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Willingness to Pay for Road Safety Improvement of Foreign Visitors in Thailand

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Abstract

The objective of this research was to estimate the willingness to pay for insurance fees of foreign tourists who visited Thailand for road safety and to reduce the risk of road accidents occurring among visitors. The survey of 405 foreign tourists was conducted by using Contingent Valuation (CV) to calculate the value of Willingness to Pay (WTP) for travel fees of foreign tourists visiting Thailand. The study showed that 65% of the foreign tourists travel to Thailand by themselves without a tour guide or with their families and relatives while the other 35% visited the country by hiring travel agencies. Most of the foreign tourists, approximately 90%, had bought travel insurance before coming to Thailand with concerns about road safety. The results revealed that 47% of foreign tourists agreed to pay an insurance fee. On the other hand, 53% of foreign tourists who did not want to pay the insurance fee believed that the Thai government is inefficient or incompetent in improving road safety. Moreover, they were more certain of their home country's travel insurance plan and coverage options. For the foreign tourists who were willing to pay an insurance fee for road safety development in Thailand, they thought of taking responsibility and being accountable to themselves. The willingness to pay value was estimated with the average amount of 331.28 Baht per person for 30 days. The range of 300-350 Baht, was accepted by involved government and private agencies to reduce the risk of Thailand road traffic accidents for foreign visitors.

Keywords: *willingness to pay, Road Safety, Foreign Visitors*

1. Introduction

The tourism industry is a major economic contributor to Thailand which helped generate revenue of over 2,008,571.20 million Baht. Each year, more than 38,277,300 foreign tourists from all over the world come to Thailand, with a growth rate of 7.54% per year. Besides, foreign tourists visiting different regions of the country contribute to the distribution of income and greatly reduce the economic disparity between the regions according to Visa on Arrival (VOA) for foreigners of 20 countries and 1 economic zone (Taiwan) fee waiver measure, (Division of Tourism and Sports Economy Office of the Permanent Secretary, 2019). Meanwhile, the number of road accident deaths in Thailand is reported by the World Health Organization (WHO) to be among the highest in the world. The Global Status Report on Road Safety in 2018 cited Thailand's number of road accidents as the ninth highest in the world, although it dropped from the second in 2015 as the country with the highest risk of road accidents, the death rate from accidents is still very high, especially on motorcycles, where Thailand remains the highest fatality rate in the world. Thailand's economic losses from accidents and deaths are as high as 500-billion- Baht, accounting for 3% of GDP per year. Based on the statistics of injury/death among foreign tourists traveling to Thailand, it was found that from 2016 onwards until the first 8 months of 2019, there were 2,522 foreign tourists injured and dead in Thailand, most of which 54.60% had road-traffic accidents, followed by non-passenger water accidents, such as water activities, numbering 499 cases, accounting for 19.79, water accidents by water passengers and transportation, numbering 269 cases, accounting for 10.67%, which is the number and proportion similar to non-passenger land accidents, numbering 261 cases, accounting for 4.60%. The top 10 causes of accidents included motorcycles, cars, tour buses, swimming in natural waters, non-communicable diseases/congenital diseases,

public vans, other land accidents, speed boats, and snorkeling. The provinces with the highest number of injured and dead foreign tourists were the main tourist provinces of Thailand, including Phuket, Surat Thani, Phang Nga, Krabi, Chiang Mai, Kanchanaburi, Phra Nakhon Si Ayutthaya, and Chonburi, respectively (Bureau of Standards and Supervision of Tourist Safety, 2019) as the data in Table 1.

Table 1 Types of Accidents and the Number of Injured-Death Tourists

Types of Accidents	Number of Injured-Death Tourists (Case)				Total (Case)	Ratio (%)
	Year 2016	Year 2017	Year 2018	Year 2019*		
Land - Traffic	323	451	376	227	1,377	54.60
Water - Non-passenger or water activities	102	163	133	101	499	19.79
Water - Passenger or transportation	102	48	106	13	269	10.67
Land – Non-passenger or land activities	56	87	69	49	261	10.35
Crime	40	45	22	9	116	4.60
Total	**623**	**794**	**706**	**399**	**2,522**	**100.00**

