# Sun, Sand, and Services: Tourism and Household Welfare in Jamaica

Matthew McKetty

September 18, 2025

University of Wisconsin - Madison
Department of Agricultural and Applied Economics

# Introduction

# Introduction: Can You Build An Economy Around Tourism Services?

- The growth of service sector industries has become a defining feature of structural change in modern developing economies.
- Tourism has become one of the most important sources of growth within global the global service sector(UNWTO 2023).
- In 2000 there were roughly 700 million global travelers.
- By 2024 this number had increased to 1.3 billion.
- Travel and Tourism:
  - Comprised 9.1% of global GDP in 2023(WTTC)
  - Employed 10.5% of the global workforce in 2019(WTTC)
  - Comprised 25% of all new jobs created worldwide(UNWTO 2023)

# Can You Build An Economy Around Tourism? Continued

- However, there are still unknowns about this industry.
- These uncertainties include:
  - The ability to raise living standards
  - The scope for back-linkages to other sectors
  - The trade-offs between income from tourism and its potential inflationary effects
  - The inclusiveness of employment in tourism across different skill-levels
  - The extent of spatial spillovers in tourism services.
  - The segments of the socio-economic distribution that benefit most

# Can You Build An Economy Around Tourism? Continued

- I investigate the nature of the relationship between growth in tourism, and household welfare in Jamaica.
- I contribute to the literature through:
    - My use of a unique and incredibly detailed household dataset spanning 2 decades
    - A rich and spatially granular dataset on tourist spending activity spanning the same period
    - Investigating in a country for which tourism is core to the development strategy
    - Answering questions around tourism relevant to Small Island Developing States(SIDS)

# Research Question

**Research Question**: Are increases in the size of the Jamaican tourism industry welfare improving for Jamaican households?

- If so, to what extent are these welfare improvements felt across the income distribution, space, and employment types.

# Discussing the Significance of Tourism






- Tourism is a critical service sector industry in Jamaica and the larger Caribbean.
- According to the International Monetary Fund tourism's share of GDP in the region ranges between $7\%$ and $90\%$
- Tourism also factors heavily into the development plans for many countries (Wattanakuljarus and Coxhead 2006), such as Jamaica's "Vision 2030" development plan.

# Roadmap

## Literature

- **Tourism and economic development**.(Faber and Gaubert 2019; Wattanakuljarus and Coxhead 2006)
  - Contribute by using granular, representative, household panel data.
  - Employ detailed tourist data spanning 2 decades.
- **The spatial characteristics of economic activity** (Ahlfeldt et al. 2015; Aragón and Rud 2013)
  - Exploit temporal and spatial variation to identify the effects of positive service sector shocks.
- **The relationship between trade, structural change, and development**. (Rodrik 2016; Venables 2016; Hausmann et al. 2006)
  - I estimate sectoral welfare impacts

## Literature Used

This paper will employ approaches and guidance from :

- The literature on shift-share instrumental variables (SSIV).(Goldsmith-Pinkham et al. 2020; Borusyak et al. 2024a, 2022; Bartik 1991; Allen et al. 2021; Borusyak et al. 2024b)
  - I employ a SSIV approach to identify the effects of changes in tourism intensity on local household welfare.
  - I exploit variation in the composition of tourists from different regions of the world to different areas of Jamaica over time.

# Background & Context

# The Scale of Global, Caribbean & Jamaican Tourism

**Table 1: Global, Regional, and Jamaican Tourism Statistics**

| Indicator | Value |
|---|---|
| **Panel A: Global & Caribbean Region Tourism Statistics** | |
| International Tourist Arrivals (2023) | 1.3 billion USD (UNWTO) |
| International Tourism Export Revenues (2023) | 1.8 trillion USD (UNWTO) |
| Global tourism GDP share (2023) | 3% (UNWTO) |
| Share of Global Trade in Services | 23% (UNWTO) |
| Average Growth In International Arrivals (2000–2023) | 4.1% annually (UNWTO) |
| Caribbean tourism arrivals (2024) | 34.2 Million (CHTA) |
| Tourism Average Share of Caribbean GDP (2015-2019) | 25.4% (OECD) |
| **Panel B: Jamaican & Caribbean Tourism** | |
| Total Tourist Arrivals to Jamaica (2024) | 4.15 Million (MOT) |
| Total Stopvoer Arrivals to Jamaica (2024) | 2.9 Million (MOT) |
| Total Cruise Passenger Arrivals to Jamaica (2024) | 1.25 Million (MOT) |
| Total Roomnights Sold in Jamaica (2024) | 5.75 Million (MOT) |
| Jamaica Total Tourism Earnings (2024) | 4.2 billion USD (MOT) |
| **Panel C: Jamaican Tourism Sector Capital Stock & Infrastructure** | |
| Jamaica Hotel Room Capacity (2024) | 26,427 Rooms (MOT) |
| Average Growth in Hotel Room Stock (2000-2024) | 2.6% (MOT) |
| Total Number of Hotels (2024) | 210 Properties (MOT) |
| Total Number of Workers in Accommodation & Restaurant Services (2024) | 43,913 (MOT) |
| 2025/2026 Ministry of Tourism Budget | 95.5 Million USD (MOT) |

*Source:* United Nations: World Tourism Organization,Caribbean Hotel & Tourism Association, Jamaican Ministry of Tourism(MOT).

# What To Like About Tourism

- The potential for backlinkages to other sectors (Wattanakuljarus and Coxhead 2006)
- The ability to include both low and high skilled worker (Nayyar et al. 2021)
- Access To Foreign Exchange: Jamaica earned $4.3$ Billion USD in 2023 (Ministry of Tourism 2023 Annual Report)
- Access To Foreign Direct Investment. Tourism generated 48& of Jamaica's FDI inflows in 2022 (Bank of Jamaica,2022)

# However, Growth In The Tourism Industry Has Not Consistently Translated Into Economic Growth

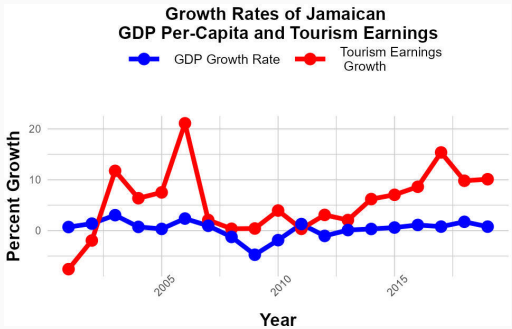



Figure 1: Tourism GDP Growth

Source: World Bank

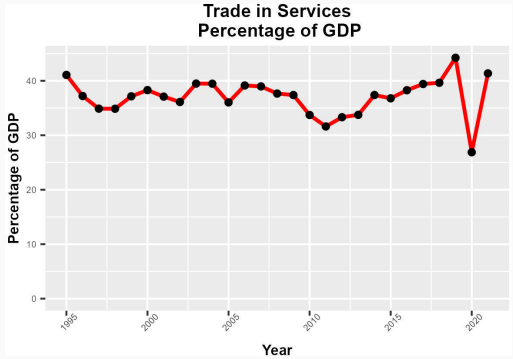



Figure 2: Services Sector Share

Source: World Bank

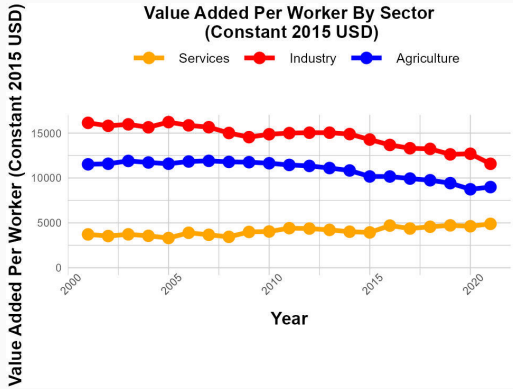



Figure 3: Multisector Value Added

Source: World Bank

# Data Overview

- Jamaica Survey of Living Conditions(JSLC)(2000-2019)
  - Annual Nationally Representative Living Standards and Measurement(LSMS) Style Household Survey
  - In most years samples roughly 2000 households and 6000 individuals
- Ministry of Tourism(MOT) Exit Survey(2000-2021, Excluding 2007 and 2015):
  - Survey conducted of tourists leaving either of Jamaica's 2 main international airports throughout each year.
  - Final Sample Of Stopover Visitors Includes Roughly 80,000 Parties
- STATIN administrative shapefiles. Community Shapefile

# Jamaican Development Areas

- The Statistical Institute of Jamaica divides the country into 84 districts referred to as "Development Areas" Other Jamaican Subdivisions
- These divisions are "groupings of communities based on geographic,demographic, economic, and social criteria/commonalities" (SDC Constitution).
- I measure tourism at the development area level.

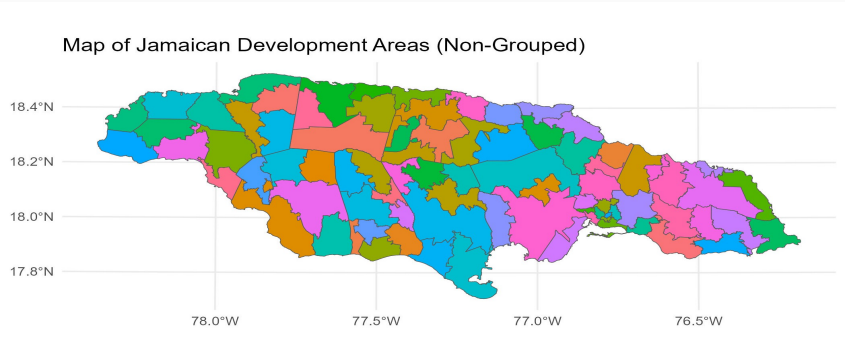



Figure 4: **Jamaican Development Areas**

# Characteristics of Development Areas

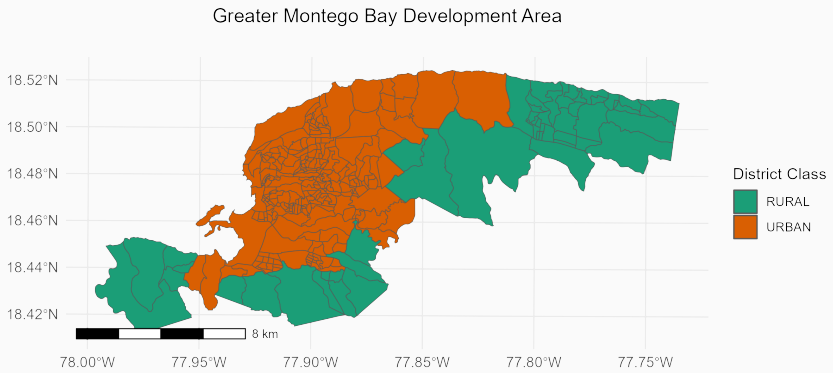



Figure 5: **Greater Montego Bay Development Area**

**Table 2: Development Area Summary Statistics**

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| Population | 84 | 32,107.25 | 37,109.81 | 1,329 | 192,044 |
| Area | 84 | 130.52 | 88.58 | 3.56 | 446.33 |
| Population.Density | 84 | 610.98 | 1,429.67 | 42.12 | 8,410.05 |

Notes: Area is measured in square kilometers. Population is based on the 2011 Census.

