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STRATEGIC PRIORITIES FOR DESTINATION MANAGEMENT IN BALI, MALANG, AND YOGYAKARTA: TRIPADVISOR EVIDENCE

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ABSTRACT

Destination management organizations need attraction-level evidence, but open records at that level are scarce and rarely tested for representativeness. This study audits a public dataset of 52,930 TripAdvisor review records, written by 33,530 users about 30 popular attractions across Bali, Malang, and Yogyakarta with reported visit years from 2013 to 2022, and asks which strategic priorities such records can responsibly support. The analysis combines descriptive statistics with Wilson confidence intervals, Holm-adjusted comparisons, user-clustered bootstrap intervals, and comparisons with official Bali and Yogyakarta tourism series. Kuta Beach, Yogyakarta Palace, and Seminyak Beach had low-rating shares of 23.1, 15.3, and 13.0 percent against a dataset baseline of 6.2 percent, and three further sites were modestly elevated; the gap held across continents of origin and across years. Sacred Monkey Forest Sanctuary held the highest record count in every year from 2013 to 2019, yet swings elsewhere exceeded sampling error, and annual record counts did not follow official arrivals. Reviewer origin shifted, with Australia declining and the United Kingdom rising, but the records overstated the United Kingdom and nearly omitted China, so they do not describe the source-market mix. These records justify field checks of service quality at the flagged sites, but they cannot establish demand or guide marketing allocations. Malang is an exploratory East Java comparator because it contributes only 829 records. The findings describe platform reviewers, not all visitors; volume and origin patterns still need official validation.

KEYWORDS: Bali, Destination Management, Malang, Online Ratings, TripAdvisor, Yogyakarta

INTRODUCTION

Destination management organizations must decide where to place scarce attention, whether in a service-quality review, an infrastructure budget, or a promotion campaign, and these decisions are made for individual attractions rather than whole regions. Arrival statistics describe how many visitors reach a destination, not how they experience particular sites. The problem is pressing in Bali, where direct foreign arrivals nearly doubled from 3.28 million in 2013 to 6.28 million in 2019 (Dinas Pariwisata Provinsi Bali, 2024). In Yogyakarta, the closest available official series is different in concept but similarly increased: international tourists using accommodation rose from 235,893 in 2013 to 433,027 in 2019 (Dinas Pariwisata Daerah Istimewa Yogyakarta, 2020). Its palace and heritage sites have also drawn research on tourist experience and revisit intention (Rindrasih & Witte, 2020; Suhud et al., 2022; Wijayanti & Damanik, 2018). Recent studies of Bali's visitors have examined motivations and consumption (Hendijani, 2023; Muna et al., 2025), while the wider overtourism debate ties visitor pressure

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to the quality of experience and the governance of crowded sites (Capocchi et al., 2019; Koens et al., 2018).

Work on destination management organizations increasingly treats data as a governance resource (Mandić & Kennell, 2021; Sorokina et al., 2022). Online reviews are a widely used attraction-level data source (Li et al., 2018; Xiang et al., 2017), and the characteristics of a review shape how readers value it (Fang et al., 2016). Reviews also carry known biases. Reviewers select themselves into writing, and the people who rate a product are often more favorable than the wider population (Hu et al., 2017). Rating scales are frequently compressed toward the top, as in hotel booking scores and Airbnb ratings (Mellinas et al., 2016; Zervas et al., 2021). A platform rating is therefore a directional signal, and any attraction-level conclusion drawn from it needs a representativeness check.

Huda et al. (2024) released such records for 30 attractions in three regions of Indonesia. Their descriptor article defines a transaction as one TripAdvisor review and rating event and presents the data as a resource for recommender systems. To our knowledge, published uses of the dataset have concentrated on recommender-system development, and we located no attraction-level descriptive audit of its coverage or representativeness. This statement rests on web searches conducted in October 2026, including the dataset's Mendeley and PubMed Central pages, and it is not an exhaustive literature search. The gap matters because a descriptive audit is what a manager would need before using such records to set priorities.

