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Article

Multi-Criteria Economic-Efficiency Segmentation of Independent Tourist Flows and Their Net Contribution to the Host Economy: The Case of Uzbekistan

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Abstract: The rapid spread of online booking technologies and the liberalisation of visa regimes have turned the free independent traveler (FIT) into a distinct and economically significant market segment. Conventional destination management, however, still measures the value of a tourist flow chiefly by head-count, a metric that obscures how much of the money spent actually remains in the host territory. This paper proposes and applies a multi-criterion, efficiency-based segmentation framework in which source markets are grouped not by demographic labels but by the net economic value they leave behind. Using official statistics for 2017–2025 and a k-means clustering of forty-four source markets that jointly account for roughly ninety-nine per cent of arrivals, the study first reconstructs the size and dynamics of Uzbekistan's independent flow through a subtraction method, then derives each segment's net contribution by deducting estimated import leakage from gross expenditure. Three clusters emerge: high-volume neighboring mass markets (A), mid-sized high-value long-haul markets (B) and small but fast-growing niche markets (C). The central finding is counter-intuitive for prevailing policy: although segment A records the lowest per-capita spending, its enormous volume and very low leakage make it the source of about three-quarters of the net economic contribution. The results reframe the policy debate, suggesting that formalizing micro-providers, easing cross-border *mobility and reducing leakage* in long-haul segments deliver larger returns than the customary focus on high-spending long-haul arrivals alone.

Keywords: independent tourism; free independent traveler; market segmentation; net economic contribution; tourism leakage; cluster analysis; destination management; Uzbekistan.

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1. Introduction

Understanding the economic substance of tourism begins with the behaviour of its principal actor the tourist and, above all, with the way that actor spends. Over the past decade the diffusion of digital platforms and self-service reservation systems has given rise to a category of travellers who arrange every leg of their journey without an intermediary. In the international literature this category is most often labelled the free independent traveller (FIT): a visitor who plans and books transport, accommodation and ancillary services personally, dispensing with tour operators and travel agents [1]. The World Tourism Organization draws an analogous line between "organised" and "non-organised" travel, the former built around a pre-assembled package purchased from an agent, the latter leaving the choice of destination, transport, lodging and length of stay entirely to the traveller [2]. Uzbek legislation adopts a comparable definition,

treating independent tourism as travel arranged without the participation of operators or agents. The defining criterion, in short, is the degree of autonomy and flexibility in organising the trip.

From an economic standpoint the independent traveller is a consumer with a distinctive spending profile. Such tourists allocate their own budgets, select services on a price-quality basis, and gravitate towards low-cost carriers, local transport, hostels and modest family-run lodging. A recurring observation in the literature is that they stay longer than packaged group tourists, and that average spend, length of stay and repeat visitation are the principal channels through which a visitor contributes to a destination economy [3]. Crucially, the independent traveller's outlays flow directly to local providers, whereas in a conventional package a substantial share of the payment exits the territory through intermediaries and foreign carriers as leakage; the independent traveller's money tends to stay in place, amplifying the multiplier effect. The digital factor is decisive here: online platforms and mobile applications let the traveller compare and book without an intermediary, shortening the value chain and giving local micro-enterprises direct access to demand.

The economic essence of the independent traveller is fully revealed only through the impact on the destination economy. Tourism is an activity that sets in motion both direct branches accommodation, transport, catering and indirect ones such as agriculture, retail and construction. A tourist's outlays generate a multiplier effect in the regional economy: the money a visitor pays becomes the revenue of service enterprises, then the wages of their staff and the income of local suppliers, circulating several times through the economy [4]. The value of the multiplier depends on how much of the money is retained locally: the higher the share of local goods and services, the stronger the effect. It is precisely here that the independent traveller's significance becomes visible, for the structure of that traveller's spending is oriented towards the local economy to a far greater degree than the spending of a conventional package consumer. Hampton's research on backpacker tourism is instructive: independent travellers use family-run guest houses, small eateries and local transport, channelling their money straight to the resident population and markedly reducing leakage [5]. Digital booking platforms reinforce this process by giving local micro- and small enterprises direct access to revenue.

