

Determinants of Domestic Travel Frequency: A Preliminary Analysis Using Penang Data

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Abstract. Given the rapid growth of domestic tourism in the Malaysian tourism industry, this study aims to examine the determinants of domestic travel frequency. The censored Tobit model was used on primary data collected from Penang Island residents. Results indicate that age, race, education-level, and average-number-of-days-spent significantly increase domestic travel frequency *ceteris-paribus*. The results shown provide tourism policymakers with a better understanding of the habits and attitudes of Malaysians *vis-à-vis* domestic tourism.

1. Introduction

Domestic tourism is gaining recognition as an important sector in the Malaysian economy. This increased recognition can be attributed to several reasons. First, there exists a vast and profitable, and yet, untapped market in the Malaysian domestic tourism sector. Domestic travelers registered in hotels increased by more than 157 per cent from 7.1 million in 1995 to 18.3 million in 2003 (Figure 1) (Tourism Malaysia 2005). Second, domestic tourism is viewed as a mechanism to stem the negative effects of currency outflow. Since the Ringgit would be spent locally rather than abroad, the domestic tourism market appeals in improving the balance of payments by reducing capital outflow.¹ Third, the future of the Malaysian tourism industry is overly dependent on world uncertainties. The onslaught of recent world events (such as 9/11, Abu Sayaf kidnappings, Bali-Jakarta terrorist bombings, Iraq war, Severe Acute Respiratory Syndrome (SARS), avian flu, tsunami etc.) have dampened overall international tourism and foreign tourist arrivals in Malaysia. As a result, tour agents, Malaysia Airlines, the hotel industry, retail trade, restaurants, as well as other transport operators with direct linkages with the tourism sector have been adversely affected.

Besides the economic aspects, other social benefits of domestic tourism include increased awareness and pride of Malaysia's natural attractions and cultural heritage amongst its citizens, greater social integration and racial harmony, and promoting better usage of free time and thus indirectly helping to deter anti-racial activities especially amongst the youth (Leong 1997). In addition, whilst domestic tourism may also experience high-low seasons,

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¹ For example, while gross receipts from Malaysia's overall tourism industry may have increased from RM1.5 billion to RM4.5 billion in 1985 and 1990 respectively, the positive effects on balance of payment were offset by outflow arising from outboard travel, which accounted for RM2.8 billion and RM4 billion in 1985 and 1990 respectively. Consequently, net receipts from the overall tourism industry may not be as large or, worse yet, negative (Government of Malaysia 1991).

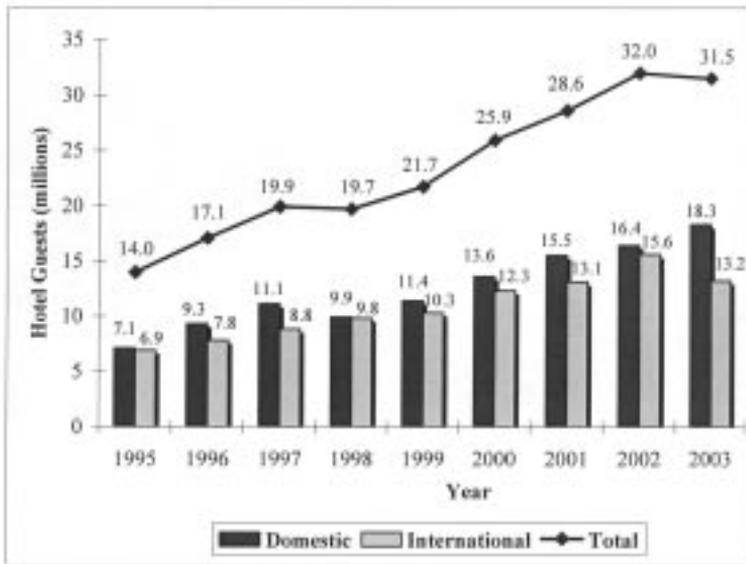


Figure 1: Number of hotel guests (domestic-international-total (1995 – 2003)
 Source: Tourism Malaysia 2005

especially during festive and holiday periods, it is more evenly distributed throughout the year compared to international tourism. This reduces the impact of seasonality on domestic tourist destinations.

In view of these reasons, the importance of promoting domestic tourism in tandem with international tourism is further augmented. However, the development of domestic tourism in Malaysia has been neglected over the years in favour of international tourism, both in practice and in the literature. In general, the key economic rationale behind efforts to promote international tourism more aggressively is due to the fact that international tourism generates revenue in foreign exchange and is beneficial to the country’s balance of payments. The emphasis of the Malaysian government on domestic tourism is only recent, through the Seventh Malaysia Plan. Under the plan, the *Cuti-Cuti Malaysia* tagline was specifically adopted in September 1999 for the domestic tourism promotion campaigns. The main objective of such campaigns is to inculcate the value of domestic holiday destinations amongst Malaysians and encourage them to change their mindsets of domestic travel destinations (Tourism Malaysia 2005). To further promote domestic travel, the government has also declared the first and third Saturdays of each month as a holiday for the public sector, effective January 1, 1999 and February 1, 2000 respectively (Government of Malaysia 2001). By doing so, the government hopes that a 5-day workweek during alternate weeks will encourage more families to participate in domestic travel activities during the extended weekends.

