

# The Tourism–Poverty Paradox in Jamaica: A Parish-Level Mathematical Examination of Hotel Concentration, Tourism Employment, and Poverty

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**ABSTRACT:** Tourism is one of Jamaica's principal economic sectors, yet the geographical coexistence of internationally competitive hotel enclaves and economically disadvantaged communities raises questions about the extent to which tourism development translates into local poverty reduction. This study examines the parish-level relationship between poverty and hotel-tourism concentration and develops a mathematical Tourism–Poverty Transmission Function explaining how tourism activity may affect household poverty through employment, wages, local procurement, entrepreneurship, fiscal transfers, leakages, and spatial inequality. Official 2012 parish poverty data indicate substantial geographical variation, ranging from 9.4% in St Mary, 10.8% in Hanover, and 11.1% in St James to 28.6% in Kingston and 32.5% in St Thomas, while major accommodation activity was concentrated around Montego Bay, Ocho Rios and Negril. A descriptive comparison shows that the five-parish north/north-west tourism belt of St Ann, Trelawny, St James, Hanover and Westmoreland had a mean poverty prevalence of approximately 14.5%, compared with approximately 22.1% among the remaining nine parishes, representing a 7.7-percentage-point difference. Nevertheless, the coexistence of relatively low poverty in tourism-intensive St James and Hanover with higher poverty in Westmoreland and St Ann demonstrates that hotel concentration alone cannot adequately explain parish poverty and that tourism's poverty-reducing effect depends on local economic linkages, employment quality, human capital, rurality, ownership, and economic leakage. The study concludes that Jamaica should shift from measuring tourism success primarily through arrivals and hotel rooms towards a Local Tourism Retention and Poverty Reduction framework that measures how much tourism expenditure, employment, ownership, procurement, and value added remain within host communities.

**KEYWORDS:** Jamaica; poverty; tourism; hotels; parish inequality; tourism leakage; local economic development

## 1. INTRODUCTION

Tourism occupies a strategically important position in Jamaica's economy because it generates foreign exchange, employment, investment, taxation, infrastructure development, and demand for numerous supporting services (World Bank, 2022; JTB, 2018; Ministry of Tourism, 2014; World Bank, 2024). Its economic importance has encouraged successive governments to promote hotel construction and concentrate substantial tourism infrastructure along Jamaica's northern and western coastal corridors. Montego Bay, Ocho Rios and Negril emerged as the country's dominant resort centres, while subsequent development has expanded accommodation investment in Trelawny, Hanover, St Ann, St James and Westmoreland. The geographical concentration of high-value tourism assets within parishes creates an important development question concerning whether communities geographically closest to hotels experience correspondingly lower levels of poverty. Economic theory would suggest that hotel investment can reduce poverty through employment, wages, local purchasing, entrepreneurship, taxation, infrastructure and multiplier effects. Nevertheless, the magnitude of these benefits depends fundamentally on how much tourism-generated income remains within the parish and reaches economically vulnerable households rather than leaking outside the local economy.

Poverty remains geographically heterogeneous across Jamaica despite substantial national progress in living standards and employment. The Jamaica Survey of Living Conditions has measured household welfare since 1988 and remains one of the principal official instruments through which poverty and socioeconomic conditions are monitored (STATIN, 2026; PIOJ, 2025; PIOJ, 2017; World Bank, 2026). Official parish estimates show that poverty has historically varied considerably, with urbanised parishes generally displaying different patterns from predominantly rural and agricultural parishes. In 2012, for example, parish poverty ranged from 9.4% in St Mary and 10.8% in Hanover to 28.6% in Kingston and 32.5% in St Thomas. Such heterogeneity indicates that national poverty rates can conceal substantial subnational differences in economic opportunity and household consumption. A parish-level approach is necessary for determining whether Jamaica's major tourism investments are geographically associated with improved socioeconomic outcomes.

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The relationship between tourism and poverty is theoretically ambiguous rather than automatically beneficial. Hotels can create direct jobs, stimulate transportation, entertainment, agriculture, construction, retail, personal services and small-enterprise activity, thereby producing direct, indirect and induced income effects (World Bank, 2001; World Bank, 2022; Ministry of Tourism, 2014; Dodman, 2012). Conversely, imported food, foreign ownership, repatriated profits, external management services and imported capital goods can cause substantial portions of tourism expenditure to leave the host economy before producing broad local multiplier effects. Resort enclaves may coexist geographically with low-income communities even when tourism revenues and visitor arrivals are substantial. Employment itself may also be seasonal, occupationally segmented, relatively low-paid, or vulnerable to international shocks, thereby weakening its long-term poverty-reducing capacity. The appropriate empirical question is not whether tourism generates economic activity, which is well established, but whether the geographical concentration of hotel tourism is associated with lower poverty in the Jamaican parishes hosting that activity.

Jamaica provides an especially informative setting for investigating this question because tourism development is spatially concentrated. The country's sustainable tourism planning documents identify Negril, Montego Bay and Ocho Rios as the principal high-density resort centres and historically concentrated accommodation along the north and north-western coast (Ministry of Tourism, 2014; JTB, 2018; PIOJ, 2017; STATIN, 2011). Tourism planning has subsequently identified major additional room investments in St Ann, Trelawny, St James and Hanover. Such spatial concentration creates a quasi-geographical contrast between parishes possessing substantial hotel-tourism activity and parishes whose economies depend more heavily on agriculture, government, manufacturing, commerce or other services. If hotel concentration generates strong local economic multipliers, tourism-intensive parishes should generally exhibit lower poverty after relevant structural differences are considered. If substantial tourism enclaves coexist with persistent poverty, however, hotel presence alone would be an inadequate measure of inclusive development.

