction, F(1, 146) = 0.12, p = .727. Cell means, shown in Figure 1, ranged from 4.93 nights (flat levy, included in booking price) to 2.85 nights (per-night levy, added at checkout), a difference of just over two nights between the most and least favourable design combinations.

Mediation Check: Presentation, Salience and Pain of Paying (H2)

To probe whether the presentation effect on length of stay operates through salience and pain-of-paying perceptions, tax salience and pain of paying were compared across the two presentation conditions. Respondents who encountered the levy itemised at check-out reported markedly higher tax salience (M = 3.91 vs. 3.01, t(148) = 7.71, p < .001) and higher pain of paying (M = 3.20 vs. 2.20, t(148) = 7.92, p < .001) than those for whom the levy was included in the booking price. Following the causal-steps logic of Baron and Kenny (1986), because presentation strongly predicts both mediating composites, and both composites strongly predict length of stay (Table 5), while the direct path from presentation to length of stay attenuates to non-significance once the composites are entered, the pattern is consistent with full mediation through salience and pain of paying; that is, presentation appears to matter for behaviour mainly because it changes how noticeable and how psychologically costly the levy feels, not through some other channel. This pattern should be confirmed with a formal bootstrapped mediation test in future work (Section 8).

Predictors of Daily Off-Site Spending (H3, H4)

Table 6 reports an OLS regression predicting average daily off-site spending. The model explained 35.7% of the variance (adjusted R^2 = .330), F(6, 143) = 13.23, p <

.001. Pain of paying was associated with markedly lower daily spend (b = −158.66 INR per scale point, p < .001), while earmark trust was associated with higher spend (b = +105.85, p < .001), supporting H4. The negative association between per-night levy structure and daily spend was in the predicted direction but only marginally significant (b = −86.50, p = .053), providing partial support for H3. Group size was positively associated with daily spend (b = +54.72, p < .001), consistent with shared costs enabling higher per-person discretionary outlay; visitor origin and age were not significant predictors.

Table 6: OLS regression predicting average daily off-site spending (INR). R^2 = .357, adj. R^2 = .330, F(6, 143) = 13.23, p < .001, N = 150

Predictor	b (INR)	SE	t	p
Intercept	2,337.7	156.4	14.95	< .001
Levy structure (1 = per-night)	−86.5	44.4	−1.95	.053
Pain of paying	−158.7	24.2	−6.55	< .001
Earmark trust	105.8	26.3	4.02	< .001
Group size	54.7	13.9	3.94	< .001
Visitor origin (1 = domestic)	−6.2	49.1	−0.13	.900
Age (years)	−0.4	2.4	−0.16	.871

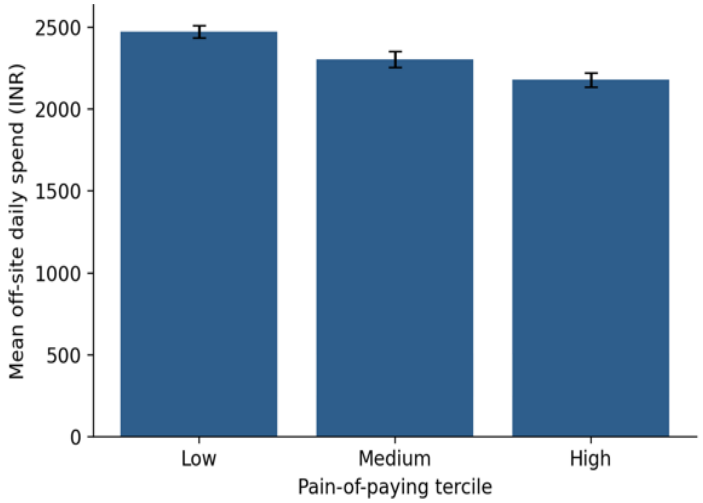


Figure 2: Mean off-site daily spending by pain-of-paying tercile, with standard-error bars.