# Distribution of Tourism Activities Across Jamaica

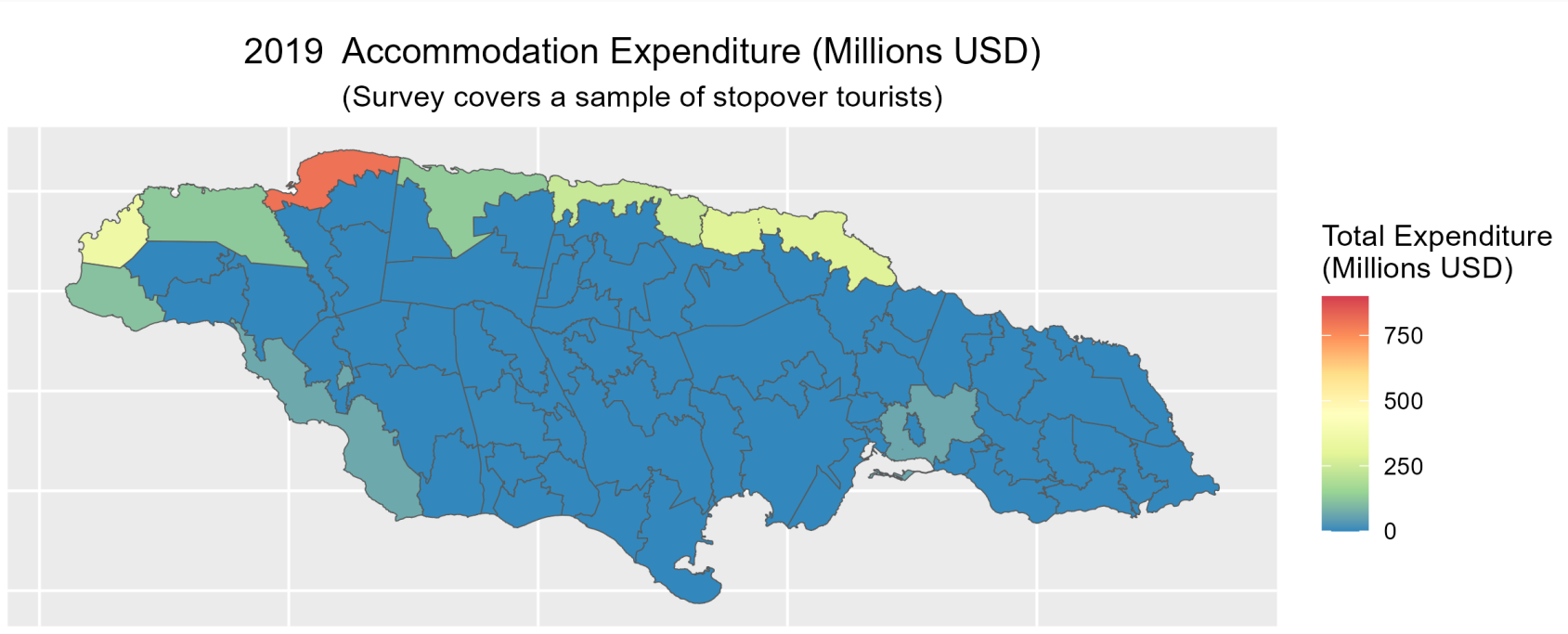



Figure 6: **Tourism Accommodation Expenditures Across The Island**

# Selected Tourist Summary Statistics

**Table 3: Tourist Summary Statistics For Study Period**

| | Mean | Standard Deviation | Median |
|---|---|---|---|
| Avg. Accom Price per Person | 590.03 | 495.58 | 520.69 |
| Number of People in Party | 1.95 | 0.96 | 2.00 |
| Total Cost of Trip | 2706.91 | 1845.23 | 2350.90 |
| Length of Stay | 7.47 | 5.88 | 7.00 |
| Visit for Vacation | 0.74 | 0.44 | 1.00 |
| Return Visitor | 0.47 | 0.50 | 0.00 |
| Summer Visitor | 0.57 | 0.49 | 1.00 |
| Income Over US60,000 | 0.50 | 0.50 | 0.00 |
| Observations | 78774 | | |

Note: Data covers the period from 2000 to 2021 excluding 2007. Prices are in 2024 USD.

# Jamaican Household Summary Statistics

**Table 4: Household Summary Statistics**

| | Mean | Median | SD |
|---|---|---|---|
| Per-Capita Consumption | 3020.99 | 2326.76 | 2682.68 |
| Per-Capita Total Expenditure | 3294.84 | 2415.31 | 3307.689 |
| Per-Capita Food Expenditure | 1450.57 | 1162.94 | 1307.787 |
| Per-Capita Non-Food Expenditure | 1571.12 | 1087.53 | 1803.881 |
| Per Capita Non Consumption Expenditure.(USD 2019) | 380.11 | 49.67 | 1217.168 |
| Non-Food Share of Consumption Expenditure | 0.49 | 0.49 | 0.140 |
| Non-Food Share of Tot. Expenditure | 0.47 | 0.46 | 0.135 |
| Consumption Share of Tot. Expenditure | 0.96 | 0.99 | 0.086 |
| Years of Schooling | 12.15 | 12.00 | 4.307 |
| Household Decile | 5.26 | 5.00 | 2.833 |
| Male HH Head | 0.51 | 1.00 | 0.500 |
| Female HH Head | 0.41 | 0.00 | 0.491 |
| Single Male | 0.06 | 0.00 | 0.241 |
| Single Female | 0.02 | 0.00 | 0.144 |
| Observations | 29566 | | |

Note: Monetary values adjusted to 2024 USD

# Urban nd Rural Households

**Table 5: Urban and Rural Household Characteristics**

| | Urban Households | | Rural Households | | Comparison |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | T-Statistic |
| Per-Capita Consumption | 3602.86 | 3161.80 | 2682.49 | 2292.67 | 25.35*** |
| Per-Capita Total Expenditure | 3990.83 | 3983.195 | 2889.95 | 2762.260 | 24.26*** |
| Per-Capita Food Expenditure | 1613.62 | 1289.520 | 1355.71 | 1308.996 | 14.04*** |
| Per-Capita Non-Food Expenditure | 1990.36 | 2319.748 | 1327.30 | 1362.054 | 26.84*** |
| Per Capita Non Consumption Expenditure.(USD 2019) | 523.55 | 1487.020 | 292.83 | 1008.639 | 11.60*** |
| Non-Food Share of Consumption Expenditure | 0.52 | 0.145 | 0.48 | 0.135 | 24.67*** |
| Non-Food Share of Tot. Expenditure | 0.48 | 0.139 | 0.46 | 0.131 | 19.51*** |
| Consumption Share of Tot. Expenditure | 0.95 | 0.095 | 0.96 | 0.080 | -12.44*** |
| Years of Schooling | 12.65 | 3.926 | 11.76 | 4.538 | 12.28*** |
| Household Decile | 6.02 | 2.806 | 4.81 | 2.752 | 32.65*** |
| Male HH Head | 0.47 | 0.499 | 0.53 | 0.499 | -7.84*** |
| Female HH Head | 0.44 | 0.497 | 0.39 | 0.487 | 9.41*** |
| Single Male | 0.06 | 0.234 | 0.06 | 0.245 | -5.88*** |
| Single Female | 0.03 | 0.159 | 0.02 | 0.135 | 6.58*** |
| Observations | 11196 | | 18370 | | 29567 |

Note: Monetary values adjusted to 2024 USD

# Development Areas Can Include Both Rural and Non-Rural Segments

**Table 6: Urban and Rural Household Characteristics**

| | Urban Households | | Rural Households | | Comparison |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | T-Statistic |
| Per-Capita Consumption | 3602.86 | 3161.80 | 2682.49 | 2292.67 | 25.35*** |
| Per-Capita Total Expenditure | 3990.83 | 3983.195 | 2889.95 | 2762.260 | 24.26*** |
| Per-Capita Food Expenditure | 1613.62 | 1289.520 | 1355.71 | 1308.996 | 14.04*** |
| Per-Capita Non-Food Expenditure | 1990.36 | 2319.748 | 1327.30 | 1362.054 | 26.84*** |
| Per Capita Non Consumption Expenditure.(USD 2019) | 523.55 | 1487.020 | 292.83 | 1008.639 | 11.60*** |
| Non-Food Share of Consumption Expenditure | 0.52 | 0.145 | 0.48 | 0.135 | 24.67*** |
| Non-Food Share of Tot. Expenditure | 0.48 | 0.139 | 0.46 | 0.131 | 19.51*** |
| Consumption Share of Tot. Expenditure | 0.95 | 0.095 | 0.96 | 0.080 | -12.44*** |
| Years of Schooling | 12.65 | 3.926 | 11.76 | 4.538 | 12.28*** |
| Household Decile | 6.02 | 2.806 | 4.81 | 2.752 | 32.65*** |
| Male HH Head | 0.47 | 0.499 | 0.53 | 0.499 | -7.84*** |
| Female HH Head | 0.44 | 0.497 | 0.39 | 0.487 | 9.41*** |
| Single Male | 0.06 | 0.234 | 0.06 | 0.245 | -5.88*** |
| Single Female | 0.03 | 0.159 | 0.02 | 0.135 | 6.58*** |
| Observations | 11196 | | 18370 | | 29567 |

Note: Monetary values adjusted to 2024 USD

# Selected Summary Statistics Of The Jamaican Labor Market

**Table 7: Characteristics of Labor Across Major Sectors**

| | Agriculture | | Consumer Services | | Manufacturing | | Not Specified | | Other Services | | Tourism Services | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Per-Capita Consumption | 2299.49 | 1778.82 | 2974.77 | 2743.23 | 3069.62 | 2379.43 | 3045.99 | 2634.53 | 3607.18 | 3150.94 | 3548.34 | 3046.32 |
| Per-Capita Total Expenditure | 2430.71 | 2047.122 | 3183.94 | 3158.568 | 3364.19 | 3018.163 | 3221.06 | 3002.343 | 4181.99 | 4303.265 | 3915.44 | 3878.217 |
| Per-Capita Food Expenditure | 1227.72 | 975.184 | 1443.98 | 1612.628 | 1460.12 | 1043.184 | 1457.88 | 1208.271 | 1598.78 | 1324.342 | 1655.67 | 1295.775 |
| Per-Capita Non-Food Expenditure | 1072.06 | 1024.351 | 1530.79 | 1704.359 | 1609.49 | 1640.466 | 1591.01 | 1790.108 | 2008.50 | 2261.944 | 1893.32 | 2194.854 |
| Per Capita Non Consumption Expenditure.(USD 2019) | 193.65 | 631.751 | 290.84 | 857.966 | 371.54 | 1122.027 | 286.52 | 897.275 | 708.36 | 1841.048 | 449.24 | 1523.801 |
| Non-Food Share of Consumption Expenditure | 0.45 | 0.132 | 0.50 | 0.132 | 0.50 | 0.132 | 0.49 | 0.154 | 0.52 | 0.140 | 0.51 | 0.136 |
| Non-Food Share of Tot. Expenditure | 0.44 | 0.129 | 0.47 | 0.129 | 0.48 | 0.128 | 0.47 | 0.150 | 0.47 | 0.130 | 0.48 | 0.132 |
| Consumption Share of Tot. Expenditure | 0.97 | 0.068 | 0.96 | 0.075 | 0.95 | 0.086 | 0.97 | 0.070 | 0.92 | 0.117 | 0.95 | 0.091 |
| Years of Schooling | 10.51 | 3.514 | 12.28 | 3.998 | 12.44 | 2.716 | 11.87 | 4.916 | 13.47 | 4.108 | 12.86 | 4.432 |
| Household Decile | 4.28 | 2.617 | 5.31 | 2.737 | 5.52 | 2.727 | 5.17 | 2.930 | 5.92 | 2.871 | 6.04 | 2.680 |
| Observations | 6620 | | 6719 | | 1330 | | 7006 | | 5029 | | 2862 | |