A clear research gap emerges from this distinction. Considerable Jamaican scholarship and official reporting examine national poverty, tourism arrivals, accommodation capacity, employment and tourism's macroeconomic importance, but comparatively little research mathematically integrates parish poverty, hotel-tourism concentration, local economic retention, rurality and tourism leakage within a unified subnational framework (PIOJ, 2017; JTB, 2018; World Bank, 2022; Dodman, 2012). Existing aggregate tourism indicators cannot determine whether economic benefits remain within the parishes generating visitor expenditure or whether they are redistributed geographically and institutionally elsewhere. Similarly, the observation that a tourism-intensive parish possesses low poverty does not establish causality because urbanisation, education, migration, infrastructure and labour-market characteristics may simultaneously influence both hotel investment and poverty. The present study addresses this gap by developing a Tourism–Poverty Transmission Function and examining the descriptive spatial relationship between Jamaica's hotel-tourism geography and official parish poverty estimates. The discussion and conclusion explicitly address this gap by demonstrating that tourism concentration appears associated with lower average poverty in the principal tourism belt, while also showing why hotel concentration cannot independently explain parish poverty.

## **2. LITERATURE REVIEW**

### **2.1 Poverty in Jamaica**

Poverty in Jamaica is conventionally measured using household consumption and a nationally established poverty line. The Jamaica Survey of Living Conditions, jointly implemented by STATIN and PIOJ, provides nationally representative information concerning consumption, education, health, housing, social protection and related dimensions of household well-being (STATIN, 2026; PIOJ, 2025; PIOJ, 2017; World Bank, 2026). Poverty has fluctuated substantially in response to economic growth, employment, inflation, external shocks, agricultural performance and household purchasing power. The COVID-19 pandemic demonstrated this vulnerability clearly because disruptions to tourism and other services contributed to deteriorating labour-market conditions and increased economic insecurity. Recent improvements in employment and household consumption have subsequently contributed to substantial reductions in official consumption-based poverty.

Geographical differences remain important because economic opportunities are not distributed uniformly across Jamaica. PIOJ's historical parish analysis identified structural persistence in which several more urbanised parishes tended to record relatively low poverty while several rural parishes repeatedly appeared among higher-poverty areas (PIOJ, 2017; STATIN, 2011; World Bank, 2026; PIOJ, 2025). Rural households face distinctive constraints involving agricultural volatility, transportation, employment diversity, access to services, climate exposure and labour-market opportunities. Urbanisation may confound any apparent relationship between tourism and poverty because some major tourism centres are also relatively urbanised economic nodes. St James, for example, contains Montego Bay, which functions simultaneously as a tourism centre and a major urban-commercial economy. A credible tourism–poverty model must distinguish hotel intensity from broader urban economic development.

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## **2.2 Tourism and Economic Development**

Tourism can affect poverty through several interconnected transmission channels. Direct effects occur when hotels, restaurants, attractions and transportation companies employ residents or purchase goods and services from local businesses, while indirect effects occur through suppliers and induced effects arise when workers spend tourism-derived income within their communities (World Bank, 2001; Ministry of Tourism, 2014; World Bank, 2022; JTB, 2018). Hotel construction can additionally increase demand for building materials, professional services, transportation, utilities and property development. Governments receive taxes and fees that can potentially finance public infrastructure, health, education, security and social programmes. Tourism can generate a geographically concentrated development stimulus when these transmission mechanisms operate effectively.

The poverty-reducing capacity of tourism nevertheless depends on the structure of ownership and production. A tourism dollar received by a locally owned hotel purchasing Jamaican food, employing residents and contracting local businesses has a substantially different poverty effect from a tourism dollar rapidly spent on imported inputs or transferred to foreign owners (World Bank, 2001; World Bank, 2022; Dodman, 2012; Ministry of Tourism, 2014). This distinction is conventionally discussed through the concept of economic leakage. Historical assessments of Jamaica have raised concerns that substantial portions of tourism earnings may leave the domestic economy through imported goods, services, interest payments and investment-income transfers. The geographical question is even narrower because income can remain in Jamaica while still leaving the parish in which tourism activity occurs. National tourism retention and local parish retention should be conceptualised as related but distinct economic processes.

## **2.3 Tourism Enclaves and Spatial Inequality**

Tourism enclaves create an important challenge for inclusive development. Resort complexes may possess high-quality roads, water, security, telecommunications, beaches and other infrastructure while adjacent communities experience deficiencies in housing, sanitation, public space, employment and social services (Dodman, 2012; Ministry of Tourism, 2014; World Bank, 2022; PIOJ, 2017). Such geographical proximity can create the appearance of economic integration even when financial linkages between the resort and surrounding community are comparatively weak. Migration towards tourism centres can further increase demand for housing and services if employment expectations attract workers more rapidly than urban infrastructure expands. Tourism growth can reduce poverty for some households while simultaneously creating new spatial pressures and inequalities.

The Jamaican case has long generated discussion concerning whether tourism enclaves are sufficiently integrated with host communities. Sustainable tourism scholarship has argued that communities surrounding major tourism areas have not always received development benefits proportional to the economic value generated by nearby tourism assets (Dodman, 2012; Ministry of Tourism, 2014; World Bank, 2001; World Bank, 2022). This does not establish that tourism causes poverty because the counterfactual level of poverty without tourism is unknown. Rather, it suggests that gross tourism revenue should not automatically be treated as a measure of community welfare. An empirical model should measure the channels through which tourism income reaches households instead of relying exclusively on hotel counts or visitor arrivals. This conceptual distinction forms the basis of the mathematical framework developed below.

## **3. MATERIALS AND METHODS**

This study employs a quantitative ecological design in which Jamaica's 14 parishes constitute the principal geographical units of analysis. Parish poverty prevalence is derived from official PIOJ data compiled from the Jamaica Survey of Living Conditions, while tourism geography is identified from Jamaica Tourist Board and Ministry of Tourism accommodation and resort information (PIOJ, 2017; JTB, 2018; Ministry of Tourism, 2014; STATIN, 2011). The principal poverty comparison uses 2012 because this is an official year for which PIOJ publishes a complete parish-level poverty series. Tourism information from the corresponding period is used wherever available, while later hotel-development information is used only to demonstrate the continuing geographical concentration of accommodation and not retrospectively treated as 2012 hotel capacity. This distinction prevents temporal mismatch from generating artificial statistical precision. The study is both empirical and model-building: the poverty comparison is observed, whereas coefficients in the proposed multivariate equations require future estimation using a harmonised parish-year panel.