This study audits the dataset to determine which management claims it can sustain. We document the source and unit of analysis, define the rating measures, quantify uncertainty, and compare volume and origin patterns with official statistics. Prior work used the dataset mainly for recommender systems. Here, we test its volume, origin, and rating signals against uncertainty and external-validity checks for Bali and Yogyakarta. Malang remains in the analysis as a limited East Java comparator.

METHODS

Data Source and Unit of Analysis

The data are the Tourism Dataset published by Huda (2023) on Mendeley Data (version 1, CC BY 4.0, https://doi.org/10.17632/h58s544674.1) and described by Huda et al. (2024). The source-dataset authors scraped records visible on TripAdvisor between October 2022 and January 2023; this is the retrieval window, not the period in which all visits occurred. They normalized the retrieved records into nine relational tables, removed empty and duplicate values, replaced user identities with new identifiers, and checked geographic fields manually with Google Maps. A transaction in the Transaction table is a single TripAdvisor review and rating event. It links one pseudonymous user, one attraction, a visit year and month, a visit mode (business, couples, family, friends, or solo), and a rating from 1 to 5. We call these review records because a record documents a reviewer's reported experience and not a verified visit or a purchase. Visit year and month are historical visit-date fields attached to each retrieved review; they are analytically distinct from the 2022-2023 retrieval window. The descriptor states that unknown visit modes, years, and months were removed and that records from the last 10 years were retained where available, so the records reflect what survived collection and filtering (Huda et al., 2024).

Scope, Selection, and Coverage

The descriptor reports that the ten most popular attractions per region, ranked by visit frequency on the platform, were selected for Bali, Malang, and Yogyakarta, which gives 30

attractions (Huda et al., 2024). We confirmed the assignment of attractions to regions by matching the attraction city code in the Item table (1, 2, or 3) to the free-text addresses, which places every code 1 in Bali, every code 2 in Malang, and every code 3 in Yogyakarta. The full dataset holds 52,930 records from 33,530 users. Bali contributes 45,170 records (85.3%), Yogyakarta 6,931 (13.1%), and Malang 829 (1.6%), and no Malang attraction exceeds 381 records. Because of this imbalance, inferential comparisons concern Bali and Yogyakarta. We retain Malang as an exploratory East Java comparator in the volume table and descriptive checks, but its small attraction-level samples cannot justify strategic priorities. Records come from 153 countries; the descriptor reports 164, and the Country table lists 165 entries, so we use the 153 that appear in the records. Transaction identifiers run from 3 to 211,241, so about one quarter of the identifier range is present, which is consistent with the filtering the descriptor describes. Retrieval took place from October 2022 to January 2023, whereas the reported visit years span 2013 to 2022. The 811 records from 2020 to 2022 (1.5%) are described separately but excluded from pre-pandemic trend and period comparisons because pandemic disruption and very small yearly samples make them non-comparable. The attraction city code collides with the first three rows of the City table, which hold Douala, an unlabeled region, and N'Djamena, so the City table is not used and the address text served as the location reference.

Treatment of Attractions with Few Records

Attractions were assigned to three tiers by record count. The 14 attractions with at least 500 records form the primary set, in which shares and ranks are reported with intervals. The 7 attractions with 100 to 499 records are reported as exploratory. The 9 attractions with fewer than 100 records (28 to 83 records each) appear in the volume table only and enter no rate or ranking claim.

Definitions and Analyses

A low rating is a rating of 1 or 2 on the five-point scale. The baseline is the pooled low-rating share across all 52,930 records, 6.2%. An attraction is called elevated when the lower bound of its 95% Wilson interval exceeds the baseline, and its share differs from that of all other records in a two-proportion chi-square test, with Holm adjustment across the 21 attractions that have at least 100 records (adjusted $p < .05$). Elevated describes a statistical difference in platform ratings and does not establish poor service, because the construct behind the rating is not documented. Origin shares are shares of records by the country recorded for the user, compared between 2013 to 2016 and 2017 to 2019, the two periods before the pandemic. Because 10,618 users (31.7%) wrote more than one record, intervals for mean differences and origin shares come from a user-clustered bootstrap with 2,000 resamples (seed 20261016). Yearly ranks are by record count, and rank uncertainty is assessed by multinomial resampling of each year's records. Robustness checks compare ratings across continents of origin, years, and visit modes. All analyses are descriptive and allow no causal claims. They were run in Python with pandas and SciPy.