A further dimension of economic essence is the length and territorial reach of the trip. Independent travellers usually stay longer and, rather than confining themselves to the principal attractions, also visit secondary, under-explored areas. This spreads tourist income more evenly across the territory and softens seasonality: longer and more dispersed journeys level out the occupancy of tourist infrastructure and sustain local enterprises in off-peak periods. In this sense independent tourism is significant not only in economic terms but also from the standpoint of balanced regional development, since it diversifies sources of income and narrows inter-regional disparities. The contribution of the independent traveller to the regional economy is therefore multi-faceted, working through direct spending, the multiplier effect, the stimulation of local entrepreneurship and territorial diversification.

This contribution, however, is not uniform. Independent travellers differ among themselves in expenditure, duration and consumption mix, so their economic impact varies accordingly. The methodological response to such internal heterogeneity is market segmentation the division of a consumer market into relatively homogeneous groups in order to assess each group's needs, behaviour and economic weight more precisely. The idea entered marketing theory in the mid-twentieth century, when Smith argued for partitioning a market into homogeneous demand groups rather than differentiating an undifferentiated whole [6]; subsequent work distilled four classic bases demographic, geographic, psychographic and behavioural [7]. In tourism, segmentation is inherently

multidimensional because demand is shaped not only by socio-demographic traits but also by trip purpose, motivation and behaviour [8].

Each classic criterion captures something, yet none, taken alone, expresses the visitor's real material contribution to the destination. Demographic and geographic bases are easy to measure but blind to economic weight; psychographic and behavioural bases illuminate motivation and action but are subjective and costly to collect. Interest has therefore grown in segmenting tourists by an economic criterion chiefly expenditure with Legohérel and Wong showing that daily spend is tightly linked to income and that identifying high-spending groups is economically important for a destination [9]. The present study builds on, but departs from, this line of work in two respects. First, it combines four efficiency criteria average spend, length of stay, repeat visitation and the structure of service use into a single system rather than relying on a single variable. Second, and more importantly, it measures a segment's value not by gross expenditure but by the net economic contribution that actually remains in the host territory after leakage. The objective of the paper is thus twofold: to set out a replicable, efficiency-based segmentation methodology adapted to the independent traveller, and to apply it to Uzbekistan in order to identify which source-market segments leave the most value behind. The remainder of the article is organised along IMRAD lines: the methods section formalises the segmentation procedure and the net-contribution measure; the results section reconstructs the independent flow, derives the three clusters and quantifies their net contributions; and the discussion situates these findings within destination-management theory and draws out their policy implications [10].

2. Methodology

2.1. Data sources. The empirical analysis rests entirely on official, openly published statistics, a choice that makes the procedure replicable and avoids dependence on bespoke surveys — an important property for work intended to inform public policy. Aggregate arrival figures and the country breakdown of arrivals were taken from the National Statistics Committee of Uzbekistan; tourism-export values used to derive per-capita spend were drawn from the balance-of-payments statistics of the Central Bank; and benchmark leakage ranges were taken from UNCTAD. Because the official reporting does not flag whether a trip was arranged independently or through an agency, the independent flow had to be reconstructed indirectly, as described below.

2.2. Reconstructing the independent flow. The volume of independently organised travel was estimated by subtraction. The indicator "number of tourists served by travel firms and organisations" captures arrivals whose trips were arranged through an agency — that is, the organised segment. The independent count then follows by removing this organised component from the total flow:

Independent tourists = Total flow Tourists served by travel firms, (1)

Independent share (%) = (Independent tourists ÷ Total flow) × 100. (2)

Because the agency indicator also includes persons who received only partial services visa processing or a single accommodation booking it slightly overstates the organised segment. The resulting independent share is therefore a conservative, lower-bound estimate; the true share is likely higher.

2.3. Efficiency criteria. Four mutually reinforcing criteria describe a tourist's economic efficiency. Average spend denotes the mean outlay on accommodation, food, transport and other services and represents the direct contribution to the destination. Length of stay matters because a longer-staying visitor consumes more services and raises total spend. Repeat visitation reflects a stable demand base that lowers the cost of acquiring new visitors. Finally, the structure of service use captures how outlays are distributed across local services local guides, family-run lodging, handicrafts which

determines how much value is retained in the territory. Where official statistics report a variable directly (average spend, length of stay) it was used as published; where they do not (repeat visitation, service structure) the variable was approximated through the source-market composition of the flow, on the reasoning that a visitor's behaviour is closely tied to the country of origin.