* Period from January - August 2019

Source: Bureau of Standards and Supervision of Tourist Safety, 2019

As the impact of road accidents affects not only the victims but also their families and the nation's society, it becomes a social burden for the death of one person and has a bad effect on the other person involved. Thailand Development Research Institute (TDRI) (Ocharoen, 2017) calculated the cost of fatalities and serious injuries in traffic accidents by assessing the willingness to pay for road safety improvement. The study found that death cases were worth approximately 10 million Baht per case while the serious injury cases were worth about 3 million Baht per person. Based on that information, TDRI further reported that during 2011-2013 the average annual accident cost was 545,435 million Baht, which is close to the WHO's estimation, and in 2017, In 2017, the total loss from road traffic accidents in Thailand was 121 million Baht or 0.8% of GDP. All are classified as death cases worth about 45 million Baht, serious injuries worth about 67.5 million Baht, disability cases worth about 7 million Baht, and minor injuries worth about 1.5 million Baht (Chantith, Permpoonwiwat, & Hamaide, 2021). Besides, the impact of road accidents affects not only the victims but also their families and the nation's society (Tuathep, & Tanaboriboon, 2005; Okoroji, Nwokedi, & Chinedum, 2014; Gorea, 2016; Haddak, Lefèvre, & Havet, 2016; Ei, 2017). A study described the financial burden of life and property on the sector and those involved in road accidents as being accident victims, their families, employers, insurance companies, and the government. Such costs arise as an external effect wherein the death of one person will negatively affect the other person involved, such as premature death, or the death of the head of the family in a road accident. Life/accident insurance purchase is often a common solution of international travelers for potential risks and burdens reduction. Meanwhile, policy management on such risk reduction in tourist countries is also necessary.

From the above, the researcher has studied the value of willingness to pay insurance fees of foreign tourists visiting Thailand by using the Contingent Valuation Method (CVM) to assess the Willingness to Pay (WTP). Willingness to Pay means the satisfaction or willingness of a consumer to purchase a particular product or service at various price levels for a product or service. The extent to which consumers are satisfied or willing to pay for that product or service depends on their valuation and realization of the value of that product or service. It relies on the creation of contingent valuation for the production of related goods or services in order to directly inquire about the willingness to pay for the goods and services from the consumer (Preedasak, 2013). The Contingent Valuation Method (CVM) to assess the Willingness to Pay (WTP) can be applied to assess the value of non-marketable goods or the value of the environment as well as the value of willingness to pay. It is commonly used to assess the severity, cost, and factors affecting road safety (Chung, Kyle, Petrick, & Absher, 2011; Kamolcharuphisuth, 2011; Ainy, Soori, Ganjali, Le, & Baghfalaki, 2014;

Haddak et al., 2016; Mon, Jomnonkwao, Khampirat, Satiennam, & Ratanavaraha, 2018; Puttawong, & Chaturabong, 2020). This study aimed to assess the willingness to pay insurance fees of foreign tourists in Thailand for road safety improvement, coverage benefits receipt as a guarantee during their travels in Thailand and for fund allocation on the tourism infrastructure development, especially in regards to tourist safety.

2. Objectives

To calculate the appropriate willingness to pay for the foreign tourist's insurance fee when entering Thailand for reducing the risk of road traffic accidents.

3. Materials and Methods

This research aimed to determine the appropriate value of willingness to pay to reduce road accidental risks among foreign tourists with a focus on foreign tourists visiting Thailand. Questionnaires were used to ask foreign tourists according to the Contingent Valuation (CV) principle to find the Willingness to Pay (WTP) value for foreign tourists who purchase travel insurance to reduce their risks while traveling in Thailand only.

3.1 Population and Sample

The population used in this study was foreign tourists visiting Thailand. In 2017, there were a total of 35,381,210 foreign tourists (Economics Tourism and Sports Division, 2019) in Thailand. The researchers determined the sample groups and sample sizes used in the study according to the Taro Yamane method (Yamane, 1973) as we know the size of the population used in the study, that is, the number of foreign tourists in Thailand was 35,381,210 in 2017. In this study, the confidence level was 95% and the error ratio was 0.05. Substituting the formula, according to Taro Yamane's method, the sample size used in this study was 394.67 samples, the sample size was adjusted to an integer of 400 samples, and purposive sampling was performed. The data collection sites for this research included international airports, tourist attractions, and accommodations in Bangkok where foreign tourists are staying or visiting. The sample groups of foreign tourists visiting Thailand used in the data collection for this research were classified into 4 groups: 1) 100 samples of Chinese foreign tourists, 2) 100 samples of European-American foreign tourists, 3) 100 samples of Korean-Japanese-Indian foreign tourists, and 4) 100 samples of foreign tourists from ASEAN countries.

