

Tourist Arrivals as a Function of Homicide in Jamaica: Developing the Bourne Homicide–Tourism Function and Estimating the Homicide Elasticity of Tourism Demand

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ABSTRACT: Tourism represents a major component of Jamaica's economy, while the country has simultaneously experienced a historically high burden of homicide that can influence destination image, perceived safety, travel decisions, and international tourism demand. This study examines whether annual tourist arrivals in Jamaica are a function of annual homicide and develops the Bourne Homicide–Tourism Function (B-HTF) for estimating the responsiveness of tourist arrivals to changes in homicide. A quantitative longitudinal time-series design is proposed using annual Jamaica Tourist Board tourist-arrival data and Jamaica Constabulary Force homicide data, with the longest consistently comparable annual series used for the final empirical estimation. The analytical framework includes descriptive trends, annual point-to-point homicide elasticities of tourist arrivals, log-log regression, first-difference models, lagged homicide specifications, structural-break analysis, and an extended tourism-demand model controlling for income in source markets, prices, exchange rates, airlift, accommodation capacity, promotion, natural disasters, COVID-19, and other shocks. Previous Jamaican and international research indicate that crime can negatively affect tourism demand, although Jamaica's resort structure, promotion, destination loyalty, and geographical concentration of violence may moderate the relationship. The study hypothesises a negative homicide elasticity of tourist arrivals but emphasises that the coefficient must be estimated empirically and distinguished from causal effects because tourism and homicide are influenced by numerous contemporaneous and lagged factors.

KEYWORDS: homicide; tourist arrivals; tourism demand; homicide elasticity; crime; Jamaica; Bourne Homicide–Tourism Function

1. INTRODUCTION

Tourism is an important source of foreign exchange, employment, investment, government revenue, business activity, and international economic integration for Jamaica. The country's tourism industry has demonstrated considerable long-run growth despite repeated exposure to recessions, hurricanes, health emergencies, security concerns, changing travel advisories, and fluctuations in global tourism demand. Jamaica welcomed more than four million visitors during 2024 and generated approximately US\$4.3 billion in tourism earnings, illustrating the contemporary macroeconomic importance of the sector (Jamaica Tourist Board [JTB], 2025; Ministry of Tourism, 2025; Office of the Prime Minister [OPM], 2025; World Bank, 2026). Tourism performance is nevertheless influenced not only by prices, income, airlift, accommodation, advertising, and global economic conditions but also by travellers' perceptions of safety and security. Jamaica's historically high level of lethal violence raises an important question concerning whether changes in homicide influence international tourism demand. The relationship between homicide and tourist arrivals represents an important intersection among criminology, tourism economics, public health, national security, and economic development.

Crime can affect tourism through perceived destination risk even when visitors themselves are not the principal victims of homicide. Potential travellers receive information about destination safety through news reporting, travel advisories, social media, interpersonal communication, tour operators, government agencies, and previous travel experiences, thereby creating pathways through which domestic violence can affect international travel decisions. Earlier research on Jamaica found that crime negatively affected tourist arrivals, although the magnitude of the overall effect was moderated by promotion and the growth of all-inclusive tourism (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). Contemporary travel guidance continues to identify violent crime as a consideration for travellers to Jamaica while simultaneously noting that tourist areas can experience different levels of violence from other parts of the country. This spatial separation is analytically important because national homicide totals may influence international perceptions even when homicide is geographically

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concentrated outside major resort areas. A tourism-demand model must distinguish actual victimisation of tourists from the broader informational and reputational effects generated by a country's homicide environment.

1.1 Statement of the Problem

Jamaica presents an apparent paradox because the country has maintained a globally recognised tourism industry while simultaneously experiencing exceptionally high levels of homicide during substantial portions of its modern history. If homicide strongly deters tourism demand, sustained increases in homicide should be associated with declining tourist arrivals, yet Jamaica has experienced periods during which both homicide and tourism increased. Such simultaneous increases do not establish that homicide has no tourism effect because powerful countervailing influences, including advertising, hotel expansion, airlift, source-market income, all-inclusive resorts, destination loyalty, exchange rates, and global tourism growth, may offset security-related reductions in demand (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). Conversely, a negative correlation between homicide and tourism would not by itself establish causality because recessions, pandemics, hurricanes, political events, travel restrictions, and other shocks can affect tourism independently of crime. The appropriate empirical question is not simply whether Jamaica has both homicide and tourism but how proportionate changes in homicide are statistically associated with proportionate changes in tourist arrivals after relevant time-series characteristics and confounding influences are considered. This study addresses that problem by developing and empirically specifying the Bourne Homicide–Tourism Function.

2. RESEARCH GAP

The relationship between crime and Jamaican tourism is not unexplored, but important analytical gaps remain that justify renewed investigation. Alleyne and Boxill (2003) examined crime and tourist arrivals over 1962–1999 and found that crime negatively influenced tourism, with a greater effect in the European market, while subsequent Caribbean research has continued to identify security as a determinant of tourism performance (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). However, the earlier Jamaican study focused on crime more generally and necessarily ended before the extraordinary homicide escalation of the 2000s, the global financial crisis, the COVID-19 collapse, the subsequent tourism recovery, and Jamaica's recent homicide decline. Considerably less attention has been devoted to estimating a specific **homicide elasticity of Jamaican tourist arrivals** by comparing annual point-to-point elasticity with an overall log-log elasticity and short-run first-difference elasticity. The extension through the contemporary period also permits structural breaks to be considered explicitly rather than assuming that the homicide–tourism relationship remained constant across fundamentally different historical tourism regimes. The present study contributes a homicide-specific, elasticity-based and time-series extension of the existing Jamaican crime–tourism literature.

3. AIM OF THE STUDY

The primary aim of this study is to determine whether annual tourist arrivals in Jamaica are a function of annual homicide and to estimate the elasticity of tourism demand with respect to homicide. The study conceptualises tourist arrivals as the dependent variable and homicide as the principal criminological explanatory variable while recognising that tourism demand is simultaneously determined by economic, tourism-industry, environmental, institutional, and international factors. The first analytical objective is to document the historical movement of annual tourist arrivals and homicide in Jamaica using the longest consistently comparable series available. The second objective is to calculate annual point-to-point homicide elasticities of tourist arrivals and identify periods in which tourism moved proportionately with or against homicide. The third objective is to estimate an overall log-log homicide elasticity and compare it with first-difference and lagged specifications. The final objective is to develop an extended Bourne Homicide–Tourism Function capable of separating the homicide association from other determinants of Jamaican tourism demand.

4. RESEARCH OBJECTIVES

The first objective is to examine the historical relationship between annual homicide and annual tourist arrivals in Jamaica. The second objective is to calculate the annual percentage and logarithmic changes in both homicide and tourist arrivals. The third objective is to estimate the annual point-to-point elasticity of tourist arrivals with respect to homicide for each year in the analytical period. The fourth objective is to estimate the overall homicide elasticity of tourist arrivals using a log-log regression model. The fifth objective is to compare the levels relationship with first-difference, lagged, structural-break, and multivariate tourism-demand models. The sixth objective is to determine whether homicide retains an independent statistical association with Jamaican tourist arrivals after relevant economic, tourism-industry, and external shocks are considered.

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5. RESEARCH QUESTIONS

This study asks whether annual homicide is statistically associated with annual tourist arrivals in Jamaica. It further asks whether an increase in homicide is associated with a proportionate reduction in tourist arrivals and whether this relationship is contemporaneous or delayed. A third question concerns the magnitude and direction of the annual point-to-point homicide elasticity of tourist arrivals. A fourth question asks whether the overall log-log homicide elasticity remains statistically significant after common trends and structural breaks are considered. A fifth question concerns whether the homicide effect differs after controlling for source-market income, prices, exchange rates, airlift, accommodation capacity, marketing, hurricanes, global recessions, COVID-19, and other tourism-demand determinants. Finally, the study asks whether Jamaica's tourism sector demonstrates resilience to homicide through destination loyalty, resort geography, all-inclusive tourism, marketing, and other protective mechanisms identified in earlier research.

6. HYPOTHESES

The principal null hypothesis states that annual homicide has no statistically significant relationship with annual tourist arrivals in Jamaica.

$$H_0: \beta^H = 0$$

The alternative hypothesis states that increasing homicide is associated with declining annual tourist arrivals in Jamaica.

$$H_1: \beta^H < 0$$

For the first-difference model, the null hypothesis states that annual proportional changes in homicide have no statistically significant relationship with annual proportional changes in tourist arrivals.

$$H_{02}: \beta^{\Delta H} = 0$$

The corresponding alternative hypothesis states that annual proportional increases in homicide are associated with annual proportional reductions in tourist arrivals.

$$H_{12}: \beta^{\Delta H} < 0$$

7. LITERATURE REVIEW

7.1 Tourism Demand and Destination Safety

Tourism demand is influenced by disposable income, relative prices, transportation costs, exchange rates, destination characteristics, marketing, accessibility, accommodation, expectations, and perceptions of safety. Unlike many ordinary consumption decisions, tourism requires travellers to move physically into a destination and exposes travel decisions to perceptions concerning personal security and environmental risk. Crime can function as a non-monetary cost that reduces the attractiveness of a destination even when the probability of a visitor becoming a crime victim remains relatively low (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). Information concerning homicide and violent crime can alter destination image, increase perceived travel risk, encourage substitution towards alternative destinations, or affect the timing and duration of travel. These effects can be transmitted through official advisories, international news, social media, travel intermediaries, insurance decisions, airlines, cruise operators, and personal networks. Tourism demand should be modelled as partly responsive to destination security while recognising that the strength of the response can differ by source market, traveller type, accommodation model, and historical period.

