

Understanding the Trend of Household Tourism Spending: Income and Socio-demographical Disparities

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A thesis submitted to the Department of Economics and Social Sciences in partial
fulfillment of the requirements for the degree of
Master of Science in Applied Economics

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Declaration

It is hereby declared that

1. The thesis submitted is my original work while completing degree at BRAC University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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Approval

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Abstract

This study explores household tourism expenditure in Bangladesh, with a particular interest in how these differ according to household income and socio-demographic characteristics, using data from the Household Income and Expenditure Survey (HIES) for 2010, 2016, and 2022. Leveraging OLS, IV 2SLS, Lewbel GMM, and Blinder-Oaxaca decomposition approaches, the study uncovers the key changes in household behaviour and reveals the determinants of tourism expenditure over time. The outcomes demonstrate that the income elasticity of tourism expenditure significantly increased, suggesting changing priorities and an improved economic situation. Also, tourism spending gaps are compared and explained by geographic (coastal vs. non-coastal), locational (rural vs. urban), marital, and gender diversities, using explained and unexplained perspectives of spending inequality. The findings of this paper offer important policy considerations for promoting equitable tourism growth, regional development, and redressing socio-economic inequalities. Together, these insights will collectively enable a deeper understanding of tourism economics in a developing country and highlight the importance of inclusive policy frameworks in enhancing sustainable tourism development.

Keywords: Household income, Tourism spending, Regional disparities, Lewbel GMM, Blinder-Oaxaca decomposition, Bangladesh

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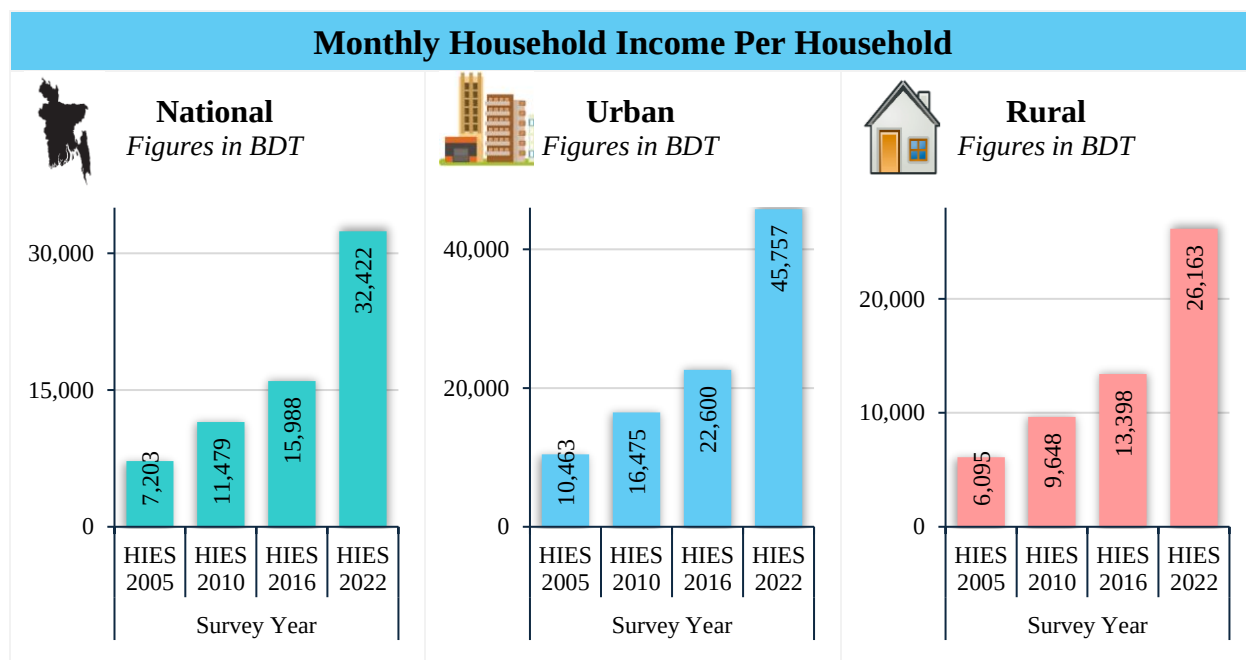
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1. Background

Bangladesh is home to stunning landscapes from winding rivers and pristine beaches to lush forests, tea gardens, waterfalls, and sacred sites. A booming tourism sector has made these places more accessible than ever. Why the surge? Improved transportation, enhanced communication networks, and new businesses are driving growth. Furthermore, household incomes have seen a significant jump, fuelling a new appetite for travel and exploration. According to the data from the Bangladesh Bureau of Statistics (BBS), in 2022, the average monthly income for a household reached BDT 32,422, as shown in Figure 1. That is double what it was in 2016 and up over 182 percent since 2010. This economic change is letting people in Bangladesh spend money on things like travel and fun, not just meeting basic needs.

Figure 1 Illustration of household income per month

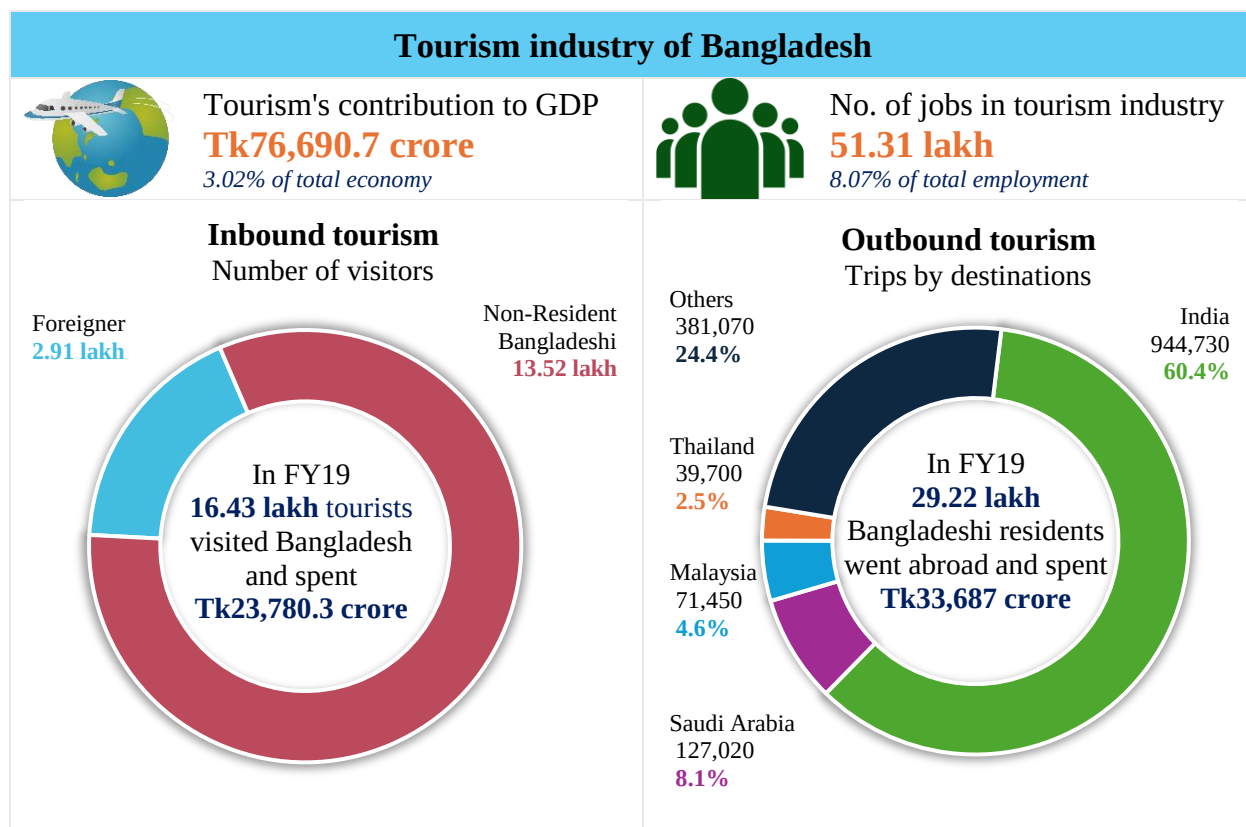


Note: The author's contribution is based on the Household Income and Expenditure Survey (HIES), Bangladesh Bureau of Statistics (BBS); Unit of measurement: Bangladeshi Currency, Taka; All icons are licensed under Creative Commons CC0 1.0 and 4.0

Moreover, as Figure 2, illustrates, the tourist industry is vital to Bangladesh's economy, generating a substantial portion of the country's GDP and jobs. In the fiscal year of 2018-19 (FY19), tourism added BDT 76,690.7 crore to the GDP, which was about 3.02 percent of the whole economy. Besides, the data on inbound and outbound tourism demonstrate that Bangladesh is not only

drawing in foreign tourists but is also experiencing a rise in domestic tourism. It reflects the sector's expansion in parallel with rising household incomes.

Figure 2 Graphical overview of Bangladesh's tourism industry



Note: The author's contribution is based on BBS, Tourism Satellite Account 2020, based on FY19 data; Unit of measurement: Bangladeshi Currency, Taka; All icons are licensed under Creative Commons CC0 1.0

This is a story of significant changes, not just numbers. Better roads, higher incomes, and hardworking entrepreneurs are coming together to make tourism important for Bangladesh's growth. The aim now is to keep this progress going strong and use tourism to help the nation grow while also taking care of its natural beauty & culture.

However, despite these favourable trends, the precise relationship between household income and tourism spending in Bangladesh remains underexplored. While global studies have highlighted that higher incomes typically lead to increased tourism expenditures, local conditions such as regional disparities, educational attainment, and socioeconomic dynamics may lead to different spending patterns in Bangladesh. This study seeks to fill that gap by examining the determinants of household tourism expenditure and how these vary across different regions and incomes.

The motivation for this research stems from the economic and social significance of tourism in developing countries like Bangladesh. Tourism can serve as a tool for poverty alleviation, regional development, and economic diversification, particularly in areas with limited industrialization. Additionally, as Bangladesh continues to experience rapid economic development, the question of how these changes translate into consumer spending, particularly in leisure sectors like tourism becomes increasingly relevant. By analysing these dynamics, this paper aims to offer policymakers insight into how economic policies can further enhance tourism growth by catering to the income dynamics of households.

This paper contributes to the broader academic field of tourism economics by applying sophisticated econometric techniques to a rapidly developing country context, where such analyses are still limited. First, it is one of the earliest empirical studies on the spending trends and patterns of tourists in Bangladesh. This country has a fast-growing tourism sector but there is not much research on the topic. By using nationally representative repeated cross-sectional household survey data (2010, 2016 and 2022), this study can track both the short-term shifts in residents' preferences and household behaviours as well as the long-term changes in social structure. Second, it addresses issues like endogeneity, unobserved heterogeneity, and disparities in this sector's spending levels by utilizing a range of strictly robust econometric techniques, including OLS, IV 2SLS, Lewbel GMM, and Blinder-Oaxaca decomposition. In this way, it is believed that this paper's methodological rigour significantly influences its outcomes. The Oster test has been introduced to quantify the bias brought on by missing variables in order to guarantee the robustness of the results. Third, this study identifies four key factors that contribute to the differential in tourism spending: gender-based disparities, urban-rural differences, marriage status, and location (coastal versus non-coastal) differences. It sheds light on what are the explanatory or unexplained factors for these differences. These contributions collectively provide new insights into the economics of tourism in underdeveloped nations. There are clear ramifications for designing policies that promote equitable and sustainable tourism development.