Poverty prevalence, denoted ( $P_i$ ), represents the percentage of residents in parish ( $i$ ) living below Jamaica's consumption-based poverty line. Hotel-tourism concentration, denoted ( $H_i$ ), is conceptually measured through hotel rooms per 1,000 parish residents rather than the simple number of establishments because accommodation properties differ substantially in size (PIOJ, 2017; JTB, 2018; Ministry of Tourism, 2014; STATIN, 2011). Tourism employment, denoted ( $T_i$ ), captures direct accommodation-sector employment where geographically compatible data are available. Rurality, denoted ( $R_i$ ), represents the proportion of the parish population or households located in rural areas and is included because poverty and hotel investment may both correlate with urbanisation. Additional controls should include education, unemployment, economic structure, population density, infrastructure and household demographic composition. The resulting framework avoids interpreting hotel location as an isolated determinant of poverty.

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Because only 14 parishes exist, statistical power constitutes an important limitation for cross-sectional multivariate estimation. A simple Pearson correlation may be useful descriptively, but coefficients based on 14 observations would be highly sensitive to influential parishes and omitted-variable bias (Wooldridge, 2020; PIOJ, 2017; STATIN, 2011; World Bank, 2022). The preferred future design is a parish-year panel combining repeated poverty estimates with tourism rooms, tourism employment, population and socioeconomic controls. Fixed-effects modelling could then control for time-invariant parish characteristics, while year effects could capture national shocks affecting all parishes simultaneously. Spatial econometric models may additionally be useful because tourism employment and household income can cross parish boundaries, around Negril and other geographically contiguous resort economies. The present cross-sectional findings should be interpreted as evidence of spatial association rather than causal estimates.

### 4. MATHEMATICAL FRAMEWORK

The first mathematical quantity is the Hotel Intensity Index, which standardises accommodation capacity by parish population. Let  $R_{i1}$  represent the number of hotel rooms located in parish  $i$ , and  $Population_i$  represent the resident parish population. Hotel intensity is then expressed as the number of hotel rooms per 1,000 residents, allowing large and small parishes to be compared on a common basis (JTB, 2018; Ministry of Tourism, 2014; STATIN, 2011; PIOJ, 2017). Higher values indicate greater geographical concentration of hotel capital relative to the resident population. This measure is preferable to hotel counts because one 1,000-room resort represents substantially greater accommodation capacity than several small properties. The index is defined as:

$$H_i = \frac{R_{i1}}{Population_i} \times 1,000$$

The baseline poverty equation hypothesises that poverty is a function of hotel intensity and relevant socioeconomic characteristics. Let  $P_i$  represent parish poverty prevalence,  $H_i$  hotel intensity,  $U_i$  unemployment,  $E_i$  education,  $R_i$  rurality, and  $X_i$  a vector of additional parish characteristics, and by 1,000 = standardises the measure as hotel rooms per 1,000 residents. Thus, a higher  $H_i$  indicates a greater concentration of hotel accommodation relative to the parish population. The coefficient  $\beta_1$  estimates the conditional association between hotel intensity and poverty after the included covariates are held constant (Wooldridge, 2020; PIOJ, 2017; World Bank, 2022; Ministry of Tourism, 2014). A negative estimated coefficient would be consistent with greater hotel intensity being associated with lower poverty, whereas a positive coefficient would indicate the opposite conditional relationship. Neither sign should be imposed as an empirical conclusion before the model is estimated. The baseline model is:

$$P_i = \beta_0 + \beta_1 H_i + \beta_2 U_i + \beta_3 E_i + \beta_4 R_i + \gamma' X_i + \varepsilon_i$$

Where  $P_i$  = parish poverty prevalence,  $\beta_0$  = intercept,  $H_i$  = Hotel Intensity Index,  $U_i$  = unemployment,  $E_i$  = education/human capital,  $R_i$  = rurality,  $X_i$  = vector of additional socioeconomic characteristics,  $\gamma'$  = corresponding vector of coefficients, and  $\varepsilon_i$  = error term. Word-ready equation:

$$P_i = \beta_0 + \beta_1 H_i + \beta_2 U_i + \beta_3 E_i + \beta_4 R_i + \gamma' X_i + \varepsilon_i$$

Where:  $P_i$  = poverty prevalence in parish  $i$ ;  $\beta_0$  = intercept;  $H_i$  = Hotel Intensity Index;  $U_i$  = unemployment rate;  $E_i$  = education/human capital;  $R_i$  = rurality;  $X_i$  = vector of additional socioeconomic and demographic controls;  $\gamma'$  = transposed vector of coefficients associated with  $X_i$ ; and  $\varepsilon_i$  = error term.

The coefficient  $\beta_1$  is of particular interest because it estimates the conditional association between hotel intensity and parish-level poverty, holding the other variables constant.

A second equation allows the relationship between tourism and poverty to be non-linear. Tourism may initially reduce poverty substantially through employment and investment, while increasingly concentrated resort development may generate diminishing local returns when leakages rise, or economic integration reaches a ceiling (World Bank, 2001; Dodman, 2012; World Bank, 2022; Ministry of Tourism, 2014). The squared hotel-intensity term allows the marginal relationship to vary with the level of tourism concentration. A statistically significant positive  $\beta_2$  combined with negative  $\beta_1$  would be consistent with an initially poverty-reducing association that becomes progressively weaker at high tourism concentration. Other coefficient combinations would imply different non-linear patterns and should be interpreted empirically rather than assumed. The quadratic model is:

$$P_i = \beta_0 + \beta_1 H_i + \beta_2 H_i^2 + \gamma' X_i + \varepsilon_i$$

Word-ready equation:

$$P_i = \beta_0 + \beta_1 H_i + \beta_2 H_i^2 + \gamma' X_i + \varepsilon_i$$

Interpretation: This is the non-linear Tourism–Poverty Model. It tests whether the relationship between hotel intensity and parish-level poverty changes as hotel concentration increases.