In the Malaysian tourism literature, research and statistical data on the characteristics and expenditure patterns of domestic travelers is rather limited compared to similar data

Table 1: Explanatory variables in the statistical model

Age	Age of the respondent (in years)
Race	1 if Chinese; 0 if non-Chinese
Gender	1 if male; 0 if female
Education level	1 if respondents have tertiary education; 0 if otherwise
Family income	Monthly family income of respondents (in Ringgit)
Number of rest days	Number of rest days per month
Average number of days spent	Average length of days spent per trip
Household size	Number of children in the household
Traveling environment	1 if respondents value safety as an important factor; 0 if otherwise

available on international tourists (Peat Marwick 1995). Current studies on the tourism industry have only concentrated on the characteristics and spending patterns of inbound international tourists (Bowen 2002; Tan 2000; Shuib and Bulan 1996). Much of the national level tourism literature has focused on the potential and market viability, as well as performance evaluation of respective domestic travel sites (Roseliza *et al.* 2004; Mohmed 2001; Hanim and Othman 2000; DCT 1997; Pearce 1997). The common denominator in these studies is that they are site-specific. The effects of the socio-economic characteristics of local travelers on the demand for domestic travel to various recreational sites in Malaysia has yet to be examined in a rigorous manner.

This study aims to gain a better understanding on how socio-economic factors affect the demand for domestic traveling for leisure and holidaying² in Malaysia, while taking into account the aforementioned shortcomings. As mentioned earlier, despite the potential economic and social contributions of domestic tourism, research focusing on how socio-economic characteristics affect domestic travel frequency is still lacking. Results from this analysis are therefore important to the tourism industry and government in its efforts to further comprehend changes occurring in the Malaysian demand patterns *vis-à-vis* domestic travel.

2. Model Development

The selection of variables that are likely to affect the frequency of Penang residents to travel domestically is based on the studies by Kang (2002), Reece (2001), Au and Law (2000), Lee and Kim (1999), Agarwal and Yochum (1999), Luzar and Diagne (1998), and Papadopoulos and Witt (1985). The following socio-economic characteristics were hypothesised to influence domestic travel frequency: (1) age of respondent; (2) race; (3)

² In this study, domestic travel is defined as traveling to domestic destinations solely for leisure and holidaying purposes only. Thus, any travel related to official business, "balik kampung", visiting friends-relatives, or even multi-purpose trips (i.e. official business/visiting friends-relatives *and* leisure/holidaying) are excluded given that the motivations, activities and accommodations utilised may be different. Problems arising from double counting are also minimised.

gender; (4) educational level of respondent; (5) total monthly family income; (6) number of rest days; (7) average number of days spent per trip; (8) household size in terms of number of children; and (9) traveling environment (refer to Table 1).

Age of the respondent (in number of years) is used in the current model with the assumption that differences in age lead to differences in tourism preferences and patterns (Reece 2001; Borg *et al.* 1990). On one hand, the likelihood for younger people³ to travel domestically is expected to be higher compared to older people because the core attraction of domestic tourism in Malaysia consists of nature-based or outdoor activities (for example Taman Negara, Cameron Highlands, Mulu Caves, Gunung Kinabalu, Pulau Langkawi, Pulau Tioman), shopping (Kuala Lumpur, and Penang), and entertainment (Genting Highlands, Mines Wonderland, A'Famosa, Sunway Lagoon). These attractions would invariably appeal more to the younger generation. On the other hand, the younger generation may not be able to travel as much due to budgetary, career or family constraints. An argument can also be made that as one grows older, one might be more inclined to travel due to lesser household or financial commitments. Due to these contrasting possibilities, the direction of influence of this variable on domestic travel is uncertain.

Race affects travel decision-making through ethnic, cultural, and historical differences. Previous studies by Reece (2001), Lee and Kim (1999), and Luzar and Diagne (1998) suggest that a dummy variable based on race be included in tourism studies to allow for the possibility of cultural and ethnic differences in influencing travel decisions. For example, the Malays have generally steered away from Genting Highlands as a domestic holiday destination (*The Star* 2005). This is primarily due to the perception that it is a gambling and gaming destination. In this study, the respondents are segregated into Chinese and non-Chinese group to examine the possibility of these differences in influencing domestic tourism decisions in Malaysia. It is hypothesised that the Chinese would have a higher propensity to travel domestically given that the Bumiputera community being considered as “generally under represented” in the domestic tourism industry (Peat Marwick 1995: 11).

Au and Law (2000), Luzar and Diagne (1998) and Leong (1997) suggest the inclusion of gender into the model to account for gender preferences among travelers. In this instance, male respondents are expected to have a higher frequency to travel. Like most Asian countries, males in Malaysia have a greater degree of decision-making power and responsibilities in socio-economic aspects. Therefore, it is envisaged that males would travel more compared to females.⁴

The level of education of a respondent reflects the degree of awareness of travel opportunities (Lee and Kim 1999; McIntosh *et al.* 1995). Educational level is therefore hypothesised to positively affect frequency of traveling as we expect those with tertiary education to be more willing to travel due to their better awareness of the domestic tourism attractions. It is also anticipated that, in most cases, those with higher education levels will

³ Defined as those who are 30 years old and below.

⁴ A reviewer pointed out that gender of the respondent may not just pick up preferences for travel or destinations but also income (since females who are single parents generally have lower income). Therefore, to test whether gender may affect income, we regressed Gender*Income in a separate Tobit regression as an interaction variable. The results obtained showed that the null is accepted and that there exists no significance for this interaction variable. Therefore, the variables gender and income do not affect one another and have thus been retained in the model.

be more willing to substitute work with leisure given the nature of their profession. In the model, a dummy variable was assigned a value of 1 for those with tertiary education and a value of 0 for those without tertiary education.