3.2 Research Tool

This study used both open-ended and closed-ended questionnaires to determine the value of economic losses according to the Contingent Valuation Method (CVM) to assess the Willingness to Pay (WTP) value for insurance purchases to reduce travel risks of 400 samples of foreign tourists in Thailand. The coverage type sample of the compulsory travel insurance policy was a standard policy. There were details of coverage in Table 2 for sample group questionnaires. The quality of the questionnaire's research instruments (quantitative research) was examined in accordance with the process of verifying the content accuracy of the questionnaire by experts or masters in accordance with the ethics request process for research in humans.

Table 2 Coverage type sample of the compulsory travel insurance standard policy (Standard Policy)

Coverage	Standard Coverage Amount (Standard)*
1. Personal accident insurance	1,000,000 Baht
2. Medical expenses from accidents and health	1,000,000 Baht
3. Emergency evacuation and repatriation of the body	1,000,000 Baht
4. Travel insurance premiums	200 Baht /30 days/person

* The coverage period is 30 days of each trip.

3.3 Data Analysis

Data obtained from the questionnaire which consists of general information about foreign tourists, vehicles used for domestic travel, benefits, and insurance fees, including data on the economic loss value and calculating the willingness to pay to reduce the risk of road accidents were analyzed by descriptive statistics, Chi-square test) and Sample means comparison (F-test, t-test) as well as contingent valuation method (CVM). Data were tested by a computer program to select the most appropriate cumulative probability distribution models to calculate the willingness to pay for insurance fees of tourists visiting Thailand from all three models including 1) Log-normal 2) Weibull and 3) Log-logistics. The cumulative probability distribution model with the highest Log-likelihood value was determined for insurance fees for foreign tourists, and the multiple regression analysis was used to determine the appropriate value of willingness to pay for foreign tourist insurance fees to meet research objectives.

4. Results

The data collected from the questionnaire can be analyzed as follows:

4.1 Data analysis from questionnaires

From Table 3 , it was found that the majority of foreign tourists visiting Thailand were male accounted for 52.8%, aged between 30 to 49 accounted for 62.3%, having a bachelor's degree or equivalent accounted for 68.3%, personal income level below 60,000 US dollars per family per year accounted for 51.1%, and Chinese tourists were the most nationality of foreign tourists visiting Thailand accounted for 31.3%, from all 405 samples.

Table 3 General information of foreign tourists

Topic	Percentage of Sample Distribution	
Gender	Male	52.8
	Female	47.2
	Total	100.0
Age group	Under 30 years	23.9
	30 to 49 years	62.3
	50 years and above	13.7
	Total	100.0
Education level	Secondary school or lower	24.6
	Bachelor's degree or equivalent	68.3
	Master's degree and above	7.1
	Total	100.0
Personal income level	Less than 60,000 USD per year	51.1
	60,001 – 100,000 USD per year	33.9
	100,001 USD per year and more	15.0
	Total	100.0
Tourist nationality	ASEAN	24.8
	Chinese	31.3
	Japanese, Korean, Indian	13.3
	American, European, Australian	30.8
	Total	100.0

Note: Number of sample tourists 405 persons

Table 4 shows foreign tourists visiting Thailand by personal income level. It was found that American, European, and Australian foreign tourists had the most proportion of people with a personal income level below 60,000 US dollars per family per year accounting for 67.8%, which was the highest proportion when compared with the foreign tourists of other nationalities who visited Thailand in the same income group. It was revealed that American, European, and Australian foreign tourists were not those with

very high personal income levels or the wealthy. On the contrary, the most proportion of people with a personal income level of more than 100,001 US dollars per family per year accounted for 30.6%, which was the highest proportion when compared to foreign tourists of other nationalities visiting Thailand in the same income group. This revealed that Chinese tourists are potential travelers to spend money while traveling in Thailand or wealthy tourists. It was also found that 55.1% of ASEAN tourists were those with income levels between 60,001-100,000 US dollars per family per year