In particular,  $\beta_1$  captures the linear relationship, while  $\beta_2$  captures the curvature or non-linear relationship associated with  $H_i^2$  (Meaning:  $H_i^2$  represents the squared Hotel Intensity Index for parish  $i$ . It is included in the model to test whether the relationship between hotel intensity and parish-level poverty is non-linear, meaning that the effect may change as hotel concentration increases). If  $\beta_1 < 0$  (Meaning:  $\beta_1 < 0$  indicates that the linear component of the relationship between hotel intensity and poverty is negative. Thus, increases in hotel intensity are initially associated with decreases in parish-level poverty, holding other

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factors constant) indicates a negative relationship between hotel intensity and parish-level poverty. In the model, greater hotel intensity is associated with lower poverty, holding the other variables constant, and  $\beta_2 > 0$ , (Meaning:  $\beta_2 > 0$  means that the coefficient of the squared Hotel Intensity Index,  $H_i^2$ , (Meaning:  $H_i^2$  represents the square of the Hotel Intensity Index for parish  $i$ . It is the quadratic term used to determine whether the relationship between hotel concentration and poverty is non-linear and positive. In the quadratic tourism–poverty model, this indicates upward curvature in the relationship between hotel intensity and poverty; for example, increasing hotel intensity would initially be associated with lower poverty, but the poverty-reducing association would become progressively weaker as hotel concentration increases.

The most important theoretical extension is the Tourism–Poverty Transmission Function, which distinguishes gross tourism activity from locally retained tourism benefits. Let  $G_i$  represent gross tourism-generated economic activity,  $L_i$  the leakage proportion,  $S_i$  the share of locally sourced goods and services,  $W_i$  the resident employment-and-wage transmission factor, and  $M_i$  the local multiplier. Effective locally retained tourism income,  $Y_i^T$  (represents effective locally retained tourism income in parish  $i$ —the portion of tourism-generated economic activity that remains within the local economy through resident wages, local procurement, locally owned businesses, and multiplier effects) increases when local sourcing, resident employment and multiplier effects are strong and decreases when leakage is high (World Bank, 2001; World Bank, 2022; Dodman, 2012; Ministry of Tourism, 2014). The function explains why two parishes possessing similar hotel capacity can experience different poverty outcomes. What matters for poverty reduction is not simply the quantity of tourism activity, but the proportion translated into household income and local productive activity.

$$Y_i^T = G_i(1 - L_i)S_iW_iM_i$$

Word-ready equation:

$$Y_i^T = G_i(1 - L_i)S_iW_iM_i$$

Poverty can then be expressed as a decreasing logistic function of effective locally retained tourism income and other socioeconomic resources. The logistic specification is useful because predicted poverty probability must remain between zero and one. Let  $p_i$  denote the probability that a randomly selected resident of parish ( $i$ ) is poor, ( $Y_i^T$ ) locally retained tourism income,  $E_i$  education and human capital,  $Q_i$  employment quality,  $R_i$  rural disadvantage, and  $D_i$  other deprivation factors (World Bank, 2026; PIOJ, 2017; World Bank, 2022; STATIN, 2026). Higher locally retained tourism income, education and employment quality are hypothesised to reduce the log-odds of poverty, whereas rural and structural deprivation are expected to increase them. The resulting Parish Tourism–Poverty Probability Function is:

$$p_i = \frac{1}{1 + \exp[-(\alpha_0 - \alpha_1 Y_i^T - \alpha_2 E_i - \alpha_3 Q_i + \alpha_4 R_i + \alpha_5 D_i)]}$$

Meaning: This is the parish tourism–poverty probability function. It estimates the probability,  $p_i$ , that a randomly selected resident of parish  $i$  experiences poverty.

Here,  $Y_i^T$  represents locally retained tourism income,  $E_i$  education or human capital,  $Q_i$  employment quality,  $R_i$  rurality or rural disadvantage, and  $D_i$  other deprivation factors. The  $\alpha$  terms are the corresponding model coefficients. The logistic formulation ensures that the estimated probability of poverty remains between 0 and 1.

Word-ready equation:

$$p_i = \frac{1}{1 + \exp[-(\alpha_0 - \alpha_1 Y_i^T - \alpha_2 E_i - \alpha_3 Q_i + \alpha_4 R_i + \alpha_5 D_i)]}$$

Meaning:  $p_i$  represents the estimated probability of poverty for a resident of parish  $i$ . The equation models this probability as a function of locally retained tourism income  $Y_i^T$ , education  $E_i$ , employment quality  $Q_i$ , rurality  $R_i$ , and other deprivation factors  $D_i$ . The logistic form ensures that  $p_i$  always falls between 0 and 1.

## 5. FINDINGS

Official parish poverty estimates demonstrate considerable geographical inequality across Jamaica. In 2012, St Mary recorded the lowest reported parish poverty prevalence at 9.4%, followed by Hanover at 10.8%, St James at 11.1% and Trelawny at 13.2% (PIOJ, 2017; STATIN, 2011; PIOJ, 2025; World Bank, 2026). At the opposite end, St Thomas recorded 32.5%, Kingston 28.6%, St Catherine 24.0% and St Elizabeth 23.8%. Jamaica's national poverty estimate in the same table was 19.9%, meaning that several tourism-oriented western and northern parishes were below the national level. Nevertheless, St Ann at 18.4% and Westmoreland at 18.9% demonstrate that substantial tourism activity did not correspond uniformly with extremely low poverty. These differences provide initial support for examining tourism intensity while simultaneously demonstrating that a single-factor hotel explanation is inadequate.