Validation against Official Statistics

Three official sources were used. The Bali Provincial Tourism Office statistics book supplies annual direct foreign arrivals to Bali (Dinas Pariwisata Provinsi Bali, 2024); the DIY Tourism Office yearbook supplies annual international tourists using accommodation in Yogyakarta (Dinas Pariwisata Daerah Istimewa Yogyakarta, 2020); and BPS-Statistics Bali

Province monthly releases supply nationality shares for 2019 (BPS-Statistics Bali Province, 2020). We compare each destination's annual review counts with its own official series, while emphasizing that Bali's border-arrival measure and Yogyakarta's accommodation-user measure are not mutually comparable. We could not locate official visitor counts by attraction or an annual Yogyakarta nationality series for 2013 to 2019, so attraction rankings and Yogyakarta origin shares remain unvalidated.

Analyses Attempted and Set Aside

Four approaches were tried and not pursued. Predictive modeling of the rating was dropped because the meaning of the rating is undocumented and the pandemic-period rows are only 1.5% of the data. A growth-share portfolio analysis was rejected because the attractions have no common owner or budget, so no portfolio decision exists, and growth rates for small attractions are unstable. A k-means grouping of the 30 attractions on seven features produced silhouette values of 0.26 to 0.32 for two to six clusters; a Ward-linkage partition disagreed with it, and the four-cluster solution placed only three of the six sites flagged below in its lowest-rated cluster, so no typology is reported. A seasonality analysis was abandoned because the pooled share of visits in each attraction type's busiest month was only 10 to 19%, an artifact of years with opposite monthly patterns: the busiest months were July to December in 2015 and January to April in 2017. Viera-González and Hernández-Martín (2026) describe a comparable masking effect when seasonality is pooled across scales. Early years also have few records (2,983 in 2013), so the monthly field is not trusted.

RESULTS AND DISCUSSION

Profile of the Records

Table 1 lists the 30 attractions by record count. Eleven attractions have more than 2,000 records. Sacred Monkey Forest Sanctuary alone holds 13,198 records (24.9%), 2.05 times the second attraction, Waterbom Bali (6,429). Ratings are compressed toward the top: the mean is 4.16 and 79.2% of records are 4 or 5, a pattern that matches the inflated online scores reported for other platforms (Mellinas et al., 2016; Zervas et al., 2021). Because most ratings are high, the lower tail carries more information than the mean.

The three regions are Bali (45,170 records), Yogyakarta (6,931), and Malang (829). Bromo Tengger Semeru National Park is the largest Malang case, with 381 records, a mean rating of 4.61, and 2.6% low ratings. Every other Malang attraction has fewer than 100 records. Malang can thus provide descriptive context for East Java, but not a defensible regional ranking or set of strategic priorities. The supplied tables contain numeric ratings and metadata, but no review title or review body. A thematic analysis would require access to the underlying texts under current platform terms or new interviews with visitors.