1.1 Problem Statement

Tourism contributes significantly to Bangladesh's economic development and household well-being. Various social, geographical, and demographic factors influence how households allocate their resources for tourism. While existing research examines tourism demand from a

macroeconomic perspective at the national level, research on the microeconomic determinants of household tourism spending in Bangladesh has not received adequate attention. Understanding these drivers is crucial, especially for low- and middle-income households that often prioritize necessary expenses like food, education, and healthcare over tourism spending.

Regional disparities in tourism spending, including between urban and rural households and coastal versus non-coastal locations, create concerns about access to tourism possibilities. Household variables, including education level, gender, and marital status, can impact tourism spending. However, limited research has been conducted in Bangladesh to explore these correlations. Addressing these gaps enables policymakers to create inclusive tourist strategies that include the economic restrictions and preferences of various household groupings.

1.2 Research Questions, Hypotheses and Aims

1. Does household income affect tourism spending in Bangladesh?

Rationale: Household income rises, so does discretionary spending, including tourism spending (Nguyen, 2021). Low-income households may prioritize essential requirements over leisure spending, thereby reducing the influence of income increase on tourism consumption.

Hypothesis: There is a positive correlation between household income and tourism expenditures, meaning higher-income households spend a larger share of their overall budget on travel and tourism activities.

Purpose: To investigate the effects of household income on discretionary expenditure on tourism and to determine whether the effects differ among income groups.

2. What are the disparities in tourism spending between urban vs. rural and coastal vs. non-coastal households?

Rationale: Geographical location significantly influences tourism behaviour. Urban households may have better access to tourism infrastructure and more disposable cash, whereas rural households may have less mobility. Coastal households are more likely to participate in tourism due to their proximity to natural attractions, while non-coastal households face higher travel expenditures.

Hypothesis: Due to differences in income level, accessibility, and tourism infrastructure, urban and non-coastal households are likely to spend more on tourism than their rural and coastal counterparts.

Purpose: To analyse regional disparities in household tourist expenses and the impact of geography on behaviour.

3. How do education, gender, and marital status impact household tourist spending?

Rationale: Higher educational attainment raises knowledge of tourist prospects and increases leisure travel spending. Gender and marital status may impact tourist decisions since female heads and married families tend to spend more than male heads and single-born households.

Hypothesis: Households with higher educational attainment spend more on travel. Male-headed and single households spend more on tourism than married or female-headed households.

Purpose: To investigate the relationship between education level, gender and marital status with household expenditure, and determine whether the demographic disparity affects the travel costs significantly.

To investigate these research questions, this paper will use several econometric approaches. Ordinary Least Squares (OLS) regression will offer baseline estimates, while more advanced techniques like Two-Stage least squares (2SLS) and Lewbel GMM estimator will solve endogeneity concerns. In addition, the Blinder-Oaxaca decomposition will aid in analysing the variations in tourism spending among different groups and the Oster (2019) test will evaluate the robustness of the findings.

The findings of this study draw attention to how income has become an important factor in shaping tourism consumption patterns for Bangladeshi families over time. The three survey waves show higher income elasticity of tourism spending as household preference changes and economic advancements become more noticeable. Ordinary least square (OLS) estimations show a significant positive correlation between household income and tourism spending, while the Lewbel generalized method of moments (GMM) and instrument-based two-stage least squares (IV 2SLS) methods validate that this is the case. The Oster test further supports the findings of these tests, which indicate that income effects are not only caused by unobserved factors. Blinder-Oaxaca

decomposition is used to analyse the variance in tourism spending. It was explained individually by observable and unobservable causes. However, unexplained factors are important in both gender and rural-urban dimensions. In addition, the research shows distinctly different patterns of expenditure between coastal and non-coastal regions of the country.

2. Literature Review

2.1 Economic Drivers of Tourism Expenditure

Numerous researchers have shown the impact of economic factors (Lin et al., 2020; Wang and Davidson, 2010; Brida and Scuderi, 2013; Lin et al., 2015) such as income, spending, unemployment, taxation, economic downturn, etc. on household tourism expenditure.

2.1.1 Income as a key factor

According to Draper and DeFranco (2025), economic factors such as household income and job security significantly influence travel decisions. The study examines the impact of cultural, economic, and environmental factors on domestic and international travel using leisure constraints concepts and case-based planning methods. Their research indicates that household wealth and job security have a role in limiting tourism and influencing travel patterns. According to Ma et al. (2024), tourism expenditure is income-inelastic, with a stronger influence in wealthier and more metropolitan locations. Rudez (2018) mentioned tourism income elasticity has decreased due to demand saturation and economic fluctuations, highlighting income as a key driver of demand. These studies show how income has a long-term impact on travel behaviours across various environments.

Now, a multilevel analysis by Hung et al. (2013) highlights important factors influencing household travel expenses, including revenue. The analytical findings imply that tourism-related expenses follow the same behaviour as ordinary products, rising as income levels rise. Alegre et al. (2009) highlighted the importance of making a distinction between the choice to travel and the amount of money spent. Both were influenced by income and prior travel experiences, whereas household earners had a negative impact on spending.

Expanding upon the first discoveries of Hung et al. (2013) and Alegre et al. (2013) concerning household tourism expenditure, later studies keep investigating the relationship between income

and travel spending patterns in economic circumstances. For example, Jang et al. (2003) showed that income plays a significant role in shaping patterns of travel expenditure, emphasizing how better-off travellers differ from others in their behaviour. Based on the author's findings, higher-income Japanese travellers' spending style remains less vulnerable to recessions or currency devaluation.

Hong et al. (1996) expanded their research to the US context and utilized the income variable as disposable household income. The economic model of consumer behaviour is the basis for the inclusion of income as an explanatory variable in consumer demand studies. It is anticipated that income and tourism product spending will be favourably correlated. Several empirical consumer demand research on leisure activities have found the income effect to be considerable (Thompson and Tinsley, 1978; Dardis et al., 1981; Dardis, Soberon-Ferrer, et al., 1994). Furthermore, Asgary et al. (1997) studied Mexican visitors to the Lower Rio Grande Valley of Texas and found that a 1 percent increase in income only resulted in a 0.22 percent rise in spending.

2.1.2 Food expenditures on tourism spending

The relationship between food expenses and travel spending reveals interesting dynamics, especially when considering food consumption patterns both at home and during travel. Cai (1998) found that households with higher sociodemographic indicators were more likely to spend on food during vacations, with only 34.29 percent reporting travel-related food expenses. This indicates that households already spending more on food at home tend to allocate resources to food while travelling. Similarly, Jang et al. (2007) revealed a positive correlation between overall food expenditures and food-aways-from (FAFH) spending among senior U.S. households. It suggested that higher food budgets are linked to increased tourism food expenses. This behavioural pattern reflects a broader trend where food-related costs serve as an essential part of the overall travel budget, particularly for higher-income households.

Looking at the case of Bangladesh, the growing trend of eating out highlights another important aspect of food consumption's impact on travel spending. Ahmed (2023) found that higher education and household size drive both food consumption and travel spending. Notably, households with higher annual food expenditures are more likely to maintain this spending pattern while travelling (Mottaleb et al., 2017). This suggests that Bangladeshi households with greater food expenses are likely to spend more on tourism-related expenditures, including food.

2.1.3 Role of non-food spending on tourism expenditure

Based on the most recent Household Income and Expenditure Survey (HIES) 2022 data, it is evident that non-food expenditures are becoming increasingly significant in Bangladesh. It showed that non-food items constituted 54.2 percent of total spending in 2022, up from 45.8 percent for food (Jahid, 2023). This change implies that budgets for non-food products may be allocated by households more frequently, which could have a favourable effect on travel spending.

Similar patterns are discovered in rural India, where in 2022–2023 non-food consumption exceeded 50 percent of total spending for the first time. According to Mishra and Rajora (2024), households are placing a higher priority on spending money on entertainment, medical care, and durable goods. This is in line with a larger economic trend that values experiences, including travel.

2.2 Socioeconomic Factors Affecting Tourism Spending

Socioeconomic factors shaped cross-border spending; a theme echoed by Hung et al. (2012), who found that large spenders considered tourism as a normal good. On the other hand, light spenders evaluated it as an inferior good. Light spenders' travel was restricted by debt, but it was made possible by access to vehicles and the internet.

2.2.1 Spending on tourism and age

Tourism spending patterns vary by age group, with those in their fifties typically spending the most due to socioeconomic factors. According to Adhikari et al. (2025), seniors' travel behaviours are influenced by income, spatial accessibility, and age-related changes. They also report more stable time allocation and fewer options for travel activities. Nagesh et al. (2025) emphasized community-centric religious tourism as an avenue for empowerment, socialisation, and resilience for low-income Indian older women, challenging mobility limitations. Ma et al. (2025) highlight the importance of travel in combating loneliness in older people, activated through health, sleep, and social interaction, illustrating emotional savings. According to Carrera (2024), the tourism segment of seniors is changing; they hope for cultural, leisure, and social tourism, rather than just traditional tourism offerings.

Lawson (1991) emphasized that life cycle stages have an impact on vacation activities and spending, with younger persons typically choosing socially focused holidays while older adults prioritize leisure and relaxation. Jang and Ham (2009) discovered that because of their greater free

time and desire to travel more, older travellers, hence, retirees over 65, are heavy spenders. On the other hand, working-age individuals are more inclined to prioritize family expenses above travel, according to Dardis et al. (1981), who found a negative association between spending and age.

Chen et al. (2021) examined the relationship between wealth and age on travel expenditure. Older people, especially those over 50, have higher spending levels in the upper quantile. In contrast, age alone may not necessarily be a reliable indicator of tourism spending patterns, since Cai (1999) found no significant link between age and travel expenditure.

2.2.2 Education and travel expenditure

Spending on tourism is somewhat influenced by education. Wu et al. (2013) showed using a Scobit model that the decision to travel is positively facilitated by both money and education. Marrocu et al. (2015), however, discovered no correlation between expenditure and education, indicating that income, rather than education is the primary driver. They pointed out that more educated people might be better at cutting expenses through planning and effective information processing, despite a tendency for greater leisure time.

Alegre et al. (2010) found a direct relationship between the amount of educational attainment in a home and its capacity to pay for holidays. Higher educated individuals were more likely to travel and households with illiterate members saw a considerable decrease in their travel and spending.

2.3 Global perspectives on the tourism sector

Alegre and Pou (2014) found that factors impacting tourism participation are resilient in times of economic downturns. Similarly, Shafiullah et al. (2018) investigated regional differences within Australia, demonstrating the disparate effects of regional and global variables such as income and exchange rates on travel demand and emphasizing the necessity of region-specific policy responses.