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**Table 1 Poverty Prevalence by Parish, Jamaica, 2012**

| Parish       | Poverty prevalence (%) | Relative to national rate |
|--------------|------------------------|---------------------------|
| Kingston     | 28.6                   | Above                     |
| St Andrew    | 17.7                   | Below                     |
| St Thomas    | 32.5                   | Above                     |
| Portland     | 21.4                   | Above                     |
| St Mary      | 9.4                    | Below                     |
| St Ann       | 18.4                   | Below                     |
| Trelawny     | 13.2                   | Below                     |
| St James     | 11.1                   | Below                     |
| Hanover      | 10.8                   | Below                     |
| Westmoreland | 18.9                   | Below                     |
| St Elizabeth | 23.8                   | Above                     |
| Manchester   | 22.5                   | Above                     |
| Clarendon    | 19.33                  | Below                     |
| St Catherine | 24.0                   | Above                     |
| Jamaica      | 19.9                   | —                         |

**Source:** PIOJ, compiled from Jamaica Survey of Living Conditions data supplied by STATIN.

A striking descriptive pattern emerges when the principal north/north-west tourism belt is examined collectively. St Ann, Trelawny, St James, Hanover and Westmoreland recorded poverty rates of 18.4%, 13.2%, 11.1%, 10.8% and 18.9%, respectively, producing an unweighted mean of approximately 14.5%. The remaining nine parishes recorded an unweighted mean of approximately 22.1%, yielding a descriptive difference of approximately 7.7 percentage points between the two groups. This pattern is compatible with the proposition that tourism-intensive areas may possess stronger employment and income opportunities, but it cannot establish that hotel development caused the difference (PIOJ, 2017; Ministry of Tourism, 2014; JTB, 2018; STATIN, 2011). Resort location is non-random; tourism parishes differ in urbanisation and infrastructure, and workers may migrate towards tourism centres. The finding should be described as a negative descriptive association between membership in the major tourism belt and parish poverty, pending stronger causal analysis.

**Table 2 Descriptive Poverty Comparison: Major Tourism Belt and Other Parishes**

| Parish grouping                      | Number of parishes | Mean poverty prevalence (%) |
|--------------------------------------|--------------------|-----------------------------|
| North/north-west major tourism belt* | 5                  | 14.5                        |
| Other parishes                       | 9                  | 22.1                        |
| Difference                           | —                  | –7.7 percentage points      |

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\*Tourism-belt definition: St Ann, Trelawny, St James, Hanover and Westmoreland. Classification reflects the geographical concentration of Jamaica's major north/north-west resort economy and should not be interpreted as an econometrically estimated treatment group.

Accommodation-sector employment provides additional evidence concerning the magnitude of tourism's labour-market channel. Jamaica Tourist Board data report approximately 35,197 persons employed in accommodation in 2012, including 12,203 in Montego Bay, 9,306 in Ocho Rios and 9,365 in Negril (JTB, 2018; Ministry of Tourism, 2014; World Bank, 2022; PIOJ, 2017). These three major resort areas accounted for approximately 30,874 accommodation jobs, or nearly 88% of the reported accommodation-sector employment across the six tourism areas. Montego Bay alone accounted for more than one-third of the total, providing a plausible labour-market mechanism through which St James could experience comparatively low poverty. Negril and Ocho Rios similarly represent substantial employment centres affecting Westmoreland/Hanover and St Ann, respectively. The geographical correspondence between major accommodation employment and comparatively low poverty in several tourism parishes is economically plausible, although it remains insufficient for causal inference.

**Table 3 Accommodation-Sector Employment by Major Resort Area, 2012**

| Resort area  | Accommodation employment | Share of reported total (%) |
|--------------|--------------------------|-----------------------------|
| Montego Bay  | 12,203                   | 34.7                        |
| Ocho Rios    | 9,306                    | 26.4                        |
| Negril       | 9,365                    | 26.6                        |
| Kingston     | 2,203                    | 6.3                         |
| Port Antonio | 1,072                    | 3.0                         |
| South Coast  | 1,048                    | 3.0                         |
| Total        | 35,197                   | 100.0                       |

Source: Jamaica Tourist Board, Annual Travel Statistics.

The hotel geography is also consistent with long-standing national tourism planning. Jamaica's tourism master planning identified the principal accommodation corridor as extending along the north and north-west coast from Negril through Montego Bay to Ocho Rios, while identifying these three locations as major centres for additional room development (Ministry of Tourism, 2014; JTB, 2018; World Bank, 2022; Dodman, 2012). Later investment plans continued this pattern, identifying substantial room development in St Ann, Trelawny, St James and Hanover. The persistence of this geography means that tourism capital is not randomly distributed among Jamaica's 14 parishes. Coastal amenities, airports, beaches, established tourism infrastructure, transportation networks and historical investment influence hotel location. Any causal model must address this spatial selection process rather than simply regressing poverty on contemporary hotel counts.

### 6. THE TOURISM–POVERTY PARADOX

The findings reveal what may appropriately be termed a Tourism–Poverty Paradox, although the concept requires careful interpretation. The paradox does not mean that tourism increases poverty, nor does it mean that communities near hotels necessarily remain poor. Rather, it describes the possibility that globally competitive, high-value tourism infrastructure can coexist spatially with economically vulnerable communities because tourism revenue does not automatically translate into broadly distributed local household income (Dodman, 2012; World Bank, 2001; World Bank, 2022; Ministry of Tourism, 2014). Hotel revenue may pass through wages, suppliers, taxation and local enterprises, but it may also leave the locality through imports, external ownership, management fees, financing costs and purchases from businesses located elsewhere. The central development variable is the local retention and distribution of tourism value, rather than hotel presence itself.

Westmoreland illustrates why this distinction matters. The parish forms a major component of the Negril tourism economy, yet its 2012 poverty prevalence of 18.9% was considerably higher than St James at 11.1% and Hanover at 10.8% (PIOJ, 2017; JTB, 2018;

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Ministry of Tourism, 2014; STATIN, 2011). If hotel concentration alone determined poverty, similarly, tourism-intensive western parishes would be expected to converge towards comparable poverty outcomes. Their differences imply that local employment structures, rural populations, agriculture, education, migration, community access to tourism opportunities and the distribution of tourism income matter substantially. Negril's functional tourism economy also crosses administrative boundaries between Westmoreland and Hanover, making parish-level attribution intrinsically imperfect. This is precisely why future research should combine parish statistics with community-level spatial analysis.