Table 1. Review records and low-rating share by attraction

Attraction	Region	Records	Low-rating share, % [95% CI]	Elevated
Sacred Monkey Forest Sanctuary	Bali	13,198	3.8 [3.4, 4.1]	No
Waterbom Bali	Bali	6,429	1.3 [1.0, 1.6]	No
Tegalalang Rice Terrace	Bali	5,815	5.8 [5.3, 6.5]	No
Uluwatu Temple	Bali	3,359	4.6 [4.0, 5.4]	No
Tanah Lot Temple	Bali	3,352	4.9 [4.2, 5.7]	No

Attraction	Region	Records	Low-rating share, % [95% CI]	Elevated
Sanur Beach	Bali	3,044	7.8 [6.9, 8.8]	Yes
Seminyak Beach	Bali	2,914	13.0 [11.8, 14.2]	Yes
Kuta Beach	Bali	2,765	23.1 [21.6, 24.7]	Yes
Merapi Volcano	Yogyakarta	2,235	5.5 [4.6, 6.5]	No
Tegenungan Waterfall	Bali	2,190	8.6 [7.5, 9.8]	Yes
Nusa Dua Beach	Bali	2,104	3.8 [3.0, 4.7]	No
Malioboro Road	Yogyakarta	1,324	8.2 [6.8, 9.8]	Yes
Ullen Sentalu Museum	Yogyakarta	978	4.5 [3.4, 6.0]	No
Yogyakarta Palace	Yogyakarta	798	15.3 [13.0, 18.0]	Yes
Bromo Tengger Semeru National Park	Malang	381	2.6 [1.4, 4.8]	No†
Sewu Temple	Yogyakarta	377	6.1 [4.1, 9.0]	No†
Ramayana Ballet at Prambanan	Yogyakarta	377	5.6 [3.7, 8.4]	No†
Water Castle (Tamansari)	Yogyakarta	373	9.9 [7.3, 13.4]	Yes†
Ratu Boko Temple	Yogyakarta	204	9.8 [6.4, 14.7]	No†
Jomblang Cave	Yogyakarta	135	1.5 [0.4, 5.2]	No†
Kalibiru National Park	Yogyakarta	130	12.3 [7.7, 19.1]	Yes†
Mount Semeru Volcano	Malang	83	n/a	n/a
Malang City Square	Malang	64	n/a	n/a
Coban Rondo Waterfall	Malang	55	n/a	n/a
Goa Cina Beach	Malang	54	n/a	n/a
Sempu Island	Malang	53	n/a	n/a
Jodipan Colorful Village	Malang	44	n/a	n/a
Balekambang Beach	Malang	36	n/a	n/a
Museum Malang Tempo Doeloe	Malang	31	n/a	n/a
Khayangan Reflexology & Massage	Malang	28	n/a	n/a

Source: Authors' analysis of Huda (2023) and Huda et al. (2024).
Note: Low rating = rating of 1 or 2. Baseline = 6.2% of all 52,930 records. Elevated = lower bound of the 95% Wilson interval above the baseline and Holm-adjusted $p < .05$ against all other records. † Exploratory (100 to 499 records). n/a = fewer than 100 records, volume only.

Elevated Low-Rating Shares

Six of the 14 attractions in the primary set meet the elevated criterion. Kuta Beach (23.1%, 95% CI 21.6 to 24.7), Yogyakarta Palace (15.3%, 13.0 to 18.0), and Seminyak Beach (13.0%, 11.8 to 14.2) stand two to four times above the 6.2% baseline. Tegenungan Waterfall (8.6%, 7.5 to 9.8), Malioboro Road (8.2%, 6.8 to 9.8), and Sanur Beach (7.8%, 6.9 to 8.8) are modestly elevated. Among exploratory attractions, Kalibiru National Park (12.3%, 7.7 to 19.1) and Water Castle (9.9%, 7.3 to 13.4) meet the criterion, while Ratu Boko Temple (9.8%, 6.4 to 14.7) does not survive adjustment ($p = .17$). At the other end, Waterbom Bali has 1.3% (1.0 to 1.6) and Sacred Monkey Forest Sanctuary 3.8% (3.4 to 4.1). Figure 1 shows the intervals. Together, the six primary attractions hold 13,035 records (24.6%) and have a low-rating share of 12.8% against 4.1% elsewhere; their mean rating is 3.77 against 4.29, a gap of 0.52 points

(95% CI 0.50 to 0.54, user-clustered bootstrap). The six were identified from the data, so these intervals do not capture the uncertainty of the selection itself.