Predictors of Displacement Intention (H5)

A binary logistic regression predicted displacement intention whether the respondent would have chosen an untaxed neighbouring destination instead. Overall, 34.7% of respondents (52 of 150) indicated a displacement intention. The model was significant, $\chi^2(6) = 44.40$, p < .001 (pseudo-R^2 = .229). Pain of paying was the strongest and only statistically significant predictor: each one-point increase in pain of paying nearly tripled the odds of displacement intention (OR = 2.85, 95% CI consistent with p = .004). Tax salience was positive but not significant (OR = 1.54, p = .271), and domestic visitors showed marginally lower odds of displacement intention than international visitors (OR = 0.47, p = .085). Levy structure and presentation were not significant direct predictors once the perception composites were included.

Table 7: Binary logistic regression predicting displacement intention. Pseudo-R^2 = .229, $\chi^2(6) = 44.40$, p < .001, N = 150

Predictor	b	SE	z	p	Odds ratio
Intercept	−4.710	1.347	−3.50	< .001	0.01
Tax salience	0.429	0.390	1.10	.271	1.54
Pain of paying	1.048	0.362	2.89	.004	2.85
Earmark trust	−0.075	0.237	−0.31	.753	0.93
Levy structure (1 = per-night)	0.377	0.474	0.80	.426	1.46
Presentation (1 = checkout)	0.095	0.494	0.19	.848	1.10
Visitor origin (1 = domestic)	−0.754	0.437	−1.72	.085	0.47

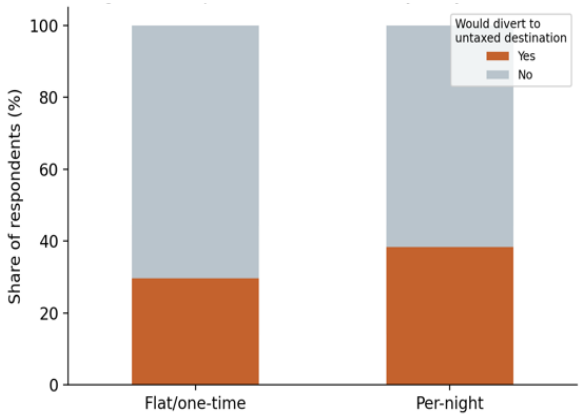


Figure 3: Displacement intention by levy structure.

Group Comparisons (H6)

A chi-square test of association between levy structure and displacement intention was not significant, $\chi^2(1) = 0.87$, $p = .351$ (per-night: 38.4% displacement vs. flat: 29.7%), indicating that the bivariate association is weaker than the multivariate pain-of-paying pathway identified in Table 7. Independent-samples t-tests found no significant difference between domestic and international visitors in daily off-site spending (M = ₹2,343 vs. ₹2,318, $t(148) = 0.42$, $p = .673$), and the logistic regression in Table 7 showed only a marginal origin effect on displacement intention. H6 therefore receives limited support: a directional asymmetry favouring lower displacement intention among domestic visitors is present but does not reach conventional significance in this sample.

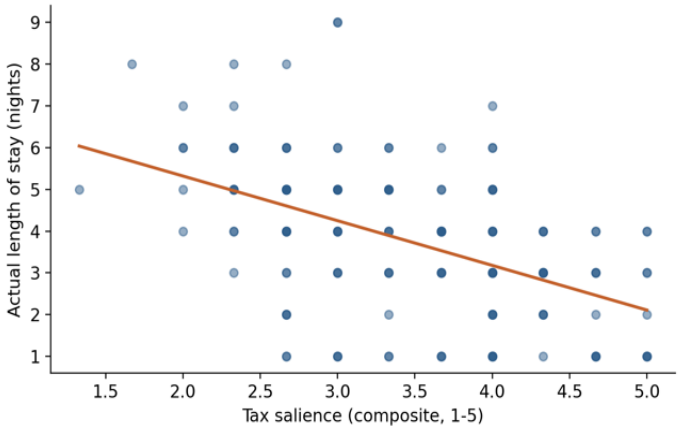


Figure 4: Relationship between tax salience and actual length of stay.