Continuing this exploration of the tourism sector, Seetaram & Dwyer (2009) concentrated on the connection between immigration and foreign visitors to Australia. Using panel data (1992-2006) from important markets like New Zealand, the UK, the USA, Japan, China, Hong Kong, South Korea, Malaysia and Singapore, they used a log-linear model. The population of the country of origin, real exchange rates, GDP per capita and immigration to Australia (measured by the number of Australian residents born abroad) were all regressed against tourist arrivals in their research.

According to the study, there is compelling evidence that immigration has a significant role in the rise in foreign arrivals, as people are more sensitive to changes in income than in price.

Seetaram et al. (2013) looked more closely at the impact of UK policy changes on Air Passenger Duty (APD) on tourism from outside the country. The study discovered that APD had an adverse effect on five out of the ten countries. Using destination-specific data, it examined those local policies can have on the desire for overseas travel. This study highlighted the interdependence of international travel and illustrated the intricate relationships between travel taxes and patterns of demand around the world. It also showed how domestic tax laws in one nation can cause disruptions to tourism flows to other nations.

In the study of summer vacation expenditures, Thrane (2016) discovered that Norwegian households spend more than three times as much on foreign travel than on domestic travel. Key cost-determining variables that differed between domestic and foreign travel included hotel and transportation selections, as well as characteristics like trip duration and income.

2.4 Empirical studies in Bangladesh on tourism

When it comes to literature in Bangladesh, most of them covered the topic of the economic potential of tourism (Amin, 2021), eco-tourism (Ullah & Hafiz, 2013; Rafa et al., 2021; Abtahee et al., 2023; Akhter & Haque, 2023), tourism as entertainment (Hossain & Easmin, 2023), tourism development (Akhy & Roy, 2020), prospects and challenges in the travel industry (Karim, 2022), foreign direct investment in tourism (Tasneem, 2022), tourism promotion (Rakib & Hassan, 2021) or niche tourism examples such as Sundarbans or Cox's Bazar (Hassan & Shahnewaz, 2014). Yet, studies investigating the household-level determinants of tourism spending remain conspicuously lacking. With rapid urbanization, income growth and shifts in consumption in the last two decades, it is vital to evaluate the role of income in determining household tourism expenditure for tourism policy formulation and sustainable sectoral development in Bangladesh.

Further, very little research has addressed the intersection between demographic factors like education, age, and regional and locational divisions with tourism expenditure. The previous studies carried out the determinants of tourism spending in different contexts (Kozak, 2001; Hung et al., 2012; Brida & Scuderi, 2013; Marrocu et al., 2015; Jurdana & Frleta, 2016), while similar studies have not yet rigorously tested in the socio-economic and demographic composition of

Bangladesh. Therefore, this study fills an important gap in the literature by using econometric techniques to analyse the effect of household income and other socio-economic variables on household tourism expenditure. This offers a unique addition to both academic understanding and public policy debate about tourism development in Bangladesh by shedding light on how household spending priorities are changing in a fast-expanding economy. Therefore, it is one of the first attempts to provide empirical linkages between household income and tourism expenditure in the Bangladesh context.

3. Materials and Methods

3.1 Data and Sample Design

This study adopted the data from the Household Income and Expenditure Survey (HIES) 2010, 2016 and 2022 dataset of Bangladesh. These waves have been carefully selected based on the historical and institutional background of tourism development in the country. The Bangladesh Tourism Board (BTB), established in 2010 as a statutory body under the Ministry of Civil Aviation and Tourism, is a milestone in the formal promotion and development of the tourism sector. This institutional change serves as an appropriate baseline for comparison to shifts in household tourism behaviour. Moreover, this study integrates findings from the Tourism Satellite Accounts reports issued by the Bangladesh Bureau of Statistics in 2012 and 2020, thus complementing the survey years with valuable additional information. Focusing on these three years allows the study to isolate a critical period of evolution of tourism policy and growth of the tourism sector, providing a solid background for exploring trends in household tourism expenditure.

Using a two-stage stratified sample design, 1000 Primary Sampling Units (PSU) were randomly selected from the list of 2001 Housing and Population Census for the 2010 wave; 2,304 PSUs from the list of 2011 for the 2016 wave and 720 PSUs from the list of 2022 for 2022 wave. The sample size was 12,240 for 2010; 46,080 for 2016; and 14,400 households for the 2022 wave. Bangladesh's main topographical and administrative divisions are called divisions. As of 2016, the remaining seven divisions were Barisal, Chittagong, Dhaka, Khulna, Mymensingh, Rajshahi, Rangpur, and Sylhet. Each division is further divided into 64 districts or Zilas. Geographic divisions that are more precise, such as those that distinguish between rural and urban areas are

added to each district. Afterwards, urban areas are separated into major divisions of Chittagong, Dhaka, Khulna, and Rajshahi, as well as other urban areas within City Corporations (CCs).

3.2 Econometric Model Specification and Variables

A general equation of the OLS regression model of the study:

$$\begin{aligned}
 \text{Tourism expenditure} &= \alpha + \beta_1\{\text{Household income}\}_i + \beta_2\{\text{Yearly food expenditure}\}_i \\
 &+ \beta_3\{\text{Yearly non-food expenditure}\}_i + \beta_4\{\text{Household head age}\}_i \\
 &+ \beta_5\{\text{Primary education}\}_i + \beta_6\{\text{Secondary education}\}_i \\
 &+ \beta_7\{\text{Tertiary education}\}_i \\
 &+ \beta_8\{\text{No education or other level of education}\}_i + \varepsilon_i
 \end{aligned} \tag{1}$$

where the error term " ε_i " denotes factors that were not observed.

As the dependent variable in Equation 1, this research has used tourism expenditure based on earlier studies such as Ma et al. (2023). This choice aligns with Ma et al. (2023) study that examined the connection between income and tourism demand in China, using an unconditional quantile regression model. Since income is a major factor in determining a person's ability to finance travel, it is the variable of interest in this study's model.

3.2.1 Dependent variable

Tourism expenditure is determined by adding the annual costs for travel and recreation. It is then multiplied by twenty-five percent as it is considered that households only spend a quarter of their income on travel-related expenses (BBS, 2014). The amount is then divided by the size of the household to determine the per capita earnings. In order to eliminate skewness, the data is eventually converted into logarithmic form.

$$\begin{aligned}
 &\text{Household tourism expenditure} \\
 &= \frac{(\text{Yearly travel expenditure} + \text{Annual recreation expenditure}) \times 25\%}{\text{Household size}}
 \end{aligned} \tag{2}$$

3.2.2 Defining the household income

The regressor or the independent variable of interest is the household income. The logarithm of household income is applied in this study. The household income variable is produced by adding labour income, business income, agricultural income, non-labour income, and other sources of income to the total household revenue. Second, to calculate household income, the whole cost of

agricultural inputs is deducted from household revenue. The final figure is calculated by dividing it by the size of the household to determine the per capita income.

$$\begin{aligned} &\text{Household income} \\ &\quad \text{Labor income} + \text{Business earnings} + \text{Agricultural income} \\ &= \frac{+ \text{Non-labour income} + \text{Other sources of income} - \text{Total agricultural input cost}}{\text{Household size}} \end{aligned} \quad (3)$$

3.2.3 Other variables

For this study, the independent variables are the highest level of education the household head has attained (primary, secondary, tertiary, no, or other), where a value of 1 indicates education up to primary, secondary, tertiary, or no or other, and 0 for other levels or none.

The study also used annual food expenditure and non-food expenditure as two additional significant factors. The sum of the fortnightly and annual food expenses is used to compute the annual food expenditure. To determine the per capita earnings, the final amount is divided by the total size of the family.

$$\text{Annual food expenditure} = \frac{\text{Annual food expenses} + \text{Fortnightly food expenses}}{\text{Household size}} \quad (4)$$

The total of annual non-food expenses (excluding travel and tourism expenses) and annual non-food expenses (including travel and tourism expenses) is used to compute annual non-food expenditures. The per capita income is additionally calculated by dividing the generated value by the size of the family.

$$\text{Annual non-food expenditure} = \frac{\text{Yearly non-food expenses (excl. tourism)} + \text{Annual non-food expenses (incl. tourism)}}{\text{Household size}} \quad (5)$$

The distribution of resources under various Social Safety Nets Programs (SSNP) is also taken into consideration by the Access to Safety Net Program as the instrumental variable. Households are shielded by SSNP from the effects of natural catastrophes, economic shocks, and other crises. The household takes on the value of 1 if it can participate in a safety net program, and 0 otherwise. Another instrumental variable, agricultural land ownership is generated by summing total operating land and other assets. Then the urban variable shows whether a household is in an urban area or not. Urban households equal one, while rural households equal zero. This distinction allows for a comparison of tourism expenditure between urban and rural areas. This variable is

used as the instrument for the 2022 wave along with access to the safety net program and agricultural land ownership.

The coastal district variable categorizes houses based on their distance from coastal locations. Coastal households are assigned 1 and non-coastal households are assigned 0. This classification allows for the comparison of tourism expenditures between coastal and non-coastal areas. To account for geographical variance in tourism behaviour, households in these districts were assigned a value of one. The coastal districts include Bagerhat, Barguna, Barisal, Bhola, Chandpur, Chittagong, Cox's Bazar, Feni, Gopalganj, Jessore, Jhalokhati, Khulna, Lakshmipur, Narail, Noakhali, Patuakhali, Pirojpur, Satkhira, and Shariatpur (WARPO, 2003).

Furthermore, the study adopted the gender of the household head, which takes a value of 1 for a female gender and 0 for a male gender; the age of the household head; and the marital status of the household head which takes the value of 1 for married individuals and 0 for otherwise.

4. Statistical Framework

4.1 Two-Stage Least Squares (2SLS)

One or more of the dependent variables may be linked with the error term, which could cause bias and inconsistent estimated coefficients in the estimation process (Wooldridge, 2013). In this case, the instrumental variable Two-Stage Least Squares (2SLS) method also addresses potential endogeneity in the model, specifically for household income.

For the 2010 and 2016 waves,

$$\begin{aligned} \text{Household income} \\ &= \pi_0 + \pi_1\{\text{Agricultural land ownership}\}_i \\ &+ \pi_2\{\text{Access to social safety net}\}_i + \varepsilon \end{aligned} \tag{6}$$

For the 2022 wave,

$$\begin{aligned} \text{Household income} \\ &= \pi_0 + \pi_1\{\text{Agricultural land ownership}\}_i \\ &+ \pi_2\{\text{Access to social safety net}\}_i + \pi_3\{\text{Urban areas}\}_i + \varepsilon \end{aligned} \tag{7}$$

The ownership of agricultural land can be considered a valid IV (Equation 6 and Equation 7) because it has a direct impact on a household's potential income, especially in rural areas. Households owning lands raise their income from farming, and land itself often forms the wealth of a family (Chakravorty et al., 2019; Grzelak, 2022).

Safety net programs, such as public works, cash transfers and other social protection measures, play a critical role in reducing wealth inequality and improving well-being (World Bank, 2019). These programs can provide financial security, even during economic downturns (Sun et al., 2022). Additionally, social protection programs contribute to economic stability (Alderman & Yemtsov, 2014). Access to safety net programs assists the poor and vulnerable in increasing their disposable income. At the same time, they tend to be set up mainly by external sociopolitical conditions (such as eligibility rules or regional location-related targeting) and are unlikely to have a direct impact on luxury spending items like tourism. These criteria make them exogenous to household consumption decisions like tourism spending. In this study, access to a social safety net is another instrument variable of household income (Equation 6 and Equation 7) for the 2010, 2016 and 2022 waves.