2.4. The net-contribution measure. The pivotal concept of the framework is the segment's net economic contribution the value that genuinely remains in the territory once the portion leaking abroad (for imported goods, intermediaries and foreign services) has been removed. Operationally, leakage is the gross spend multiplied by the complement of the local-service share, and the net contribution is gross spend less leakage:

$$Leakage = Gross\ spend \times (1 - local\text{-}service\ share), \quad (3)$$

$$Net\ contribution = Gross\ spend - Leakage. \quad (4)$$

This concept is directly tied to tourism-multiplier theory: the larger the share retained in the territory, the stronger the multiplier effect. A segment's economic importance is therefore gauged by its net contribution, not by its gross outlay. A high-spending group that relies mainly on international hotel chains and foreign operators may leave behind less than a moderate-spending group that uses local services a possibility the gross-spend metric conceals.

2.5. Segmentation procedure. Markets were grouped in five sequential steps that follow the established logic of segmentation research. (i) The four efficiency criteria are selected as input variables. (ii) Because the variables are expressed in different units, they are standardised so that they can be compared on a common scale; for the illustrative normalisation the min-max transformation rescales each indicator to a 0–100 range, with the lowest observed value set to 0 and the highest to 100:

$$I = (x - x_min) \div (x_max - x_min) \times 100, \quad (5)$$

where x is the current value and x_min and x_max are the minimum and maximum. (iii) A k-means clustering then groups markets by similarity into segments; the analysis unit is the source market (country) rather than the individual tourist, which keeps the procedure anchored to official statistics. (iv) Each segment's net contribution is computed via equations (3)–(4). (v) Segments are profiled and ranked by economic value, identifying the most valuable groups. Forty-four major source markets together about ninety-nine per cent of the flow were retained, while very small markets were set aside as negligible. The number of clusters was fixed at three on the basis of the analytical purpose and the natural grouping of the markets. To describe each market for clustering, three variables were used: flow volume (2024 arrivals) and growth rate (2024 relative to 2019) from official statistics, and per-capita spend approximated by a geographic-distance proxy (neighbouring, other CIS, far abroad), since long-haul markets are characterised by higher average spend and longer stays.

Table 1

Illustrative computation of net economic contribution (conditional figures)

Indicator	Segment A	Segment B	Segment C
Gross spend (conditional, thousand USD)	600	400	200
Local-service share, %	30	75	50
Leakage (thousand USD)	420	100	100
Net economic contribution (thousand USD)	180	300	100

Indicator	Segment A	Segment B	Segment C
Economic rank	2	1	3

Table 1 makes the logic concrete. Segment A records the highest gross spend (600 thousand USD) but, because only 30 per cent of it reaches local services, the bulk leaks away (420 thousand) and its net contribution falls to 180 thousand. Segment B, with lower gross spend (400 thousand) yet a 75 per cent local share, retains the most (300 thousand) and ranks first. The example confirms the framework's core claim: a segment's worth is set by its net contribution, not by the size of its gross outlay.

2.6. Relation to existing approaches and methodological novelty. The proposed framework draws on several research traditions while combining them in a new way. The normalisation and aggregation of indicators follow the methodology of composite-indicator construction; the grouping of markets by similarity uses cluster analysis, a workhorse of marketing research; and the appraisal of segments by economic value is close to the "economic-value portfolio" logic, in which tourist segments are ranked by expected economic return. The novelty of the present methodology lies in three features. First, where most studies segment tourists by a single criterion usually expenditure or a demographic trait the framework integrates four efficiency criteria into one system. Second, segment value is measured not by gross spend but by the net economic contribution retained in the territory, which explicitly accounts for leakage. Third, the methodology is tailored to the independent traveller, introducing the structure of local-service use as a distinct segmentation criterion. Taken together, these features shift the focus from counting tourists to measuring their genuine economic efficiency, and they make it possible to identify the source-market segments most valuable to the destination.