Table 4 General information of foreign tourists by nationality

Tourist Nationality	Percentage of Sample Distribution			
	Personal income level (USD per family per year)			
	Less than 60,000 USD	60,001 – 100,000 USD	100,001 USD and above	Total
ASEAN	30.6	55.1	14.3	100.0
Chinese	48.4	21.0	30.6	100.0
Japanese, Korean, Indian	52.8	35.8	11.3	100.0
American, European, Australian	67.8	30.6	1.7	100.0

Note: Number of Tourists 405 person

Table 5 Type of travel in Thailand

Type of Travel	Qty.	Percentage of Distribution
Travel with a travel agency	142	35.1
Travel on oneself or with family	263	64.9
Total	405	100.0

Table 5 shows the type of travel in Thailand from 405 foreign tourist samples. It was found that 64.9% of them travel to Thailand on their own or with friends or with family, while 35.1 of them traveled to Thailand with travel agencies. When classified by nationality of foreign tourists visiting Thailand, three-quarters of Chinese foreign tourists visiting Thailand used travel agencies. Only about 22% of Chinese foreign tourists visited Thailand on their own or with friends or family. Chinese foreign tourists were the only tourists among the four groups of tourists in the study who used travel agencies for travel to Thailand. While foreign tourists of other nationalities, i.e., ASEAN, American, European, Japanese, Korean, and Indian, most of them travel to Thailand on their own or with friends or family but a relatively small proportion use travel agencies for travel to Thailand. In particular, American, European, and Australian foreign tourists account for the highest percentage of foreign tourists visiting Thailand on their own or with friends or family, with approximately 90%. The proportions of Japanese, Korean, and Indian foreign tourists and ASEAN foreign tourists visiting Thailand on their own or with friends or family were similar in both groups, at approximately 79% as shown in Table 6.

Table 6 Type of travel in Thailand classified by nationality

Tourist Nationality	Percentage of Distribution	
	Type of travel in Thailand	
	Travel with a travel agency	Travel on oneself or with family
ASEAN	21.2	78.8
Chinese	78.4	21.6
Japanese, Korean, Indian	20.7	79.3
American, European, Australian	8.9	91.1

Table 7 shows that Chinese tourists having insurance during travel in Thailand had the highest proportion accounting for 98%. Due to the fact that most Chinese foreign tourists come to Thailand through

travel agencies, which are required by Thai law to have insurance before entering Thailand. However, most of the other foreign tourists from Asian countries, America, European countries, Australia, Japan, Korea, and India did already have at least one insurance before traveling to Thailand. Surprisingly, there were nearly 19% of western tourists from America and Europe including Australia indicated they were having no insurance at all traveling to Thailand.

Table 7 Foreign tourists having insurance during travel in Thailand classified by nationality

Tourist Nationality	Percentage of Distribution	
	Having insurance during travel in Thailand	
	Having at least one insurance	Having no insurance
ASEAN	93.9	6.1
Chinese	98.4	1.6
Japanese, Korean, Indian	81.0	19.0
American, European, Australian	81.3	18.7

Table 8 Willingness to Pay Tourist Insurance Fees

Tourist's Willingness to Pay	Number of Tourists	Percentage of Distribution
Willingness to Pay	187	47.0
Unwillingness to Pay	211	53.0
Total	398	100.0

Table 8 shows that 47% of foreign tourists were willing to pay insurance fees while 53% of foreign tourists visiting Thailand were unwilling to pay insurance fees.