This study examines urban areas as an instrument influencing household income for the 2022 wave. In Bangladesh, urban households had higher income, expenditures, and assets compared to rural households (Rezaul, 2022), indicating that being in an urban area can predict household income. Urban status has a significant impact on tourism spending through income, and when crucial factors are controlled, the exogeneity condition is relatively stable. Urban status is a suitable indicator for endogenous income.

Tourism expenditure

$$\begin{aligned}
 &= \alpha + \beta_1\{\text{Household income}\}_i + \beta_2\{\text{Yearly food expenditure}\}_i \\
 &+ \beta_3\{\text{Yearly non-food expenditure}\}_i + \beta_4\{\text{Household head age}\}_i \\
 &+ \beta_5\{\text{Primary education}\}_i + \beta_6\{\text{Secondary education}\}_i \\
 &+ \beta_7\{\text{Tertiary education}\}_i \\
 &+ \beta_8\{\text{No education or other level of education}\}_i + \varepsilon_i
 \end{aligned} \tag{8}$$

Regression analysis begins with the use of instrumental variables to forecast household income. The correlation between these instrumental variables and household income is necessary, but it should not coincide with the error term in the equation, explaining tourism expenditure.

In the second stage, where tourism expenditure is the dependent variable, the predicted household income values from the first stage are employed as regressors. Through the process of isolating the exogenous fluctuation in income, consistent estimators are produced. The Wald chi-squared statistic determines if each independent variable in the model is statistically significant on its own. The R-squared value indicates the proportion of the variance in tourism spending that can be explained by the independent variables in the model. The average squared difference between the dependent variable's actual and anticipated values is measured by the root mean square error or MSE. A better model fit is indicated by a lower MSE. When dealing with unobservable variables that could skew the OLS estimators, the 2SLS technique is helpful (Wooldridge, 2010).

4.2 Lewbel (2012) Estimation

In order to mitigate the possibility of endogeneity in Equation 1 which analyses how income affects tourism expenditure, this study utilized Lewbel's (2012) Generalized Method of Moments (GMM) technique. This approach addresses the problem of identifying reliable external instruments, which is prevalent in economic models by using heteroskedasticity to create internal instruments.

Lewbel (2012) develops a method that builds instruments relying on heteroskedasticity present in the data, providing a helpful alternative when no obvious instrument is present or when one is present but weak. The approach is predicated on three key assumptions:

$$E(X\epsilon_1) = 0, \quad E(X\epsilon_2) = 0, \quad \text{and} \quad cov(Z, \epsilon_1, \epsilon_2) = 0 \quad (9)$$

with heteroskedasticity represented by $cov(Z, \epsilon_1, \epsilon_2) \neq 0$.

In equation 8, X are the vector of regressors, Z is a subset (or all) of X , and ϵ_1, ϵ_2 denote the error terms of the structural and reduced-form equations, respectively. Instruments are made as

$$[Z - E(Z)]\hat{\epsilon}_2 \quad (10)$$

where $\hat{\epsilon}_2$ are the residuals from the first-stage regression. The inclusion of these instruments ensures that second-stage regression-endogenous regressors are validly instrumented.

When regressors are correlated with the error term in standard regression models, endogeneity occurs producing biased results. To develop instruments that are uncorrelated with the error term, the Lewbel GMM method takes advantage of higher moments of the data. It notably exploits

heteroskedasticity (variability of error variance across observations). Since these instruments are generated directly from the endogenous regressors of the model, they do not require any external instruments which is useful in situations when traditional instruments are either weak or unavailable.

Household income was used as the endogenous variable in the construction of the heteroskedasticity-based instruments for this study, while other household and sociodemographic variables were included as exogenous controls. Hansen's J-statistic was applied to confirm the validity of the instrument. The estimator improves the efficiency of the estimates by correcting for heteroskedasticity in addition to accounting for endogeneity.

Lewbel estimation is used to address potential endogeneity biases and maintain consistency in the estimated relationship between household income and tourism expenditure. This makes it possible to draw more reliable policy implications about the household income elasticity of Bangladesh's tourism demand.

In this research, both Lewbel GMM and IV 2SLS methods are employed to handle endogeneity, although they tackle the problem in different ways. When endogenous regressors are present, the IV 2SLS is specially made to account for the endogeneity of household income through external instruments. Lewbel's GMM approach, in contrast, provides an extra degree of robustness by identifying the lack of reliable external instruments by utilising heteroskedasticity as a source. This dual approach increases the validity of the outcomes by ensuring that any shortcomings in one method are counterbalanced by the strengths of the other.

4.3 Blinder-Oaxaca Decomposition

The Blinder-Oaxaca decomposition is applied to examine disparities in household tourism expenditures among distinct socio-demographic categories, such as gender, urban vs rural, coastal vs non-coastal regions, and married vs single families.

Initially, the study performs separate regressions of household tourism expenditure on the explanatory variables for groups A and B:

$$Y_A = \alpha_A + X_A\beta_A + u_A \quad (11)$$

$$Y_B = \alpha_B + X_B\beta_B + u_B \quad (12)$$

Separate regression models are used to estimate the breakdown for each group, and then a pooled model with a group dummy variable is used. The explained portion is calculated by multiplying the difference in average features between the groups by pooled coefficients (Jann, 2008).

$$\begin{aligned}\bar{Y}_B - \bar{Y}_A &= (\hat{\alpha}_B + \bar{X}_B \hat{\beta}_B) - (\hat{\alpha}_A + \bar{X}_A \hat{\beta}_A) \\ &= [(\bar{X}_B - \bar{X}_A) \hat{\beta}^*] + [\bar{X}_B (\hat{\beta}_B - \hat{\beta}^*) + \bar{X}_A (\hat{\beta}^* - \hat{\beta}_A) + (\hat{\alpha}_B - \hat{\alpha}_A)]\end{aligned}\quad (13)$$

where the estimated parameters from Equation (11) and (12) are denoted by $\hat{\alpha}$ and $\hat{\beta}$. The average of the explanatory factors for Group A and Group B is represented by $\bar{X}_A$ and $\bar{X}_B$. The estimated coefficients of the explanatory factors utilizing pooled data on Group A and Group B are represented by the vector, $\hat{\beta}^*$.

This method decomposes the gap in results into two components. The explained part, $(\bar{X}_B - \bar{X}_A) \hat{\beta}^*$ captures differences due to observable characteristics like household income, age, or education. The unexplained part is often interpreted as differences due to unobserved factors such as discrimination or unmeasured group characteristics.

This approach is robust because it uses standard errors to guarantee that the decomposition results are reliable. The method helps determine if the discrepancies in tourism spending are caused by structural causes or observable qualities by breaking down the observed variations in spending.

5. Empirical results

5.1 Descriptive Statistics

Table 1 provides a comprehensive overview of several economic, socio-economic, and demographic data, highlighting the salient characteristics of the sampled population. Panel A concentrates on income, land ownership, and spending, whereas Panel B delves into demographic and socioeconomic information for two years.

Table 1 Descriptive Statistics

	2010 wave			2016 wave			2022 wave		
	Count	Mean	SD	Count	Mean	SD	Count	Mean	SD
Variable	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Panel A: Income, land and expenditure									
Household Income	11,871	9.740	0.992	9,070	9.665	1.166	4,315	11.484	1.353
Agricultural Land Ownership	12,239	19791.770	74385.250	22,870	40525.450	136681.200	7,108	137216.7	493038.4

Household Tourism Expenditure	11,211	5.169	1.138	41,121	5.572	1.228	13,065	7.450	1.197
Annual Food Expenditure	12,238	9.601	0.444	45,988	11.130	0.603	14,170	8.525	1.170
Annual Non-food Expenditure	12,231	9.109	0.803	45,871	9.634	0.770	14,058	8.814	0.928
Panel B: Socio-economic and demographic characteristics									
Female	12,239	0.143	0.350	46,073	0.126	0.332	14,177	0.117	0.321
Age	12,239	46.006	13.883	45,861	44.777	14.038	14,177	46.975	13.606
Married	12,239	0.895	0.306	46,073	0.906	0.292	14,177	0.909	0.288
Safety Net Program	12,239	0.244	0.430	46,066	0.243	0.429	14,177	0.286	0.452
Primary Education	12,239	0.158	0.365	46,073	0.247	0.431	14,177	0.273	0.446
Secondary Education	12,239	0.266	0.442	46,073	0.284	0.451	14,177	0.412	0.492
Tertiary Education	12,239	0.060	0.237	46,073	0.045	0.207	14,177	0.072	0.258
No Education	12,239	0.516	0.500	46,073	0.005	0.072	14,177	0.025	0.156
Urban	12,239	0.359	0.480	46,069	0.303	0.460	14,177	0.500	0.500
Coastal District	12,240	0.288	0.453	46,076	0.297	0.457	14,177	0.299	0.458

Note: STATA 17 output

Panel A in Table 1 shows that the sample's mean household income is likely to be low from BDT 9.740 (Bangladeshi currency) only in 2010 to BDT 9.665 in 2016 to witness a sharp growth moving to 11.484 in 2022. This speedy increase in 2022 can suggest greater income prospects or cash progression earnings. Agricultural land ownership has increased from BDT 19,791.77 in 2010 to BDT 40,525.45 in 2016 and further reached BDT 137,216.7 in 2022. Higher variance indicates greater heterogeneity in land ownership. Tourism spending gradually increased over the three waves, with BDT 5.169 in 2010, followed by BDT 5.572 in 2016 and sharply up to BDT 7.450 in 2022, implying a household preference inclination toward recreational activities. On the other hand, the yearly data for food spending is not typical. It rose from BDT 9.601 in 2010 to BDT 11.130 in 2016 yet fell to BDT 8.525 in 2022. This decrease could indicate alterations in food patterns, food inflation, or substitution effects. Non-food spending also has a similar drag on a yearly basis where it peaked at BDT 9.634 in 2016 and ends at BDT 8.814 in 2022.

Panel B shows that the share of female respondents is fairly consistent, edging down from 14.3 percent in 2010 to 11.7 percent in 2022. Age seems to remain pretty steady across waves, with a slight dip in 2016 (45 years), and increasing again in 2022 (47 years). Marital status is stable, with 90 percent of respondents married each year. In 2022, slightly more people (28.6 percent) participate in safety programs than in 2010 and 2016 (24.4 percent and 24.3 percent, respectively). This suggests increased awareness and extension of these programs over time.

The percentage of persons with primary and secondary education is increasing, with secondary education rising from 26.6 percent in 2010 to 41.2 percent by 2022. In contrast, the tertiary level

fluctuates between 4.5 percent in 2016 and 7.2 percent in 2022. From 2010 to 2022, the percentage of people without formal education declined from more than 50 percent to only 2.5 percent. This demonstrates significant progress in literacy improvement.