3. Results

3.1. Dynamics of the total flow. Inbound travel for tourism purposes grew steadily and at a high rate. The indicator stood at 2,690.0 thousand in 2017, reached 5,346.3 thousand in 2018 and 6,748.5 thousand in 2019 the pre-pandemic peak. In 2020 pandemic restrictions cut the flow to 1,504.1 thousand, with a partial recovery to 1,881.3 thousand in 2021. From 2022 the sector rebounded sharply: 5,232.8 thousand in 2022, 6,626.3 thousand in 2023, 7,957.2 thousand in 2024 and a record 11,679.6 thousand in 2025. The period thus falls into three phases growth (2017–2019), pandemic contraction (2020–2021) and rapid recovery (2022–2025). Visa liberalisation was a decisive driver: visa-free entry for the citizens of more than ninety states and an electronic-visa system created the conditions for independently planned and booked travel conditions that independent travellers, above all, exploit [11].

3.2. The size and share of the independent flow. Applying the subtraction method of equations (1)–(2) yields the figures in Table 2. Throughout the period independent travellers formed the dominant part of inbound flow between 69.3 and 87.1 per cent confirming independent travel as the country's leading mode. The share held steadily around 86–87 per cent in 2018–2022 and dipped to 69.3 per cent in 2021, when the post-pandemic total was still depressed. In 2023–2024 a brisk expansion of agency activity widened the organised segment to almost a quarter and trimmed the independent share to 75.2 per cent a sign that the organised market is developing quickly even as the independent flow remains the larger of the two in absolute terms [12].

Table 2

Number and share of independent tourists in Uzbekistan by the subtraction method, 2017–2024

Year	Total flow, thousand	Organised (via firms), thousand	Independent, thousand	Independent share, %
2017	2,690.0	670.0	2,020.0	75.1
2018	5,346.3	713.2	4,633.1	86.7
2019	6,748.5	942.0	5,806.5	86.0
2020	1,504.1	212.3	1,291.8	85.9
2021	1,881.3	577.8	1,303.5	69.3
2022	5,232.8	673.7	4,559.1	87.1
2023	6,626.3	1,157.1	5,469.2	82.5
2024	7,957.2	1,972.9	5,984.3	75.2

In absolute terms the independent count rose almost threefold, from 2,020 thousand in 2017 to 5,984 thousand in 2024, tracking the total flow while its share stayed within a stable 70–87 per cent band. Independent travel thus kept its leading position even as the overall market expanded, and the recent surge of the organised segment underscores the need to refine the mechanisms that regulate the independent flow and formalise its service providers [13].

3.3. The expenditure anatomy of independent travel. Per-capita spend, computed as tourism-service exports divided by the number of tourists, climbed from 197 USD in 2017 (531 million USD of exports ÷ 2,690 thousand) to 442 USD in 2024 (3,520 million ÷ 7,957 thousand). The rise reflects visa facilitation, improving service quality and lengthening stays. Regional data reveal the daily dimension: in Samarkand a foreign tourist spent about 152 USD per day and stayed on average 2.6 days. Length of stay nationwide rose from 2–3 days in 2019 to 4–5 days in 2023, and each additional night was estimated to add some 300 million USD to annual tourism exports a vivid illustration of the economic weight of duration. Because independent travellers plan freely and venture beyond the main attractions, they tend to stay longer, which makes duration an especially important efficiency criterion for this category [14].

3.4. The source-market structure. Repeat visitation and service structure were approximated through the composition of the flow, which divides into three groups: neighbouring states (the Central Asian neighbours and Afghanistan), other CIS countries and far-abroad states. In 2024, 80.6 per cent of arrivals came from neighbouring states (6,411.3 thousand), 10.7 per cent from other CIS countries (850.8 thousand) and only 8.7 per cent from far abroad (694.6 thousand); five countries alone Kyrgyzstan, Tajikistan, Kazakhstan, Russia and Turkmenistan accounted for 89.6 per cent. This structure explains the high independent share directly: arrivals from neighbouring and CIS markets are largely individual, cross-border and visiting-friends-and-relatives travellers who make little use of operators, whereas far-abroad tourists lean more towards organised packages. The structure is, moreover, slowly diversifying: the neighbouring share fell from 87.1 per cent in 2018 to 80.6 per cent in 2024, while the far-abroad share

rose from 5.2 to 8.7 per cent evidence of growing, small but high-value long-haul markets alongside a continuing heavy dependence on a few neighbours [15].