Table 8: Summary of hypothesis tests.

Hyp.	Result	Supported?
H1	Per-night structure reduced length of stay by 0.61 nights net of controls ($p < .001$)	Supported
H2	Checkout presentation reduced stay length at the bivariate/ANOVA level ($p < .001$); the effect was fully mediated by tax salience and pain of paying	Supported (mediated)
H3	Per-night structure reduced daily off-site spend by ₹86.50 ($p = .053$)	Partially supported
H4	Earmark trust positively predicted both length of stay and daily spend (both $p < .001$)	Supported
H5	Pain of paying predicted displacement intention (OR = 2.85, $p = .004$); tax salience did not ($p = .271$)	Partially supported
H6	No significant spend difference by origin ($p = .673$); marginal origin effect on displacement ($p = .085$)	Not supported / limited

Supplementary Analyses in R: Scale Validity and Correlation Structure

The primary hypothesis tests in Sections 5.4–5.9 rely on three composite scales computed from nine Likert items. To verify that these composites capture genuinely distinct constructs, a varimax-rotated principal component analysis was conducted on the nine items in R (Figure 5, Figure 6). Two components exceeded the conventional

Kaiser eigenvalue-1 criterion (Kaiser, 1960; eigenvalues 4.09 and 2.20); a third component, with eigenvalue 0.70, was retained on theoretical grounds because it corresponds cleanly to the earmark-trust items. The rotated solution recovered the expected three-factor structure with a clean simple pattern: all three pain-of-paying items loaded strongly (0.78–0.86) on one component with tax-salience items as clear secondary loadings, the three tax-salience items loaded strongly (0.79–0.83) on a second component, and all three earmark-trust items loaded strongly and almost exclusively (0.82–0.87) on a third, orthogonal component. Together the three components explained 77.7% of item variance. The clean separation of earmark trust from the other two composites is corroborated by the correlation matrix (Figure 7): earmark trust correlated at essentially zero with both tax salience (r = .00) and pain of paying (r = .01), supporting its discriminant validity as a distinct construct, whereas tax salience and pain of paying were themselves highly correlated (r = .72) consistent with both reflecting a shared, broader sensitivity to the cost of the levy, a point returned to in Section 8.

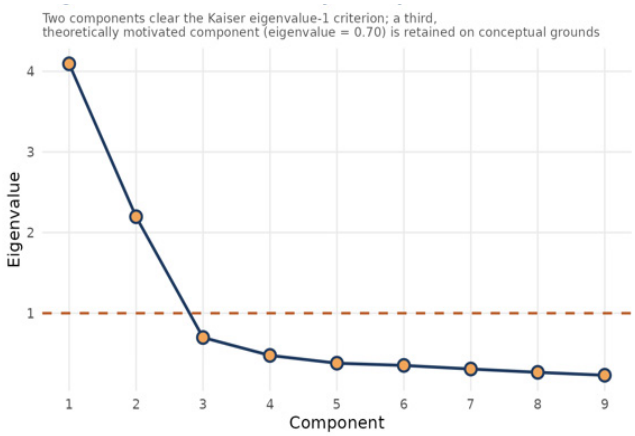


Figure 5: Scree plot of the nine levy-perception items (R, psych package).