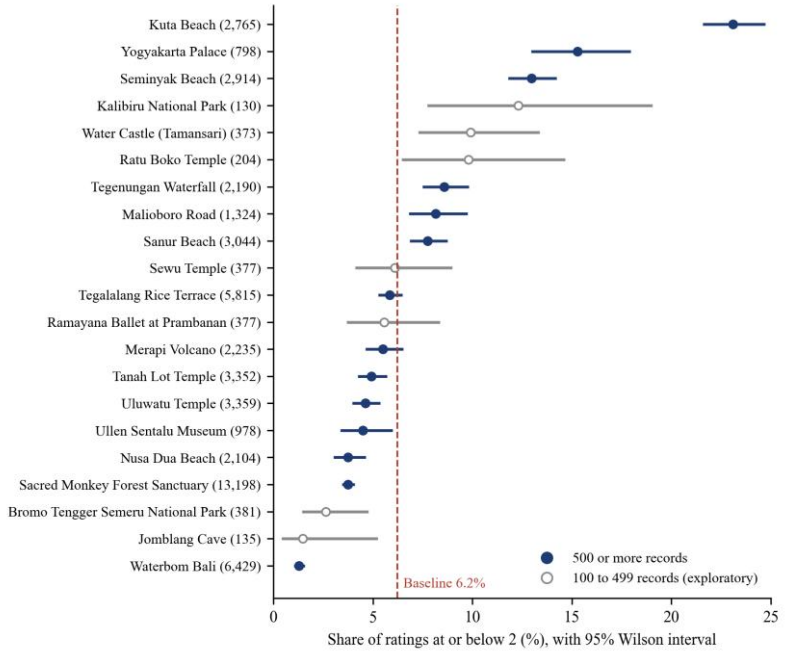


Figure 1. Share of low ratings by attraction with 95% Wilson intervals
Source: Authors' analysis of Huda (2023). Record counts in parentheses.

The gap is stable across the checks available. Among the six attractions, mean ratings by continent of origin range from 3.66 to 3.88, compared with 4.21 to 4.35 for the same continents at all other attractions, and no continent is an exception. The gap is also present every year from 2013 to 2019, between 0.39 and 0.61 points, with no trend. Visit mode does not explain it: at four large attractions the mean rating varies by only 0.09 to 0.30 points across visit modes, well below the gap, and across the dataset visit-mode averages differ by about 0.23 points at most (business 4.31, based on 623 records, to solo 4.09). The pattern therefore looks like a stable property of how these sites are rated on the platform. It cannot separate a real service problem from differences in what reviewers expect or how they use the scale, which is the self-selection problem described by Hu et al. (2017).

The sites differ in kind. Kuta, Seminyak, and Sanur are open, crowded coastal sites, which may explain part of their share, but Malioboro Road is an urban shopping street and Yogyakarta Palace a heritage complex, and both are elevated too. Waterbom Bali, the second most reviewed attraction, has the lowest share, so high volume alone does not produce a large dissatisfied minority. Studies of Yogyakarta Palace examine how visitor experience is managed and what shapes the intention to return (Suhud et al., 2022; Wijayanti & Damanik, 2018). They make the Palace a sensible place to start looking, but they do not test or explain the gap reported here. The records contain no review text, so the cause cannot be examined. Review text features shape how readers judge a review (Fang et al., 2016). A follow-up study should therefore code the underlying review texts and compare them with on-site observations.

Record Volume, Rank Stability, and Fit with Official Arrivals

Sacred Monkey Forest Sanctuary had the highest record count in every year from 2013 to 2019, with a yearly share of records between 18.8% and 32.6%, and it ranked first in all 2,000

resamples in each year. Below it, single-year ranks move a good deal: Waterbom Bali ranked 2, 2, 4, 2, 6, 16, and 2 across the seven years, with 722, 1,078, 878, 1,705, 641, 55, and 1,127 records. Resampling cannot produce swings of this size, since the 95% interval for Waterbom's rank in 2018 is 15 to 18, and the intervals for other mid-tier ranks are generally a few positions wide. The volatility therefore comes from the data and not from chance, which points to collection or filtering effects. The overall order is nevertheless fairly stable: the rank correlation of record counts between consecutive years among the 20 largest attractions is 0.81 to 0.95.