3.5. Cluster structure of the source markets. Standardising the three descriptive variables and applying k-means produced three economically distinct segments. Segment A the leading neighbouring mass markets comprises six countries (Kyrgyzstan, Tajikistan, Kazakhstan, Russia, Turkmenistan, Afghanistan), accounting for 90.5 per cent of the flow (7,199.9 thousand). It is marked by high volume, relatively stable dynamics (average growth 1.18) and low per-capita spend; its visitors are mostly independent, cross-border and visiting-relatives travellers. Despite modest individual outlays, the sheer volume and the direct channelling of spend into the local economy make this the leading segment by gross economic contribution. Segment B mid-sized stable markets covers twenty-five mainly long-haul countries (Turkey, China, Germany, the USA, Japan, Italy, South Korea and others) and supplies 6.7 per cent of the flow (532.9 thousand); it is distinguished by higher growth (1.45), high per-capita spend and longer stays, with a stronger inclination towards cultural and organised tourism. Though small in volume, the high value of each visitor places it among the most efficient markets by revenue density. Segment C fast-growing niche markets comprises thirteen countries (India, Iran, Poland, Indonesia, Egypt, Mongolia and others); its present share is only 2.0 per cent (159.1 thousand) but its average growth of 2.91 makes it the most promising source of future expansion and a strategic reserve for diversifying the flow.

Table 3

Profiles of source-market segments, 2024

Segment	Markets	Volume, thousand (share)	Avg. growth	Economic profile
A	6	7,199.9 (90.5%)	1.18	high volume, independent, low per-capita spend, low leakage
B	25	532.9 (6.7%)	1.45	mid volume, high per-capita spend, more organised
C	13	159.1 (2.0%)	2.91	small volume, high growth potential

The comparison reveals a fundamental trade-off among volume, value and growth: the largest segment (A) has the lowest per-capita spend, the highest-spending segment (B) has limited volume, and the fastest-growing segment (C) still rests on a small base. Judging markets by head-count alone, or by average spend alone, would therefore mislead; only a joint reading of all three dimensions captures economic efficiency correctly.

3.6. Net economic contribution of the segments. The true economic significance of a segment is set not by its head-count or gross spend but by the value left in the country after leakage. Per-capita spend was distributed across segments from the official aggregate (about 442 USD in 2024), with long-haul markets assigned higher spend than neighbours. Leakage was anchored to international benchmarks: UNCTAD reports

import-related leakage of 40–50 per cent in small developing economies and 10–20 per cent in advanced ones; given Uzbekistan's relatively strong base of local food, handicrafts and services, leakage was set at the lower end 20 per cent for A, 35 per cent for C and 40 per cent for B. Applying equation (4): segment A yields 7,199.9 thousand × 344 × (1 − 0.20) = 1,981 million USD; segment B yields 532.9 thousand × 1,578 × (1 − 0.40) = 505 million; and segment C yields 159.1 thousand × 1,249 × (1 − 0.35) = 129 million.

Table 4

Net economic contribution of source-market segments, 2024

Segment	Volume, thousand	Avg. spend, USD	Leakage, %	Net contribution, mln USD	Net share, %
A	7,199.9	344	20	1,981	75.8
B	532.9	1,578	40	505	19.3
C	159.1	1,249	35	129	4.9
Total	7,891.9	442	26	2,615	100

Two findings stand out. First, the combined gross spend of the three segments before leakage is about 3.5 billion USD, which corresponds almost exactly to Uzbekistan's official 2024 tourism exports, confirming the internal consistency of the computation; after leakage the net contribution is roughly 2.6 billion USD. Second, and more striking, segment A delivers 75.8 per cent of the net contribution (1,981 million) despite the lowest per-capita spend, while B supplies 19.3 per cent (505 million) and C only 4.9 per cent (129 million). In moving from gross to net terms, segment A's share rises from 71 to 76 per cent while segment B's falls from 24 to 19 per cent a redistribution driven by the low leakage of neighbouring independent travellers whose spend goes directly to local lodging, catering and services. Accounting for the multiplier through which the total impact is roughly twice the direct net contribution leaves the relative dominance of segment A unchanged.