Source: Author's calculations based on the Jamaica Survey of Living Conditions

# Selected Industry Comparison: Agriculture vs: Tourism

**Table 9:** Agriculture vs. Tourism Services Comparison

| | Agriculture | | Tourism Services | | Difference |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | T-Stat |
| Per-Capita Consumption | 2965.58 | 2372.50 | 3548.34 | 3046.32 | -19.48*** |
| Per-Capita Total Expenditure | 3186.53 | 2767.628 | 3915.44 | 3878.217 | -18.82*** |
| Per-Capita Food Expenditure | 1646.33 | 1346.511 | 1655.67 | 1295.775 | -13.87*** |
| Per-Capita Non-Food Expenditure | 1319.75 | 1346.134 | 1893.32 | 2194.854 | -18.72*** |
| Per Capita Non Consumption Expenditure | 341.91 | 897.240 | 449.24 | 1523.801 | -8.50*** |
| Non-Food Share of Consumption Expenditure | 0.43 | 0.143 | 0.51 | 0.136 | -22.66*** |
| Non-Food Share of Tot. Expenditure | 0.42 | 0.140 | 0.48 | 0.132 | -17.70*** |
| Consumption Share of Tot. Expenditure | 0.96 | 0.083 | 0.95 | 0.091 | 11.81*** |
| Years of Schooling | 10.27 | 3.765 | 12.86 | 4.432 | -17.95*** |
| Household Decile | 5.25 | 2.818 | 6.04 | 2.680 | -27.06*** |
| Male HH Head | 0.54 | 0.499 | 0.61 | 0.488 | 0.23 |
| Female HH Head | 0.15 | 0.352 | 0.34 | 0.474 | -15.37*** |
| Single Male | 0.30 | 0.458 | 0.04 | 0.196 | 18.22*** |
| Single Female | 0.02 | 0.141 | 0.01 | 0.096 | -3.39*** |
| Observations | 6621 | | 2862 | | 9483 |

Source: Author's calculations based on the Jamaica Survey of Living Conditions

# Conceptual Framework

# Conceptual Framework: Local Shocks To Tourism Services

- I adapt the conceptual framework of Moretti (2010) and Aragón and Rud (2013).
- These papers employ this framework to analyze the effects of industry shocks on local communities
- In Aragón and Rud (2013), they analyze the effects of a change in policies of a gold mine in Peru
- This framework allows for reduced form analysis of the general equilibrium effects of shocks

# Conceptual Framework: Part 1

- Assume that there are a collection of municipalities $m$ in Jamaica,
- Jamaica is a small open economy.
- Each municipality is a competitive economy
- Produce a vector of internationally & domestically tradable goods and local goods
- The internationally tradable goods are given by $x_1, x_2, x_3, ....., x_n$
- International good prices are determined globally
- The non-tradable goods are $g_1, g_2, g_3, ....., g_J$
- Non-tradable prices are determined locally

# Conceptual Framework: Part 2

- Each good is produced using labor,
- Labor which can be either high-skilled or low-skilled,
- High-skilled workers having a relatively higher level of productivity than low-skilled labor
- Labor is mobile across sectors in a municipality
- Therefore,wages and marginal product are equal
- The local labor supply for each type is upward sloping
- The supply depends on geographic mobility and the distribution of tastes for leisure.

# Conceptual Framework: Part 3

- Consider the case of a positive shock to tourism in the locality $m$ because of a new resort
- The opening of the new property increases the room stock in the area, and new tourists arrive
- here is a permanent labor demand shock in the municipality $m$ for the tourism sector $x_1$,
- This generates an increase in employment in that industry.
- The effect of this shock on the welfare of households in the local area will depend on 2 channels.
    - The first channel is that of wages and the implied effects on consumption expenditures.
    - The second channel is non-accommodation tourist spending in the locality.

## Channel: Wages

- The change in wages will depend on the type of labor demanded, its supply elasticity, and the labor intensity of production
- The stronger the linkages between tourism and other sectors in the same location, the larger the expected increase in either employment or wages in those sectors
- Increases in total wages may then be offset by price increases in non-tradables because of a labor shortage following the labor demand shock
- The magnitude of the increase will also depend on the skill-level of labor demanded and the degree to which they are substitutable.
- The effects on local tradable sectors is ambiguous

## Channel: Tourist Non-Accommodations Spending

- Tourists may spend on goods, entertainment, food and other offerings within a community.
- The strength of this channel depends on how integrated the tourist experience is with that of locals.
- There may also be positive effects on local amenities.
- Local services may become more expensive as a result (Faber and Gaubert 2019; Allen et al. 2021; Almagro and Domínguez-Iino 2025)
- A more segregated structure of the tourist experience implies less local activity spending, but also less crowding out.

## Implications Of The Framework

- Welfare outcome depends on whether the increases in earnings improvements in amenities outweigh the price increases in the local nontradable sector.
- My descriptive statistics, and conversations with industry leaders suggest a low level of integration between locals and tourists
- Labor in the Jamaican tourism sector is largely low-skilled, in line with Nayyar et al. (2021)
- Conversations with the Ministry of Tourism also imply a high degree of labor mobility within Jamaica
- For much of my study period, high unemployment was a persistent challenge
- Based on this knowledge, I generate 5 testable hypotheses

# Testable Hypotheses

1. There will be an increase in real per-capita consumption among households in areas exposed to positive tourism shocks relative to areas farther from these shocks. This increase will be determined by the low-skilled labor supply elasticity, and its mobility within Jamaica.
2. The tourism sector experiences an increase in its total wage bill through greater employment. Whether or not there is an increase in per-capita expenditures for these households depends on the supply elasticity of low-skilled labor.
3. The increase in real per-capita consumption will be highest among households working in local non-tradable sectors. To the extent that worker skill correlates with ownership and work in local nontradable services, this tourism shock will increase real consumption among the most affluent.

## Testable Hypotheses

1. There are increases in the prices of local nontradable goods. The extent of this increase will depend on the size of the tourism shock, and the availability of low-skilled labor.
2. The likelihood of a household being in poverty will decrease. This occurs as a result of households moving from lower paying sectors into tourism and because of households in local non-tradables earning higher wages. The extent of this reduction in poverty will depend on the labor supply elasticity, the size of the tourism demand shock, and the degree of price increases resulting from tourism spending.

# Data and Methodology

# Baseline SSIV Specification

The Baseline 2SLS specification is the following: Stage 1:

$$Tourism_{dt} = \chi + \phi Bartik_{dt} + \iota X_{idt} + \omega D_t + \pi C_d + \eta_{idt} \quad (1)$$

Stage 2:

$$Y_{idt} = \alpha + \beta Tourism_{d,t} + \psi X_{idt} + \rho D_t + \lambda C_d + \epsilon_{idt}, \quad (2)$$

Where

- $Y_{idt}$ is per-capita expenditure, or poverty status for in household $i$, in development area $d$, in year $t$.
- The term $Tourism_{d,t}$ is the total expenditure on accommodations in year $t$ in development area $d$.
- The variable $Bartik_{dt}$ is the shift-share instrumental variable
- Here $X_{idt}$ is a vector of household level controls,
- The term $D_t$ is a time dummy.
- $C_d$ are development area dummies

# Empirical Strategy I

- We may expect that the levels of tourism in a development area are correlated with unobserved characteristics of a development area that affect the outcome variable.
- We may also worry about reverse causality.
- This motivates my use of an instrument that is correlated with tourist expenditures and plausibly exogenous in from other unobserved characteristics of development areas
- I exploit variation in heterogeneous tourists decisions on where to stay in Jamaica over time to construct a shift-share instrumental variable

# Motivating The SSIV Approach

- Borrowing notation from Borusyak et al. (2024a), consider a general estimating equation of the form

$$y_i = \beta x_i + \gamma^{'} w_i + \epsilon_i \tag{3}$$

  where we want to measure a causal relationship between two variables across a set of units $i$

- However we are concerned of treatment endogeneity, that is that there is correlation between $x_i$ and $\epsilon_i$

- We therefore use an instrument $z_i$ that is correlated with the endogenous treatment, and plausibly uncorrelated with the error term.

# Motivating The SSIV Approach

- Shift-Share Instrumental Variables take the form

$$z_i = \sum_{k=1}^{K} \underbrace{s_{ik}}_{\text{Share}} \underbrace{g_k}_{\text{Shift}}, \tag{4}$$

- where $(g1, ...gk)$ are shifts that are common to all units.
- the vector $(s_{i1}, ....., s_{iK})$ are the exposure shares that vary across units.
- $z_i$ is therefore the share-weighted averaged of the shifts.
- SSIVs have been useful in numerous empirical settings such as:

# Motivating The SSIV Approach

- The identification argument is that **either:**
  - The shifts are as good as randomly assigned and that that they only effect the outcome through the treatment
  - or, that the shares satisfy parallel trends: The outcomes for units with high vs low shares would have continued on the same trend without the treatment.