Residential status varies by year, with urban residents at 35.9 percent in 2010, 30.3 percent in 2016, and rising to 50 percent by 2022. This tendency may reflect rural-to-urban migration, yet infrastructural development may not lead to urban sprawl as expected due to pro-urban expansion policies. Coastal districts continue to have a population of approximately 29 percent over all three waves. This stability suggests little demographic shift in coastal areas.

5.2 Exogeneity and Instrumental Validity

To test whether the instrumental variable (IV) approach was valid in the regression models, we performed the Durbin and Wu-Hausman F tests for the exogeneity of the explanatory variables. The null hypothesis (H_0) for both tests states that the variables in the model are exogenous, which means that there is no correlation between explanatory variables and the error term in the structural equation.

Table 2 Endogeneity tests

Test	2010 wave	2016 wave	2022 wave	Null hypothesis (H_0)	Outcome
Durbin (score)	12.923 ($p = 0.000$)	15.067 ($p = 0.000$)	12.164 ($p = 0.001$)	Variables are exogenous	Reject
Wu-Hausman F Test	12.927 ($p = 0.000$)	15.082 ($p = 0.000$)	12.176 ($p = 0.001$)	Variables are exogenous	Reject

Note: STATA 17 output

During these three waves (2010, 2016, and 2022), the results of the Wu-Hausman F test and the Durbin (score) test consistently reject the null hypothesis of exogeneity at conventional significance levels in Table 2. These tests examine if the key explanatory variable (household income) is exogenous to the system. Test statistics stand significant in the three waves of data, suggesting endogeneity of predictor variables and it is appropriate to use instrumental variable techniques like IV 2SLS and Lewbel GMM to address the issue of endogeneity. The endogeneity could occur in the case of omitted variable bias, measurement error, or reverse causality. This fits with economic intuition since unobserved components (e.g., household preference and regional characteristics) could affect both income and tourism spending simultaneously making income endogenous in the regression context.

Here, the 2SLS method and Lewbel GMM, which used agricultural land ownership, access to social safety net and urban region as instruments of household income is appropriate to the extent that it makes it possible to separate the causal relationship between household income and household tourism expenditure.

5.3 Regression Analysis

Table 3 displays the findings from three models (Ordinary Least Squares, Two-stage Least Squares, and Lewbel two-step GMM), that examine how several factors, especially household income, affect the amount spent on tourism.

Table 3 Effects of household income on household tourism expenditure

Variable	2010 wave			2016 wave			2022 wave		
	OLS	2SLS	Lewbel GMM	OLS	2SLS	Lewbel GMM	OLS	2SLS	Lewbel GMM
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Household Income	0.082*** (0.011)	0.366*** (0.077)	0.341*** (0.075)	0.056*** (0.011)	1.002*** (0.325)	1.011*** (0.338)	0.107*** (0.013)	0.620*** (0.160)	0.650** (0.226)
Annual Food Expenditure	0.361*** (0.026)	0.253*** (0.039)	0.262*** (0.038)	0.259*** (0.025)	0.234*** (0.051)	0.233*** (0.053)	0.093*** (0.015)	0.034 (0.027)	0.030 (0.030)
Annual Non-food Expenditure	0.531*** (0.018)	0.400*** (0.040)	0.410*** (0.039)	0.548*** (0.023)	0.281** (0.101)	0.279*** (0.105)	0.315*** (0.021)	0.221*** (0.049)	0.217** (0.063)
Age	-0.002*** (0.001)	-0.002*** (0.001)	-0.002*** (0.001)	-0.002* (0.001)	-0.007*** (0.003)	-0.007*** (0.003)	0.003* (0.001)	0.004 (0.002)	0.004 (0.002)
Primary Education	–	–	–	0.039 (0.030)	0.068 (0.056)	0.068 (0.057)	0.156** (0.048)	0.094 (0.080)	0.089 (0.086)
Secondary Education	0.082*** (0.028)	0.049 (0.030)	0.053* (0.030)	0.060* (0.032)	-0.035 (0.068)	-0.037 (0.070)	0.239*** (0.044)	0.166* (0.079)	0.162 (0.088)
Tertiary Education	3.556*** (0.044)	0.219*** (0.057)	0.230*** (0.057)	0.306*** (0.078)	-0.417 (0.292)	-0.425 (0.299)	0.624*** (0.086)	0.469*** (0.145)	0.459** (0.150)
No Education	-0.014 (0.025)	-0.018 (0.026)	-0.017 (0.026)	-0.074 (0.130)	-0.302 (0.223)	-0.304 (0.206)	0.212 (0.117)	0.291 (0.171)	0.282 (0.170)
Constant	-3.909*** (0.212)	-4.437*** (0.264)	-4.384*** (0.262)	-3.156*** (0.278)	-9.241*** (1.908)	-9.294*** (2.010)	2.208*** (0.239)	-2.368 (1.425)	-2.646 (1.977)
R squared	0.308	0.266	0.273	0.167	–	-0.535	0.124	-0.187	-0.419
Cragg-Donald Wald test	–	105.418***	105.418***	–	8.625***	8.625***	–	11.534***	15.677***
Sargan (score)	–	2.013	–	–	0.068	–	–	5.953	–
Basmann chi2(1)	–	2.011	–	–	0.068	–	–	5.939	–
Kleibergen-Paap rk LM	–	–	140.851***	–	–	16.067***	–	–	15.508**
Hansen J	–	–	2.452	–	–	0.058	–	–	5.947

Note: i) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; ii) robust standard errors in parentheses; iii) Primary education in the 2010 wave dropped due to multicollinearity

5.2.1 Ordinary least square (OLS)

The OLS results (Column 1) in Table 3 show that household income has a statistically significant positive effect on tourism spending for the three waves (2010, 2016 and 2022). With coefficients that are statistically significant at 1 percent, income remains a major predictor over the course of the three time periods. However, there is some temporal variation in the magnitude of this effect. As of 2010, a 1 percent rise equates to an 8.2 percent increase in tourism spending. The effect decreased to 5.6 percent in 2016 but increased significantly to 10.7 percent in 2022, suggesting that household tourism expenditures have grown increasingly susceptible to fluctuations in income over time. This may correspond to changing consumption patterns, an increase in disposable income, or structural changes in the economy that affect how households allocate expenditure to tourism.

Consumption of food and non-food items is also a significant factor in determining the overall amount of money spent on tourism. Across all years, the effect of annual non-food expenditures is consistently greater than that of food spending, indicating that households with greater disposable income devote more funds to travel. The most intriguing aspect of this situation is that the non-food coefficient reduced to 31.5 percent in 2022 after remaining constant in 2010 and 2016 (53.1 percent in 2010 and 54.8 percent in 2016). This suggests that although non-food consumption still plays a significant role, its proportional influence on spending on tourism has declined recently, maybe as a result of shifting consumer preferences or economic uncertainty.

In 2010 and 2016, the age variable had a modest, negative coefficient, suggesting that older households might be spending less on travel, perhaps because of shifting priorities or health concerns (shown in Table 3, Column 1). However, the association reverses, if slightly, in 2022, suggesting that higher tourism expenditures are now associated with greater life expectancy. This may relate to better mobility among the elderly, altering social norms, or older engagement in tourism activities.

In the case of education level, tertiary and secondary education levels are consistently significantly related to increased tourist spending, however, tertiary education has the most positive impact across all waves. Its coefficient was highest in 2010 (3.556), decreasing in 2016 (0.306), and then rising again in 2022 (0.624). This trend underscores the persistent impact of education on

consumer behaviour, whereby higher education contributes to awareness, aspirations, and financial ability for tourism activities.

The model of this study covers approximately 30.8 percent of the variance in tourism expenditure in the 2010 wave whereas the 2016 wave and 2022 wave explain a smaller share of 16.7 percent and 12.4 percent respectively, as indicated by the R-squared value.

5.2.2 Two-stage least squares (2SLS)

The findings (Table 3, Column 2) suggest that across three waves of analysis Bangladeshi household income exerts a different effect on tourism expenditure. The income coefficient is positive and statistically significant at the 1 percent level for each of the three waves, although there are large variations in its magnitude. A 1 percent increase in household income in 2010 caused tourism expenditure to increase by 36.66 percent, but in 2016 it soared to 100.2 percent, and in 2022 it cooled off to 62 percent. The greater income elasticity in 2016 might have resulted from structural changes in household spending patterns, or economic conditions, which might have amplified the influence of income on travel expenditures. The drop in 2022 suggests that while income remains a key determinant, other factors may be started to have a greater influence on household decisions about tourism spending.

Food and non-food expenditures differ considerably from the OLS results, though they are still significant. However, over time, the influence of non-food expenditures on tourism spending declines, from 40 percent in 2010 to 22.1 percent in 2022, while there is still a considerable positive correlation. Surprisingly, annual food spending is statistically significant for 2010 and 2016, but not for 2022. This suggests that food spending loses significance in comparison to other categories when it comes to explaining tourism spending as household income rises. This could indicate a shift in household priorities, as separate expenses for the trip come from extra sources rather than essential components.

In the 2010 and 2016 waves, the age of the household head continues to have a small but significant negative effect on tourism expenditure, unlike the OLS results. Although the coefficient is indicated as positive (0.004) in 2022, it is not statistically significant. This change may be a reaction to older adults' evolving travel habits, which may have been sparked by things like better health, increased financial stability, or modifications that enable many older adults to engage in tourism.

Tertiary education being strongly positive and significant in 2010 and 2022 yet appearing contradictorily negative and insignificant in 2016 could reveal cohort effects or temporary economic conditions that suppressed education effects on tourism expenditure. Higher education attainment once again proves important in 2022 as those with tertiary qualifications are generally more involved in tourism activities because they may have access to better income levels, education, or leisure-based consumption.

The Cragg-Donald Wald test results show that the instruments used for the IV 2SLS models are indeed relevant, given the highly significant results across the waves. On the other hand, the Sargan and Basman chi2 tests reveal insignificant evidence of over-identification in the instruments, which indicates that the instruments are valid for all years. The credibility of the IV estimates is further bolstered by this test, ensuring that the endogeneity is not driving the results.

These findings highlight the need for accounting for endogeneity when assessing the relationship between income and tourism spending. According to our IV estimations, our estimated impacts were very high in 2016, and OLS estimates are probably skewed downward. Further investigation of shifting roles among other factors, including age, education, and non-food spending, highlights how household tourism spending in Bangladesh is dynamic in nature.

5.2.3 Lewbel (2012) GMM

The Lewbel GMM estimates are in strong concordance with the IV 2SLS results, and further confirm the finding of endogeneity in the relationship between income and tourism spending. (Table 3, Column 3). For all waves, the income coefficient is positive and significant, but the size of the coefficient changes. In 2010, the effect of household income on tourism expenditure was 34.1 percent, which is close to the IV estimate so OLS may underestimate the true effect. 2016 also marks the highest coefficient level at 101.1 percent, which can be interpreted as a high-income elasticity in this period. This result aligns with IV results, reiterating that economic conditions or behavioural changes enhance income's role in tourism expenditure. By 2022, income effects reach only 65 percent, still remarkable, implying potentially stabilized household tourism expenditure patterns.