Annual record counts also do not track official arrivals. Records for Bali attractions rose from 2,425 in 2013 to a peak of 10,881 in 2016, 4.5 times the 2013 level, and then fell to 5,436 in 2019, half the peak. Official direct foreign arrivals to Bali rose steadily from 3,278,598 in 2013 to 6,275,210 in 2019, a gain of 27% between 2016 and 2019 (Dinas Pariwisata Provinsi Bali, 2024). The rank correlation between the two annual series is 0.39 (n = 7, p = .38). Figure 2 shows the divergence. Yogyakarta provides the same validity warning. Its review counts rose from 514 in 2013 to 1,774 in 2016 and then fell to 404 in 2019, whereas the official series of international tourists using accommodation rose from 235,893 to 433,027. The rank correlation is 0.00 (n = 7, p = 1.00). This is not a direct Bali-Yogyakarta comparison because the official indicators differ; it is a within-destination check showing that neither platform series follows its corresponding official trend.

Record counts therefore measure when reviews were written and retained, not visitation, and a ranking of records is a ranking of retained reviews among 30 preselected attractions. Similar cautions apply to other platform series: Wu et al. (2025) segment multi-year attention data by phase instead of pooling across the pandemic, and Katz et al. (2025) show that stable averages can hide redistribution. No official attraction-level counts were found against which to check the ranking.

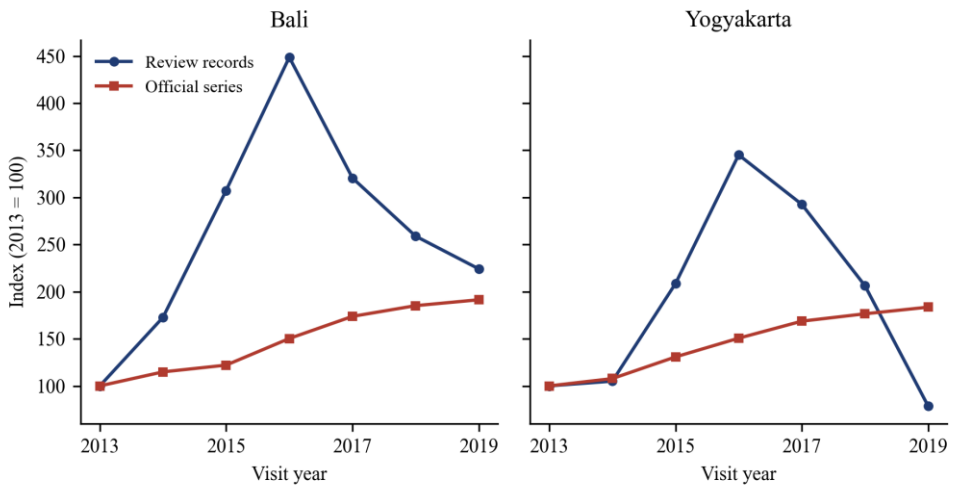


Figure 2. Review records and destination-specific official tourism series, 2013 to 2019 (index, 2013 = 100)

Source: Authors' analysis of Huda (2023); Dinas Pariwisata Provinsi Bali (2024); Dinas Pariwisata Daerah Istimewa Yogyakarta (2020).

Note: Bali's official series is direct foreign arrivals; Yogyakarta's is international tourists using accommodation. Indices are compared only within destination because the official measures are not equivalent.