# Motivating The SSIV Approach

- Shift-Share Instrumental Variables have been used a number of empirical contexts
- Two of the most notable are:
  - Studying the impact of Chinese imports on local U.S. labor markets (Autor et al. 2013)
  - Studying effects of immigration on wage inequality(Borusyak et al. 2024a; Card 2009)
  - The Effects of Changes In Tourism On Urban Welfare (Allen et al. 2021)

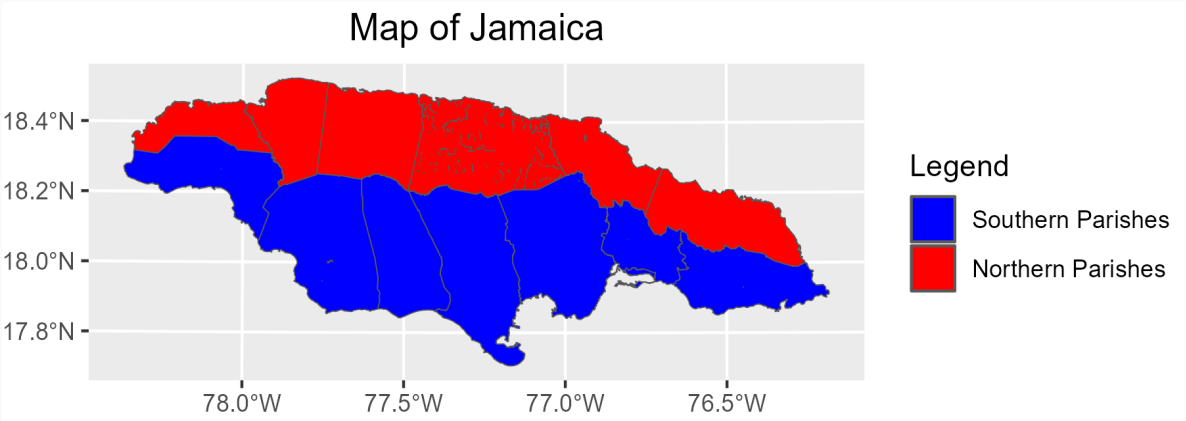
# Shift-Share Instrumental Variable (SSIV) Construction

I then construct a Bartik instrument $Bartik$ for each development area $d$ in each year $t$ of the analysis, where I exploit the variation in the shares of tourists from different regions visiting different areas of Jamaica over time.

$$Bartik_{dt} = \sum_{r \in R} \frac{T_{dr0}}{T_{d0}} \left( \frac{T_{-drt} - T_{-dr0}}{T_{-dr0}} \right), \tag{5}$$

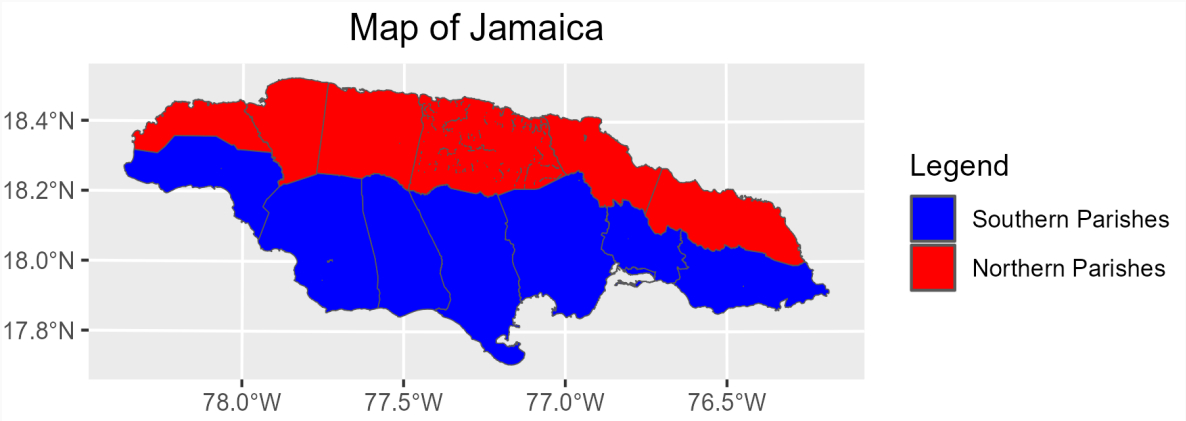
- where $T_{dr0}$ is total expenditure on accommodations in $d$ by tourists from region $r$ during the base period $t = 0$. Shift-Share Identity
- the term $T_{d0}$ is also spending on accommodations in development area $d$ during the base period.
- A SSIV is made up of two components:
  - The proportion (or **share**) of spending done by tourists from certain global regions in a particular community in some base year.

# Empirical Strategy III: Identification Through Bartik Instruments




- Suppose there are two regions of Jamaica North and South.
- $90\%$ of the North's revenues come from Canadian tourists
- $10\%$ of the South's revenues come from Canadians

# Empirical Strategy III: Identification Through Bartik Instruments-Continued




- Suppose that because of a sudden preference shock, twice the number of Canadians visit Jamaica
- On average we would expect the region with more exposure to Canadian tourist dollars to see a greater increase in total earnings

# Development Areas Have Heterogeneous Exposure To Tourists From Different Regions Over Time

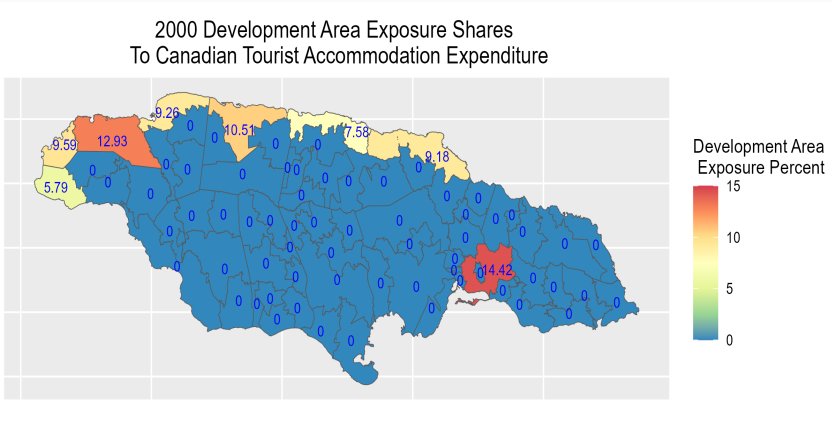



Figure 7: Canada Exposure Shares 2000

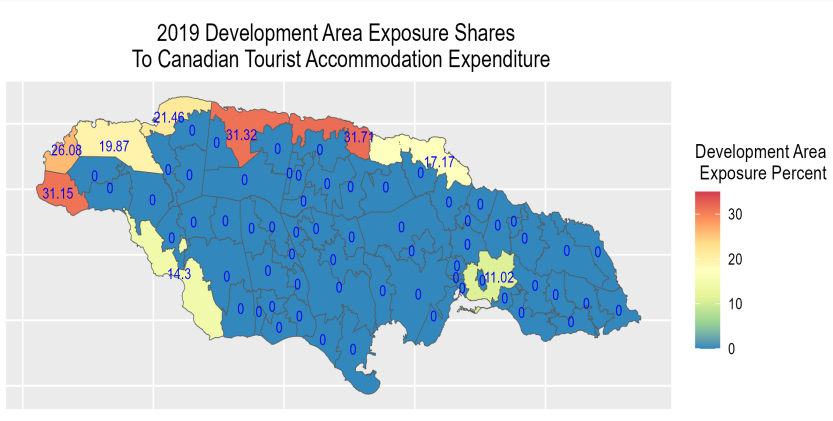
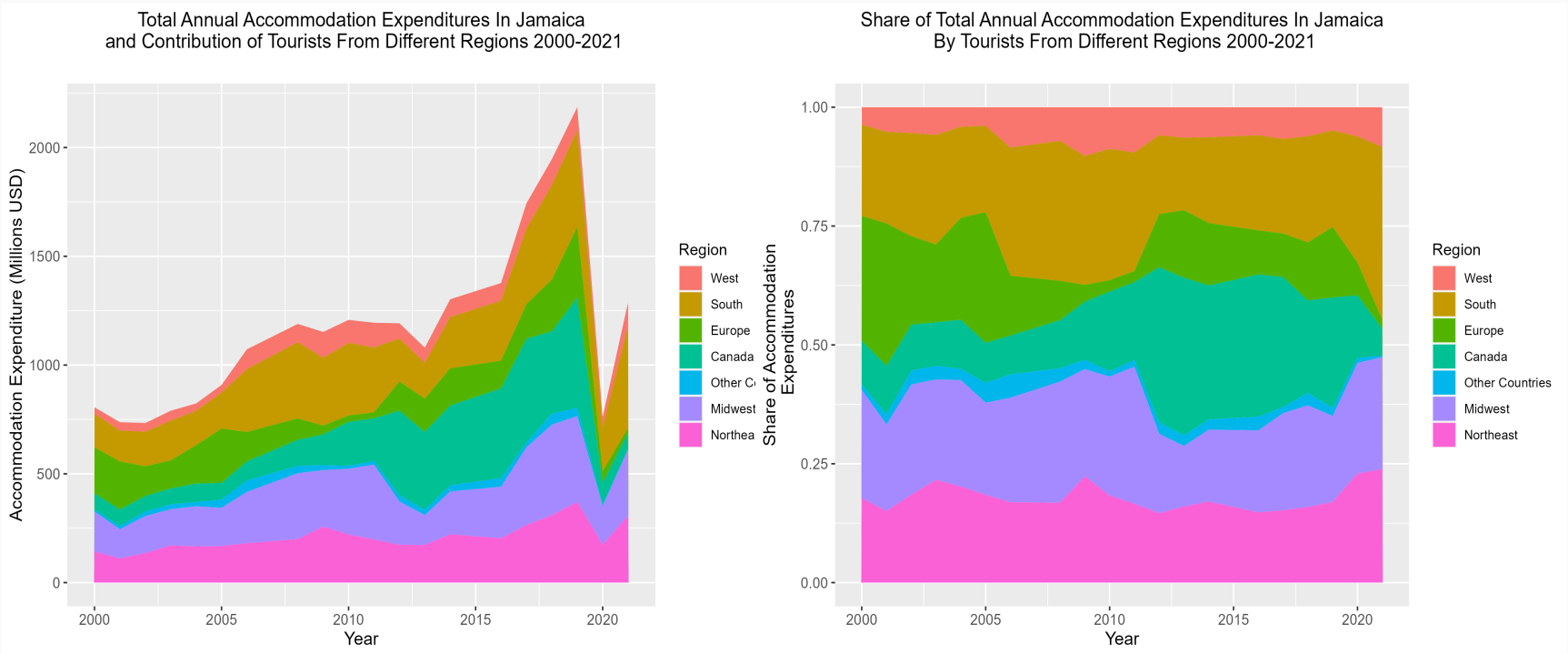



Figure 8: DA Canada Exposure Shares 2019

# The Magnitude and Share of Expenditures of Tourists From Different Regions Vary Over Time




(a) **Level of Expenditures By Region**

(b) **Share of Expenditures by Region**

# First Stage Regression Results

**Table 10: First Stage of IV: Relationship Between Tourism Earnings and Log Household Expenditure**

| | Accommodations Expenditures(Millions USD) | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Shift-Share Instrument | 1.7e+02 | 2.2e+02* | 8.1e+01*** |
| | (9.1e+01) | (1.1e+02) | (1.6e+01) |
| Household Size | | | 6.5e-02 |
| | | | (6.0e-02) |
| Female Household Head | | | -3.2e-01 |
| | | | (3.8e-01) |
| Rural District | | | 1.1e+00 |
| | | | (3.2e+00) |
| First-Stage F-Statistic | 3 | 4 | 26 |
| Observations | 38117 | 38117 | 38117 |
| Standard Deviation | 110.644 | 110.644 | 110.644 |
| Household Controls | No | No | Yes |
| Development Area Dummies | No | No | Yes |
| Year Dummies | No | Yes | Yes |

*Notes:* Accommodation expenditure is calculated at the development area level.