Monthly family income (in Ringgit) of the respondents was included in the model to account for spending patterns of domestic tourists. When family income increases, particularly for those in the lower income groups, additional disposable income is available for recreational and leisure activities such as traveling. In this case, income will have a positive effect on domestic travel, assuming that the latter is a normal good (Reece 2001; Luzar and Diagne 1998). On the other hand, a negative effect will indicate that respondents view domestic travel as an inferior good as these respondents who are primarily in the higher income groups, would prefer to travel abroad instead as income increases. Leong (1997) and Wyllie (1993) found evidence to substantiate the notion that the more affluent Malaysians choose to travel abroad for their vacations. Given these contrasting possibilities, the direction of influence of this variable on domestic travel frequency will be determined.

As each individual faces a time constraint whereby an individual's total time is allocated between market and non-market activities, participation in domestic travel would invariably involve the latter. When time for non-market activities increases, it is expected that domestic travel frequency would increase as well. Number of rest days per month is used in this study to represent the amount of time available for leisure activities, such as domestic travel. It is therefore hypothesised that a higher number of monthly rest days will encourage more domestic travel, as it would facilitate short trips within the country.

Based on prior research, average length of stay by tourists (in terms of number of days) is commonly used in tourism forecast models (Au and Law 2000; Agarwal and Yochum 1999). The number of days spent per trip is expected to be positively correlated to domestic travel frequency. Longer length of days spent vacationing at a destination indicates higher enjoyment one receives while traveling. This may therefore induce a higher propensity to travel in the future.

Agarwal and Yochum (1999) and Fish and Waggle (1996) provide evidence to suggest that household size, represented by the number of children in the household, determines travel decision making. This variable explains the magnitude of household burden that would affect domestic travel frequency. A negative relationship is expected between household size and frequency to travel, as increasing number of children in a household would indicate a greater financial burden one would have to bear. As a result, domestic travel frequency may decrease. On the other hand, the financial burden that comes with a larger household size may also compel families to travel domestically instead of abroad. Additional travel costs such as passport and visa costs and rising international airline fares may entice larger families to choose the cheaper alternative. As such, the direction of this variable is to be determined.

Given current world and regional uncertainties, a dummy variable is used to capture the impact of current political uncertainties on domestic travel frequency (Papadopoulos and Witt 1985). A dummy variable was assigned a value of 1 if respondents rated safety as an important consideration and 0 if they did not. As such, if safety is an important factor in determining travel frequency, a positive relationship can be expected. On the other hand, a negative relationship denotes respondents do not consider safety to be of significant concern or that domestic destinations in Malaysia are considered safe.

Table 2: Descriptive statistics of variables in the statistical model

Variables	Those who have traveled domestically for the past 12 months (n = 329)				Those who have NOT traveled domestically for the past 12 months (n = 207)				Total Sample (N = 536)		
	Mean	Min	Max		Mean	Min	Max		Mean	Min	Max
Number of trips	2.43	1	12		-	-	-		1.48	0	12
Age (years)	26.9	16	71		28.1	16	58		27.4	16	71
Race (dummy)	0.76	0	1		0.74	0	1		0.76	0	1
Gender (dummy)	0.41	0	1		0.44	0	1		0.42	0	1
Education level (dummy)	0.58	0	1		0.48	0	1		0.54	0	1
Household income (RM)	2356.4	400	12000		2714.3	200	55000		2494.6	200	55000
Number of rest days	6.75	0	18		6.48	0	12		6.65	0	18
Average number of days spent	3.68	1	30		0	0	0		2.26	1	30
Household size (no. of children)	0.61	0	8		0.80	0	8		0.68	0	8
Traveling environ. (dummy)	0.45	0	1		0.44	0	1		0.45	0	1
Number of observations above the limit										329	
Number of observations at the limit										207	

The regressand in the model is defined as the number of domestic trips the respondent has traveled over the past twelve months. The model regressors (Table 1) range in nature from continuous/integers (age of respondent, household income, number of rest days, average number of days spent, household size) to binary/dummy variables (race, gender, education level of respondent, traveling environment).

3. Data

Data for this research was obtained based on the demand structure of residents of the state of Penang towards domestic travel and how their socio-economic characteristics affect their frequency of travel to recreational sites in other states in Malaysia.

A structured questionnaire survey was conducted among Penang residents randomly drawn from various ethnic groups, aged 16 years old and above.⁵ Penang residents were defined as those who have stayed on Penang Island for at least a period of 12 months prior to the date of survey. The survey was conducted from December 2001 to February 2002, with a total sample size of 536 respondents. Questionnaires were prepared in both the English and Chinese languages.

Respondents were asked how many times they traveled to domestic destinations (solely for leisure and holidaying purposes) during the past 12 months from the date of survey. In addition, socio-economic characteristics of the respondents were also recorded.

3.1. Characteristics of Survey Respondents

Descriptive statistics of variables in the statistical model are presented in Table 2. Of the 536 total sample, 329 respondents (61 per cent) reported that their domestic travel frequencies were above the limit value of zero (i.e. those who have traveled domestically a positive number of trips for the past 12 months)⁶, while 207 respondents (39 per cent) reported that their domestic travel frequency were at the limit value of zero (i.e. those who did not travel domestically at all for the past 12 months). The average number of domestic travel trips among those above the limit value was 2.43 trips, with the minimum and maximum being 1 and 12 trips respectively. For the total sample, the average number of domestic travel was 1.48 trips.