7.2 Crime and Tourism in Jamaica

Jamaica provides one of the most important Caribbean cases for examining crime and tourism because high violent-crime levels have coexisted with a large and internationally successful tourism industry. Alleyne and Boxill (2003) analysed Jamaica during 1962–1999 and found that crime had a negative impact on tourist arrivals, although the effect was relatively small in the overall market and greater among European visitors. They argued that advertising, promotion, and growth in all-inclusive hotels helped moderate the effect of crime on total tourism demand (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). Historical evidence also indicates that escalating crime and negative publicity were associated with declining Jamaican tourist arrivals during parts of the 1970s. This earlier experience demonstrates that security perceptions can affect tourism even when crimes are not directed specifically against international visitors. The present study extends this literature by isolating homicide as the principal security variable and estimating its elasticity with respect to tourist arrivals.

7.3 Homicide as a Tourism-Demand Variable

Homicide represents an especially salient measure of destination violence because it captures the most severe outcome of interpersonal violence and frequently attracts substantial domestic and international attention. Compared with aggregate crime statistics, homicide can also provide a more consistently interpretable long-run indicator because reporting practices for less serious offences can change considerably with policing, reporting behaviour, and classification systems. International evidence indicates

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that homicide can be negatively associated with international tourism demand, although the size of the relationship differs across destinations and specifications (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). Nevertheless, homicide can affect tourism through perception rather than direct tourist victimisation, meaning that the relevant theoretical mechanism is destination risk and reputation rather than simply the number of tourists murdered. National homicide may operate as a signal of broader security conditions even when tourist zones are geographically separated from communities experiencing the greatest violence. The empirical challenge is to distinguish this possible deterrence effect from the numerous other variables simultaneously influencing tourist arrivals.

8. THEORETICAL FRAMEWORK

The theoretical framework integrates tourism-demand theory, destination-risk theory, criminological conditions, and the concept of elasticity. Potential tourists are conceptualised as consumers choosing among competing destinations according to expected utility, monetary costs, destination attributes, perceived safety, accessibility, and other considerations. Homicide can reduce expected destination utility by increasing perceived security risk, although marketing, resort security, destination familiarity, all-inclusive accommodation, and geographical separation between tourist areas and violent communities may weaken this transmission mechanism (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). The theoretical expectation is a negative partial derivative of tourist arrivals with respect to homicide, holding other determinants constant. However, the observed bivariate relationship can be positive during historical periods when other factors generate tourism growth sufficiently strong to offset any homicide deterrence. The empirical model must distinguish the gross historical association from the partial homicide effect estimated after relevant controls are introduced.

9. THE BOURNE HOMICIDE–TOURISM FUNCTION

The Bourne Homicide–Tourism Function conceptualises annual tourist arrivals as a function of homicide and a vector of economic, tourism-industry, environmental, institutional, and external variables. Let T_t denote tourist arrivals in year t , H_t denote homicide, Y_t denote source-market income, RP_t denote relative tourism prices, ER_t denote the exchange rate, AIR_t denote airlift capacity, $ROOM_t$ denote accommodation capacity, ADV_t denote destination advertising or promotion, and X_t denote extraordinary shocks. The function recognises homicide as an important security variable without assuming that homicide constitutes the sole or dominant determinant of Jamaican tourism demand. This distinction is important for Jamaica because previous research suggests that marketing and all-inclusive tourism can partially insulate the destination from broader crime perceptions (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). The basic homicide-only function is nested within the larger tourism-demand model so that the change in the homicide coefficient after controls are introduced can be evaluated. The general Bourne Homicide–Tourism Function is expressed in Equation (1).

Equation (1): General Bourne Homicide–Tourism Function

$$T_t = f(H_t, Y_t, RP_t, ER_t, AIR_t, ROOM_t, ADV_t, X_t)$$

Where:

T_t = annual tourist arrivals to Jamaica

H_t = annual homicides in Jamaica

Y_t = income or economic conditions in major tourist source markets

RP_t = relative tourism prices

ER_t = exchange rate

AIR_t = airlift or transportation capacity

$ROOM_t$ = tourist accommodation capacity

ADV_t = tourism advertising and promotion

X_t = external shocks and other relevant variables

10. MATERIALS AND METHODS

10.1 Research Design

This study employs a quantitative longitudinal ecological time-series design to examine the relationship between annual tourist arrivals and annual homicide in Jamaica. The calendar year constitutes the unit of analysis, thereby permitting the historical movement of tourism and homicide to be aligned within a common annual framework. Tourist arrivals represent the dependent variable, while homicide represents the principal explanatory variable in the basic B-HTF. The preferred tourism measure is annual stopover tourist arrivals because stopover visitors spend time within the destination and correspond most directly to the theoretical concept of tourism demand, although total visitor arrivals can be estimated as a robustness specification. Annual time-series analysis is appropriate because both tourism and homicide can exhibit persistence, structural change, lagged responses, and sensitivity to

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extraordinary shocks (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). The analytical strategy progresses from descriptive measurement to annual elasticity, levels regression, first differences, lagged models, structural-break analysis, and multivariate estimation.

10.2 Data Sources

Tourism data are obtained principally from the Jamaica Tourist Board's Tourism Information Publishing Site, which catalogues annual visitor-arrival files extending from the historical period through 2025. The JTB catalogue contains separate historical files for 1963–1977, 1978–1992, 1993–2007, overlapping subsequent periods, and a current 2009–2025 file, providing the basis for construction of a long annual tourism series. Homicide data are obtained from the Jamaica Constabulary Force historical murder statistics and aligned with the corresponding tourism year. World Bank and UN Tourism series can be used for validation where their definitions and coverage correspond to the JTB measure, but they should not be mechanically combined because international tourism series may count tourists, visitors, cruise passengers, or other categories differently (JTB, 2026; World Bank, 2026; UN Tourism, 2026; JCF, 2026). The World Bank itself cautions that tourism-arrival definitions and collection methods can differ and that arrivals count trips rather than unique individuals. A single internally consistent JTB arrival definition should be retained for the primary elasticity analysis wherever possible.

10.3 Definition of Tourist Arrivals

The principal dependent variable is annual stopover tourist arrivals, represented by T_t . Stopover arrivals are preferred because they correspond to visitors who enter Jamaica and remain in the destination rather than cruise passengers whose exposure, expenditure, duration, and security considerations can differ substantially. Total visitor arrivals, including cruise passengers, may nevertheless be examined in a secondary model because the broader measure captures the overall volume of visitor traffic entering Jamaica. The distinction is methodologically important because combining visitor categories can obscure heterogeneous responses to homicide and other destination conditions (Alleyne & Boxill, 2003; JTB, 2026; World Bank, 2026; UN Tourism, 2026). All annual observations must use the same visitor definition before logarithmic transformations, percentage changes, or elasticity calculations are performed. Any historical definitional break identified in JTB documentation should be recorded and addressed through harmonisation, dummy variables, or sensitivity analysis rather than silently ignored.

10.4 Measurement of Homicide

Annual homicide, represented by H_t , is measured as the number of murders recorded by the Jamaica Constabulary Force during calendar year t . The homicide count is preferred initially because the research question concerns the responsiveness of tourist arrivals to the absolute national volume of lethal violence and the international signals generated by that violence. A secondary specification should replace the homicide count with the homicide rate per 100,000 population to determine whether tourism responds more strongly to violence intensity than to absolute homicide volume. Homicide is transformed using natural logarithms for the elasticity models because logarithmic coefficients provide direct proportional interpretations and can reduce the influence of scale differences between homicide and tourism. The JCF historical series should be retained consistently across the analytical period because mixing different homicide definitions could introduce artificial variation into the estimated elasticity (Alleyne & Boxill, 2003; JCF, 2026; World Bank, 2026; WHO, 2024). Homicide is examined in levels, logarithms, annual logarithmic changes, rates, and lagged forms.

10.5 Descriptive Annual Change in Tourist Arrivals

Before elasticity is calculated, the annual percentage change in tourist arrivals is computed to identify the direction and magnitude of tourism growth or contraction. The calculation compares tourist arrivals in year t with tourist arrivals in the immediately preceding year, $t-1$. Positive values indicate tourism growth, while negative values indicate declining arrivals. This descriptive measure is useful for identifying episodes associated with recessions, security concerns, hurricanes, border restrictions, pandemics, and tourism recoveries. Percentage changes are not themselves elasticities because an elasticity requires comparison with the proportional change in another variable (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). Annual tourist-arrival growth is calculated using Equation (2).

Equation (2): Annual Percentage Change in Tourist Arrivals

$$\text{Tourism Growth}_t = [(T_t - T_{t-1}) / T_{t-1}] \times 100$$

10.6 Descriptive Annual Change in Homicide

The annual percentage change in homicide is similarly calculated before estimation of the elasticity function. This measure identifies the proportional increase or decrease in lethal violence between two consecutive years. Positive values indicate increasing homicide, while negative values indicate declining homicide. Comparing annual homicide growth with tourist-arrival growth provides an initial descriptive indication of whether the two series move together or in opposite directions. Such comparison remains descriptive because tourism may respond with a delay and because both variables can be affected by independent external conditions (Alleyne

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& Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). Annual homicide growth is calculated using Equation (3).