# Results

# Results Roadmap

- Baseline Findings & Proving An Effect
- Heterogeneous Effects by Industry, Employment, and Skill-Type
- Heterogeneous Effects Across The Distribution of Real Consumption
- Effects Across Demographic Categories

# There is no effect of tourism on households expenditures on average.

**Table 11: SSIV: Relationship Between Accommodation Spending and Real Log Household Expenditure**

| | Log Per-Capita Expenditure(USD) | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Accommodations Expenditures(Millions USD) | 1.2e-03** | 1.4e-03 | 2.2e-04 |
| | (4.3e-04) | (9.0e-04) | (6.3e-04) |
| Household Size | | | -1.4e-01*** |
| | | | (3.7e-03) |
| Rural District | | | -1.4e-01*** |
| | | | (2.0e-02) |
| Female Household Head | | | -6.2e-02*** |
| | | | (1.1e-02) |
| First-Stage F-Statistic | 3 | 4 | 26 |
| Observations | 38117 | 38117 | 38117 |
| Standard Deviation | 0.732 | 0.732 | 0.732 |
| Household Controls | No | No | Yes |
| Development Area Dummies | No | No | Yes |
| Year Dummies | No | Yes | Yes |

Accommodation Expenditures are calculated at the development area level in millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks. Female Household Head indicates either a single adult female or household with multiple persons for which the household head or principal earner is female.

# Tourism Benefits Only Accrue To A Subset of Urban Households

**Table 12: IV-Breakdown Across Urban-Rural**

| | Comparison: Incl. Kingston | | | Comparison: Excl. Kingston | | |
|---|---|---|---|---|---|---|
| | (1) Urban | (2) Rural | (3) All | (4) Urban | (5) Rural | (6) All |
| Tourism Expenditure(Millions USD) | -4.4e-04 | 6.7e-04 | 2.1e-04 | 2.6e-03*** | -8.2e-04 | 1.2e-03 |
| | (1.2e-03) | (1.5e-03) | (6.5e-04) | (6.0e-04) | (1.2e-03) | (7.7e-04) |
| Household Size | -1.5e-01*** | -1.3e-01*** | -1.4e-01*** | -1.5e-01*** | -1.3e-01*** | -1.4e-01*** |
| | (3.6e-03) | (2.9e-03) | (3.7e-03) | (4.4e-03) | (2.9e-03) | (2.9e-03) |
| Female | -1.2e-01*** | -2.7e-02** | -5.8e-02*** | -1.0e-01*** | -2.7e-02** | -5.1e-02*** |
| | (9.2e-03) | (1.1e-02) | (1.1e-02) | (2.0e-02) | (1.1e-02) | (1.2e-02) |
| First-Stage F-Statistic | 98 | 23 | 37 | 95 | 18 | 42 |
| Observations | 17792 | 18865 | 36657 | 11125 | 18381 | 29506 |
| Standard Deviation | 0.730 | 0.703 | 0.733 | 0.711 | 0.703 | 0.717 |
| Number of Clusters | 35 | 58 | 60 | 34 | 57 | 59 |
| Bootstrapped Standard Errors | Yes | No | No | Yes | No | No |
| HH Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| DA Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Dummies | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* Bootstrapped standard errors are provided in parentheses below the coefficient estimates. The bootstrapped confidence intervals are in brackets below the standard error estimates. Accommodations Expenditures are calculated at the development area level in millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks. *** p¡0.01, ** p¡0.05, * p¡0.1.

# Quantifying Baseline Results

- A coefficient of .0026 implies that an increase of 1 million dollars in accommodations expenditures generates a .26% increase in real consumption
- Therefore an increase of a approximately 3.8 million U.S. dollars in accommodations expenditures generates a 1% increase in real per-capita consumption.
- This translates to an increase of approximately 36 dollars in real consumption expenditures for every increase of approximately 3.8 million U.S. dollars for this subset of urban households.

# We can compare the significance of these effects To Usual Changes In Tourism Levels

**Table 13:** Average Magnitudes Over Various Lags

| Statistic | 1 Year Lagged Value | 5 Year Lagged Value | 10 Year Lagged Value |
|---|---|---|---|
| Mean Expenditure Change | 21.09 | 46.04 | 63.53 |
| Median Expenditure Change | 7.92 | 31.06 | 36.73 |
| Min Expenditure Change | 0 | 0.02 | 0.02 |
| Max Expenditure Change | 235.54 | 430.92 | 449.26 |
| SD Expenditure Change | 33.35 | 63.34 | 89.45 |

Notes: All expenditures are in millions of US Dollars corrected for inflation to the year 2024.

- The average change over 5 years in tourism earnings for a development area is 31.06 million
- Therefore on average over 5 years, real per-capita consumption in these communities should increase roughly 288 U.S. dollars

# My Main Results Are Robust To Recommended SSIV Standard Error Corrections

**Table 14:** Comparison of AKM Regression Results Across Methodologies

| Method | Estimate | Std.Error | P.Value | Left.CI | Right.CI |
|---|---|---|---|---|---|
| Panel A: IV Estimates All Regions | | | | | |
| **Panel A: IV Estimates All Regions** | | | | | |
| Homoscedastic | 2e-04 | 5e-04 | 0.7102 | -7e-04 | 0.0011 |
| EHW | 2e-04 | 5e-04 | 0.7166 | -7e-04 | 0.0011 |
| Reg. Cluster | 2e-04 | 7e-04 | 0.8078 | -0.0012 | 0.0015 |
| AKM | 2e-04 | 2e-04 | 0.3069 | -2e-04 | 5e-04 |
| AKM0 | 2e-04 | 2e-04 | 0.2502 | -1e-04 | 8e-04 |
| Panel B: IV Estimates Urban Households | | | | | |
| **Panel B: IV Estimates Urban Households** | | | | | |
| Homoscedastic | 0.002 | 6e-04 | 0.0011 | 8e-04 | 0.0032 |
| EHW | 0.002 | 6e-04 | 0.0016 | 8e-04 | 0.0033 |
| Reg. Cluster | 0.002 | 4e-04 | 0 | 0.0011 | 0.0029 |
| AKM | 0.002 | 5e-04 | 1e-04 | 0.001 | 0.003 |
| AKM0 | 0.002 | 7e-04 | 0 | 0.0013 | 0.004 |
| Panel C: IV Estimates Rural Households | | | | | |
| **Panel C: IV Estimates Rural Households** | | | | | |
| Homoscedastic | -3e-04 | 6e-04 | 0.6459 | -0.0016 | 0.001 |
| EHW | -3e-04 | 6e-04 | 0.6465 | -0.0016 | 0.001 |
| Reg. Cluster | -3e-04 | 0.0011 | 0.7841 | -0.0024 | 0.0018 |
| AKM | -3e-04 | 3e-04 | 0.255 | -8e-04 | 2e-04 |
| AKM0 | -3e-04 | 3e-04 | 0.2225 | -9e-04 | 2e-04 |

*Notes:* The tourism expenditure is measured in millions and is measured at the level of the development area. These results reflect the corrected standard errors for the AKM recommended shift-level regression.

# Household Real Consumption Increases For Food, Non-Food, & Healthcare Services

**Table 15: IV-Breakdown of Spending Across Sub-Categories- Urban Households(Not Including Kingston)**

| | Log Food | Log Non-Food | Log Non-Consumption | Healthcare | Utilities | Loan Repayment |
|---|---|---|---|---|---|---|
| Tourism Expenditure(Millions USD) | 2.6e-03*** | 3.2e-03** | 3.0e-03 | 2.3e+00*** | 1.4e+00 | 2.7e+00* |
| | (5.3e-04) | (1.3e-03) | (6.0e-03) | (7.6e-01) | (4.6e+00) | (1.5e+00) |
| First-Stage F-Statistic | 56 | 58 | 62 | 56 | 58 | 67 |
| Observations | 11117 | 11110 | 7023 | 10295 | 11120 | 6767 |
| Standard Deviation | 0.704 | 0.861 | 1.971 | 990.399 | 520.181 | 1434.743 |
| Number of Clusters | 34 | 34 | 34 | 34 | 34 | 34 |
| Bootstrapped Standard Errors | Yes | No | No | Yes | No | No |
| HH Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| DA Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Dummies | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* Bootstrapped standard errors are provided in parentheses below the coefficient estimates. The bootstrapped confidence intervals are in brackets below the standard error estimates. Accommodations Expenditures are calculated at the development area level in millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks.

# Discussion of Framework Hypotheses

- These findings support the first component of the first testable prediction of the framework
- Areas that are most exposed to tourists experiencing increases on average in real consumption.
- The second component of the framework concerned the labor supply elasticity
- Highly elastic and mobile low-skilled labor would mean that the labor demand shock is quickly met by the labor force, therefore constraining significant increases in wages.
- My data do not allow me to fully characterize labor market dynamics, but I can consider the likelihood of possible mechanisms indirectly over my study period.
- The next step is to compare the effects of tourist expenditures for

# It Is Medium-Skilled Occupations In Select Urban Areas That Appear To Benefit The Most

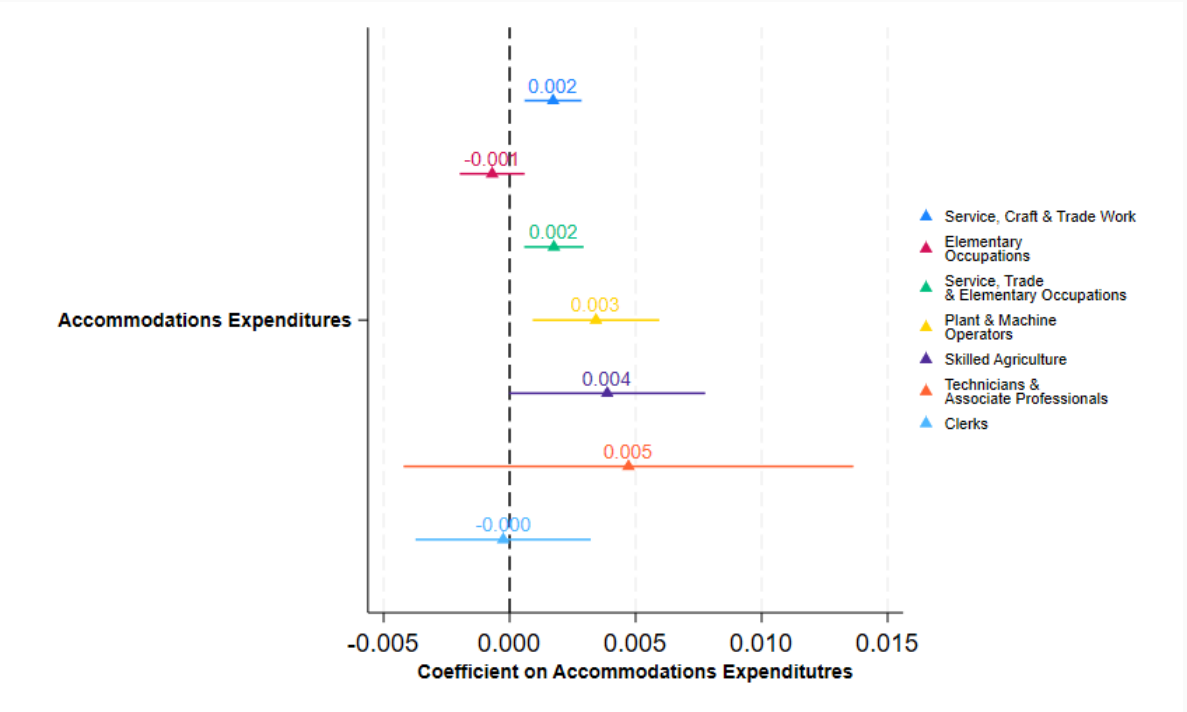
**Table 16: IV - Relationship Between Skill-Level and The Effect of Tourism Expenditures on Log Real Per-Capita Consumption-Urban Households(Not Including Kingston)**