The average age for those above the limit value of zero was slightly younger (26.9 years) compared to those at the limit (28.1 years).⁷ The average age for the total sample was 27.4 years (Table 2). While the majority of the sample consisted of those who were 30 years old and below (70 per cent), 63 per cent of those in this age group reported that they had

⁵ The sample questionnaire and a complete set of data will be provided by the authors upon request.

⁶ Respondents not recording domestic travel during the specified period but having otherwise a complete record of socio-economic characteristics are included in the sample. Number of trips of domestic travelling data containing zero as well as a positive number of trips is consequently distributed over a limited range.

⁷ An Equality of Means test conducted between the mean ages of those above and below the limit yielded a *t*-value and probability value of 2.03 and 0.04 respectively. As such, the null hypothesis that the means of the two samples being equal is rejected.

Table 3: Breakdown of domestic travel responses by age groups

	Traveled to domestic destinations	Didn't travel to domestic destinations	Total
31 years above	92 (58%)	68 (42%)	160 (30%)
30 years old	237 (63%)	139 (37%)	376 (70%)
Total	329 (61%)	207 (39%)	536 (100%)

Table 4: Breakdown of domestic travel responses by ethnicity

	Traveled to domestic destinations	Didn't travel to domestic destinations	Total
Chinese	251 (62%)	154 (38%)	405 (76%)
Non-Chinese	78 (59%)	53 (40%)	131 (24%)
Total	329 (61%)	207 (39%)	536 (100%)

Table 5: Breakdown of domestic travel responses by gender

	Traveled to domestic destinations	Didn't travel to domestic destinations	Total
Males	135 (60%)	91 (40%)	226 (42%)
Females	194 (63%)	116 (37%)	310 (58%)
Total	329 (61%)	207 (39%)	536 (100%)

Table 6: Breakdown of local travel responses by education level

	Traveled to domestic destinations	Didn't travel to domestic destinations	Total
Tertiary educ.	191 (66%)	99 (34%)	290 (54%)
Non-tertiary educ.	138 (56%)	108 (44%)	246 (46%)
Total	329 (61%)	207 (39%)	536 (100%)

traveled to domestic destinations in the past 12 months compared to 58 per cent amongst those aged 31 years and above (Table 3). In other words, although the majority of the total sample belonged to the younger age group, the proportion of those who reported having traveled to domestic destinations in the past 12 months were almost identical amongst the two age-groups.

In terms of ethnicity, while Chinese respondents dominated the total sample (76 per cent), the proportion of Chinese (62 per cent)⁸ and non-Chinese (59 per cent) respondents who had traveled domestically over the past 12 months was higher compared to those who had not traveled⁹ (Table 4). In terms of gender, the proportion of males (60 per cent) and females (63 per cent) who had traveled domestically over the past 12 months was similar despite the fact that the majority of the respondents in the total sample were females (58 per cent) (Table 5). Both these results suggest that ethnicity and gender may not necessarily influence the likelihood of traveling domestically.

In considering the overall sample, 54 per cent of the respondents had tertiary education. The proportion of those with tertiary education and had traveled domestically over the past 12 months was significantly higher (66 per cent) compared to those who had not traveled (34 per cent) (Table 6). This indicates that education may have a slight effect on domestic travel frequency. Average household income for the overall sample was RM2,495 per month, ranging from a minimum of RM200 to a maximum of RM55,000 per month. Average household income for those who had not traveled (RM2,714) exceeded that of those who had traveled domestically over the past 12 months (RM2,356) (Table 2). This suggests that domestic travel frequency may be inversely related to income levels, especially amongst those in the higher income groups.

The average number of rest days for the overall sample was 6.65 days per month, translating to about 5.5 working days per week. However, there does not exist much difference between those above the limit value of zero and those at the limit because the average number of rest days per month for the two groups was 6.75 days and 6.48 days respectively (Table 2).¹⁰ The average number of days spent for those above the limit value of zero was 3.68 days per trip. However, this figure would be lowered to only 2.26 days per trip if the overall sample were to include those at the limit (Table 2). This further emphasises the importance of separating those above the limit of zero and those at the limit for analytical purposes.¹¹

Average household size (represented by number of children) for the overall sample was 0.68 persons. The average household size for those above the limit value of zero was

⁸ The percentage is computed in this way:

$$\frac{(0.76 \times 329)}{(0.76 \times 329) + (0.74 \times 207)} = 62\%$$

⁹ The 76 per cent Chinese proportion overstates the racial distribution in Penang and Malaysia. It is acknowledged that a more proportionate distribution representing the state and national scenario may offer more representative results.

¹⁰ An Equality of Means test conducted between the mean number of rest days of those above and below the limit yielded a *t*-value and a probability value of 1.93 and 0.05 respectively. As such, we failed to reject the null hypothesis that the means of the two samples are equal, and it is concluded that there exists no sufficient differences between the two means.