Equation (3): Annual Percentage Change in Homicide

$$\text{Homicide Growth}_t = [(H_t - H_{t-1}) / H_{t-1}] \times 100$$

10.7 Computation of Annual Tourist-Arrival Elasticity to Homicide

The annual homicide elasticity of tourist arrivals measures the proportional change in tourist arrivals relative to the proportional change in homicide between two consecutive years. The study employs logarithmic changes rather than merely dividing conventional percentage changes because logarithmic differences are consistent with the log-log B-HTF and provide a symmetric measure of proportional change. The numerator is the natural logarithm of the ratio of current-year tourist arrivals to previous-year tourist arrivals, expressed as $\ln(T_t/T_{t-1})$. The denominator is the natural logarithm of the ratio of current-year homicide to previous-year homicide, expressed as $\ln(H_t/H_{t-1})$. Dividing the logarithmic change in tourist arrivals by the logarithmic change in homicide produces the annual tourist-arrival elasticity to homicide, represented by ε^{TH}_t . The annual elasticity is calculated using Equation (4).

Equation (4): Annual Homicide Elasticity of Tourist Arrivals

$$\varepsilon^{TH}_t = \ln(T_t/T_{t-1}) / \ln(H_t/H_{t-1})$$

Where:

ε^{TH}_t = annual elasticity of tourist arrivals with respect to homicide

T_t = tourist arrivals in the current year

T_{t-1} = tourist arrivals in the preceding year

H_t = homicide in the current year

H_{t-1} = homicide in the preceding year

$\ln$ = natural logarithm

10.8 Step-by-Step Computation of the Annual Elasticity

Calculation of the annual homicide elasticity of tourist arrivals involves four sequential operations for each pair of consecutive years. First, current tourist arrivals are divided by previous-year tourist arrivals, and the natural logarithm of that ratio is calculated to obtain $\Delta \ln(T_t)$. Second, current homicide is divided by previous-year homicide, and the natural logarithm of that ratio is calculated to obtain $\Delta \ln(H_t)$. Third, the logarithmic change in tourist arrivals is divided by the logarithmic change in homicide to generate $\varepsilon^{TH}_t = \Delta \ln(T_t) / \Delta \ln(H_t)$. Fourth, the resulting coefficient is interpreted according to its sign and magnitude while considering whether the homicide denominator is sufficiently different from zero to yield a meaningful annual elasticity. The same computational procedure is repeated across every consecutive annual observation for which comparable tourism and homicide data are available. Equations (5) through (7) summarise the computational sequence.

Equation (5): Logarithmic Change in Tourist Arrivals

$$\Delta \ln(T_t) = \ln(T_t/T_{t-1})$$

Equation (6): Logarithmic Change in Homicide

$$\Delta \ln(H_t) = \ln(H_t/H_{t-1})$$

Equation (7): Annual Homicide Elasticity of Tourist Arrivals

$$\varepsilon^{TH}_t = \Delta \ln(T_t) / \Delta \ln(H_t)$$

10.9 Interpretation of Annual Homicide Elasticity

A negative annual elasticity indicates that tourist arrivals and homicide moved in opposite directions during the corresponding annual interval. For example, $\varepsilon^{TH}_t = -0.50$ would indicate that the proportional change in tourist arrivals was opposite in direction and approximately one-half the magnitude of the proportional change in homicide during that interval. A positive elasticity indicates that homicide and tourist arrivals moved in the same direction, but this should not be interpreted as evidence that homicide stimulated tourism because common trends and omitted variables may generate simultaneous increases. An absolute elasticity greater than 1 indicates that tourist arrivals changed proportionately more than homicide, while an absolute elasticity below 1 indicates a proportionately smaller tourism movement relative to homicide. The annual elasticity becomes unstable when homicide changes very little because $\Delta \ln(H_t)$ approaches zero and creates a very small denominator. Annual elasticities should be treated as descriptive year-specific responsiveness measures rather than causal estimates.

10.10 Treatment of Zero or Near-Zero Homicide Change

Special treatment is required when annual homicide remains unchanged or changes only marginally. If H_t equals H_{t-1} exactly, $\ln(H_t/H_{t-1})$ equals zero and the annual homicide elasticity of tourist arrivals is mathematically undefined. If homicide changes only slightly, the denominator approaches zero, and the resulting elasticity can become extremely large even when tourist arrivals change by an ordinary amount. Such observations should not be deleted merely. They produce extreme ratios because they contain

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substantive information about tourism changing while homicide remained essentially stable. However, they should be flagged as unstable and excluded from interpretations suggesting behavioural responsiveness of a magnitude. This treatment parallels standard caution in elasticity calculations whenever the denominator exhibits negligible proportional change.

10.11 Overall Homicide Elasticity of Tourist Arrivals

The principal overall elasticity is estimated using a log-log regression containing all comparable annual observations. Natural logarithms are applied to both tourist arrivals and homicide so that the homicide coefficient can be interpreted directly as the average historical elasticity of tourist arrivals with respect to homicide. The expected coefficient is negative because increasing lethal violence is hypothesised to reduce destination attractiveness and tourism demand. A coefficient of -0.20 , for example, would mean that a 1% higher homicide level is statistically associated with approximately 0.20% lower tourist arrivals within the estimated model. The coefficient remains an association unless the time-series design and controls provide sufficient evidence to support a stronger causal interpretation (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). The overall elasticity model is specified using Equation (8).

Equation (8): Overall Homicide Elasticity of Tourist Arrivals

$$\ln(T_t) = \alpha + \beta^H \ln(H_t) + \varepsilon_t$$

Where:

$\ln(T_t)$ = natural logarithm of tourist arrivals

α = regression intercept

β^H = homicide elasticity of tourist arrivals

$\ln(H_t)$ = natural logarithm of homicide

ε_t = stochastic error term

10.12 First-Difference Elasticity Model

A first-difference model is required because both tourism and homicide can exhibit long-term historical trends that generate misleadingly strong relationships in levels. The dependent variable becomes the annual logarithmic change in tourist arrivals, while the principal explanatory variable becomes the annual logarithmic change in homicide. This specification tests whether proportional changes in homicide are systematically associated with proportional changes in tourism from one year to the next. A statistically significant negative $\beta \Delta H$ would provide stronger evidence of short-run inverse co-movement than a negative levels coefficient alone. Nevertheless, contemporaneous first differences can miss delayed tourism responses because travellers frequently make reservations before the year in which they arrive (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). The first-difference elasticity is estimated using Equation (9).

Equation (9): First-Difference Homicide–Tourism Model

$$\Delta \ln(T_t) = \alpha + \beta \Delta H \Delta \ln(H_t) + \varepsilon_t$$

10.13 Lagged Homicide Elasticity

Tourism may respond to homicide with a delay because destination information, travel advisories, media coverage, holiday planning, airline schedules, and bookings operate across time. The study should estimate current homicide alongside one-year and, where statistically justified, two-year lagged homicide. A significant negative coefficient on H_{t-1} would indicate that previous-year homicide contains information associated with current-year tourist arrivals after other variables in the model are considered. Lag selection should be based on information criteria, residual diagnostics, tourism-booking logic, and sample size rather than arbitrarily including numerous lags. Earlier Jamaican research explicitly recognised immediate and delayed crime effects through transfer-function modelling, making lagged specifications especially relevant to the present extension (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). The lagged elasticity model is expressed in Equation (10).

Equation (10): Lagged Homicide Elasticity Model

$$\ln(T_t) = \alpha + \beta_0 \ln(H_t) + \beta_1 \ln(H_{t-1}) + \beta_2 \ln(H_{t-2}) + \varepsilon_t$$

10.14 Extended Tourism-Demand Model

A credible estimate of the homicide effect requires controls for major non-crime determinants of Jamaican tourism demand. The extended B-HTF incorporates source-market income, relative tourism prices, exchange rates, airlift, accommodation capacity, advertising, global economic conditions, weather-related disasters, pandemics, and other relevant shocks where consistent annual data are available. Source-market variables are especially important because the United States, Canada, the United Kingdom, Europe, and other markets differ in economic conditions and potentially in sensitivity to destination security. Tourism capacity variables are required because arrivals cannot expand independently of airline seats, hotel rooms, cruise schedules, and related infrastructure. Shock variables should explicitly identify events such as COVID-19 because treating the 2020 collapse as an ordinary

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response to homicide would severely bias the estimated relationship. The preferred multivariate specification estimates homicide as one component of a wider tourism-demand system rather than treating it as a complete explanation.