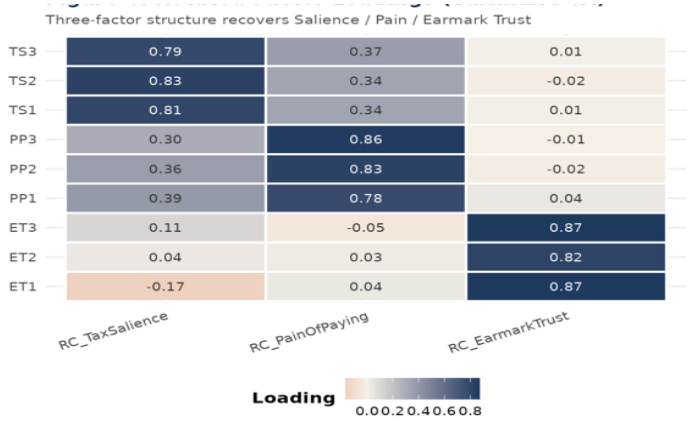


Figure 6: Rotated (varimax) factor loadings for the nine items, by construct.

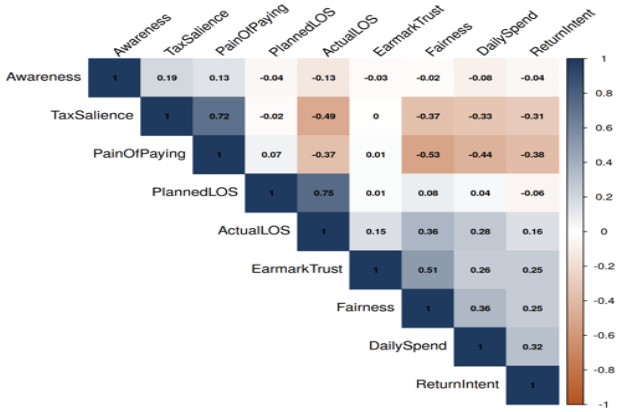


Figure 7: Hierarchically clustered correlation matrix of all continuous study variables (R, corrplot package).

Visitor Segmentation: A K-Means Cluster Analysis

Beyond the variable-centred regressions reported above, a person-centred k-means cluster analysis (k = 3) was run on the standardised tax-salience, pain-of-paying and earmark-trust scores to test whether visitors group into interpretable behavioural segments. Three segments emerged (Table 9, Figure 8). "Skeptical low-trust visitors" (n = 40, 26.7%) reported moderate tax salience and pain of paying but markedly low earmark trust (−1.10 SD); this group showed a below-average length of stay (3.28 nights) and a high displacement rate (45.0%). "Price-sensitive avoiders" (n = 50, 33.3%) combined the highest tax salience and pain of paying with above-average earmark trust, yet still recorded the shortest length of stay of the three segments (2.96 nights) and the highest displacement rate in the sample (52.0%) consistent with a group whose behaviour is driven primarily by cost sensitivity rather than distrust. "Unfazed high-spenders" (n = 60, 40.0%) reported the lowest tax salience and pain of paying, the longest length of stay (4.75 nights), the highest daily spend (₹2,504) and a markedly low displacement rate (13.3%). Figure 9 plots the length-of-stay and spending outcomes by segment.

Table 9: Visitor segment profiles from k-means cluster analysis (k = 3, N = 150)

Segment	n (%)	Tax salience	Pain of paying	Earmark trust	Actual LOS	Daily spend (INR)	Displacement rate
Skeptical low-trust visitors	40 (26.7%)	3.71	3.01	1.99	3.28	2,198	45.0%
Price-sensitive avoiders	50 (33.3%)	4.18	3.48	3.47	2.96	2,244	52.0%
Unfazed high-spenders	60 (40.0%)	2.69	1.86	3.07	4.75	2,504	13.3%