St James provides the strongest descriptive case for a potentially favourable tourism–poverty relationship. Montego Bay contained the largest reported accommodation employment among the major resort areas in 2012, while St James recorded poverty of only 11.1% (JTB, 2018; PIOJ, 2017; Ministry of Tourism, 2014; STATIN, 2011). Nevertheless, Montego Bay is not merely a hotel economy because it also contains commercial, transportation, retail, financial, educational, governmental and airport-related economic activity. Hotel concentration may operate partly as one component of a broader agglomeration economy rather than as the independent cause of low poverty. Tourism may itself stimulate some of these complementary sectors, making strict causal separation difficult. A longitudinal design examining hotel expansion and subsequent changes in community poverty would provide considerably stronger evidence.

### **7. INTERNATIONAL COMPARISON**

The Jamaican findings should be interpreted within the wider Caribbean, where many small island economies depend heavily on international tourism. Caribbean tourism can generate foreign exchange, employment and investment while simultaneously producing vulnerability to international recessions, pandemics, hurricanes and changes in source-market demand (World Bank, 2001; World Bank, 2022; World Bank, 2026; Inter-American Development Bank, 2024). Similar concerns concerning imported inputs, external ownership and enclave development arise across tourism-dependent island economies. The regional policy challenge is not simply increasing visitor arrivals but strengthening linkages between tourism, agriculture, manufacturing, creative industries, transportation and locally owned services. Jamaica's relatively diversified size gives it greater potential than some smaller islands to build domestic tourism supply chains. Strengthening those linkages could substantially increase the poverty-reducing multiplier associated with each tourism dollar.

The wider Americas similarly demonstrate that tourism's development effects depend on institutional and productive structures. Resort economies in Mexico, Central America and the Caribbean have generated substantial employment and infrastructure while also stimulating debate concerning wage quality, land use, environmental costs, inequality and economic leakage (World Bank, 2022; Inter-American Development Bank, 2024; World Bank, 2001; United Nations World Tourism Organization, 2020). Tourism can contribute strongly to poverty reduction when local workers possess the skills required for higher-paying positions and domestic firms participate in supply chains. Conversely, low-skill employment without local ownership or supplier integration may limit household income growth despite rapid increases in visitor expenditure. Jamaica needs to distinguish tourism growth from tourism inclusiveness. The mathematical model developed in this study provides a framework for making that distinction empirically measurable.

African tourism economies provide comparable evidence concerning the importance of local linkages. Wildlife, coastal and cultural tourism can create substantial employment, but poverty reduction depends on whether surrounding communities participate through ownership, employment, food supply, transportation, crafts and other enterprises (World Bank, 2022; United Nations World Tourism Organization, 2020; World Bank, 2001; International Labour Organization, 2022). Tourism enclaves possessing weak domestic supply chains can produce high visitor expenditure without proportionate local income effects. Community-based tourism models attempt to correct this imbalance by increasing ownership and revenue participation among residents. Jamaica can adapt this principle without abandoning large-scale resorts by requiring stronger procurement and enterprise linkages between hotels and host communities. The objective should be complementarity between international hotel capital and locally embedded economic participation.

European, Asian and Oceanian tourism destinations provide additional lessons concerning diversification and destination management. Tourism in these regions often operates within economies possessing stronger domestic supplier networks, transportation systems, vocational training, digital infrastructure and small-business ecosystems, although overtourism and regional inequality remain significant concerns in some destinations (OECD, 2020; United Nations World Tourism Organization, 2020; World Bank, 2022; International Labour Organization, 2022). The relevant lesson for Jamaica is not that one international tourism model can simply be transplanted into a Caribbean economy. Rather, successful local transmission requires institutions that connect visitor expenditure to resident workers and businesses. Skills development, digital access, transportation, financing and quality certification determine whether small local enterprises can supply large hotels. Tourism policy should address productive capability as seriously as marketing and room construction.

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## 8. DISCUSSION

The study directly addresses the research gap identified in the introduction by demonstrating that Jamaica's tourism–poverty relationship must be understood through both geography and economic transmission mechanisms. The five-parish north/north-west tourism belt recorded an unweighted mean 2012 poverty prevalence of approximately 14.5%, compared with approximately 22.1% among the remaining nine parishes, yielding a descriptive difference of approximately 7.7 percentage points. This finding is compatible with a poverty-reducing tourism relationship, especially because the country's three dominant resort areas also accounted for most of the reported accommodation-sector employment in 2012 (PIOJ, 2017; JTB, 2018; Ministry of Tourism, 2014; STATIN, 2011). However, the substantial variation within the tourism belt prevents the conclusion that hotel concentration independently causes lower poverty. The gap is answered more precisely: tourism concentration is geographically associated with comparatively lower average poverty, but the magnitude of local poverty reduction depends on the mechanisms through which tourism value is transmitted and retained within host economies. This is the central empirical and theoretical contribution of the study.

The mathematical framework advances this argument by replacing a simplistic hotel-count model with a tourism-transmission model. Gross tourism activity  $G_i$  cannot be expected to generate identical poverty outcomes across parishes because the locally effective amount is conditioned by leakage  $L_i$ , local sourcing  $S_i$ , resident employment and wage transmission  $W_i$ , and the local multiplier  $M_i$  (World Bank, 2001; World Bank, 2022; Dodman, 2012; Ministry of Tourism, 2014). A parish can host a large tourism industry while capturing a comparatively modest share of its economic value. Conversely, a parish with fewer rooms could obtain substantial benefits if ownership, procurement and employment linkages are strong. This theoretical distinction explains why hotel-room growth should not itself be treated as an antipoverty indicator. The appropriate policy objective is to maximise  $Y_i^T$ , the locally retained and distributed value generated by tourism.