Equation (11): Extended Bourne Homicide–Tourism Function

$$\ln(T_t) = \beta_0 + \beta_1 \ln(H_t) + \beta_2 \ln(Y_t) + \beta_3 \ln(RP_t) + \beta_4 \ln(ER_t) + \beta_5 \ln(AIR_t) + \beta_6 \ln(ROOM_t) + \beta_7 ADV_t + \beta_8 COVID_t + \beta_9 DISASTER_t + \beta_{10} TREND_t + \varepsilon_t$$

10.15 COVID-19 and Extraordinary Shocks

The COVID-19 pandemic represents an exceptional structural break that must be modelled explicitly rather than interpreted as an ordinary tourism response to homicide. Jamaica closed its borders to international travellers in March 2020 and subsequently reopened its airports in June 2020, producing a travel interruption fundamentally different from ordinary changes in tourism demand. Hurricanes, global recessions, terrorist incidents affecting international aviation, source-market shocks, and major disruptions to airlift can similarly affect tourist arrivals independently of domestic homicide. Dummy variables, intervention models, or separate structural regimes should be considered according to the timing and magnitude of each shock. The importance of controlling for such events is demonstrated by the sharp pandemic disruption and subsequent tourism recovery documented in official Jamaican tourism statistics (JTB, 2025; Ministry of Tourism, 2025; OPM, 2025; World Bank, 2026). Failure to model these events could incorrectly attribute tourism losses or recoveries to homicide.

10.16 Structural-Break Analysis

The homicide–tourism relationship should not be assumed to remain constant across the entire historical period. Jamaica's tourism product changed substantially with the expansion of all-inclusive resorts, new accommodation, increased airlift, destination marketing, changing source markets, digital travel information, and evolving security arrangements. Homicide likewise moved through substantially different regimes, while the tourism sector experienced shocks including political violence, global recessions, hurricanes, September 2001, COVID-19, and subsequent recovery. Chow tests, Bai–Perron multiple-break procedures, interrupted time-series models, or regime-specific regressions can be used to identify statistically meaningful changes in the relationship. This approach is appropriate because earlier Jamaican research suggested that all-inclusive tourism and promotion reduced the aggregate tourism sensitivity to crime (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). Structural-break analysis can determine whether homicide elasticity changed as Jamaica's tourism model evolved.

10.17 Stationarity and Time-Series Diagnostics

Time-series variables can produce spurious regression results when trending non-stationary series are estimated in levels without appropriate diagnostic testing. Augmented Dickey–Fuller, Phillips–Perron, or related unit-root tests should be conducted for logged tourist arrivals, logged homicide, and the continuous control variables before final model selection. If relevant variables are integrated of the same order, cointegration procedures should be considered to determine whether a stable long-run relationship exists. Where cointegration is established, an error-correction model can separate short-run homicide effects from long-run equilibrium adjustment. Residual tests should additionally assess serial correlation, heteroscedasticity, normality, influential observations, model specification, and parameter stability. These procedures are necessary because a statistically significant coefficient in a simple levels regression does not automatically represent a genuine economic relationship.

10.18 Statistical Analysis

Descriptive statistics should initially summarise tourist arrivals, homicide counts, homicide rates, annual growth rates, logarithmic changes, and annual elasticities. Pearson correlation may be reported as a preliminary measure of association but should not serve as the principal evidence concerning the homicide–tourism relationship. Ordinary least-squares log-log regression should estimate the preliminary overall elasticity, followed by first-difference, lagged, structural-break, and multivariate specifications. Coefficients should be presented with standard errors, 95% confidence intervals, probability values, R^2 or adjusted R^2 , and appropriate time-series diagnostic statistics. Statistical significance should be evaluated at $P < .05$ while substantive significance should be judged from coefficient magnitude, confidence intervals, stability across models, and consistency with tourism-demand theory. The conclusion concerning homicide elasticity should be based on convergence across several specifications rather than selection of the single model producing the largest or most statistically significant coefficient.

11. RESULTS

11.1 Annual Tourist Arrivals and Homicide in Jamaica, 1970–2025

Tourism and homicide represent two markedly different but potentially interconnected dimensions of Jamaica's social and economic development. Tourism generates foreign exchange, employment, investment, taxation revenue, and extensive linkages with transportation, accommodation, entertainment, agriculture, and other sectors of the Jamaican economy. Homicide, by contrast, represents the most severe form of interpersonal violence and generates substantial public-health, social, security, and economic

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costs. The coexistence of a globally successful tourism industry with historically high levels of homicide makes Jamaica an important case for examining whether tourism demand responds to changes in lethal violence. Previous Jamaican research has suggested that crime can negatively affect tourist arrivals, although advertising, destination characteristics, and the expansion of all-inclusive tourism can moderate this relationship (Alleyne & Boxill, 2003). This report documents the annual movement of stopover tourist arrivals and homicide in Jamaica from 1970 through 2025 as the empirical foundation for estimating the homicide elasticity of tourism demand.

11.2 Annual Tourist Arrivals and Homicide

Table 1 presents annual stopover tourist arrivals and recorded homicides in Jamaica between 1970 and 2025. The two series demonstrate substantially different long-run trajectories, with stopover arrivals generally increasing over the period while homicides also increased markedly before declining in the final years of the series. Tourist arrivals increased from 309,122 in 1970 to more than 2.6 million in 2025, although the long-run expansion was interrupted by major contractions during the 1970s and the COVID-19 pandemic. Homicide increased from 152 cases in 1970 to historically elevated levels exceeding 1,600 in several years during the 2000s and 2010s before falling substantially to 673 in 2025. The descriptive coexistence of increasing tourism and increasing homicide over substantial portions of the period indicates that homicide cannot be considered the sole determinant of Jamaica's tourism performance. Nevertheless, these aggregate patterns do not exclude a negative partial effect of homicide because other tourism-promoting forces may have offset the deterrent effect associated with crime and destination-security perceptions.

Table 1. Annual Stopover Tourist Arrivals and Homicide in Jamaica, 1970–2025

Year	Stopover tourist arrivals	Homicides
1970	309,122	152
1971	359,323	145
1972	407,806	188
1973	418,257	232
1974	432,987	195
1975	395,809	266
1976	327,706	367
1977	264,921	409
1978	381,818	381
1979	426,540	351
1980	395,000	889
1981	406,000	490
1982	468,000	405
1983	566,000	424
1984	603,000	484
1985	572,000	434
1986	664,000	449
1987	739,000	442
1988	649,000	414
1989	829,000	439
1990	989,000	542
1991	1,007,000	561
1992	1,057,000	629
1993	1,105,000	654
1994	1,098,000	690
1995	1,147,000	780
1996	1,162,000	925
1997	1,192,000	1,038

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1998	1,225,000	953
1999	1,248,000	849
2000	1,323,000	887
2001	1,277,000	1,139
2002	1,266,000	1,045
2003	1,350,000	976
2004	1,415,000	1,471
2005	1,479,000	1,674
2006	1,679,000	1,340
2007	1,701,000	1,584
2008	1,767,000	1,619
2009	1,831,000	1,683
2010	1,922,000	1,447
2011	1,952,000	1,133
2012	1,986,000	1,102
2013	2,008,000	1,202
2014	2,080,000	1,005
2015	2,123,000	1,208
2016	2,181,704	1,354
2017	2,352,915	1,647
2018	2,472,727	1,287
2019	2,680,920	1,339
2020	880,404	1,323
2021	1,464,399	1,474
2022	2,478,391	1,498
2023	2,916,006	1,406
2024	2,900,358	1,147
2025	2,601,416	673

Notes. Tourist arrivals refer to stopover visitors and exclude cruise passengers. Values for 1980–2015 are reported to the nearest thousand in the Government of Jamaica historical series used for this table, whereas more precise observations are available for the recent period. Homicide figures represent recorded murders from the Jamaica Constabulary Force historical series; the JCF notes that crime statistics can be revised because of ongoing investigations.

10.3 Tourist Arrivals and Homicide during the 1970s

The 1970s provide an especially important historical period for examining the possible relationship between violence and Jamaican tourism. Stopover arrivals increased from 309,122 in 1970 to 432,987 in 1974 before declining to 395,809 in 1975, 327,706 in 1976, and only 264,921 in 1977. Over approximately the same period, homicide increased from 195 cases in 1974 to 266 in 1975, 367 in 1976, and 409 in 1977. Thus, tourist arrivals declined by approximately 38.8% between 1974 and 1977, while recorded homicides more than doubled from 195 to 409 cases. Tourist arrivals subsequently recovered sharply to 381,818 in 1978 and 426,540 in 1979, while homicides declined from 409 in 1977 to 381 in 1978 and 351 in 1979. The 1970s provide descriptive evidence of an inverse tourism–homicide movement during an important period of Jamaica's political, economic, and social instability.

10.4 The 1980s

The beginning of the 1980s was characterised by an extraordinary homicide shock, with recorded murders increasing from 351 in 1979 to 889 in 1980. Stopover tourism simultaneously declined from 426,540 in 1979 to approximately 395,000 in 1980, although this simple temporal correspondence cannot establish that homicide caused the tourism decline. Homicide subsequently fell to 490 in 1981 and 405 in 1982, while stopover arrivals increased from approximately 406,000 to 468,000 over those years. Tourism

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expanded considerably thereafter, reaching approximately 739,000 stopover arrivals in 1987, although the number temporarily declined to approximately 649,000 in 1988. By 1989, arrivals had increased to approximately 829,000 while homicide stood at 439 cases. The decade illustrates both episodes of inverse movement and periods in which tourism expanded despite continuing lethal violence.

10.5 The 1990s

The 1990s marked a sustained expansion of Jamaica's stopover tourism industry alongside a substantial escalation in homicide. Stopover arrivals increased from approximately 989,000 in 1990 to 1.248 million by 1999, representing substantial growth in international tourism demand. Homicide simultaneously increased from 542 cases in 1990 to 1,038 in 1997 before declining to 953 in 1998 and 849 in 1999. The decade provides an important warning against assuming that a negative homicide effect requires total tourist arrivals to decline whenever homicide increases. Tourism-promoting factors such as hotel development, destination marketing, international income growth, airlift, exchange rates, and Jamaica's established tourism brand may have offset some of the potential deterrent effect associated with increasing violence. The appropriate empirical question is whether tourist arrivals would have been even greater in the absence of increasing homicide rather than whether tourism and homicide can increase simultaneously.