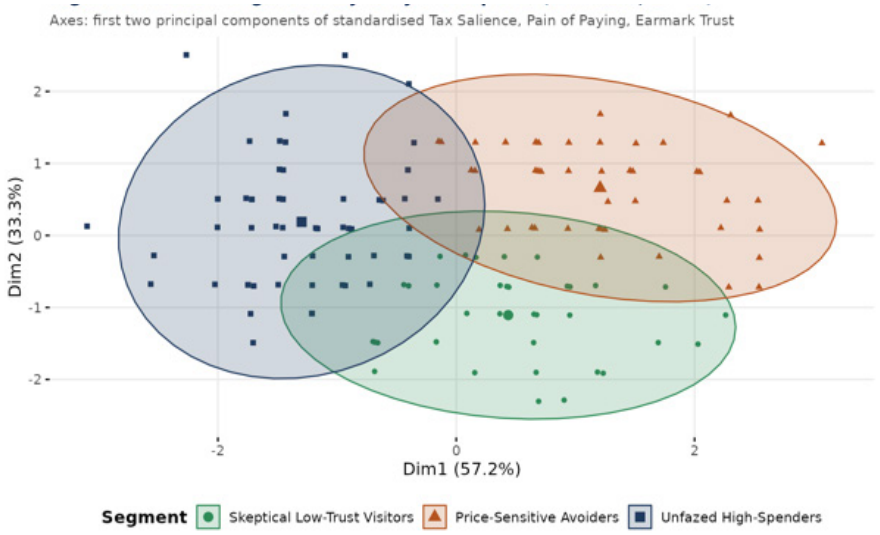


Figure 8: Visitor segments plotted on the first two principal components of the clustering variables.

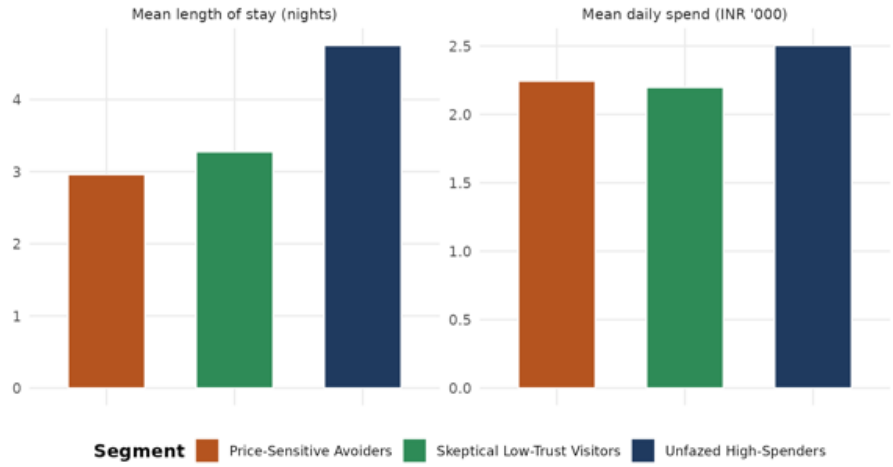


Figure 9: Length of stay and daily spend by visitor segment.

Exploratory Moderation: Does Earmark Trust Buffer Pain of Paying?

Because earmark trust was associated with longer stays in the main regression (Table 5), an exploratory follow-up tested whether earmark trust moderates that is, buffers the negative association between pain of paying and length of stay. A regression of actual length of stay on pain of paying, earmark trust, their interaction, levy structure and planned length of stay found the Pain of Paying × Earmark Trust interaction was not statistically significant ($b = -0.123$, $SE = 0.095$, $t = -1.29$, $p = .200$). As Figure 10 illustrates, the predicted slopes at low, mean and high earmark trust are close to parallel; if anything the point estimate trends toward slightly steeper (not shallower) decline at high trust, the opposite of a buffering pattern, but the interaction is too imprecisely estimated in this sample to support that interpretation. Earmark trust therefore appears to shift the level of length of stay upward (Table 5) without changing visitors' sensitivity to pain of paying an additive rather than a buffering effect. This null result is reported for transparency and should be revisited with a larger sample.