| | Low-Skilled | Medium-Skilled | High-Skilled |
|---|---|---|---|
| Tourism Expenditure(Tens of Millions USD) | 1.9e-02 | 2.5e-02* | 5.6e-02 |
| | (2.2e-02) | (9.8e-03) | (1.6e-01) |
| First-Stage F-Statistic | 30 | 74 | 3 |
| Observations | 1454 | 7939 | 1723 |
| Standard Deviation | 0.665 | 0.690 | 0.705 |
| Number of Clusters | 34 | 34 | 34 |
| Bootstrapped Standard Errors | Yes | Yes | Yes |
| HH Controls | Yes | Yes | Yes |
| DA Dummy | Yes | Yes | Yes |
| Year Dummies | Yes | Yes | Yes |

*Notes:* Accommodations Expenditures are calculated at the development area level in millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks. Female Household Head indicates either a single adult female or household with multiple persons for which the household head or principal earner is female.

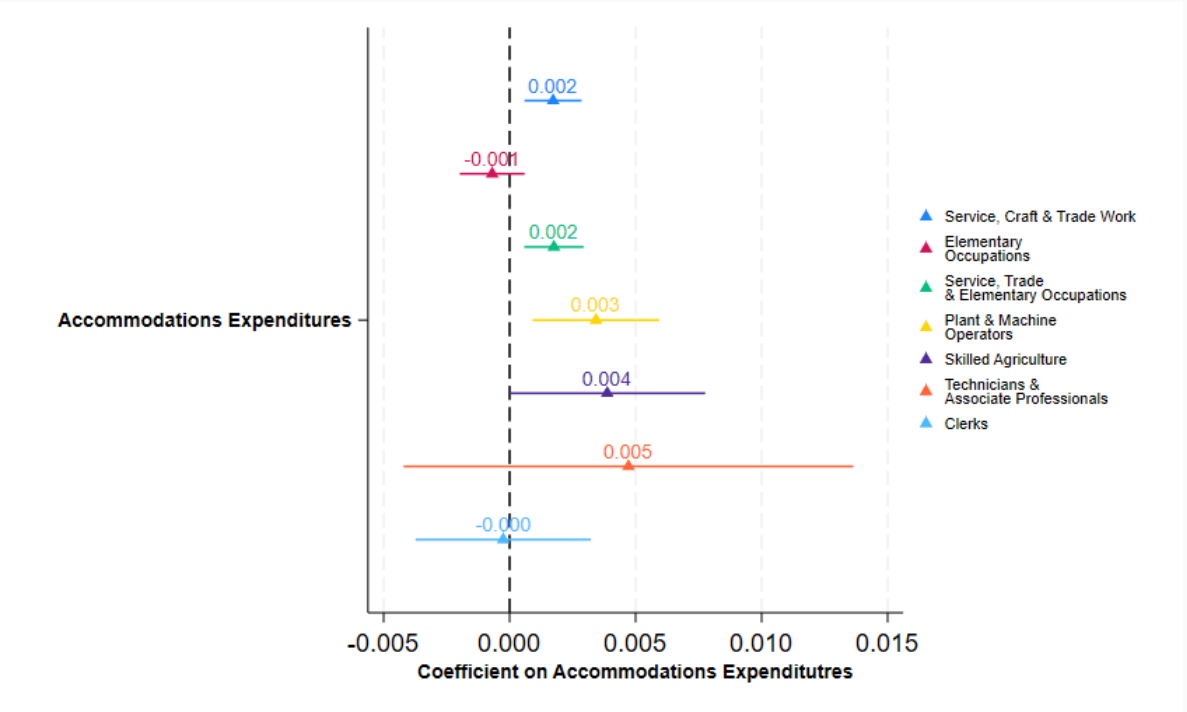
# Service & Manufacturing Occupations Are Benefiting The Most: Table

Figure 10: **Cross-Section Comparison of IV Coefficients Across Occupation Categories In Urban Area Not Including Kingston**



# Service & Manufacturing Occupations Are Benefiting The Most: Figure

Figure 11: **Cross-Section Comparison of IV Coefficients Across Occupation Categories In Urban Area Not Including Kingston**



# Rural Households Are Slightly More Likely To Work in Tourism Industries

**Table 19: IV - Tourism Industry Employment Likelihood By Sector & Rurality**

| | Urban Tourism Employment Likelihood | Rural Tourism Employment Likelihood |
|---|---|---|
| Tourism Expenditure (Millions USD) | 5.8e-04 | 5.3e-04* |
| | (3.8e-04) | (2.8e-04) |
| | [-0.000,0.001] | [-0.000,0.001] |
| First-Stage F-Statistic | 61 | 23 |
| Observations | 17793 | 18866 |
| Standard Deviation | 0.280 | 0.250 |
| Number of Clusters | 35 | 58 |
| HH Controls | Yes | Yes |
| DA Dummy | Yes | Yes |
| Year Dummies | Yes | Yes |

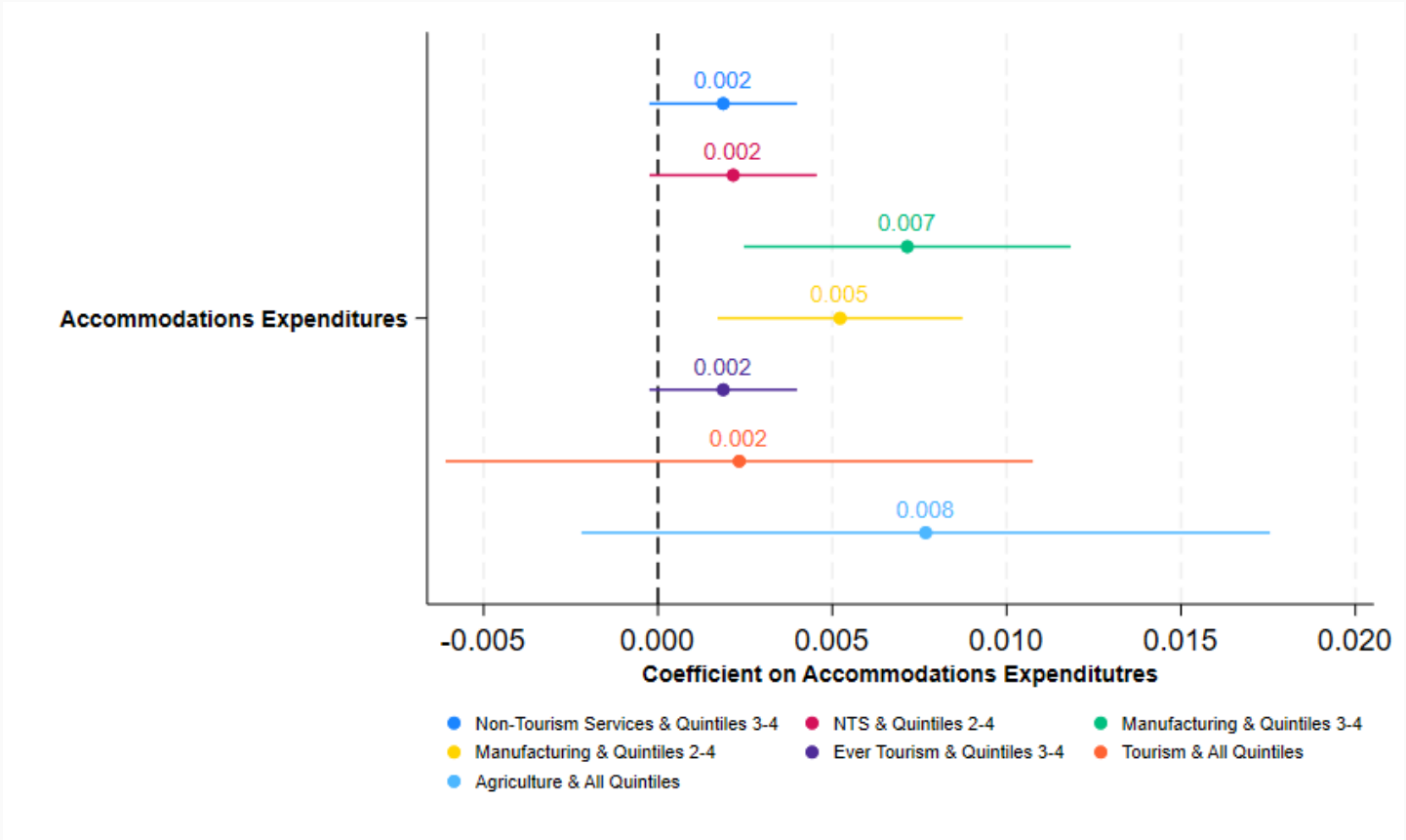
*Notes:* The Tourism Industry outcome is binary variable with 1 indicating the household head or principal earner works in a tourism related industry and 0 indicating the individual works in a different industry. Bootstrapped standard errors are in parentheses below point estimates while the 95% bootstrapped confidence interval is in brackets below the standard errors. Accommodation Expenditures are calculated at the development area level ins of millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. Household expenditures are also adjusted to 2024 U.S. Dollar values. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks. Female Household Head indicates either a single adult female or household with multiple persons for which the head or principal earner is female.

# Motivating The Panel Industry Specification

- A repeated cross section specification has certain limitations in this context
- When measuring results by sector, I cannot account for people taking on jobs or leaving jobs.
- This motivates my use of a panel subset of my data.
- I aggregate up to the industry level for this analysis
- I specify that an individual must have been in a particular industry for each period they are observed.