The pattern for consumption expenditures is similar to the IV results. Tourism spending is still significantly influenced by non-food expenditures, whose coefficients dropped from 41 percent in 2010 to 21.7 percent in 2022. Food expenditure, on the other hand, was considerable in 2010 and

2016, but it lost its significance in 2022, confirming the idea that, as household income increases, basic consumption becomes a less significant component of discretionary tourism expenditure.

Household tourism expenditure remains negatively associated with household head age in 2010 and 2016. The correlation hit a very low value in 2016, although it somewhat recovered to a positive value in 2022. This reflects the IV's results, which indicated that older household heads may have been less involved in tourism in the past but have changed their minds for a variety of reasons in the present.

Although they have varying effects, household head's education levels continue to be a significant factor in driving tourism spending. With values of 0.230 and 0.459, respectively, tertiary education was extremely significant in 2010 and 2022 but not in 2016. Additionally, research shows that the impact of higher education on tourism spending has been consistent over time, even though the 2016 transitory economic downturn may have reduced these advantages.

The Cragg-Donald Wald test shows that the instruments used in the Lewbel GMM are sufficiently correlated with the endogenous regressors (it remains highly significant in all years). The Kleibergen-Paap rk LM test further increases significance across the three years, confirming that the instruments are relevant.

For all waves, the Hansen J-test (overidentification test) indicates that there are no signs of over-identifying restrictions, suggesting that the instruments are valid and do not introduce bias into the model.

Overall, Lewbel GMM results support IV findings, highlighting the necessity of endogeneity in this analysis. The income effect is statistically significant and substantial across all waves, but its related magnitude varies according to shifting household spending patterns and economic situations. These results highlight how household decisions about tourism spending in Bangladesh are influenced by income, non-food expenses, and education.

5.2.4 Blinder-Oaxaca decomposition

The Blinder-Oaxaca decomposition is used to examine the variations in household tourism spending among different sociodemographic groups. The findings of this decomposition are shown in Table 4 for households with coastal vs. non-coastal regions, rural vs. urban areas, unmarried versus married heads, and male versus female household heads.

Table 4 Blinder-Oaxaca decomposition of household tourism expenditure

	2010 wave	2016 wave	2022 wave
	(1)	(2)	(3)
Panel A: Non-coastal vs Coastal regions			
Non-coastal district	5.201*** (0.013)	5.497*** (0.016)	7.301*** (0.022)
Coastal district	5.094*** (0.021)	5.370*** (0.024)	7.368*** (0.033)
Difference	0.107*** (0.025)	0.127*** (0.024)	-0.067 (0.040)
Explained	-0.063*** (0.014)	0.020 (0.013)	0.020 (0.016)
Unexplained	0.170*** (0.021)	0.107*** (0.027)	-0.087* (0.038)
No. of observations (Non-coastal district)	7,734	5,899	2,973
No. of observations (Coastal district)	3,135	2,589	1,080
Panel B: Rural vs Urban areas			
Rural	5.025*** (0.013)	5.438*** (0.014)	7.302*** (0.021)
Urban	5.419*** (0.019)	5.578*** (0.036)	7.364*** (0.037)
Difference	-0.394*** (0.023)	-0.140*** (0.039)	-0.062 (0.042)
Explained	-0.481*** (0.015)	-0.201*** (0.017)	-0.128*** (0.016)
Unexplained	0.087*** (0.021)	0.061* (0.036)	0.067 (0.039)
No. of observations (Rural)	6,875	7,272	2,994
No. of observations (Urban)	3,994	1,217	1,059
Panel C: Household Head Unmarried vs Married			
Unmarried	5.157*** (0.036)	5.492*** (0.059)	7.131*** (0.074)
Married	5.171*** (0.011)	5.456*** (0.014)	7.330*** (0.019)
Difference	-0.015 (0.038)	0.036 (0.061)	-0.198** (0.076)
Explained	-0.011 (0.021)	0.077*** (0.026)	-0.084** (0.030)
Unexplained	-0.003 (0.032)	-0.041 (0.054)	-0.115 (0.067)
No. of observations (Unmarried)	1,027	436	226
No. of observations (Married)	9,842	8,052	3,827
Panel D: Household Head Male vs Female			
Male	5.171*** (0.012)	5.460*** (0.014)	7.329*** (0.019)
Female	5.162*** (0.028)	5.412*** (0.055)	7.157*** (0.067)
Difference	0.009 (0.030)	0.048 (0.057)	0.172* (0.013)
Explained	-0.121*** (0.019)	-0.161*** (0.028)	0.078** (0.004)
Unexplained	0.131*** (0.027)	0.209*** (0.052)	0.094 (0.065)
No. of observations (Male)	9,401	8,040	3,809
No. of observations (Female)	1,468	448	244

Note: i) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; ii) Heteroscedasticity robust standard errors in parentheses

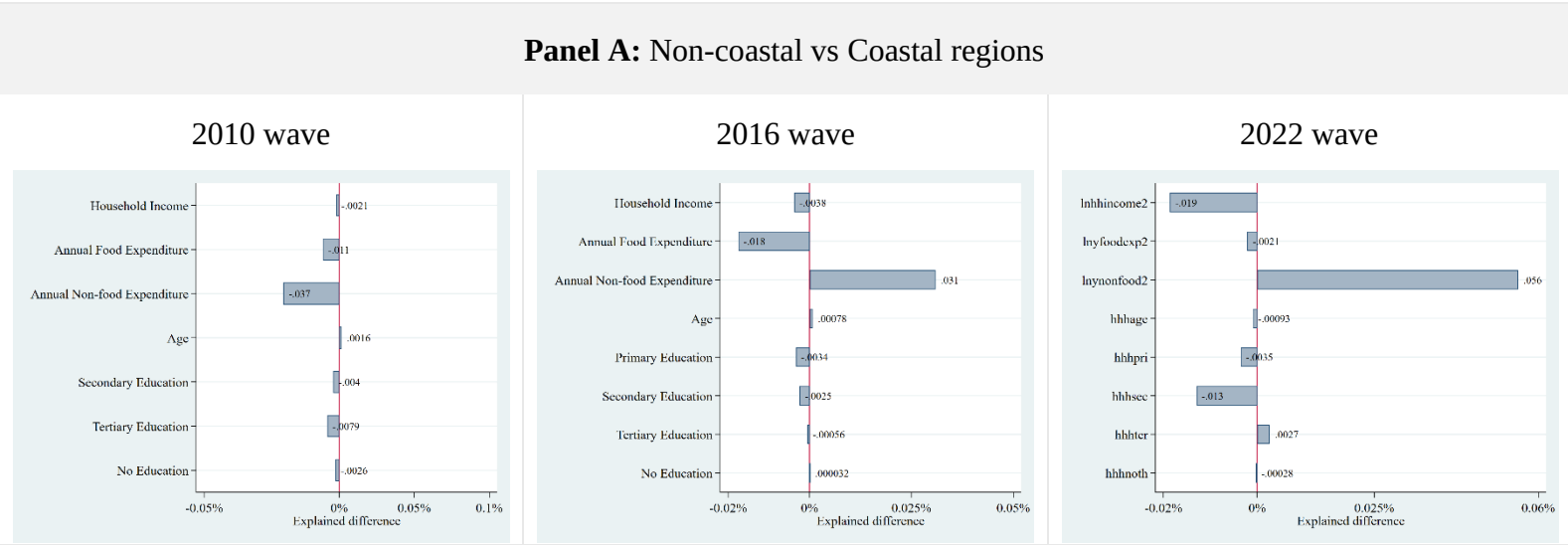
Results for Blinder-Oaxaca decomposition (Table 4, panel A) show that the tourism expenditures of coastal districts were lower than those of non-coastal districts in 2016 by a margin of 0.107 and 0.127, respectively. Although not statistically significant, the disparity has reversed to a negative differential of 0.067 by 2022, suggesting that expenditure patterns may have caught up. According to the 2010 decomposition analysis, an unexplained impact (0.170) accounted for the majority of the disparity, which could account for the unobserved features like infrastructure or other preferences. Overall, the unexplained factor turned negative by 2022, which may indicate that coastal districts are currently benefiting more from these unmeasured effects than provincial ones, presumably as a result of rising tourism in these areas. Figure 3 (Panel A) makes it evident that, albeit the variables varied among the three waves. In 2010, household income had a slight positive impact on the gap, while tertiary education and non-food expenditures had negative effects. It highlights the importance of both spending and education. By 2016, non-food spending alone was the most significant factor favouring coastal households, whereas food spending and higher education continued to have detrimental buffering effects. Household income, together with food expenditure, made minor negative contributions in 2022, whereas non-food expenditure was the main positive contributor, helping coastal households. These data show that both spending patterns and regional dynamics have become more significant when it comes to identifying patterns of tourism expenditure over time.

Spending on tourism was continuously higher in urban than in rural regions, although the difference gradually shrank. Urban households spent 0.394 more than rural households in 2010, which was mostly due to visible factors such as differences in income and education (-0.481). The difference decreased to 0.140 by 2016, and by 2022, it was statistically insignificant (-0.062). The positive unexplained component and the diminishing influence of observable elements point to changing unobservable impacts, including changing cultural perceptions of rural tourism. According to the figure (Panel B), the main causes of the urban-rural divide have changed throughout time. While tertiary education among urban households had a noticeable negative influence, non-food expenditures emerged as a prominent contributor in 2010, with rural households spending much less in this category. In addition to negative contributions from household income and food spending, non-food expenditure remained dominant by 2016, favouring urban families. Non-food spending continued to be the biggest driver in 2022, supporting the disparities in spending patterns, while factors related to income and education had

less of an impact. These patterns show how the growing urban-rural divide in tourism spending has been influenced by changes in spending patterns and educational influences.

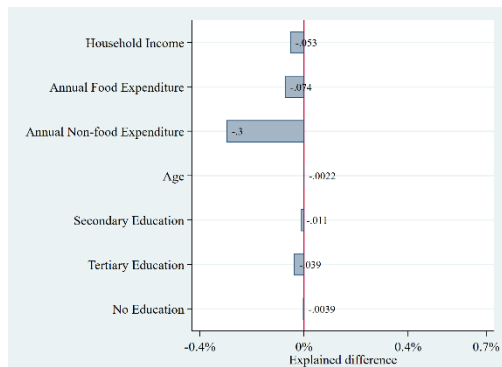
The difference in tourism spending between married and single household heads is minimal between 2010 and 2016, but by 2022, married people spend much more (-0.198) (Panel C). The insignificant unexplained component suggests that unobservable features seem to have little effect, while observable factors, like household income and education, account for a large portion of this difference (-0.084 in 2022). This implies that the disparity is mostly caused by quantifiable factors rather than behavioural variations. From Figure 3 (Panel C), it is evident that spending habits evolve over time. In 2010, non-food expenditure played the largest positive role, favouring married household heads, alongside contributions from food expenditure and income. However, tertiary and secondary education negatively influence the gap, reflecting distinct spending behaviours of unmarried household heads. By 2016, non-food expenditure remained a dominant factor favouring married households, while food expenditure and income continued to contribute positively, and education factors had smaller negative impacts. By 2022, the trend solidified, with non-food expenditure again being the largest positive contributor. Household income and age also favour married households, while secondary education, food expenditure, and primary education show moderate negative impacts. These findings highlight the growing influence of spending patterns and observable characteristics over time.