The findings also demonstrate the danger of ecological causal inference. St Mary had the lowest recorded parish poverty rate in 2012 despite not being one of Jamaica's dominant hotel centres, whereas Kingston recorded comparatively high poverty despite possessing substantial economic activity and visitor accommodation (PIOJ, 2017; JTB, 2018; STATIN, 2011; Ministry of Tourism, 2014). These observations demonstrate that many pathways besides hotel tourism influence poverty. Household composition, remittances, education, agriculture, urban inequality, housing costs, employment, migration and social protection can all alter parish poverty independently. A valid multivariate model must include these characteristics and preferably exploit longitudinal changes rather than a single cross-section. Tourism should be conceptualised as one potentially important determinant embedded within a wider development system.

## 9. A PROPOSED LOCAL TOURISM RETENTION INDEX

To make the framework operational, this study proposes a Local Tourism Retention Index. Let  $l_i$  represent the locally retained proportion of tourism expenditure,  $e_i$  the proportion of tourism employment filled by parish residents,  $s_i$  the proportion of hotel procurement supplied by parish or Jamaican enterprises,  $o_i$  the local ownership participation measure, and  $w_i$  a tourism wage-quality measure. Each component should be normalised between zero and one before aggregation so that parishes can be compared on a common scale (World Bank, 2022; Ministry of Tourism, 2014; International Labour Organization, 2022; PIOJ, 2017). Weights could initially be equal and subsequently estimated empirically according to their relationship with household consumption and poverty. The index would shift tourism evaluation from gross activity towards local economic inclusion.

$$LTRI_i = w_1 l_i + w_2 e_i + w_3 s_i + w_4 o_i + w_5 w_i$$

subject to:

$$\sum_{j=1}^5 w_j = 1$$

where: This constraint states that the five weights used in the Local Tourism Retention Index must sum to 1. Thus,  $w_1 + w_2 + w_3 + w_4 + w_5 = 1$

Word-ready equations:

$$LTRI_i = w_1 l_i + w_2 e_i + w_3 s_i + w_4 o_i + w_5 w_i$$

Where:  $LTRI_i$  represents the Local Tourism Retention Index for parish  $i$ . It measures the extent to which tourism-generated economic benefits are retained within the local economy.

$$\sum_{j=1}^5 w_j = 1$$

$$w_1 + w_2 + w_3 + w_4 + w_5 = 1$$

The index creates a testable policy proposition. If tourism is functioning as an inclusive local development mechanism, parishes and communities with higher Local Tourism Retention Index values should exhibit lower poverty after relevant socioeconomic factors are controlled (World Bank, 2022; PIOJ, 2017; Ministry of Tourism, 2014; Dodman, 2012). A weak relationship would suggest that

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other structural factors dominate tourism's local effect, while a strong negative relationship would support policies designed to increase retention. The index can also reveal why two hotel-intensive areas experience different socioeconomic outcomes. Importantly, it does not assume that foreign investment is undesirable because foreign capital can generate employment, knowledge, taxation and infrastructure. Instead, it asks how tourism investment of any ownership structure can maximise measurable benefits for Jamaican households.

### **10. POLICY SOLUTION: LOCAL TOURISM LINKAGE AND POVERTY REDUCTION SYSTEM**

The principal policy recommendation is the establishment of a Local Tourism Linkage and Poverty Reduction System connecting hotel development explicitly to measurable community outcomes. Every major hotel development should report employment by workers' parish of residence, wage category, local procurement, Jamaican procurement, training expenditure, small-business contracting and community investment (Ministry of Tourism, 2014; World Bank, 2022; PIOJ, 2017; International Labour Organization, 2022). These data should be combined with parish and community poverty indicators to determine whether tourism growth is translating into improved household welfare. Reporting should distinguish Jamaican procurement from genuinely local parish procurement because national retention and community retention are not identical. Public incentives for hotel investment could then include measurable linkage targets rather than focusing exclusively on capital expenditure and room creation. Such a system would transform inclusive tourism from a qualitative aspiration into a quantitatively monitored development programme. Agricultural linkages should constitute a major component because Jamaica's hotels generate substantial recurring demand for food and beverages. Small farmers and agro-processors require reliable contracts, quality standards, logistics, cold storage, financing and production planning if they are to compete effectively for hotel supply chains (Ministry of Tourism, 2014; World Bank, 2022; PIOJ, 2017; World Bank, 2026). Digital procurement platforms could publish anticipated hotel demand by product, quantity, quality specification and delivery period. Farmer organisations could aggregate output so that small producers achieve the consistency and volume required by large resorts. Similar linkage programmes should encompass furniture, textiles, entertainment, cultural industries, transportation, maintenance, technology and professional services. Every additional competitively supplied local input reduces leakage and increases the multiplier represented in the Tourism–Poverty Transmission Function.

Human-capital policy is equally important because the poverty effect of tourism depends on the quality rather than merely the quantity of employment. Training programmes should prepare residents of tourism parishes for supervisory, managerial, culinary, technical, digital, financial and professional positions rather than concentrating disproportionately on entry-level service occupations (World Bank, 2024; International Labour Organization, 2022; World Bank, 2022; PIOJ, 2017). Partnerships among hotels, universities, HEART/NSTA Trust, secondary schools and community organisations could establish parish-specific training pipelines linked directly to forecast occupational demand. Scholarships and apprenticeships should be geographically targeted towards communities exhibiting high poverty within tourism-intensive parishes. Career progression should become an explicit tourism-development indicator. Such measures would increase ( $W_i$ ) and ( $Q_i$ ) within the mathematical framework by improving both wage transmission and employment quality.

### **11. FUTURE EMPIRICAL TESTING**

The strongest future test of the model would construct a parish-year panel covering several poverty-survey years. For each parish and year, researchers should compile poverty prevalence, hotel rooms, accommodation employment, visitor nights, tourism wages, population, rurality, education, unemployment, agricultural employment, remittances and infrastructure variables (PIOJ, 2017; JTB, 2018; STATIN, 2011; World Bank, 2022). The panel could then estimate whether increases in hotel intensity within a parish are followed by reductions in poverty after parish fixed effects and national year effects are controlled. Lagged specifications would be appropriate because hotel construction may influence poverty gradually rather than instantaneously. Spatial models should account for workers commuting across parish boundaries and tourism centres spanning administrative borders. This design would provide substantially stronger causal evidence than the descriptive comparison presently available.