¹¹ In comparison, based on a household survey by Frank Small & Associates in September-October 1991, the average days in a trip for leisure and holiday was 3.1 (as cited in Peat Marwick 1995) while the Domestic Tourism Survey 1988 conducted by the Malaysian Tourism Development Corporation reported (1988) an average duration of 4.9 nights per trip (as cited in Leong 1997).

relatively lower (0.61 persons) compared to those at the limit (0.80 persons) (Table 2).¹² This suggests that those with smaller families exhibit a higher tendency to travel domestically compared to those with larger household size. Lastly, traveling environment did not appear to play an important role as only 45 per cent of the total sample felt that safety concerns affected their travel frequency. An almost equal percentage of those at the limit (44 per cent) and those above the limit (45 per cent) reported it as of significance (Table 2).¹²

4. The Tobit Model

In this study, the dependent variable (Y_i) measures the number of domestic trips traveled in the past 12 months by the i th respondent, while the corresponding independent variables (X_i) comprise the various socio-economic characteristics in question. In this case, the censored regression or Tobit model (Tobin 1958) is appropriate because 39 per cent of the sample (207 out of 536) reported that they did not travel domestically at all for the 12-month period prior to the date of the survey.¹³

The standard censored or Tobit model for the research study is written as follows:

$$\begin{aligned}
 Y_i^* &= X_i' \beta + u_i, & i &= 1, 2, \dots, n \\
 Y_i &= Y_i^* & \text{if } Y_i^* &> 0, \\
 Y_i &= 0 & \text{if } Y_i^* &\leq 0,
 \end{aligned} \tag{1}$$

where Y_i = observed dependent variable (number of domestic trips traveled in the past twelve months)

Y_i^* = latent variable (the optimal number of domestic trips of the respondent; it can also be construed as the solution to a utility maximisation problem)

X_i' = k-dimensional vector of known regressors as listed in Table 1

β = k-dimensional vector of unknown parameters

u_i , = stochastic disturbance term of the regression assumed to be $N(0, \sigma^2)$.

The β coefficients are estimated using the statistical program EViews 3.1 by the method of maximum likelihood (assuming normality of the disturbance term). This maximum

¹² An Equality of Means test conducted between the mean household size of those above and a below limit yielded a t -value and probability value of 2.24 and 0.02 respectively. As such, the null hypothesis that the means of the two samples are equal is therefore rejected.

¹³ Even though no domestic trips were reported by these respondents, the data do contain otherwise corresponding socio-economic characteristics for each of these respondents. Thus the sample is censored at the limit value of zero. Altering or disposing of such data would result in the loss of valuable information on users and non-users (Heckman 1979). The use of ordinary least squares regression, on the other hand, would result in biased, inconsistent, and inefficient parameter estimates (Greene 1981; 1983; Nelson 1981; Judge *et al.* 1988).

Table 7: Summary statistics for Tobit analysis of determinants of domestic travel frequency

Independent variables	1	2	3	4	5
	Coefficients β	Z-statistic	$\frac{\partial E(Y)}{\partial X_i}$	$\frac{\partial E(Y Y>0)}{\partial X_i}$	$\frac{\partial P(Y>0)}{\partial X_i}$
Constant	-1.9034	-2.7238**	-1.2186	-0.8553	-0.3311
Age	0.0386	2.4519*	0.0247	0.0173	0.0067
Race	0.6900	2.7125**	0.4418	0.3101	0.1200
Gender	0.1947	0.9450	0.1247	0.0875	0.0339
Educational level	0.4352	1.9255*	0.2786	0.1956	0.0757
Household income	-0.000045	-1.1871	-0.00003	-0.00002	-0.000008
Num. rest days	0.0026	0.0463	0.0017	0.0012	0.0005
Avg. num. days spent	0.4698	13.4820**	0.3008	0.2111	0.0817
Household size	-0.1330	-1.1921	-0.0851	-0.0598	-0.0231
Traveling environment	-0.2185	-1.0578	-0.1399	-0.0982	-0.0380

Note: The unconditional expected value of y (at mean x) = 1.2980; the conditional expected value of y (at mean x) = 2.030; the standard error around the Tobit model index = 2.1497; the predicted probability that $y>0$ (at the mean x) = 0.6402; $z = 0.3588$; $f(z) = 0.3739$.

** at 1 per cent significance

* at 5 per cent significance

Source: Columns 3 - 5 computed by authors.

likelihood estimation procedure assures the large sample properties of consistency and asymptotic normality of the estimated coefficients so that conventional tests of significance are applicable. The likelihood function for this model is:

$$L(\theta) = \prod_0 \left[1 - \Phi \left(\frac{X_i^1 \beta}{s} \right) \right] \prod_1 \sigma^{-1} \phi \left[\frac{(Y_i - X_i^1 \beta)}{s} \right] \tag{2}$$

where, \prod denotes the product over values of i such that $Y_i^* \leq 0$; \prod_1 denotes the product over values of i such that $Y_i^* > 0$; $\theta = (\beta', \sigma^2)$; and $\Phi(\bullet)$ and $\phi(\bullet)$ are, respectively, the cumulative distribution and probability density function of the standard normal variable (Greene 2003; Amemiya 1973).

5. Results

The resulting Tobit coefficients (column 1) and associated z-statistics (column 2) are reported in Table 7. Each estimated Tobit regression coefficient (β_i) reflects the propensity to travel for the underlying population due to a unit change in the relevant independent variable (Kennedy 1998). In addition, the marginal effect of each of the explanatory variables on the expected value of the dependent variable (number of domestic trips) for all cases (column 3), for cases above the limit (column 4), and changes in the probability for cases at the limit (i.e. those who have not traveled before but might) (column 5) are calculated (McDonald and Moffitt 1980).

The goodness-of-fit tests for the model indicate that the log-likelihood ratio (LR) is 193.9088 while the Wald statistic is 21.4941. Both tests have a probability value (p -value) of 0.00000. Thus, both null hypotheses are rejected and it is concluded that the model fits the data well.