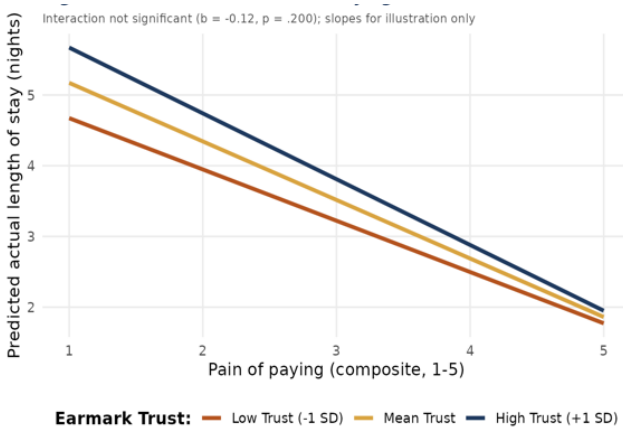


Figure 10: Predicted length of stay across pain of paying, at three levels of earmark trust (interaction not significant).

Destination-Level Perception Profiles and Stay Distributions

Figure 11 plots mean scores on all six perception and outcome measures for each of the four destinations. The profiles are visually similar across destinations no jurisdiction stands out as systematically more or less burdensome on any measure which suggests that the behavioural differences documented in Sections 5.4–5.9 are driven predominantly by levy design (structure, presentation, earmarking) rather than by destination identity per se, reinforcing the respondent-level coding strategy adopted in Section 4.1. Figure 12 shows the full distribution (not just means) of actual length of stay by destination and levy structure using violin and box plots; within every destination, the per-night distribution sits visibly lower than the flat/one-time distribution, confirming that the structure effect reported in Table 5 is not driven by any single site.

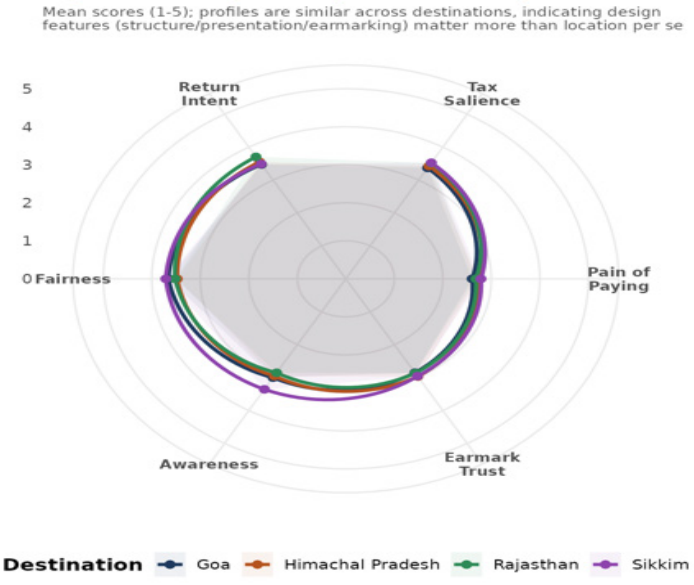


Figure 11: Mean levy-perception and outcome scores by destination.

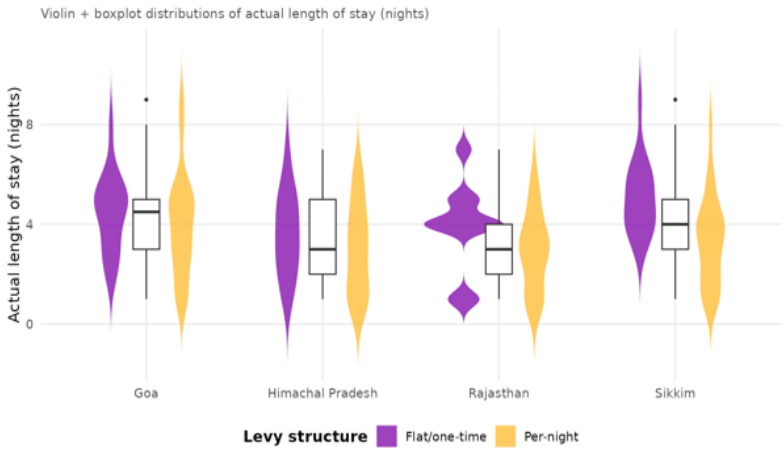


Figure 12: Distribution of actual length of stay by destination and levy structure (violin + box plot).