Figure 3 Explained gaps in household tourism expenditure by key categories

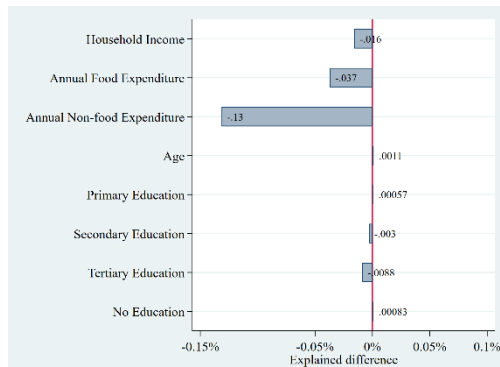


Panel B: Rural vs Urban areas

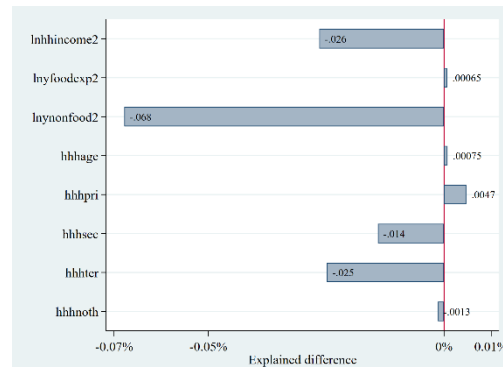
2010 wave



2016 wave

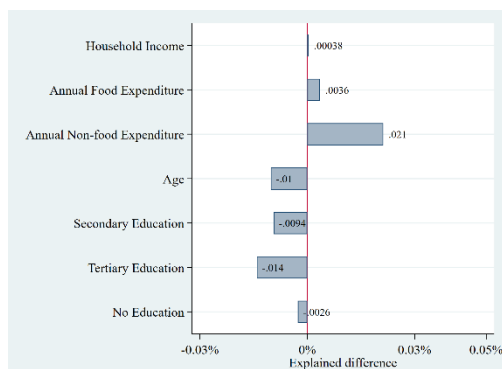


2022 wave

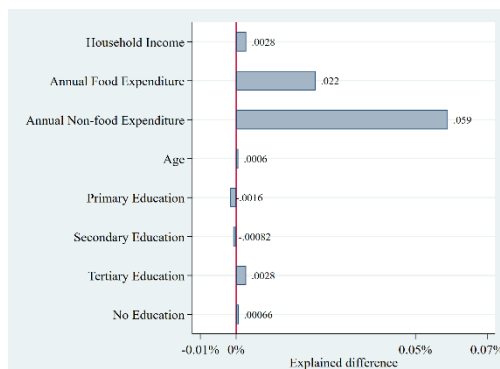


Panel C: Household Head Unmarried vs Married

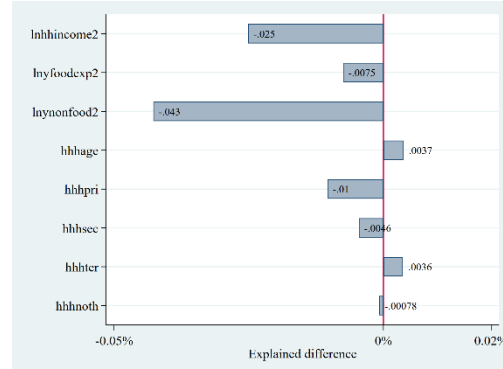
2010 wave



2016 wave

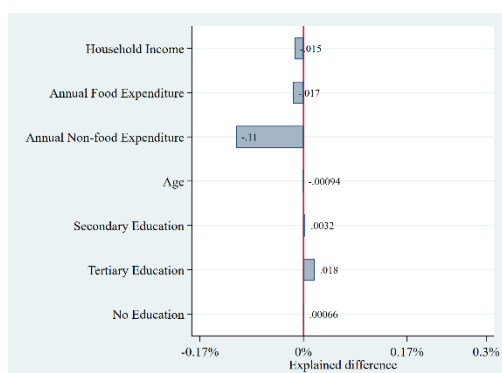


2022 wave

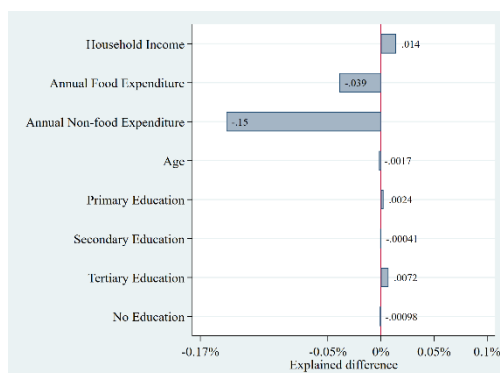


Panel D: Household Head Male vs Female

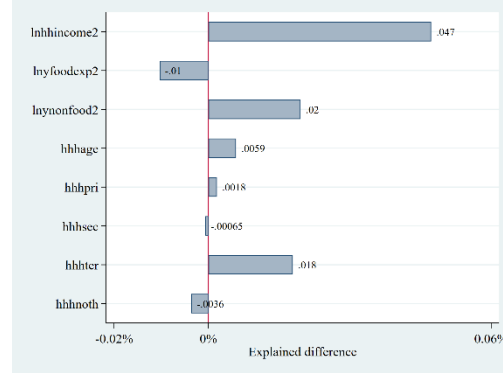
2010 wave



2016 wave



2022 wave



Note: STATA 17 output

Male respondents consistently show higher tourism spending compared to females, with the disparity becoming statistically significant in 2022 (Panel D). In earlier years, the explained component is negative (2010 and 2016), suggesting that female respondents possess characteristics, such as education and income, which should predict higher spending. However, the unexplained component remains positive, indicating that unobservable factors, such as social norms and mobility restrictions, have likely constrained women's expenditure patterns. By 2022, the explained component turns positive (0.078), reflecting potential shifts in economic participation or travel preferences among women. Figure 3 (Panel D) further details the factors contributing to this disparity across years. In 2010, annual non-food expenditure emerged as the largest negative contributor, suggesting lower non-food spending by female-headed households, alongside minor negative effects from household income and food expenditure. Tertiary education provides a small positive contribution, favouring male-headed households. In 2016, non-food expenditure continued to dominate as the negative driver for female-headed households, while income and food expenditure made marginal positive contributions to male-headed households. By 2022, the disparity is primarily influenced by household income, with male-headed households exhibiting higher earnings. Non-food expenditure also contributes positively, favouring males, while female-headed households show slightly higher spending on food expenditure. These findings underscore the role of income disparities, spending patterns, and evolving social dynamics in shaping gender-based differences in tourism expenditure.

5.2.5 Oster (2019) test

To further assess the robustness of the household income variable on household tourism expenditure, the Oster test was utilized across three waves (2010, 2016 and 2022) (Table 5). The selection of R_{max} equal to 0.2 for the Oster test is well-documented in the case of low-income countries datasets. According to González and Miguel (2015), income, consumption, and business revenue are measured with significant inaccuracy in many low-income nation household datasets; therefore, assuming that R_{max} is equal to 1 or that it is near 1 is probably far too conservative. In addition, McKenzie (2012) mentioned that autocorrelations for many economic outcomes are generally less than 0.5, with many being around 0.3 and ranging from 0.2 to 0.8. According to McKenzie (2012) and De Mel et al. (2009), there is a significant amount of measurement error in the outcome variables.

The Oster test was conducted using multiplying factors of 2. However, the findings were robust to all assumptions using multiplying factors of 5, 10 and 15, indicating that the bias-adjusted treatment effects are insensitive to variations in assumptions about the strength of selection on unobservable.

For the 2010 wave, the estimates show a wide gap between the restricted model coefficient (0.408) and the fully controlled model (0.082). This gap suggests that observed controls have a considerable impact on the relationship between income and household tourism expenditure. Moreover, the within R-squared increases dramatically from 0.126 (restricted) to 0.308 (full model), suggesting that the included controls account for a large portion of the variation in the outcome. However, the bias-adjusted treatment effect (β^*) is estimated to be 0.513. This implies that after accounting for potential unobserved bias, household income has a stronger positive link to household tourism expenditure than observed in the full model. Moreover, the proportionality coefficient (δ) indicates that the household income effect is rather insensitive to unobserved confounders in this wave.

Table 5 Oster (2019) test

Variable of Interest	Dependent variable: Household Tourism Expenditure					
	2010 wave		2016 wave		2022 wave	
	Restricted	Full model	Restricted	Full model	Restricted	Full model
	(1)	(2)	(1)	(2)	(1)	(2)
Household income	0.408	0.082	0.149	0.056	0.157	0.108
Controls	NO	YES	NO	YES	NO	YES
Constant	YES	YES	YES	YES	YES	YES
No of observation	10,869	10,869	8,511	8,488	4,054	4,053
R squared (Within)	0.126	0.308	0.020	0.167	0.034	0.121
R_{Max}		0.062		0.033		0.024
$\beta_{Restricted} - \beta_{Full}$		0.325		0.093		0.049
$R_{Max} - R_{Full}$		-0.246		-0.134		-0.097
$R_{Full} - R_{Restricted}$		0.182		0.147		0.087
Bias-adjusted treatment effect (β^*) ($R_{Max} = R_{Full} + (R_{Full} - R_{Restricted})$)		0.523		0.141		0.163
Coefficient of proportionality (δ) ^a ($R_{Max} = \min(0.2R_{Full}, 1)$)		0.276		0.035		0.065

Note: i) R_{Max} is the estimated R_2 of the coefficient, considering both observed and unobserved factors in a hypothetical regression; ii) R_{Full} is the coefficient's estimated R_2 from a regression with a complete set of observable control

variables; iii) The estimated R_2 of the coefficient from a regression that solely contains the dependent variable and the primary independent variable is known as $R_{Restricted}$

In contrast to the 2010 wave, the household income coefficient is 0.149 in the restricted model of the 2016 wave which drops to 0.054 in the full model (Table 5). The difference (0.093) is smaller than in 2010, indicating a lesser impact effect of controls on income's effect. The within R-squared climbs modestly from 0.020 (restricted) to 0.167 (full), indicating that as compared with wave 1, there is a smaller role for observable controls to explain the variance in the outcomes. The bias-adjusted treatment effect (β^*) is lower at 0.141 because after potential unobserved bias is incorporated, an essentially weaker income effect emerges overall. Besides, the proportionality coefficient (δ) is much lower for this wave, meaning that the household income effect was more susceptible to unobserved confounding.

Furthermore, in the 2022 wave, the household income coefficient dropped from 0.157 in the restricted model to 0.108 in the full model, indicating that the inclusion of additional controls reduces the estimated impact. The within R-squared increased from 0.034 to 0.121 in the full model, indicating better model explanatory power. Yet there is some difference in coefficients (0.049) and R^2 (0.087) between restricted and full models, pointing to the remaining gap for unobserved explanations. adjusted treatment effect (β^*) indicates that income has a greater true effect than that omitted variable bias. The coefficient of proportionality (δ) suggests limited bias from unobservables, supporting the robustness of the income variable in the overall model.