5.1. *Age*

Domestic travel frequency is significantly dependent on age of the respondent (Table 7). A positive relationship is found and this suggests that increasing age of the respondents increases the frequency of domestic travel. This result complies with the study of Smith and Mackay (2001) and Reece (2001), whereby older adults reported a significantly higher number of vacation trips per year than did the younger people. In other words, as the age of respondents increases, it provides a greater degree of determining power, particularly in terms of freedom to travel.

In considering all observations, a year increase in age leads to a 0.0247 unit increase in domestic travel frequency (column 3). The results also indicate that for those who have traveled in the past 12 months, a year increase in age implies an expected change of 0.0173 unit increase in domestic trips frequency, other things being equal (column 4). In addition, as age increases by another year, the probability of making a domestic trip increases by 0.67 per cent for those who have not traveled over the past 12 months (column 5).

5.2. *Race*

Race is statistically significant and positively related to frequency of domestic travel (Table 7). This suggests that Chinese respondents participate in more domestic trips compared to non-Chinese. Comparing the results in column 4 and 5, Chinese respondents with domestic travel experience have a higher number of domestic trips compared to Chinese respondents who have not traveled for the past 12 months. In other words, Chinese respondents above the limit may be more frequent travelers compared to Chinese respondents at the limit.

5.3. *Gender*

The gender variable is positively related to the frequency of domestic travel, though the effect is not statistically significant (Table 7). This indicates that while males participate in more domestic trips compared to females, male respondents who have traveled in the past 12 months have higher frequency rates of domestic travel compared to those who have not traveled in the past 12 months.

5.4. *Educational Level*

The educational level of the respondents plays a positive and statistically significant role in the model in (Table 7). This implies that higher education might induce higher interest levels of the respondents in exploring the country, thus resulting in higher frequencies of

¹⁴ The Wald test was conducted between the age and educational level variables. The chi-square is 3.09 with the probability of 0.08. At 10 per cent level of significance, the null hypothesis for age and education having the same effects towards the number of domestic trips is thus rejected.

domestic travel. As such, the role of leisure amongst respondents with higher education may play an important role in utility maximising decisions.

5.5. *Household Income*

Results from Table 7 reveal a negative and statistically insignificant relationship between household income and domestic travel frequency. This suggests that domestic travel may be an inferior good, especially amongst those in the higher income groups. When income increases by RM1000, the frequency of traveling domestically reduces by 0.03 when considering the total sample (column 3). If, only the respondents who have traveled for the past 12 months are considered, an increase of RM1000 in household income would induce a decrease in domestic travel by as much as 0.02 trips, other things being equal (column 4). In considering those who have not traveled for the past 12 months, each additional increase of RM1000 induces a 0.8 per cent lower probability of making a domestic trip, *ceteris paribus* (column 5).

5.6. *Number of Rest Days*

Number of rest days is positively related to the frequency of domestic travel, though not statistically significant (Table 7). From the total sample, an additional day of rest led to a 0.0017 unit increase in frequency of domestic trips (column 3). While observing the sample for those who had traveled for the past 12 months, an additional day of rest would result in a 0.0012 trip increase in frequency of domestic trips, other things being equal (column 4). The results also indicate that each additional day of rest implies a 0.05 per cent higher probability of making a trip among those who have never traveled domestically for the past 12 months (column 5).

5.7. *Average Number of Days Spent*

Domestic travel frequency is significantly dependent on the average number of days spent per trip (Table 7). A positive relationship was also found and this suggests that as respondents spend a higher number of days during their trips, their frequency of domestic travel would increase as well.

An additional day spent on a domestic trip would lead to 0.3 higher frequency of domestic travel trips when considering the overall sample (column 3). On the other hand, an additional day spent implies an expected change of 0.2 in the frequency of domestic trips amongst those who have traveled domestically over the past 12 months, other things being equal (column 4). In considering those who have not traveled domestically over the past 12 months, each additional day spent implies an 8.2 per cent higher probability of making a domestic trip (column 5).¹⁵

¹⁵ The Wald test was conducted between age and household income, as well as educational level and household income. The chi-square is 6.02 and 3.71 respectively. At 5 per cent level of significance, both null hypotheses were rejected. It can thus be concluded that there are differences between age and household income towards the number of domestic trips. Statistical differences are also found between educational level and household income.

5.8. Household Size

Household size, represented by the number of children, is negatively correlated with frequency to travel domestically in the model (Table 7). While this result concurs with the study of Fish and Waggle (1996), the effect is not statistically significant.

Increasing the size of the household induces a higher financial burden, and therefore reduces the number of domestic travel trips undertaken. Taking all observations under consideration, if the respondents have an additional child, the frequency to travel domestically reduces by 0.09 trips, other things being equal (column 3). For observations on domestic travel over the past 12 months, the expected number of trips would reduce by 0.06 trips per additional number of child (column 4). In predicting the probability of those who have not traveled for the past 12 months, each additional child in the household implies a 2.3 per cent decrease in probability of making a domestic trip.

5.9. Traveling Environment

Traveling environment is negatively related to domestic travel frequency, though the effect is not statistically significant. This result implies that in making domestic travel decisions, respondents do not consider safety to be of major concern or that domestic destinations in Malaysia are considered safe.