Pandemic-Period Records, 2020 to 2022

The 2022 records were analyzed descriptively rather than omitted. They number 247: 228 for Bali, 15 for Yogyakarta, and 4 for Malang. Their overall mean rating is 4.34 and 8.1% are low ratings. The corresponding totals are 529 records in 2020 (mean 4.30; 8.1% low) and only 35 in 2021 (mean 4.54; no low ratings). Yogyakarta's 2022 low-rating share is 20.0%, but it represents only 3 of 15 records; Malang has only four records. These cells are too sparse and pandemic-affected for trend inference, which is why 2020 to 2022 are reported here but excluded from the pre-pandemic rank, origin-period, and official-trend comparisons.

Reviewer Origin and Its Validity

Across all attractions, Australia's share of records fell from 27.8% in 2013 to 2016 to 21.7% in 2017 to 2019 (change-6.0 points, 95% CI-7.0 to-5.1), while the United Kingdom's share rose from 10.7% to 15.1% (+4.5 points, 3.7 to 5.3). The United States was stable (11.6% to 12.3%, +0.7 points,-0.2 to 1.5). India rose by 1.1 points, and Singapore fell by 1.0 point. Table 2 gives the Bali series, which holds 85% of the records and is the one comparable with Bali statistics. At Yogyakarta, no origin share changed detectably, since every interval includes zero. Poland (6.3% to 7.7%) and Georgia (4.6% to 6.1%) rank among the seven largest Yogyakarta origins, which looks unusual and may reflect geocoding or clusters of reviewers, though the descriptor does not document the coding rule.

Table 2. Reviewer origin shares for Bali attractions and official nationality shares (%)

Origin country	2013 to 2016	2017 to 2019	Change, points [95% CI]	Official 2019, monthly range
Australia	32.2	24.9	-7.4 [-8.5,-6.3]	15.4 to 21.1
United Kingdom	10.8	16.0	+5.2 [+4.3, +5.9]	3.6 to 5.0
United States	9.8	10.6	+0.8 [+0.1, +1.5]	3.9 to 4.7 (two months)
India	4.8	6.2	+1.4 [+0.8, +2.0]	4.7 to 8.0
Indonesia	6.9	6.1	-0.9 [-1.4,-0.3]	not reported
Singapore	4.9	3.2	-1.7 [-2.1,-1.2]	4.6 (December only)
China	1.2	1.3	+0.1 [-0.2, +0.4]	14.7 to 28.0

Source: Authors' analysis of Huda (2023); official shares from BPS-Statistics Bali Province (2020).
Note: Change computed from unrounded shares; 95% CI from a user-clustered bootstrap. Official figures are the range across eight monthly 2019 releases (January to March, May to July, September, December); the United States and Singapore appear in only some releases.

The comparison with official 2019 shares shows that the records do not mirror the source-market mix. Australia is moderately overstated (24.9% against roughly 15 to 21%), the United Kingdom by a factor of about three (16.0% against 3.6 to 5.0%), and China is understated by an order of magnitude (1.3% against 14.7 to 28.0%). India is the only large market that fits. A plausible reason, which these data cannot test, is that the platform's reviewer base differs from the arrival mix, for example because some travelers are less likely to post on it, and self-selection of reviewers adds to this (Hu et al., 2017). The direction of the Australian decline is compatible with the official picture, in which Australia held first place in 2019 at roughly one fifth of monthly arrivals, but no annual nationality series for 2013 to 2016 was retrieved, so the size of the decline is unverified and the United Kingdom's rise cannot be confirmed. The shift is best read as a change in who wrote the retained reviews. It is not evidence of a change in source

markets, and it gives no basis for reallocating marketing spend. Liu and Knight (2024) show that origin-market composition matters for destination resilience, which is a reason to rely on official arrival data by nationality for that question.

Provisional Strategic Priorities

The clearest priority is to verify service quality at Kuta Beach, Yogyakarta Palace, and Seminyak Beach, where the low-rating shares are largest and most precisely estimated. Tegenungan Waterfall, Malioboro Road, and Sanur Beach form a second group for review. Managers could combine on-site observation and short visitor surveys with a defined rating question. If review texts become available, coding them may help explain the scores. The current evidence warrants investigation, not intervention. Second, do not use record counts or ranks as evidence of visitation. Infrastructure and long-term marketing commitments need official arrival data or site-level counts, and Sacred Monkey Forest Sanctuary can be called a consistent leader in review volume but not a verified anchor of visitation. Third, do not allocate source-market spending from the platform's origin mix. Use official arrivals by nationality, and read platform origin only as a description of reviewers. These priorities are not ranked by expected return and carry no cost estimates, which would require spending and price data the dataset lacks. Marques et al. (2026) make a related point that volume and value are different quantities, and that volume indicators should not be read as economic performance.