10.6 The 2000s

The 2000s provide an even stronger example of the simultaneous expansion of tourism and homicide. Stopover arrivals increased from approximately 1.323 million in 2000 to 1.831 million in 2009 despite considerable annual variation during the first part of the decade. Recorded homicide increased from 887 in 2000 to 1,471 in 2004, 1,674 in 2005, and a period high of 1,683 in 2009. Tourist arrivals nevertheless continued to increase during much of this high-homicide period, reaching approximately 1.679 million in 2006 and 1.767 million in 2008. This simultaneous movement demonstrates why simple levels correlations between tourism and homicide can produce misleading interpretations when both variables are influenced by long-run trends and omitted determinants. A log-log elasticity model should be supplemented with first differences, lagged homicide, structural-break analysis, and multivariate tourism-demand controls.

10.7 Tourism Expansion during 2010–2019

The decade preceding COVID-19 represented another substantial period of tourism expansion in Jamaica. Stopover arrivals increased from approximately 1.922 million in 2010 to 2.681 million in 2019, with arrivals exceeding two million for the first time during the decade. Homicide, in contrast, displayed pronounced volatility, falling from 1,447 in 2010 to 1,005 in 2014 before subsequently increasing to 1,647 in 2017. Tourist arrivals nevertheless reached 2,352,915 in 2017, 2,472,727 in 2018, and 2,680,920 in 2019. The 2018 experience is notable because homicide declined substantially from 1,647 to 1,287 while stopover arrivals increased by more than 119,000. Overall, the decade again suggests that homicide should be considered one potential determinant of tourism demand within a broader economic and destination-demand model rather than an exclusive predictor of visitor arrivals.

10.8 COVID-19 and the 2020 Structural Break

The 2020 observation represents a fundamental structural break in the tourism series and should not be interpreted as an ordinary response to homicide. Stopover arrivals collapsed from 2,680,920 in 2019 to 880,404 in 2020, representing a decline of approximately 67.2%. Homicide changed comparatively little, declining from 1,339 in 2019 to 1,323 in 2020 in the internally continuous historical JCF series used for this report. The enormous tourism contraction was principally associated with COVID-19, international border restrictions, reduced aviation, and the interruption of global travel rather than a comparable movement in Jamaican homicide. Inclusion of 2020 in an unadjusted homicide–tourism regression could substantially distort the estimated homicide elasticity. The empirical model should incorporate a COVID-19 intervention variable and undertake sensitivity analysis with the pandemic years treated separately.

10.9 Tourism Recovery, 2021–2024

Jamaica's stopover tourism recovered rapidly following the pandemic disruption, increasing from 880,404 arrivals in 2020 to 1,464,399 in 2021 and 2,478,391 in 2022. Arrivals increased further to 2,916,006 in 2023 before declining marginally to 2,900,358 in 2024. Homicide, meanwhile, increased from 1,323 in 2020 to 1,474 in 2021 and 1,498 in 2022 before declining to 1,406 in 2023 and 1,147 in 2024. The simultaneous increase in tourism and homicide during the initial recovery again illustrates the powerful influence of factors unrelated to domestic violence: the reopening of international travel and the release of suppressed tourism demand. However, the 2022–2024 observations subsequently show tourist arrivals reaching historically high levels while homicide moved substantially downward. This recent period may provide valuable observations for examining whether declining homicide reinforces tourism performance after pandemic-related effects are controlled statistically.

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10.10 Developments in 2025

The year 2025 requires caution because both tourism and homicide declined substantially, but the tourism decline cannot reasonably be attributed to falling homicide. Stopover arrivals decreased from 2,900,358 in 2024 to 2,601,416 in 2025, representing a reduction of approximately 10.3%. Recorded homicide simultaneously declined from 1,147 to 673, representing a historically substantial reduction in lethal violence. The fact that tourism declined while homicide also declined generates a positive annual point-to-point homicide elasticity mechanically, even though it would be inappropriate to conclude that reducing homicide caused tourism to fall. The 2025 tourism result was affected by factors separate from homicide, including disruption to tourism accommodation and infrastructure during the latter part of the year. This observation reinforces the necessity of controlling for extraordinary shocks when estimating the homicide elasticity of tourist arrivals.

10.11 Overall Historical Assessment

The complete 1970–2025 series reveals that Jamaica's tourism sector expanded enormously despite the country's substantial long-run increase in homicide. Stopover arrivals rose from 309,122 in 1970 to 2,601,416 in 2025, meaning that the annual volume in 2025 was more than eight times the corresponding 1970 level. Homicide increased from 152 in 1970 to peaks exceeding 1,600 during the 2000s and 2010s before declining substantially to 673 in 2025. These long-run increases in both variables mean that a simple levels correlation could potentially indicate a positive association even when the true partial effect of homicide on tourism demand is negative. The historical record contains several periods of inverse movement, including the mid-to-late 1970s, as well as periods in which tourism expanded despite sharply increasing homicide. The data strongly support the use of elasticity, first-difference, lagged, structural-break, and multivariate methods rather than concluding the raw levels alone.

10.12 Implications for the Homicide Elasticity of Tourist Arrivals

The annual data in Table 1 provide the numerical foundation for calculating the homicide elasticity of tourist arrivals. For each year after the first observation, the logarithmic change in tourist arrivals can be divided by the corresponding logarithmic change in homicide. This produces a year-specific elasticity showing how large the proportional movement in tourist arrivals was relative to the proportional movement in homicide. A negative elasticity indicates that tourism and homicide moved in opposite directions, while a positive elasticity indicates that the two variables moved in the same direction during that annual interval. The annual coefficient should not be interpreted causally because the sign can be generated by unrelated shocks affecting either tourism or homicide. The annual homicide elasticity of tourist arrivals is expressed as follows:

$$\epsilon^{TH}_t = \ln(T_t/T_{t-1}) / \ln(H_t/H_{t-1})$$

Where:

ϵ^{TH}_t = annual homicide elasticity of tourist arrivals

T_t = tourist arrivals in the current year

T_{t-1} = tourist arrivals in the preceding year

H_t = homicide in the current year

H_{t-1} = homicide in the preceding year

$\ln$ = natural logarithm

The annual historical series demonstrates a complex relationship between homicide and stopover tourist arrivals in Jamaica from 1970 to 2025. Several periods, such as the mid-1970s, exhibit the theoretically expected pattern in which increasing homicide coincided with declining tourism, while subsequent homicide reductions coincided with tourism recovery. Other periods demonstrate the opposite phenomenon, with tourist arrivals increasing substantially despite elevated or increasing homicide. These findings do not invalidate the proposition that homicide can negatively affect tourism demand because the observed number of tourists represents the combined outcome of security, prices, income, airlift, accommodation, advertising, destination attractiveness, global travel conditions, and extraordinary shocks. The descriptive evidence instead demonstrates why the homicide effect must be isolated statistically rather than inferred from whether the two annual series move in opposite directions every year. The next analytical stage should calculate the annual homicide elasticity for each year from 1971 through 2025 and estimate the overall, first-difference, lagged, and adjusted homicide elasticities of Jamaican tourist arrivals.

14. Time-Series Diagnostics and Robustness Analysis

14.1 Stationarity and Unit-Root Testing

Before interpreting the homicide elasticity estimates, Augmented Dickey–Fuller (ADF) tests were conducted to examine the stationarity properties of logged tourist arrivals and logged homicide. When only an intercept was included, the ADF statistic for $\ln(T_t)$ was -0.936 with $P = .776$, indicating that the null hypothesis of a unit root could not be rejected. For $\ln(H_t)$, the ADF statistic was -2.692 with $P = .075$, which similarly failed to reject the unit-root null hypothesis at the conventional 5% level. When a deterministic trend was included, logged tourist arrivals produced an ADF statistic of -3.655 and $P = .025$, suggesting that tourist arrivals may be trend-stationary under that specification, whereas logged homicide remained non-stationary with an ADF statistic

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of -1.707 and $P = .748$. These findings demonstrate that the statistical properties of the variables depend partly on treatment of the deterministic trend and caution against relying exclusively on the simple level regression. The strong positive elasticity obtained from the original log-log levels model must be interpreted cautiously because the two series contain substantial historical trending behaviour.

First differencing produced substantially stronger evidence of stationarity for both variables. The ADF statistic for $\Delta \ln(T_t)$ was -6.316 with $P < .001$, strongly rejecting the null hypothesis of a unit root in annual tourism changes. Similarly, $\Delta \ln(H_t)$ produced an ADF statistic of -7.975 with $P < .001$, indicating that annual logarithmic homicide changes were stationary. These results support the use of first differences as an important robustness specification for examining the short-run homicide–tourism relationship. The finding is consequential because the first-difference model produced a very different homicide coefficient from the simple levels model. Whereas the levels elasticity was strongly positive and statistically significant, the complete-sample first-difference elasticity was slightly negative and statistically non-significant. The stationarity results strengthen the argument that the positive levels relationship should not be interpreted as a causal effect of homicide on tourist arrivals.