Analysis Sheet

The full output of the R analyses reported in this section reliability statistics, PCA loadings, the complete correlation matrix, cluster segment profiles and sizes, moderation-regression coefficients, destination perception profiles, and the raw dataset annotated with each respondent's assigned segment is provided as a multi-tab analysis workbook (Supplementary File S2, "R Analysis Sheet").

Discussion

The results speak most clearly to the presentation puzzle raised in Section 3.2. A pure tax-salience account predicts that itemising a levy at check-out should weaken its behavioural effect, because the charge is less visible when the trip is planned. The opposite pattern was observed: checkout presentation was associated with both higher salience scores and shorter stays at the bivariate level. This is more consistent with a pain-of-paying account in which separating a payment from the consumption it finances and delivering it as an unanticipated line item at settlement makes the charge more, not less, aversive (Prelec & Loewenstein, 1998), and the finding that presentation's direct effect on length of stay disappears once salience and pain of paying are controlled (Section 5.6) indicates that both mechanisms are activated together in this setting rather than trading off against each other as the theoretical framework's two competing accounts had assumed.

The structure result (H1) replicates, in a stated-behaviour survey, the direction found in quasi-experimental hotel-performance data for a comparable per-night levy in Manchester (Anguera-Torrell *et al.*, 2025) and is consistent with the marginal-cost logic that a recurring per-night charge enters the nightly stay decision while a lump-sum charge enters only the participation decision (Aguiló *et al.*, 2005; Gooroochurn & Sinclair, 2005). The magnitude observed here roughly six tenths of a night, or a further 1.9 nights once combined with the least favourable presentation is not trivial relative to a mean stay of under four nights, and destination managers concerned about average length of stay should treat structure as a first-order design choice.

The earmarking result (H4) is the most policy-actionable finding in the study. Earmark trust was the only design-perception variable associated with both longer stays and higher off-site spending, and it is, unlike the levy amount itself, essentially costless for authorities to change: it requires only a credible, specific and visible communication of how revenue is used, consistent with the earmarking and tax-aversion literature (Sussman & Olivola, 2011; do Valle *et al.*, 2012; Cetin *et al.*, 2017), tempered by the replication caution that has attached to some earmarking effects elsewhere (Olsen *et al.*, 2019). Sikkim's TSD fund is named but its specific uses are not consistently itemised to visitors, and Rajasthan's heritage cess is earmarked for conservation only at some sites; the association found here suggests that standardising and publicising this communication could partly offset the contraction associated with structure and presentation.

Finally, the displacement result (H5) refines the discrete-choice prediction that a heavier perceived burden raises substitution toward untaxed alternatives (Train, 2009). Pain of paying, not tax salience, was the operative channel: visitors who found the levy psychologically aversive to pay were substantially more likely to say they would have chosen an untaxed neighbouring destination, independent of how salient the charge was at the planning stage. This is consistent with displacement being driven by the affective experience of paying rather than by advance awareness of the charge.

The supplementary R analyses (Section 5.11–5.14) add two further points of interest. First, the k-means segmentation shows that the aggregate regression coefficients reported in Table 5 average over three visibly different visitor types: a large "unfazed high-spender" segment that is largely indifferent to levy design and drives much of the sample's spending and length of stay, a "price-sensitive avoider" segment for whom cost sensitivity (not distrust) predicts both the shortest stays and the highest displacement risk, and a "skeptical low-trust" segment whose short stays and elevated displacement risk appear to be driven specifically by low confidence in how levy revenue is used

rather than by the levy's salience or its psychological cost. This third segment is exactly the group the earmarking recommendation in Section 7 is designed to reach. Second, the exploratory moderation check found no evidence that earmark trust buffers visitors' sensitivity to pain of paying the earmarking effect documented in Table 5 and Table 6 operates by raising the general level of length of stay and spending, not by making cost-sensitive visitors less cost-sensitive.