6. Conclusions and Policy Implications

To summarise, four independent variables (age, race, educational level, and average number of days spent) significantly increase domestic travel frequency amongst Penang residents, holding all else constant. This suggests that older, educated, and Chinese respondents tend to travel domestically more frequently than their younger, less educated, and non-Chinese cohorts. Similarly, as one spends a longer period of time traveling, the likelihood to travel in the future increases as well.

Contrary to *a priori* expectations, older respondents tend to travel domestically more compared to those in the younger age groups. From the data gathered in the survey, although respondents who were 31 years old and above accounted for only 30 per cent of the total sample, 58 per cent of this age group reported having traveled to domestic destinations in the past 12 months. On the other hand, only a slightly higher proportion (63 per cent) amongst those below 30 years old reported having traveled to domestic destinations during the same period although this age group dominated the total sample (70 per cent) (Table 3). This can probably be explained by the fact that those in the younger age groups may be too preoccupied with their careers, and as such, do not make traveling a priority. Conversely, younger tourists could also prefer to travel to foreign destinations instead, given that they are more adventurous and more willing to travel to farther destinations. This is evidenced by the fact that 162 (43 per cent) of those who are 30 years old and below stated that they have traveled overseas during the same period compared to only 50 (31 per cent) of those 31 years old and above (Table 8). As such, opportunities exist to tap this younger segment of the population in future domestic destination marketing strategies.

One avenue could be in the area of nature programmes as more than half of those who are 30 years old and below and who had traveled to domestic destinations reported that their

Table 8: Breakdown of foreign travel responses according to age groups

	Traveled to foreign destinations	Did not travel to foreign destinations	Total
31 years above	50 (31%)	110 (69 %)	160 (30%)
30 years old	162 (43%)	214 (57%)	376 (70%)
Total	212 (39%)	324 (60%)	536 (100%)

Table 9: Breakdown of responses by age groups and most popular reason to travel domestically (Amongst those who traveled domestically in the past 12 months, $n = 329$)

	30 years old ($n_1 = 237$)	31 years above ($n_2 = 92$)	Total ($n = 329$)
Nature	135 (57%)	46 (50%)	181 (55%)
Shopping	43 (18%)	24 (26%)	67 (20%)
Food	34 (14%)	8 (9%)	42 (13%)
Heritage	20 (8 %)	9 (10%)	29 (9%)
Others	5 (2 %)	5 (5%)	10 (3%)

primary reason for travel was nature activities (Table 9). In this aspect, adventure or extreme sports tourism catering to the younger age group could be popularised in tandem with local tourist destinations with theme parks such as Sunway Lagoon, Mines Wonderland, A'Famosa, Bukit Merah, Lost World of Tambun, and Resorts World. Other suggestions to attract the younger generation to travel domestically include establishing cheaper and safer accommodation such as 2- and 3-star hotels, youth hostels, chalets or rest houses since budgetary constraints would be the main criteria for this group. Tour agencies should also target high schools and universities during term breaks and provide discounted packaged deals on local attractions to these students. At the same time, transportation agencies such as Malaysian Airlines Systems (MAS), AirAsia, Keretapi Tanah Melayu (KTM), and others could set lower prices for students, given that their demand for domestic tourism is generally more elastic compared to those with family or work commitments.

Race is positively related to domestic travel frequency. This implies that in general, Chinese respondents travel more frequently compared to other races. This could possibly be due to their higher average income levels. At the same time, the tourism authorities may also consider promoting domestic tourism amongst the Malays and Indians more aggressively. Newspaper advertisements should focus on the Malay and Indian news-media (such as *Utusan*, *Berita Harian*, *Tamil Nesan*, and *Malaysia Nanban*) as well as popular Malay and Indian magazines. Multi-lingual travel guides, maps, bus and train schedule, information-packed brochures, and television and radio advertisements, may be necessary in order to reach a wider and more diverse population. Special prayer rooms and picnic sites (since it had always been a culture for Malay families to enjoy picnics) at tourist destinations should also be built for the convenience of Malay tourists.

Table 10: Breakdown of responses by gender and most popular reason to travel domestically (Amongst those who traveled domestically in the past 12 months, n = 329)

	Males (n1 = 136)	Females (n2 = 193)	Total (n = 329)
Nature	72 (53%)	109 (57%)	181 (55%)
Shopping	22 (16%)	45 (23%)	67 (20%)
Food	21 (15%)	21 (11%)	42 (13%)
Heritage	16 (12%)	13 (7%)	29 (9%)
Others	5 (4%)	5 (3%)	10 (3%)

Respondents with tertiary educational level visit domestic destinations more frequently compared to those without tertiary education. This is evidenced by the fact that 66 per cent of those who had tertiary education reported having traveled to domestic destinations in the past 12 months compared to only 56 per cent of those who do not possess tertiary education (Table 10). To encourage more domestic travel amongst those with tertiary education, tech-savvy promotional campaigns could focus on the Internet to provide more informative details about the various domestic destinations. Such information could also be made in the form of complimentary VCDs or DVDs, whereby potential tourists could search for street maps, driving guides, and contact details themselves. On the other hand, to penetrate the group without tertiary education, it may be prudent to carry out advertisement and promotion efforts in a more diverse manner. For instance, while the name of the main tourist destinations may be known, this group of tourists may not know which hotel to go to, how to get there, or what to do once there. As such, future promotional strategies could concentrate on specially designed all-inclusive travel packages to cater to certain groups of housewives, hawkers, retirees, and those who may require language-based tour guides. As previously mentioned, multi-lingual advertisements may attract those who are less literate to learn more about the various domestic destinations in the country. Associating famous personalities with various domestic destinations (e.g. Dato' Michelle Yeoh with Perak and Tan Sri P. Ramlee with Penang and so forth) may also be helpful since those who are less educated would be more inclined to associate "famous faces or names" with the destinations being promoted.