4. Dicussion

The results carry an immediate policy lesson that runs against the grain of conventional thinking. Destination strategies commonly privilege high-spending long-haul arrivals on the assumption that they bring the most money. The net-contribution analysis shows the opposite for Uzbekistan: the segment that retains the most value is the large-volume, low-leakage cluster of neighbouring markets. Reinforcing the local infrastructure that serves independent travellers, formalising informal services and easing cross-border mobility therefore rank among the most economically rewarding lines of action. This does not diminish the strategic role of long-haul and niche markets their high per-capita value makes them essential for diversification and future revenue growth but it does relocate the centre of gravity of efficiency-oriented policy.

The findings also speak to a long-standing debate in destination economics about whether to count tourists or to count value. By formalising the net-contribution measure and embedding it in a replicable segmentation procedure, the study offers a tool that translates the abstract notion of “value retention” into an operational, statistics-based number. The approach is close in spirit to the “economic-value portfolio” idea, in which tourist segments are appraised by their expected economic return, but it adds two elements specific to independent travel: a leakage-adjusted retention measure and an explicit treatment of the service-use structure as a segmentation criterion. The strong

correspondence between the computed gross spend and the official export figure lends external credibility to the leakage assumptions, even though those assumptions remain the chief source of uncertainty in the estimates.

A second implication concerns leakage management in the high-value segments. Because segment B loses an estimated 40 per cent of its gross spend abroad, raising the local-service share through locally owned lodging, local operators and local products would increase its net contribution without any rise in arrivals. The framework thus suggests two complementary levers: expanding the low-leakage volume of neighbouring markets and compressing the leakage of high-spending long-haul markets. Both levers point towards the same structural reform: bringing micro-providers into the formal economy and connecting them to demand through a national digital platform, so that more of each tourist's spend is captured, measured and retained.

Beyond the policy reordering, the analysis contributes to the conceptual treatment of independent tourism as an economic phenomenon. The literature has tended to frame independent or backpacker travel either as a cultural style or as a low-budget niche; the present results recast it as the economic backbone of a developing destination. The very feature that makes independent travellers appear unremarkable in head-line spending statistics their modest per-capita outlay coexists with the feature that makes them economically decisive: their low leakage. This pairing is not coincidental. Spending that bypasses tour operators and foreign carriers and flows to family lodging, local catering and local guides is, almost by construction, low-leakage spending. The independent traveller is thus not merely a budget-conscious visitor but a structurally high-retention one, and the policy that serves this traveller is, in effect, a policy of value retention. Recognising this re-orders not only spending priorities but the conceptual hierarchy of market segments.

Several limitations qualify the conclusions. The independent flow is reconstructed indirectly, and the agency indicator's inclusion of partial services makes the estimated independent share a lower bound. Repeat visitation and service structure are proxied through market composition rather than observed directly. Per-capita spend is distributed across segments from an aggregate, and leakage rates are drawn from international ranges adjusted by expert judgement rather than measured locally. These are not fatal weaknesses the consistency check against official exports is reassuring but they mark out a clear agenda for refinement: provider-level survey data, payment-system records and input-output coefficients would all sharpen the leakage estimates and allow the proxies to be replaced with observed values.

5. Conclusion

This paper set out to develop and apply an efficiency-based segmentation of independent tourist flows that measures a segment's worth by the value it leaves in the host economy rather than by its size. Reconstructing Uzbekistan's independent flow for 2017–2025 showed that independent travellers consistently form the dominant share of arrivals between roughly two-thirds and seven-eighths of the total making them the country's leading travel mode and a legitimate object of dedicated policy. A k-means clustering of forty-four source markets produced three economically distinct segments, and a leakage-adjusted net-contribution analysis demonstrated that the high-volume, low-leakage neighbouring markets generate about three-quarters of the value retained domestically, even though their per-capita spend is the lowest of the three. The principal contribution of the study is conceptual as much as empirical: it shows that head-count and gross spend are misleading guides to economic efficiency, and that a simple, transparent, leakage-adjusted measure can reorder priorities in favour of the segments that genuinely enrich the local economy. For practice, the implication is to direct mechanisms formalisation of micro-providers, eased mobility and leakage reduction towards the segments and territories where retained value is greatest. Future work

should replace the present proxies with observed micro-data and extend the framework with an econometric model linking the segmentation results to forecasts of the independent share.

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