# Panel: Manufacturing and Non-Tourism Services In The Middle of The Expenditure Distribution Drive The Observed Effects

Figure 12: **Panel Comparison of Coefficients Across Industries of Employment**



# Panel: Manufacturing and Non-Tourism Services In The Middle of The Expenditure Distribution Drive The Observed Effects

Table 20: **IV-Panel Per-Capita Consumption By Industry**

| | NTS: 3-4 | NTS: 2-4 | Manuf.: 3-4 | Manuf.: 2-4 | Ever Tourism: 3-4 | Tourism: 1-5 | Agriculture: 1-5 |
|---|---|---|---|---|---|---|---|
| Tourism Expenditure (Millions USD) | 1.9e-03* | 2.2e-03* | 7.2e-03* | 5.2e-03*** | 1.9e-03* | 2.3e-03 | 7.7e-03 |
| | (1.1e-03) | (1.2e-03) | (2.3e-03) | (1.7e-03) | (1.1e-03) | (4.1e-03) | (4.9e-03) |
| First-Stage F-Statistic | 46 | 46 | 22 | 16 | 46 | 9 | 3 |
| Observations | 703 | 908 | 273 | 353 | 703 | 238 | 1129 |
| Bootsrapped P-Value | 0.082 | 0.077 | 0.037 | 0.005 | 0.082 | 0.577 | 0.125 |
| Number of Clusters | 46 | 50 | 36 | 43 | 46 | 34 | 55 |
| Bootstrapped Standard Errors | No | No | Yes | No | No | No | No |
| Household Control | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Household Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* Bootstrapped standard errors are provided in parentheses below the coefficient estimates. The bootstrapped confidence intervals are in brackets below the standard error estimates. Accommodations Expenditures are calculated at the development area level in millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks.

# Mid-Skilled Private Sector Workers Are The Main Beneficiaries

**Table 21:** IV- Skills and Employment Categories

| | Log Exp: Private Sector | | Log Expenditure: Government | | Log Expenditure: Own-Account | |
|---|---|---|---|---|---|---|
| | LM Skill | High Skill | LM Skill | High Skill | LM Skill | High Skill |
| Tourism Expenditure(Millions USD) | 1.7e-03* | 5.6e-03* | 2.0e-04 | -5.3e-03* | -2.7e-04 | 6.3e-03 |
| | (7.8e-04) | (2.8e-03) | (2.7e-03) | (2.5e-03) | (1.4e-03) | (5.4e-03) |
| First-Stage F-Statistic | 49 | 14 | 20 | 10 | 23 | 3 |
| Observations | 8887 | 1046 | 1307 | 1040 | 10315 | 1082 |
| Standard Deviation | 0.679 | 0.727 | 0.674 | 0.666 | 0.674 | 0.691 |
| Number of Clusters | 59 | 57 | 58 | 54 | 59 | 58 |
| Bootstrapped Standard Errors | No | No | No | No | No | No |
| Household Control | Yes | Yes | Yes | Yes | Yes | Yes |
| Household Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* Bootstrapped standard errors are provided in parentheses below the coefficient estimates. The bootstrapped confidence intervals are in brackets below the standard error estimates. Accommodations Expenditures are calculated at the development area level in millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks.

# Discussion of Framework Hypotheses

- The results suggest that the benefits of the tourism demand shock are accruing to those in service sector as predicted by the framework
- The positive coefficient of .0023 for column 5 could reflect the increase in wages individuals receive moving to jobs in the tourism sector following a labor demand shock
- We can see from the tables comparing household summary statistics for those working in tourism versus those in agriculture that tourism sector household per-capita consumption is on average significantly higher than that for households involved in agricultural activities.
- Even if real wages in the sector do not increase with increasing tourism demand, if workers in the sector command relatively better wages than sectors such as agriculture, an increase in tourism activity may indeed result in an increase in real per-capita

# Discussion of Framework Hypotheses

- So far we have seen that increases in tourism produce increases in real consumption for urban households in non-tourism industries
- We also see improvements in households for which the survey head is employed in tourism for at least one survey period.

# There Are No Statistically Significant Impacts of Tourism On Poverty Likelihood

**Table 22: IV - Relationship Between Tourism Earnings and Household Poverty Status by Municipality Type**

| | Household Likelihood of Being In Poverty | | | |
|---|---|---|---|---|
| | Full Sample | Full Sample(No Kingston) | Urban(No Kingston) | Rural(No Kingston) |
| Tourism Expenditure(Tens of Millions USD) | -2.1e-03 | -2.1e-03 | -2.6e-03 | 3.8e-03 |
| | (1.7e-03) | (1.7e-03) | (3.8e-03) | (4.6e-03) |
| First-Stage F-Statistic | 37 | 37 | 61 | 18 |
| Observations | 36659 | 36659 | 17793 | 18382 |
| Standard Deviation | 0.332 | 0.332 | 0.290 | 0.367 |
| Number of Clusters | 60 | 60 | 35 | 57 |
| Bootstrapped Standard Errors | No | No | Yes | No |
| Household Controls | Yes | Yes | Yes | Yes |
| Development Area Dummy | Yes | Yes | Yes | Yes |
| Year Dummies | Yes | Yes | Yes | Yes |

*Notes:* The poverty outcome is binary variable with 0 indicating a household is not below the poverty line and 1 indicating the household is below the poverty line. Accommodation Expenditures are calculated at the development area level in tens of millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks. Female Household Head indicates either a single adult female or household with multiple persons for which the head is female.

# Panel: The Core of The Expenditure Distribution Sees The Greatest Rise in Real Per-Capita Consumption

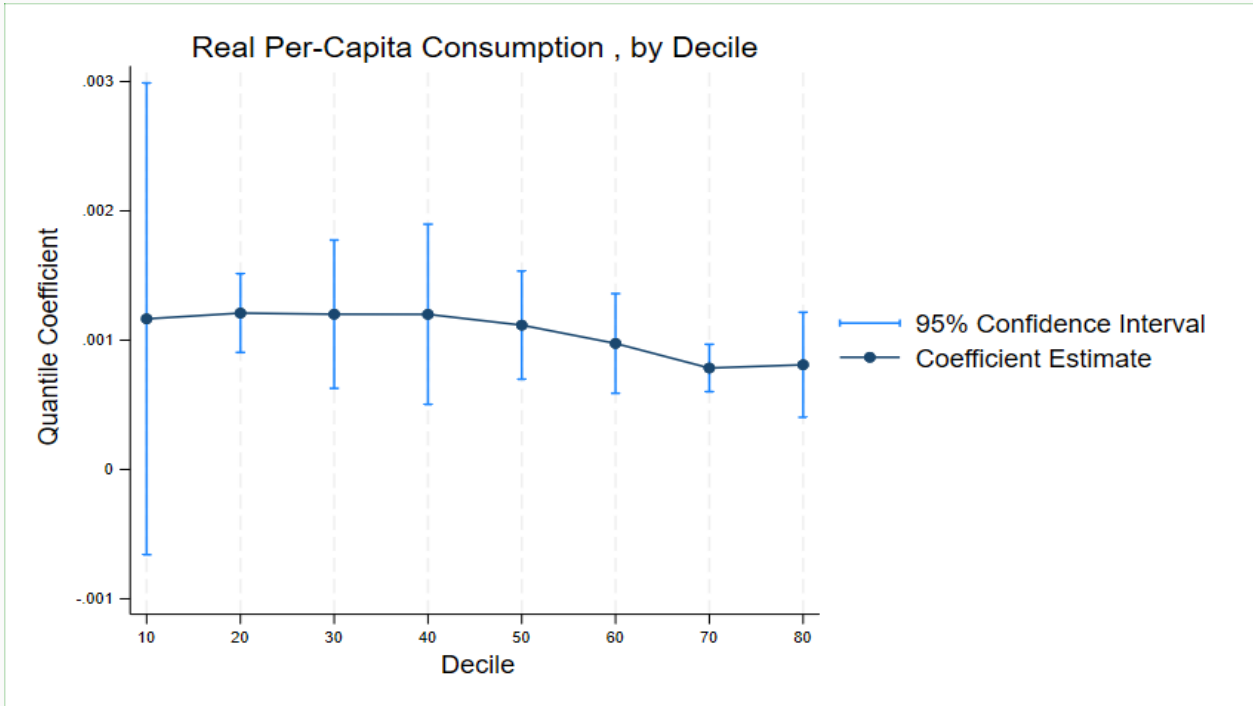
**Table 23: IV- Panel Based on Deciles for Urban Areas Excluding Kingston**

| | Log Per Capita Expenditure(USD) Separated by Deciles | | | | | |
|---|---|---|---|---|---|---|
| | (1-10) | (1) | (1-3 ) | (1-5) | (1-7) | (1-9) |
| Tourism Expenditure(Millions USD) | -3.8e-04 | 1.2e-02 | 6.0e-03 | 5.3e-03* | 5.2e-03** | 1.9e-03 |
| | (7.2e-04) | (1.1e-02) | (3.4e-03) | (2.5e-03) | (2.0e-03) | (9.8e-04) |
| First-Stage F-Statistic | 25 | 10 | 8 | 10 | 13 | 21 |
| Observations | 6032 | 371 | 1234 | 2202 | 2806 | 4910 |
| Standard Deviation | 0.711 | 0.524 | 0.488 | 0.495 | 0.505 | 0.583 |
| HH Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* Bootstrapped standard errors are provided in parentheses below the coefficient estimates. The bootstrapped confidence intervals are in brackets below the standard error estimates. Accommodations Expenditures are calculated at the development area level in millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks.

# Quantile Regression Distributional Results Support the Panel Results

Figure 13: Quantile Regression Coefficient Graph



# Quantile Regression Distributional Results Support the Panel Results

**Table 24: IV: Quantile Regression of Log Per-Capita Consumption Expenditure on Tourist Accommodations Expenditures**

| | Log Per-Capita Expenditure(USD) by Expenditure Quantile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 |
| Tourism Expenditure(Millions USD) | 1.3e-03 | 1.3e-03*** | 1.3e-03*** | 1.3e-03*** | 1.2e-03*** | 1.1e-03*** | 9.0e-04*** | 8.4e-04 |
| | (1.7e-03) | (2.1e-04) | (1.5e-04) | (2.7e-04) | (2.4e-04) | (1.3e-04) | (8.8e-05) | (4.8e-04) |
| Observations | 36657 | 36657 | 36657 | 36657 | 36657 | 36657 | 36657 | 36657 |
| Smoothing Bandwidth | 7.2e-02 | 8.1e-02 | 8.2e-02 | 8.1e-02 | 8.1e-02 | 8.1e-02 | 8.1e-02 | 8.0e-02 |
| Household Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Group Dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The tourism expenditure is measured in millions and is measured at the level of the development area.