Since number of days spent vacationing is statistically significant and has a positive influence on travel frequency, this suggests that respondents who report spending longer period of trips during their respective domestic trips have a higher likelihood to travel again. These respondents experience higher levels of enjoyment during their trips, and as such, would be more inclined to repeat their experiences. Future domestic travel campaigns should therefore focus on enticing repeat travelers through promotion of specialised packages and tax incentives. Hotels and resorts could offer discounted packages to those who return the following year as a form of valuing repeat customers. Increased promotions of corporate domestic traveling, including incentive trips, training seminars, and conferences, may also be useful given that participants may desire a return visit with their families in the future. While other independent variables such as gender, household income, number of rest days, household size, and traveling environment are not statistically significant factors in explaining domestic travel frequency patterns, a brief discussion on the direction of their effects on domestic travel frequency may be worth while.

Although there were generally less males in the total sample (42 per cent), the proportion of males (60 per cent) who reported having traveled to domestic destinations in the past 12 months was only slightly lower than those of females (63 per cent) (Table 5). It is also interesting to note that amongst those who traveled domestically in the past 12 months, both males (53 per cent) and females (57 per cent) rate nature as the most popular reason for their travel (Table 10). Overall, shopping was the second most popular reason (20 per cent), followed by food (13 per cent) and heritage visits (9 per cent) for both genders. This suggests that while gender and domestic travel frequency may be positively correlated, domestic travel decision-making does not discriminate between genders. Thus future promotional campaigns on domestic destinations should be directed at both sexes instead of generalising that males are more inclined towards nature adventure travel or that women only prefer shopping.

The negative income effect indicates that domestic travel is an inferior good. As such, changes in domestic travel prices may not provide substantial effects on travel frequency, especially amongst those in the higher income groups. This result concurs with previous findings that the more affluent Malaysians choose to travel abroad for their vacations. This is because domestic destinations do not connote high social stature (or “have-been-to” status) in the eyes of the society compared to traveling abroad. To reverse this trend, it is suggested that the tourism industry allocate a larger proportion of advertising and promotional budgets specifically to cater to the domestic population instead of for overseas promotion. Moral-suasion may be necessary using attractive advertisements or slogans (e.g. “Destinasi Malaysia Boleh”) to repeal popular misconceptions that foreign products (destinations) are better. On the other hand, those in the lower income groups may still be an untapped market as domestic traveling might yet be a normal good to them. As such, appropriate pricing strategies such as offering special rates to Malaysian residents, cheaper domestic air travel, and development of additional budget and mid-range hotels, motels, chalets, and guest houses may be attractive to those in the lower income groups.

The results also indicate that while number of rest days is positively related to domestic travel frequency, it is not a critical explanatory factor. Given that the reported average length of days spent for those who have traveled was about 4 days, the existing weekend rest days might still be too short to induce any significant effect on domestic travel frequency. Travelers would have a limited choice of destinations to visit within that short weekend period. To promote growth in the domestic travel industry, the authorities may consider a 5-day working week or should at the very least undertake steps to combine the period of public holidays whenever possible. For example, the current first and third Saturday public holidays could be made variable to suit other non-religious public holidays that may happen to fall before or after weekends. By doing so, the public would have a prolonged stretch of uninterrupted non-working days for holiday purposes. Domestic tour operators should also package their tours during this period to fit in with the number of days that people would like to spend holidaying. In addition, to reduce significant travel time, the Subang International airport, currently not utilised, should be converted into a domestic airport given its strategic location. Budget airlines such as AirAsia should also be encouraged to operate to and from more domestic destinations, especially to East Malaysian cities (e.g. AirAsia currently operates from Penang to Kuala Lumpur International Airport and Johore Bahru Senai Airport only). The negative relationship between household size and frequency of domestic trips suggests

that increasing number of children in a household induces greater financial and time constraints and thus reduces the number of domestic travel trips. It would therefore be beneficial if tourist destinations and hoteliers offer more family discount packages or extra perks (e.g. complimentary beds for children, childcare/baby sitting services, extended check-out times) to attract those with larger household size to travel. Traveling amenities such as diaper changing and baby feeding stations could also be improved to provide for families traveling along the highways.

7. Limitations of the Study

To promote domestic tourism in a more aggressive manner, there must be an initial understanding of the factors that motivate domestic travel demand. While this study acts as a catalyst for further research on domestic tourism in Malaysia, several inherent limitations are acknowledged.

First, since the questionnaires were not canvassed personally, the accuracy of the responses depends on the individual understanding of the respondents. While personal interviews would have produced more accurate responses, it would have required greater costs and time.¹⁶ Second, approximately 76 per cent of the respondents in the sample were Chinese and this over represents this community's share of the population. An ethnic distribution that more closely reflects the population might have yielded more representative results. Third, parameter estimates of the model should be interpreted with care since specification tests by Pagan and Vella (1989) indicate that the underlying disturbance term may be non-normally distributed.

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¹⁶ Follow-up studies could be conducted using data obtained from the Malaysia Household Expenditure Survey data. However, the difficulty in obtaining these data from the Department of Statistics of Malaysia remains an unresolved problem.

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