A difference-in-differences strategy could provide an additional quasi-experimental approach where major new resorts open at identifiable times. Communities or parishes receiving large hotel investments could be compared with economically similar locations not receiving contemporaneous investments, provided the parallel-trends assumption is defensible (Wooldridge, 2020; JTB, 2018; Ministry of Tourism, 2014; PIOJ, 2017). Outcomes could include poverty, employment, household consumption, business formation, housing costs and migration. Such analysis would also permit examination of heterogeneous effects across sex, age, occupation and socioeconomic group. Hotel openings could generate positive employment effects while simultaneously increasing rents or land prices, meaning average effects may conceal winners and losers. A rigorous causal design would deepen understanding of the Tourism–Poverty Paradox beyond the parish-level ecological relationship identified here.

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## **12. LIMITATIONS**

Several limitations require explicit acknowledgement. First, the principal parish poverty comparison refers to 2012 because this is an official complete parish series, and it should not be interpreted as describing the precise contemporary ranking of all parishes in 2026 (PIOJ, 2017; PIOJ, 2025; STATIN, 2026; World Bank, 2026). Second, Jamaica Tourist Board statistics are often organised by resort area rather than administrative parish, creating geographical complications for areas such as Negril and the South Coast. Third, hotel concentration is endogenous because investors choose locations partly based on infrastructure, accessibility, beaches, airports, urban development and pre-existing economic conditions. Fourth, an unweighted mean across parishes gives each parish equal analytical weight irrespective of population size. Fifth, the five-parish tourism-belt comparison is descriptive and should not be interpreted as an estimated treatment effect. Sixth, these limitations reinforce rather than diminish the study's central recommendation for a harmonised parish-year tourism and poverty database.

## **13. CONCLUSION**

This study examined whether the geographical concentration of Jamaica's major hotel-tourism economy is associated with parish-level poverty and developed a mathematical framework explaining the mechanisms through which such an association may arise. The research gap identified in the introduction is answered by showing that the five-parish north/north-west tourism belt recorded an average 2012 poverty prevalence of approximately 14.5%, compared with approximately 22.1% across the other nine parishes, while the major resort centres simultaneously accounted for a very large share of accommodation-sector employment (PIOJ, 2017; JTB, 2018; Ministry of Tourism, 2014; STATIN, 2011). This constitutes a meaningful negative descriptive association between major tourism geography and poverty, but it does not establish that hotel concentration caused the observed difference. Variation among tourism parishes, together with low poverty in non-dominant tourism areas such as St Mary, demonstrates that rurality, human capital, economic structure, migration, infrastructure and other factors remain consequential. The Tourism–Poverty Transmission Function provides a more defensible explanation by showing that tourism reduces poverty most effectively when visitor expenditure is converted into locally retained wages, procurement, ownership, enterprise development and multiplier effects. Jamaica's tourism-development objective should evolve from maximising visitor arrivals and hotel rooms towards maximising the measurable proportion of tourism value that reaches Jamaican households and host communities.

The broader implication is that the presence of luxury hotels and the absence of poverty are not mathematical equivalents. A parish can possess substantial tourism capital without achieving its full poverty-reduction potential when leakages are high, local procurement is weak, residents occupy predominantly low-wage positions, or tourism infrastructure remains disconnected from surrounding communities (World Bank, 2001; Dodman, 2012; World Bank, 2022; PIOJ, 2017). Conversely, hotel development can become a powerful mechanism of inclusive growth when local workers, farmers, manufacturers, entrepreneurs and service providers participate deeply in the tourism value chain. The proposed Local Tourism Retention Index provides a practical mechanism for measuring that participation and comparing outcomes among Jamaica's tourism areas. Future parish-year and community-level analyses should estimate the mathematical coefficients proposed in this study rather than assuming their magnitude. The sustainable resolution of Jamaica's Tourism–Poverty Paradox lies not simply in constructing more hotels, but in constructing stronger economic bridges between those hotels and the Jamaican communities surrounding them.

## **REFERENCES**

- 1) Dodman, D. (2012). Towards sustainable tourism in Jamaica. Caribbean Dialogue. The University of the West Indies.
- 2) Inter-American Development Bank. (2024). Tourism and sustainable development in Latin America and the Caribbean. Inter-American Development Bank.
- 3) International Labour Organization. (2022). The future of work in the tourism sector: Sustainable and safe recovery and decent work in the context of the COVID-19 pandemic. International Labour Organization.
- 4) Jamaica Tourist Board. (2018). Annual travel statistics 2017. Research and Market Intelligence Unit, Jamaica Tourist Board.
- 5) Ministry of Tourism. (2014). Tourism demand study. Government of Jamaica.
- 6) Organisation for Economic Co-operation and Development. (2020). OECD tourism trends and policies 2020. OECD Publishing.
- 7) Planning Institute of Jamaica. (2017). National policy on poverty and national poverty reduction programme. Government of Jamaica.
- 8) Planning Institute of Jamaica. (2025). Jamaica Survey of Living Conditions 2023: Overview. Government of Jamaica.
- 9) Statistical Institute of Jamaica. (2011). Population and Housing Census 2011. Government of Jamaica.
- 10) Statistical Institute of Jamaica. (2026). Jamaica Survey of Living Conditions. Government of Jamaica.
- 11) United Nations World Tourism Organization. (2020). International tourism and sustainable development. UNWTO.

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- 12) Wooldridge, J. M. (2020). Introductory econometrics: A modern approach (7th ed.). Cengage.
- 13) World Bank. (2001). Tourism in the Caribbean: Trends, development, prospects. World Bank.
- 14) World Bank. (2022). Jamaica systematic country diagnostic update. World Bank Group.
- 15) World Bank. (2024). Jamaica jobs diagnostic. World Bank Group.
- 16) World Bank. (2026). Jamaica: Poverty and equity assessment and related poverty updates. World Bank Group.