Table 3. Augmented Dickey–Fuller Tests for Tourist Arrivals and Homicide

Variable	ADF specification	ADF statistic	P value	Inference at 5%
$\ln(T_t)$	Intercept	-0.936	0.776	Unit root not rejected
$\ln(T_t)$	Intercept + trend	-3.655	0.025	Reject unit root under trend specification
$\ln(H_t)$	Intercept	-2.692	0.075	Unit root not rejected
$\ln(H_t)$	Intercept + trend	-1.707	0.748	Unit root not rejected
$\Delta \ln(T_t)$	Intercept	-6.316	<0.001	Stationary
$\Delta \ln(H_t)$	Intercept	-7.975	<0.001	Stationary

Note. The null hypothesis of the ADF test is that the series contains a unit root. Rejection at $P < .05$ provides evidence of stationarity under the deterministic specification employed.

15. COINTEGRATION ANALYSIS

Because the level variables exhibited evidence of non-stationary behaviour, an Engle–Granger cointegration test was conducted to determine whether tourist arrivals and homicide shared a stable long-run equilibrium relationship. The test statistic was -2.673 with an approximate p -value of .210. The relevant critical values were approximately -4.107 at 1%, -3.449 at 5%, and -3.122 at 10%. Since the test statistic was less negative than each of these critical values, the null hypothesis of no cointegration could not be rejected. The evidence does not establish a statistically stable bivariate long-run equilibrium relationship between logged tourist arrivals and logged homicide over the complete study period. A conventional bivariate error-correction model is not supported by these data and should not be estimated merely because it was included among the originally proposed models.

Table 4. Engle–Granger Cointegration Test

Test	Statistic	P value	5% critical value	Conclusion
$\ln(T_t)$ and $\ln(H_t)$	-2.673	.210	-3.449	No evidence of cointegration

The absence of bivariate cointegration has an important implication for interpretation of the original overall homicide elasticity. Although the simple log-log levels model produced $\beta^H = 0.8776$ and $P < 0.001$, the cointegration test does not establish that tourist arrivals and homicide form a stable long-run equilibrium system. The high R^2 of the levels model cannot by itself be regarded as evidence of a substantive long-run causal relationship. Instead, the coefficient is likely influenced substantially by the historical movement of both variables through time. This conclusion is consistent with the dramatic difference between the positive levels elasticity and the near-zero complete-sample first-difference coefficient. The evidence favours specifications that control explicitly for time trends, structural shocks, and other determinants of tourism demand.

16. TREND-CONTROLLED HOMICIDE ELASTICITY

A deterministic time trend was introduced into the log-log regression to determine whether the positive homicide coefficient remained after controlling for the long-run expansion of Jamaica's tourism industry. The estimated homicide elasticity declined

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dramatically from 0.8776 in the original bivariate levels model to 0.1089 in the trend-controlled model. More importantly, the homicide coefficient was no longer statistically significant, with $P = .199$ and a 95% confidence interval extending from approximately -0.0573 to 0.2750 . The annual trend coefficient was positive at approximately 0.0359 and highly statistically significant ($P < .001$), indicating strong systematic growth in tourist arrivals over the historical period independent of contemporaneous homicide. Model explanatory power increased to $R^2 = .896$, suggesting that the time trend accounts for a substantial portion of the historical variation previously associated with homicide. The disappearance of statistical significance after introduction of the trend provides strong evidence that the original positive homicide elasticity was substantially confounded by common historical movement.

Equation (12): Trend-Controlled Homicide–Tourism Model

$$\ln(T_t) = 12.1386 + 0.1089\ln(H_t) + 0.0359\text{TREND}_t$$

Where:

Homicide elasticity = 0.1089

P = 0.199

95% CI = -0.0573 to 0.2750

$R^2 = .8962$

The trend-controlled result is one of the most important findings of the study because it substantially alters the interpretation of the original levels model. A naïve interpretation of $\beta^H = 0.8776$ would suggest that higher homicide was associated with substantially higher tourist arrivals, which contradicts the theoretical expectation that destination insecurity can discourage tourism. Once the long-run historical growth of tourism is explicitly modelled, the homicide coefficient becomes small and statistically indistinguishable from zero. The finding indicates that much of the original positive relationship reflected the fact that both tourism and homicide generally increased over substantial portions of the 1970–2025 period. It does not establish that homicide has no tourism cost because a national annual bivariate model cannot capture destination perceptions, source-market heterogeneity, geographical concentration, marketing responses, or other mechanisms identified in earlier Jamaican research. Instead, the result demonstrates that the apparent positive homicide elasticity is not robust to a basic control for historical trend.

17. COVID-19 INTERVENTION MODEL

The COVID-19 pandemic generated the largest annual disruption in the tourist-arrival series and required explicit treatment as a structural intervention. A COVID-19 indicator was introduced alongside homicide and the deterministic time trend to distinguish the pandemic-related tourism shock from the ordinary homicide–tourism relationship. In this specification, the homicide coefficient declined further to 0.0531 and remained statistically non-significant ($P = .504$), with a 95% confidence interval from approximately -0.1026 to 0.2089 . The trend coefficient remained positive at 0.0408 and highly statistically significant ($P < .001$), while the COVID-19 coefficient was -0.9069 and highly statistically significant ($P < .001$). Model explanatory power increased substantially to $R^2 = .9519$, indicating that the trend and pandemic intervention together explained a very large proportion of the historical variation in logged stopover arrivals. The results confirm that failure to isolate COVID-19 can substantially distort interpretation of the relationship between homicide and tourism.

Equation (13): Trend- and COVID-Controlled Model

$$\ln(T_t) = 12.4042 + 0.0531\ln(H_t) + 0.0408\text{TREND}_t - 0.9069\text{COVID}_t$$

Where:

Homicide elasticity = 0.0531

P = 0.504

95% CI = -0.1026 to 0.2089

COVID-19 coefficient = -0.9069

P < 0.001

95% CI = -1.1612 to -0.6527

$R^2 = .9519$

The reduction of the homicide elasticity from 0.8776 in the unadjusted levels model to only 0.0531 after controlling for trend and COVID-19 is substantively important. The adjusted coefficient indicates that a 1% difference in homicide was associated with only approximately a 0.05% difference in tourist arrivals within this specification, and the confidence interval includes both negative and positive values. There is no statistically reliable positive homicide elasticity after the major historical trend and pandemic disruption are incorporated. The COVID-19 coefficient, by contrast, is large, negative, and highly significant, confirming the exceptional nature of the pandemic shock to Jamaica's tourism sector. These results reinforce the principle that tourist arrivals are generated by a complex tourism-demand system rather than by homicide alone. They also demonstrate empirically why extraordinary events must be incorporated into the B-HTF before the homicide coefficient is interpreted.

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18. PRE-COVID FIRST-DIFFERENCE ANALYSIS

Because the COVID-19 period produced extraordinary movements in tourist arrivals unrelated to ordinary homicide dynamics, the first-difference model was re-estimated for the pre-pandemic period ending in 2019. This specification produced a homicide elasticity of -0.1059 , compared with -0.0300 in the complete 1971–2025 first-difference model. The pre-COVID coefficient was statistically significant at the 5% level, with $P = .035$ and a 95% confidence interval from approximately -0.2042 to -0.0076 . The estimated intercept was 0.0488 , indicating positive average tourism growth after accounting for annual homicide changes within the simple specification. Model explanatory power remained modest, with $R^2 = .0575$, demonstrating that annual homicide changes explained only a relatively small proportion of annual tourism changes. Nevertheless, the negative coefficient provides evidence that before the extraordinary pandemic disruption, increases in homicide were associated with modest reductions in annual stopover-tourism growth.

Equation (14): Pre-COVID First-Difference Model

$$\Delta \ln(T_t) = 0.0488 - 0.1059 \Delta \ln(H_t)$$

Where:

Short-run homicide elasticity = -0.1059

$P = 0.035$

95% CI = -0.2042 to -0.0076

$R^2 = 0.0575$

The pre-COVID elasticity implies that a 1% annual increase in homicide was associated with an approximately 0.11% reduction in annual tourist-arrival growth during the pre-pandemic historical period. Since the absolute value of the coefficient is substantially below unity, tourism demand can be described as relatively homicide-inelastic within this short-run specification. This finding is broadly consistent with earlier Jamaican research showing that crime negatively affected tourist arrivals but that the aggregate effect was comparatively modest because advertising, promotion, and all-inclusive accommodation helped insulate tourism demand. However, the low R^2 demonstrates that homicide alone accounted for only a small fraction of year-to-year tourism variation. The coefficient should be interpreted as evidence of a modest historical association rather than as a complete explanation of Jamaican tourism performance.

19. STRUCTURAL-BREAK ANALYSIS

Formal Chow tests were conducted at selected historically meaningful points to determine whether the parameters of the simple log-log homicide–tourism relationship remained stable throughout the complete study period. Significant evidence of parameter instability was detected at 1980, 1990, 2000, 2010, and 2020. The Chow statistic for a 1980 break was $F = 6.44$ with $P = .003$, while the corresponding 1990 test produced $F = 15.24$ with $P < .001$. Significant structural instability was also observed at 2000 ($F = 8.10$, $P < .001$), 2010 ($F = 13.76$, $P < .001$), and 2020 ($F = 5.17$, $P = .009$). These results demonstrate that a single constant homicide coefficient imposed across 1970–2025 does not adequately represent the changing statistical relationship between tourism and homicide. The evidence supports the theoretical argument that Jamaica's tourism system evolved through distinct historical regimes involving changes in accommodation, all-inclusive tourism, marketing, airlift, security arrangements, source markets, global travel, and extraordinary shocks.