Implications for Indian Destination Authorities

• Prefer a flat or one-time levy over a per-night structure where the policy objective is revenue with minimal effect on length of stay; reserve per-night structures for contexts where shortening stays or capping cumulative visitor-nights is itself the objective.

• Where a per-night or itemised structure is retained for administrative reasons, invest in reducing pain of paying at the point of payment for example by pre-disclosing the exact levy amount well before check-out and integrating it into a single, clearly itemised line rather than presenting it as a surprise addition.

• Communicate a specific, credible use of levy revenue (e.g., named infrastructure or conservation projects with periodic public reporting) rather than a generic fund name; this study's earmark-trust measure was the strongest lever available to authorities to offset behavioural contraction.

• Coordinate levy design across neighbouring jurisdictions where feasible. Because displacement intention is driven by pain of paying rather than by levy visibility alone, a regional approach to structure and communication (for example, harmonising Himachal Pradesh and adjoining hill-state charges) would blunt the destination-substitution channel identified in Section 5.8.

• Track length of stay and off-site spending, not only arrivals, in routine tourism statistics; the arrivals-only data currently published for most of the sampled jurisdictions cannot detect the within-trip contraction documented here.

Limitations and Future Research

Several limitations qualify these findings. First, the sample was recruited through non-probability, purposive intercept sampling at four jurisdictions, which limits statistical generalisability to the broader population of Indian tourist destinations and levy designs. Second, length of stay, spending and the design-perception composites were self-reported and collected in a single cross-sectional wave, which raises the possibility of common-method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and recall bias in the retrospective "planned length of stay" item. Third, the mediation pattern reported in Section 5.6 was assessed with a simplified comparison-of-coefficients approach rather than a formal bootstrapped indirect-effect test; a structural equation model with a proper mediation test would strengthen causal interpretation. Fourth, the supplementary factor analysis (Section 5.11) showed that tax salience and pain of paying, while separable with a clean three-factor rotation, are themselves highly correlated ($r = .72$); this raises the possibility that the two scales partly capture a single, broader "levy aversion" dimension rather than fully independent psychological mechanisms, and future instrument development should test whether the two can be sharpened into more discriminant measures. Fifth, the exploratory moderation and cluster analyses in Sections 5.12–5.13 are, by construction, exploratory: the three-segment typology and the null moderation result should be treated as hypothesis-generating rather than confirmatory until replicated in an independent sample. Sixth, because levy structure, presentation and earmarking co-vary partly by jurisdiction, respondent-level coding reduces but does not eliminate potential confounding with unobserved jurisdiction characteristics (climate, seasonality, destination type). Future work should extend this survey with the quasi-experimental designs proposed in the companion theoretical article synthetic difference-in-differences (Arkhangelsky, Athey, Hirshberg, Imbens, & Wager, 2021) and Callaway–Sant'Anna staggered difference-in-differences estimators (Callaway & Sant'Anna, 2021) applied to administrative arrival and spending data to corroborate the self-reported associations documented here with revealed behaviour, and should test the mediation and moderation pathways formally with a pre-registered, adequately powered design.

CONCLUSION

This study provided the primary empirical test that a companion theoretical article on Indian tourist levies had called for. Using a 150-respondent survey fielded across four Indian levy jurisdictions between July 2025 and March 2026, it found that levy structure, presentation and earmarking communication are independently associated with the behavioural margins levies are meant to move: a per-night structure and checkout presentation are both associated with shorter stays, the presentation effect operating through tax salience and pain of paying rather than directly; earmarking communication is associated with longer stays and higher spending; and pain of paying, specifically, predicts the intention to substitute toward untaxed destinations. For Indian authorities designing or revising visitor levies, the clearest actionable lesson is that how a charge is structured, timed and explained matters as much as, and is considerably cheaper to change than, its level.

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