# There Are Heterogeneous Effects Across Quintiles and Skill Dimension As Well

**Table 25: Panel Regression Comparing Outcomes By Employment Category and Skill Level For Households In Various Deciles**

| | All Employment:3-4 | LM:2-8 | LM:2-8 Private | LM:2-8 Own Account | LM:2-8 Gov | High-Skilled:2-8 Gov |
|---|---|---|---|---|---|---|
| Tourism Expenditure(Millions USD) | 3.0e-03** | 2.6e-03** | 4.7e-03* | 2.5e-03 | -4.0e-04 | 1.9e-04 |
| | (1.2e-03) | (1.2e-03) | (2.6e-03) | (2.0e-03) | (5.5e-03) | (3.6e-03) |
| First-Stage F-Statistic | 25 | 18 | 19 | 12 | 2 | 7 |
| Observations | 2429 | 3651 | 707 | 1200 | 117 | 132 |
| Standard Deviation | 0.399 | 0.478 | 0.438 | 0.463 | 0.460 | 0.468 |
| Number of Clusters | 58 | 60 | 50 | 55 | 22 | 24 |
| Bootstrapped Standard Errors | No | No | No | No | Yes | Yes |
| Household Control | Yes | Yes | Yes | Yes | Yes | Yes |
| Household Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* Bootstrapped standard errors are provided in parentheses below the coefficient estimates. The bootstrapped confidence intervals are in brackets below the standard error estimates. Accommodations Expenditures are calculated at the development area level in millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks.

# Urban Homeowners See Higher Benefits Than Urban Renters

**Table 26: IV- Comparing The Impact of Tourism on Urban Homeowners vs. Urban Renters (Excluding Kingston)**

| | Homeowner Expenditure | Renter Expenditure |
|---|---|---|
| Tourism Expenditure(Millions USD) | 3.8e-03* | 1.1e-04 |
| | (1.4e-03) | (8.1e-04) |
| | [0.001,0.007] | [-0.002,0.002] |
| First-Stage F-Statistic | 13 | 15 |
| Observations | 6063 | 9613 |
| Standard Deviation | 0.706 | 0.743 |
| Number of Clusters | 34 | 60 |
| Bootstrapped Standard Errors | Yes | Yes |
| HH Controls | Yes | Yes |
| DA Dummy | Yes | Yes |
| Year Dummies | Yes | Yes |

*Notes:* Bootstrapped standard errors are provided in parentheses below the coefficient estimates. The bootstrapped confidence intervals are in brackets below the standard error estimates. Accommodations Expenditures are calculated at the development area level in millions of 2024 U.S. Dollars. Household expenditures are inflated or deflated based on Jamaican regional price indexes to obtain real consumption levels across different parts of the country. All shift-share instrument shocks are demeaned to extract the idiosyncratic component of the shocks.

# There is Little Evidence Of Large Impacts by Tourism on Cost of Living

**Table 27:** IV: Regression of Cost of Living Variables On Tourism

| | Per-Capita Utilities | Per-Capita Rent | Per Capita Property Tax |
|---|---|---|---|
| Tourism Expenditure (Millions USD) | 1.4e+00* | 9.2e-01 | 8.1e-02 |
| | (6.1e-01) | (1.0e+00) | (4.5e-02) |
| First-Stage F-Statistic | 70 | 70 | 70 |
| Observations | 11522 | 11522 | 11522 |
| Standard Deviation | 535.996 | 594.928 | 47.613 |
| Number of Clusters | 39 | 39 | 39 |
| HH Controls | Yes | Yes | Yes |
| DA Dummy | Yes | Yes | Yes |
| Year Dummies | Yes | Yes | Yes |

*Notes:* Tourism expenditure is measured in millions and is measured at the level of the development area.

# There Are No Differences Based on Sex of Household Head

**Table 28:** IV: Regression of Log Per-Capita Expenditure By Gender of Individual or Household Head

| | Urban | | Rural | |
|---|---|---|---|---|
| | Male-Headed Households | Female Headed Households | Male-Headed Households | Female Headed Households |
| Tourism Expenditure (Millions USD) | -4.6e-04 | 1.2e-03 | 4.8e-04 | 1.4e-04 |
| | (1.2e-03) | (1.7e-03) | (1.4e-03) | (1.5e-03) |
| | [-0.003,0.002] | [-0.002,0.005] | [-0.002,0.003] | [-0.003,0.003] |
| First-Stage F-Statistic | 35 | 20 | 11 | 9 |
| Observations | 10989 | 9324 | 13351 | 7716 |
| Standard Deviation | 0.723 | 0.725 | 0.722 | 0.682 |
| Number of Clusters | 45 | 45 | 70 | 70 |
| HH Controls | Yes | Yes | Yes | Yes |
| DA Dummy | Yes | Yes | Yes | Yes |
| Year Dummies | Yes | Yes | Yes | Yes |

*Notes:* The tourism expenditure is measured in millions and is measured at the level of the development area.

# Discussion of Framework Hypotheses

- Testable hypothesis 3 predicts that to the extent that higher skills are associated with higher earnings and employment in non-tourism services, the benefits of a tourism demand shock may accrue to wealthier homes.
- As testable hypothesis 4 of my framework predicts, increases in tourist accommodation spending intensity in a given development area will lead to price increases in local nontourism/nontradable industries
- The level of the increase depending on how integrated tourist activities and spending are with the activities of local residents.
- From results in the previous tables it is apparent that it is not only the non-tradable sector that may benefit from these local shocks,as we see increases in real consumption for manufacturing employed

# Discussion and and Implications

## Conclusions

- I have shown the efficacy of employing shift-share instrumental variables to the study of tourism in the context of Jamaica
- I have shown evidence that there are limits to the breadth of tourism's impact across the socioeconomic distribution in Jamaica
- The benefits of tourism in the Jamaican context accrue to those in the core of the expenditure distribution, in private sector firms
- There are no significant increases in per-capita consumption within the tourism sector

## Conclusions

- I have demonstrated that there is potential to raise some living standard through export based tourism
- The extent to which this is felt throughout the economy depends on the skills demanded and the production technology
- The type of tourism one chooses to invest in also has significant implications
- The poorest may not benefit depending on the structure of the sector
- Considering these channels and attributes is important when considering tourism specialization

## Jamaican Administrative and Statistical Subdivisions

- **Parishes:** These 14 divisions are the main units of local government in the country.
- **Communities:**: "A community is a defined geographical area, grouping people based on common ownership of resources, the interdependent use of primary institutions, such as schools and churches, and or sharing of social, economic, and cultural facilities..."(SDC Constitution). There are 775 of these divisions.
- **Enumeration Districts:** Enumeration Districts are primary units used by the Statistical Institute of Jamaica (STATIN) to conduct their surveys. In the 2016 survey frame (the most recent) there were roughly 5776 of these districts.
    - Importantly, thee enumeration districts are wholly contained within the development areas. These districts are also

## Identifying Assumptions

- We assume that either
  - (1) The relative shares in the reference year in each community or,
  - (2) Shocks underlying variation in the percentage of tourists visiting one community $c$ relative to other communities $j \neq c$ from one year to the next

  are uncorrelated with other characteristics of these communities or the households within them that may impact our outcome variables of interest. Formally:

$$\mathbb{E}[B_{cdt}\epsilon_{ict}] = 0; \forall d \in \{0, 1, 2, 3, 4\} \tag{6}$$

In order for this assumption to hold, the instrument must satisfy the relevance condition and the exclusion restriction. Condition 1: Relevance Condition 2: Exclusion Restriction Return: SSIV Construction

# Matching Hotels to Development areas

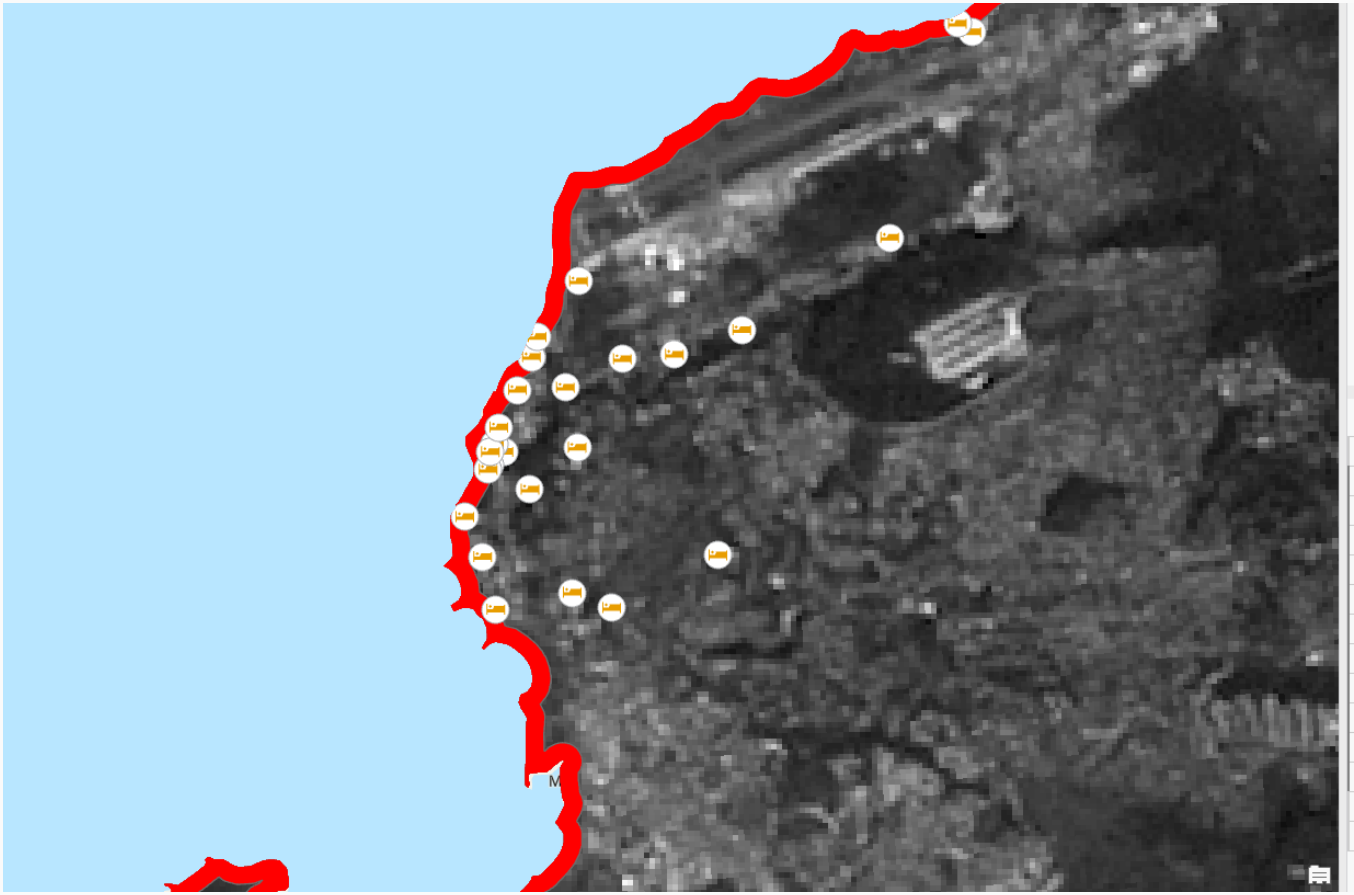


Figure 14: **Location of Hotels Within The Montego Bay Development Area**