Table 5. Selected Structural-Break Tests for the Homicide–Tourism Relationship

Candidate break year	Chow F statistic	P value	Statistical conclusion
1980	6.44	.003	Significant structural break
1990	15.24	<.001	Significant structural break
2000	8.10	<.001	Significant structural break
2010	13.76	<.001	Significant structural break
2020	5.17	.009	Significant structural break

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Note. These are selected candidate-break tests rather than an exhaustive endogenous multiple-break procedure. A subsequent Bai–Perron analysis would be preferable for identifying break dates statistically without imposing all break points in advance.

The structural-break findings provide an important explanation for the instability observed in the annual elasticities and regression coefficients. Jamaica's tourism industry in the 1970s was structurally different from the industry operating after the expansion of large all-inclusive resorts, extensive destination marketing, increased airlift, and substantial hotel investment. Similarly, the information environment through which international travellers became aware of Jamaican violence changed substantially with cable news, the internet, online travel platforms, social media, and contemporary government travel advisories. Tourism-security measures also evolved, potentially reducing visitors' direct exposure to violence even while national homicide remained elevated. Earlier research found that the negative crime effect on Jamaican tourism was moderated by advertising, promotion, and growth of all-inclusive hotels, providing an important substantive mechanism through which the homicide elasticity could change over time. The statistically significant breaks support regime-specific analysis rather than the assumption of one immutable homicide elasticity over the entire 56-year period.

20. SUMMARY OF HOMICIDE ELASTICITY MODELS

The robustness analyses substantially clarify the empirical relationship between homicide and Jamaican tourism. The original log-log levels model produced a strong positive homicide elasticity of 0.8776, but this coefficient fell to 0.1089 and became statistically non-significant once a deterministic trend was included. After both historical trend and the COVID-19 intervention were controlled, the homicide coefficient declined further to 0.0531 and remained statistically non-significant. The complete-sample first-difference model produced a small negative coefficient of -0.0300 that was statistically non-significant, whereas the pre-COVID first-difference model produced a statistically significant negative elasticity of -0.1059 . Cointegration analysis failed to establish a stable bivariate long-run equilibrium relationship, while structural-break tests demonstrated significant parameter instability across several major historical periods. Taken together, the results provide stronger support for a small negative short-run pre-pandemic association than for the strong positive association suggested by the unadjusted historical levels model.

Table 6. Consolidated Homicide Elasticity Results for Jamaican Tourist Arrivals

Model	Homicide coefficient	P value	95% CI	R ²	Interpretation
Unadjusted log-log levels	0.8776	<.001	0.7322 to 1.0231	.7305	Strong positive levels association; vulnerable to common trend
First difference, full sample	−0.0300	.812	−0.2822 to 0.2221	.0011	No significant short-run association
Trend-controlled levels	0.1089	.199	−0.0573 to 0.2750	.8962	Homicide no longer significant
Trend + COVID-controlled	0.0531	.504	−0.1026 to 0.2089	.9519	Homicide remains non-significant
Pre-COVID first difference	−0.1059	.035	−0.2042 to −0.0076	.0575	Modest negative short-run association
Engle–Granger cointegration	Test statistic = −2.673	.210	—	—	No evidence of bivariate cointegration

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21. INTERPRETATION OF THE BOURNE HOMICIDE–TOURISM FUNCTION

The expanded results indicate that the relationship between homicide and tourist arrivals in Jamaica is considerably more complex than suggested by the original bivariate levels regression. The unadjusted positive elasticity of 0.8776 largely disappears when the long-run tourism trend is explicitly controlled, declining to 0.1089 and becoming statistically non-significant. Introducing the COVID-19 intervention reduces the coefficient further to 0.0531, again with no statistical evidence that it differs from zero. Conversely, the pre-pandemic first-difference specification produces a negative elasticity of -0.1059 that is statistically significant at the 5% level. This result indicates that, before the exceptional COVID-19 disruption, a 10% annual increase in homicide was statistically associated with approximately a 1.06% reduction in annual tourist-arrival growth within the bivariate first-difference specification. The relatively small magnitude is consistent with the proposition that Jamaican tourism has historically displayed considerable resilience to national crime conditions.

The findings also provide a useful reconciliation with the existing Jamaican literature. Alleyne and Boxill (2003) examined tourist arrivals and crime during 1962–1999 using a transfer-function approach and reported that crime negatively affected tourism, with a stronger effect in the European market, but that the overall effect was relatively small because advertising, promotion, and all-inclusive hotels moderated the impact. Government documentation has similarly recognised that perceptions of Jamaica's crime rate can adversely affect tourism while noting the geographical concentration of much lethal violence outside major resort areas and the implementation of enhanced security measures in tourism zones. The present pre-COVID first-difference elasticity of -0.1059 is directionally consistent with that earlier evidence, although the current study examines homicide specifically rather than the broader crime measures used in previous research. The results extend rather than replicate the earlier literature by quantifying the proportional responsiveness of stopover arrivals to annual homicide changes over a substantially longer historical period.

22. HYPOTHESIS ASSESSMENT

The original hypotheses require qualification because the statistical conclusion depends on whether the analysis concerns historical levels or short-run changes. In the unadjusted levels model, the null hypothesis $\beta^H = 0$ is rejected, but the estimated coefficient is positive rather than the hypothesised negative direction and loses statistical significance after controlling for historical trend. The unadjusted levels result does not support the substantive hypothesis that increasing homicide reduces tourist arrivals. In the complete 1971–2025 first-difference model, the coefficient is negative but statistically non-significant, meaning that $H_0: \beta\Delta H = 0$ cannot be rejected for the complete period. In the pre-COVID first-difference model, however, the coefficient is negative and statistically significant, providing evidence consistent with the hypothesised inverse short-run relationship before the pandemic disruption. The appropriate conclusion is conditional rather than universal: evidence of a negative homicide elasticity emerges in the pre-pandemic short-run specification, but the relationship is not stable across all models or historical regimes.

23. PRINCIPAL FINDING

The principal empirical finding is not that homicide alone determines Jamaica's tourist arrivals but that the estimated relationship changes substantially according to time-series specification and historical regime. The strong positive association observed in raw historical levels is substantially explained by long-run trend and does not survive basic controls for historical growth and the COVID-19 disruption. Annual first differences across the complete sample show virtually no relationship, while the pre-COVID first-difference model identifies a modest but statistically significant negative homicide elasticity of approximately -0.106 . The absence of bivariate cointegration and the presence of multiple structural breaks further demonstrate that one constant elasticity coefficient cannot adequately characterise Jamaica's experience from 1970 through 2025. These results support conceptualising homicide as one component of a wider tourism-demand system that includes destination security, source-market income, relative prices, exchange rates, airlift, accommodation capacity, marketing, global shocks, and tourism-sector resilience. The empirical findings provide a foundation for estimating the extended B-HTF rather than treating the preliminary bivariate elasticity as the final causal parameter.

24. DISCUSSION

The theoretical expectation of a negative homicide elasticity is supported by previous research indicating that crime and security concerns can discourage tourism demand. Earlier Jamaican evidence is relevant because Alleyne and Boxill found that crime adversely affected arrivals while also identifying advertising, promotion, and all-inclusive hotels as mechanisms capable of reducing the aggregate impact (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). This suggests that Jamaica may display a negative partial homicide elasticity even when raw tourist arrivals increase during high-homicide periods. Such an outcome would not be contradictory because tourism growth generated by source-market income, airlift, hotel expansion, marketing, and destination loyalty can exceed the tourism losses statistically associated with homicide. The relevant empirical quantity is the counterfactual difference between observed arrivals and the arrivals that might have occurred under

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otherwise similar conditions with lower homicide. The extended B-HTF is designed to move the analysis towards this conditional interpretation.

The geography of Jamaican tourism provides another reason why the homicide elasticity may be smaller than the national homicide burden initially suggests. Resort areas, all-inclusive properties, organised transportation, private security, and tourism-specific policing can create a degree of separation between visitor experiences and violence concentrated in communities. Contemporary travel guidance similarly distinguishes the national violent-crime problem from conditions within many tourist areas, although crime remains relevant to destination perceptions. This segmentation can weaken the direct relationship between national homicide and tourist arrivals because prospective travellers may perceive resort spaces differently from the country (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). Nevertheless, international news concerning exceptionally high homicide rates can affect national destination reputation even when visitor zones remain comparatively insulated. Both national homicide and tourism-area security perceptions should be incorporated where sufficiently consistent data become available.

25. COVID-19 as a Critical Empirical Test

The year 2020 demonstrates why a simple bivariate homicide–tourism model can produce misleading conclusions. International tourism collapsed because governments closed borders, airlines reduced operations, cruise activity stopped, and travellers faced unprecedented health and mobility restrictions, while these developments were largely independent of Jamaica's homicide movement. If the 2020 tourism decline were mechanically attributed to homicide, the estimated homicide coefficient could be seriously distorted. The subsequent recovery similarly reflected border reopening, vaccination, pent-up travel demand, restored airlift, accommodation reopening, and global tourism normalisation rather than homicide alone. COVID-19 should be represented through intervention variables or excluded in a sensitivity model to determine how strongly it influences the homicide coefficient. Comparing pre-pandemic, pandemic, and post-pandemic specifications will provide an important robustness test for the B-HTF.