Limitations

The records are not a sample of visitors. Attractions were chosen as the ten most popular per region by platform visit frequency, reviewers select themselves, and the platform's user base differs from official arrivals, as the origin comparison shows. Ratings are compressed, and their meaning is undocumented. The intervals reported here allow for repeated users through clustering, but they do not cover the post hoc selection of the six attractions or any collection effects. The annual series carries a clear artifact, shown by the mismatch with official arrivals and by single-year counts such as 55 records for Waterbom Bali in 2018. Malang is thin (829 records), the Yogyakarta origin fields contain anomalies, and the City table is unusable as supplied. The dataset contains no review text, so numeric ratings cannot reveal why visitors evaluated a site as they did. Validation was partial: official attraction-level counts and a Yogyakarta nationality series were not found, Bali and Yogyakarta official volume indicators are not equivalent, and the official nationality shares are monthly figures for 2019 only, so they bound the comparison without matching the annual periods used for the records. Finally, pooling Bali and Yogyakarta may hide differences between them, and findings from one destination do not transfer automatically to another (El Zein et al., 2025). Zhang et al. (2026) note that in a post-crisis setting the past is a weak predictor of the future, which is why the pandemic years were excluded from trend comparisons here.

CONCLUSION

This study examined 52,930 TripAdvisor review records for 30 attractions in Bali, Malang, and Yogyakarta. Malang provides descriptive context for East Java, but its 829 records are spread too thinly across ten attractions for regional priority setting. Kuta Beach, Yogyakarta Palace, and Seminyak Beach have elevated low-rating shares that remain stable across continents and years and are not explained by visit mode. Managers should verify service quality at these sites before drawing conclusions about service. Annual record counts did not follow official arrivals, and

mid-tier ranks moved by more than sampling error. and reviewer origin overstated the United Kingdom and nearly omitted China, so neither record counts nor origin shares should guide infrastructure or marketing decisions. The 2022 subset contains 247 records, too few for trend inference. More broadly, platform records become useful to managers only when their coverage, uncertainty, and fit with official statistics are reported. Future work should code review text for the flagged sites, collect direct visitor ratings with an anchored scale, obtain official attraction-level counts and annual nationality series, and test whether the dissatisfaction gap persists in more recent records.

DECLARATIONS

Data availability and licensing.

The dataset analyzed is openly available on Mendeley Data (Huda, 2023; https://doi.org/10.17632/h58s544674.1) under a CC BY 4.0 license, and its descriptor presents it for non-commercial research (Huda et al., 2024). The records derive from TripAdvisor, and the descriptor states that the platform's data redistribution policies were followed. We collected no additional platform data, did not redistribute the raw records, and used them only for non-commercial research; readers who reuse platform-derived data should consult the current terms of use of TripAdvisor. Derived tables and analysis scripts are available from the corresponding author on reasonable request. Official statistics come from the sources cited.

Ethical considerations.

Formal ethical review was not required for this secondary analysis of anonymized public data. We did not contact users, link records to external data about individuals, or attempt re-identification, and results are reported only in aggregate.

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Conflicts of interest.

The authors declare no conflict of interest.

Author contributions.

Ida Ayu Kartika Maharani and Putu Ayu Ossi Widiari: conceptualization, data curation, formal analysis, writing (original draft), and writing (review and editing).

Use of AI tools.

Generative AI assistants supported language editing (Opus 5.5). The authors reviewed the outputs, checked numerical results against the source data and cited documents, and took full responsibility for the content.

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