Overall, these results demonstrate a significant, though varying effect of household income on household tourism expenditure across the years. The larger (δ) and bias-adjusted treatment effect (β^*) in 2010 implies the income of tourism expenditure elasticity is stronger in the earlier period, possibly driven by macroeconomic conditions and changing household priorities. The important influence of control variables emphasises the complexity of tourism expenditure determinants.

6. Summary of Findings and Economic Discussion

This research explores the determinants of household tourism expenditure in Bangladesh on income, education, location, and changing consumption patterns. The impact of socioeconomic

variables on tourism behaviour, both positive and negative, is greater and more nuanced than what one would expect.

The strong positive correlation between tourism spending and household income is consistent with previous research emphasizing income as a key determinant of discretionary consumption in developing countries (P. K. Narayan, 2004). However, a change from a weak correlation in 2010 to a strong correlation in 2016 and 2022 suggests that consumption behaviour is evolving, possibly driven by wider economic expansion and greater disposable income growth. This evolution is reflected in the poverty reduction. The patterns from 2010 to 2022 point to a slowdown in the rate of poverty alleviation during a time of stronger economic expansion in Bangladesh (World Bank, 2020). Nonetheless, the regional differences in income elasticity indicate that geography and infrastructure continue to mediate these outcomes.

Comparing the survey data from 2010 to 2022 demonstrates intertemporal differences in household demand, which outweighs the significant change in the composition of tourism spending. This corresponds with the wider economic transition taking place in Bangladesh, marked by increasing consumer expenditure on leisure and non-essential goods (The Daily Star, 2022). When households in Bangladesh feel secure in fulfilling their fundamental necessities, they may then save money for vacation or lifestyle enhancement. Zaman (2023) mentioned that travelling was regarded as a luxury at one point. Only the wealthy were supposed to use it while middle-class families only sometimes took leisurely vacations, usually domestically. However, decreasing non-food spending in 2022 may suggest lower resources or altered household priorities. Gender and occupation have a significant impact on expenditure, as demonstrated by Hastuti (2021)'s observation of disparities among female farmers. In this setting, spending may shift away from traditional sources of demand due to reasons such as increased internet access, societal norms, or economic structural changes.

The results also highlight the importance of demographic characteristics, particularly age, in determining tourism expenditure. The negative coefficient on age in 2010 and 2016 indicates that older households spend less on tourism, which is consistent with the findings of Modigliani (1986). As people get older, they prioritize savings and necessary purchases over leisure and tourism (Modigliani, 1986). However, the relationship between household head's age and household tourism expenditure turns weakly positive in 2022 waves, reflecting a behavioural shift in travel

by older people. Similar to this research's finding of the 2022 wave, Chen et al. (2021); Mehmetoglu, (2007), and Jang et al., (2004) found a strong positive correlation between age and tourism spending. However, Bernini and Cracolici (2015) stated that age has a negative impact on travel desires while it has a positive impact on tourist spending. Conversely, older generations are more likely to travel but are less likely to spend money on travel. The growing number of older individuals in a nation like Bangladesh (M. A. Zaman & Parvez, 2024), may indicate future travel demand, necessitating targeted initiatives for the elderly population. Policymakers should explore ways to promote the tourism of seniors accommodating this market opportunity.

The findings confirm that education is a critical determinant of tourism behaviour. Households with higher levels of education consistently spend more on tourism, particularly tertiary education. The findings would be consistent with those of (Alegre et al., 2009), who employed four variables to represent the number of household members who were, respectively, illiterate and had primary mid-level and higher education. The temporary decline in the impact of tertiary education in 2016 might also reflect short-term economic fluctuations, or a shift in the affordability of tourism, or changing tastes among highly educated households. The insignificant or negative influence of lower education levels indicates that the policies are needed to promote tourism accessibility for lesser-educated households in Bangladesh, through initiatives such as awareness campaigns or community-based tourism models.

This research also shows the ongoing disparity in tourism expenditure between urban and rural households, as well as between coastal and non-coastal regions. The Blinder-Oaxaca decomposition consistently detected significant differences between rural and urban households and coastal and non-coastal districts. Urban households are more likely than rural families to spend money on tourism (Zhang & Cao, 2022; Ma et al., 2023). However, by 2022, the difference was no longer statistically significant probably due to rising rural incomes, increased connectivity, and changing travel habits. Lu et al. (2024) demonstrated that digital networks can positively impact rural family tourism expenses by enhancing access to information and facilitating transactions. The creation of network infrastructure indirectly increases tourism by improving access to information and transactions, particularly in rural areas. Then the reversal of the trend in spending differences between coastal and non-coastal districts in 2022 suggests a potential surge in domestic tourism demand in coastal districts, which is consistent with ongoing trends of

infrastructure investments and tourism development programs driven by the central government (Rayhan, 2022; Siddiqui, 2023). However, some literature indicates an unequal presence of resources and development opportunities, confirming the regional imbalance of tourism-related studies in developing countries (Nuryanti, 1998; Li et al., 2016; Liu et al., 2017; Goh et al., 2013). It is essential to make more targeted investments in rural and coastal tourism marketing and infrastructure to realize the untapped potential. The Blinder-Oaxaca decomposition revealed the gender disparity in tourism expenditure, with men spending more than women. It highlighted structural and cultural barriers that prevent women from fully participating in travelling. Women's lower spending while having measurable features like income and education may be due to invisible hurdles such as social mobility or safety difficulties. The minor increase in 2022 may indicate progress in overcoming these challenges, such as increased economic involvement, social policy interventions, or changing views towards female travel autonomy.

7. Strengths and limitations

The study utilized a comprehensive household-level dataset across three waves (2010, 2016 and 2022), which has enabled a comparative analysis of changes over time. This strengthens the robustness of the findings by accounting for possible changes in tourism spending patterns. Using a wide range of econometric methods (OLS, 2SLS, GMM, and Blinder-Oaxaca decomposition) provides a balanced strategy, assuring the outcomes not to be driven by a single model choice and a better understanding of the relationship between household income and tourism expenditure. Moreover, identifying the influence of socioeconomic status or education level on travel expenses offers important insights for future public policies. These findings can help policymakers or government officials to develop targeted measures to promote more equitable participation in travel activities in poorly participative areas such as rural areas or coastal areas. Besides, the study contributes to the understanding of complex factors influencing tourism spending by concentrating its analysis on age, educational attainment, and a variety of other geographical differences. This study adds to the existing literature by covering a gap of knowledge, especially in relation to diverse demographic factors influencing leisure activities in a developing economy and country like Bangladesh. Finally, to further strengthen the validity of the results and give some idea about the sources of household income differences, sophisticated econometric tools (e.g., the 2SLS,

Lewbel GMM and Blinder-Oaxaca decomposition) were employed. This makes the analysis more rigorous and quite robust compared to a simpler OLS regression (Lewbel, 2012; Oaxaca, 1973).

Despite the strengths, the research has some limitations. Although 2SLS and GMM are used to control for endogeneity, there may still be some variables suffering from measurement errors or omitted variable bias, most likely in cross-sectional analyses. This means that in potential terms, things like culture are not held constant and could lead to biased estimates. Furthermore, in GMM, the assumption of exogeneity of instruments is a significant issue, especially in complex socio-economic contexts (Wooldridge, 2010). Furthermore, the study considers a wide range of variables, however, the data is only representative of Bangladesh so the findings may not be generalizable outside of this context. Moreover, some other important variables that can affect tourist decisions, such as internet access or social media use, are not included in the analysis. Although the paper studies the impact of education, it does not differentiate between the quality of education or the subject area in which they earned their credentials, which might have an impact on individual travel and leisure preferences. This study may overlook other variables, such as social networks, family structures, or regional identity. More broadly, the model could be expanded to include a wider set of variables, and this would provide a better overview of the determinants of tourism expenditure.

8. Conclusion

This paper offers an extensive assessment of the factors driving tourism expenditure in Bangladesh, highlighting the roles of income, education, age and socio-geographic disparities across three waves. Though the determinants of tourism spending have remained stable across the three years, there have been changes in the relative importance and the mechanisms. This paper found that the demand for tourism is highly and erratically sensitive to income. Particularly when comparing the years 2016 and 2022, it seems that tourism responds more to increases in household income. This could be attributed to a shift in lifestyle trends, economic prosperity, and possible changes in consumer behaviour.

Education functions as an important determinant of tourism expenditure across regions, with people with tertiary education being notably more likely to visit tourist attractions, even though education does not play a role in accommodation expenditure as tourism expenditure. Although

demographic variables (age, gender) similarly affect tourism behaviour, their effects vary across time, and estimation methods, reflecting broader socio-cultural and economic changes. And regional disparities between urban and rural as well as coastal and non-coastal areas also appear to be narrowing over the years, suggesting a democratization of tourism access in Bangladesh.

In general, the insights presented in this paper provide new considerations to the concept of tourism economics by shedding light on how income, age, education, and regional characteristics integrate to affect tourism expenditure within a developing economy like Bangladesh. These results can provide the groundwork for policymakers to guide targeted interventions that will contribute to inclusive growth in a key driver of economic growth in the country, namely the tourism sector. Future research could build on these findings by investigating additional socio-cultural variables and by examining how different industries may interact with tourism to generate wider economic advantages.

8.1 Policy recommendations

These findings provide some concrete suggestions for policymakers in Bangladesh, especially regarding the need to promote tourism as a channel for inclusive economic growth and regional prosperity.

1. Infrastructure for the tourism sector: The differences in the tourism expenditure in rural and urban, as well as in the coastal and non-coastal districts underscore the need for targeted investments in tourism infrastructure in Bangladesh's less developed and non-coastal regions. Better transport networks, accommodation, and attractions in the rural and coastal areas would address the regional gap and drive up these economies. Community-based tourism projects such as eco-tourism projects can also provide environmental sustainability while generating economic benefits.
2. Awareness and education promotion: The positive association between educational attainment and tourism expenditure indicates that a higher level of education leads to more leisure activities. To encourage leisure as an economic activity, policymakers may launch publicity campaigns and introduce tourism literacy in school curriculums. Developments leading to the inclusion of less-educated populations into tourism, such as discounted rates (packages) for low-income consumers or local events, would increase tourism access and participation.

3. Tourism policies that are friendly to senior citizens: The adverse impact of age on tourism expenditure calls for the need for age-inclusive tourism development. Tourism packages that are friendly for the senior population, for example, discount packages, accessibility features and health and safety considerations could allow older populations to take part more actively in tourism. It aligns with international practices by making tourism inclusive for ageing societies (Modigliani, 1986).
4. Boosting earnings and alleviation of inequality: The result indicates that there is a stronger relationship between household income and tourism expenditure in 2016 and 2022 than in 2010. The growth of disposable income stimulates the demand for tourism. Policies that focus on redistribution of income, job creation, and rural development could encourage marginalised populations to take part in tourism activities. Additionally, tax incentives or subsidies offered to locals to travel domestically could promote wider participation in domestic tourism.
5. Capitalizing on coastal and urban tourism opportunities: With higher spending on tourism in urban and coastal areas, there is potential to harness these regions as development hubs. For instance, investment in sustainable tourism could be directed at addressing vulnerabilities such as the impacts of climate change along coastal areas while utilizing their distinctive natural and cultural features.

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