26. TOURISM RESILIENCE AND HOMICIDE

The concept of tourism resilience is central to understanding why Jamaica can experience substantial tourism growth despite a high national homicide burden. Resilience in this context does not mean that homicide has no cost, but that other attributes and institutional adaptations can prevent the full security shock from translating into lost arrivals. Jamaica's brand recognition, beaches, climate, cultural appeal, diaspora connections, repeat visitors, all-inclusive resorts, air connectivity, marketing, accommodation investment, and tourism-security arrangements can all contribute to this resilience (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). The estimated homicide elasticity may be negative but relatively small in absolute magnitude, after tourism-industry variables are controlled. Alternatively, a large negative coefficient would suggest that Jamaica's observed tourism performance might have been substantially stronger in the absence of its homicide burden. Estimating rather than assuming this elasticity is the central empirical contribution of the proposed study.

27. POLICY IMPLICATIONS

The policy significance of the study extends beyond determining whether tourists themselves are frequent homicide victims. If national homicide reduces arrivals through destination reputation and perceived risk, violence prevention can generate economic benefits beyond the direct health, social, and criminal-justice benefits of preventing violent deaths. A statistically robust negative homicide elasticity would imply that homicide reduction can form part of tourism competitiveness policy as well as public-health and national-security policy. However, policy attribution should not be based on a bivariate correlation because tourism responds simultaneously to economic conditions, marketing, airlift, hotel capacity, disasters, health emergencies, and international travel patterns (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). Tourism authorities and security agencies would benefit from integrating crime indicators into destination-demand forecasting while continuing to evaluate the independent effectiveness of tourism promotion and product development. The broader implication is that homicide prevention can potentially create positive externalities extending from population health and community safety to international reputation and foreign-exchange earnings.

28. LIMITATIONS

The principal limitation concerns the challenge of establishing a perfectly consistent tourist-arrival definition across a very long historical period. JTB historical files contain detailed visitor statistics, but changes in tourism categories, cruise activity, reporting systems, and visitor definitions must be examined before combining observations into one elasticity series. A second limitation is that national homicide may imperfectly measure the security conditions experienced by tourists because lethal violence is geographically and demographically concentrated. A third limitation concerns endogeneity and omitted-variable bias because

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homicide and tourism may both respond to economic conditions, institutional change, political events, or other common factors. A fourth limitation is the presence of major structural shocks, COVID-19, hurricanes, recessions, and travel disruptions, which can dominate annual tourism changes independently of homicide. Finally, annual national observations provide a relatively small time-series sample and constrain the number of controls and lags that can be estimated simultaneously without overfitting.

29. FUTURE RESEARCH

Future research should disaggregate tourist arrivals by source market because visitors from the United States, Canada, the United Kingdom, Europe, the Caribbean, and other regions may respond differently to homicide information and travel advisories. Monthly data could also improve identification by providing substantially more observations and allowing closer alignment between homicide shocks, media attention, advisories, bookings, and actual arrivals. Parish-level analysis could compare homicide in major tourism areas with national homicide to determine whether local violence is more influential than country-level security reputation. Separate models for stopover and cruise tourism would establish whether visitors with different lengths of stay and destination exposure exhibit different homicide elasticities. Tourism receipts, average expenditure, length of stay, hotel occupancy, and repeat visitation could additionally be modelled because homicide might affect tourist behaviour even when the total number of arrivals remains resilient. These extensions would transform the B-HTF from a national annual model into a wider research programme concerning crime, tourism demand, destination resilience, and the economic consequences of violence.

30. CONCLUSION

This study proposes a comprehensive framework for determining whether annual tourist arrivals in Jamaica are a function of annual homicide and for estimating the homicide elasticity of tourism demand. The Bourne Homicide–Tourism Function treats homicide as an important destination-security variable while recognising that tourist arrivals are simultaneously determined by income, prices, exchange rates, airlift, accommodation, marketing, global conditions, natural disasters, pandemics, and other influences. The principal elasticity measure is β^H from the log-log function $\ln(T_i) = \alpha + \beta^H \ln(H_i) + \varepsilon_i$, supplemented by annual point-to-point elasticities, first differences, lagged models, structural-break tests, and multivariate specifications. Existing Jamaican and international studies provide a theoretical expectation of a negative coefficient but also indicate that marketing, all-inclusive resorts, destination segmentation, and other resilience mechanisms can moderate the effect of crime on tourism (Alleyne & Boxill, 2003; Levantis & Gani, 2000; Mohammed & Sookram, 2015; Akamavi et al., 2023). The study should estimate rather than presume the magnitude of Jamaica's homicide elasticity and should avoid interpreting simple historical association as causation. Once the complete, internally consistent JTB annual series is assembled, the framework provides a reproducible basis for estimating whether, by how much, and with what delay homicide is associated with Jamaica's international tourism performance.

REFERENCES

- 1) Akamavi, R. K., Ibrahim, F., & Swaray, R. (2023). Tourism and troubles: Effects of security threats on the global travel and tourism industry performance. *Journal of Travel Research*. <https://doi.org/10.1177/00472875221138792>
- 2) Alleyne, D., & Boxill, I. (2003). The impact of crime on tourist arrivals in Jamaica. *International Journal of Tourism Research*, 5(5), 381–391. <https://doi.org/10.1002/jtr.444>
- 3) Jamaica Constabulary Force. (2026). *Crime statistics: Historical murder statistics*. Jamaica Constabulary Force.
- 4) Jamaica Tourist Board. (2025). *Annual travel statistics 2024*. Jamaica Tourist Board.
- 5) Jamaica Tourist Board. (2026). *Visitor arrivals to Jamaica: Annual statistics*. Jamaica Tourist Board.
- 6) Levantis, T., & Gani, A. (2000). Tourism demand and the nuisance of crime. *International Journal of Social Economics*, 27(7/8/9/10), 959–967. <https://doi.org/10.1108/03068290010336964>
- 7) Mohammed, A.-M., & Sookram, S. (2015). The impact of crime on tourist arrivals—A comparative analysis of Jamaica and Trinidad and Tobago. *Social and Economic Studies*, 64(2).
- 8) Office of the Prime Minister. (2025). *Jamaica's tourism sector enters new era of inclusive growth and innovation*. Government of Jamaica.
- 9) World Bank. (2026). *World Development Indicators: International tourism, number of arrivals*. World Bank.
- 10) World Health Organization. (2024). *Jamaica: Health data overview*. World Health Organization.

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Appendix A. Recommended Analytical Dataset

Variable	Symbol	Measurement	Expected relationship with tourist arrivals
Tourist arrivals	T_t	Annual stopover arrivals	Dependent variable
Homicide	H_t	Annual JCF murders	Negative
Homicide rate	HR_t	Homicides per 100,000 population	Negative
Source-market income	Y_t	Real GDP/income of principal markets	Positive
Relative tourism prices	RP_t	Jamaica tourism prices relative to competing destinations	Negative
Exchange rate	ER_t	Relevant real/effective exchange rate	Ambiguous
Airlift	AIR_t	Seats/flights/air capacity	Positive
Accommodation	$ROOM_t$	Available hotel/visitor rooms	Positive
Advertising	ADV_t	Tourism marketing expenditure/proxy	Positive
COVID-19	$COVID_t$	Pandemic/intervention dummy	Negative
Disaster	$DISASTER_t$	Hurricane/disaster indicator	Negative
Time trend	$TREND_t$	Annual deterministic trend	Empirical
Lagged homicide	H_{t-1}	Previous-year homicide	Expected negative

Appendix B. Core Equations for Microsoft Word

General function

$$T_t = f(H_t, Y_t, RP_t, ER_t, AIR_t, ROOM_t, ADV_t, X_t)$$

Annual tourist-arrival change

$$\text{Tourism Growth}_t = [(T_t - T_{t-1}) / T_{t-1}] \times 100$$

Annual homicide change

$$\text{Homicide Growth}_t = [(H_t - H_{t-1}) / H_{t-1}] \times 100$$

Annual tourist-arrival elasticity to homicide

$$\varepsilon^{TH}_t = \ln(T_t/T_{t-1}) / \ln(H_t/H_{t-1})$$

Overall homicide elasticity

$$\ln(T_t) = \alpha + \beta^H \ln(H_t) + \varepsilon_t$$

First-difference elasticity

$$\Delta \ln(T_t) = \alpha + \beta^H \Delta \ln(H_t) + \varepsilon_t$$

Lagged model

$$\ln(T_t) = \alpha + \beta_0 \ln(H_t) + \beta_1 \ln(H_{t-1}) + \beta_2 \ln(H_{t-2}) + \varepsilon_t$$

Extended B-HTF

$$\ln(T_t) = \beta_0 + \beta_1 \ln(H_t) + \beta_2 \ln(Y_t) + \beta_3 \ln(RP_t) + \beta_4 \ln(ER_t) + \beta_5 \ln(AIR_t) + \beta_6 \ln(ROOM_t) + \beta_7 ADV_t + \beta_8 COVID_t + \beta_9 DISASTER_t + \beta_{10} TREND_t + \varepsilon_t$$