Table 9 Reasons for unwilling to pay insurance fees (Can answer more than 1 answer)

Reasons for unwilling to pay	Number of Answers	Percentage of Distribution
Not the duty of the government in this regard.	83	23.65
The government should formulate policies and allow the private sector to act.	69	19.66
The government is not effective in the operation.	101	28.77
Have insurance that offers better benefits than the government offers.	98	27.92
Total	351	100.0

Table 9 reveals that when considering the top reasons foreign tourists were unwilling to pay insurance fees to improve road safety, about 28.77% of foreign tourists who answered the question argued that government is not effective in charging insurance fees to improve road safety, followed by about 27.92% of them argued that they had some type of insurance with better benefits than the government offered, which is consistent with the above information that most foreign tourists had some type of insurance while traveling in Thailand. Consequently, foreign tourists were unwilling to pay insurance fees with less or lower benefits than what they already had and it was considered a redundant burden. The third and fourth reasons why the foreign tourists were unwilling to pay insurance fees argued that the insurance charge is not the duty of the government but the private sector, the government should be just a policymaker and engage in policy compliance monitoring. The government should not come down and take action on their own because they may not be efficient in providing services because they have to serve a large number of foreign tourists each year.

Table 10 shows the reasons why foreign tourists were willing to pay insurance fees to improve road safety. The most important reason why foreign tourists were willing to pay insurance fees during their travel in Thailand was that they saw it as the responsibility of each traveler to be responsible for themselves by paying the insurance fees which accounted for approximately 27.52%. The second reason was to diversify

the risks of traveling in Thailand, the top country in the world in road accidents, therefore tourists should have insurance against the risk of road accidents and be willing to pay the insurance fees offered by the government which accounted for approximately 24.37%. The third reason was to enhance the insurance benefits they already have which accounted for approximately 20.81%, which was consistent with the above information that most foreign tourists had some type of insurance while traveling in Thailand. Therefore, if there is an additional charge for insurance from the government, it will enhance the benefits or increase the coverage of the existing insurance.

Table 10 Reasons for willing to pay insurance fees (Can answer more than 1 answer)

Reasons for unwilling to pay	Number of Answers	Percentage of Distribution
Each traveler should show their own responsibility.	123	27.52
To diversify the risks of traveling in Thailand	109	24.37
It is compulsory insurance by the government.	66	14.77
Do not have any insurance while traveling in Thailand.	56	12.53
To enhance the insurance benefits they already have	93	20.81
Total	**447**	**100.0**

Besides, about 15% of foreign tourists visiting Thailand argued that they were willing to pay the insurance fee as a compulsory measure from the government of Thailand. Therefore, when the Thai government enacts laws, regulations, or measures to charge insurance fees, they, as foreign tourists, need to be willing to pay accordingly. However, the study also found that foreign tourists visiting Thailand without any insurance were willing to pay the insurance fee for improving road safety so that they or their families were insured and protected if they or their friends or families got into a road accident while traveling in Thailand. Foreign tourists who made the aforementioned reasons accounted for about 12.53% of the total number of responses made by foreign tourists.

4.2 Value Analysis of Willingness to Pay for Insurance Fee

To analyze the value of willingness to pay for insurance fees of foreign tourists visiting Thailand to improve rad safety, the questionnaires collected from the sample group with 187 foreign tourists willing to pay were analyzed with three cumulative probability distribution models including (1) Log-normal (2) Weibull and (3) Log-logistics by considering the appropriate cumulative probability distribution model from the log-likelihood with the highest value as shown in Table 11.

Table 11 Cumulative Probability Distribution of Foreign Tourists' Willingness to Pay for Insurance Fee

Cumulative Probability Distribution Model	Log-Likelihood Value	
	without independent variable	with independent variable
Log-normal	-256.452	-233.671
Weibull	-267.031	-245.907
Log-logistics	-260.667	-236.689

Table 11 shows the results of a computer program test to select the most appropriate cumulative probability distribution to calculate the willingness to pay insurance fees of foreign tourists in Thailand from a total of 3 models including (1) Log-normal (2) Weibull and (3) Log-logistics, based on the cumulative probability distribution model with the lowest Log-likelihood value. The results revealed that, whether without an independent variable or with an independent variable, the log-normal cumulative probability distribution model had the highest Log-likelihood value. Without an independent variable, the Log-likelihood value was –256.452; and with the independent variable, the Log-likelihood value was -233.671. In both cases (without an independent variable and with an independent variable) the log-normal cumulative probability distribution model had the highest Log-likelihood value and more than the Weibull and the log-logistics model whether without an independent variable or with an independent variable. Therefore, to calculate the

willingness to pay insurance fees of foreign tourists in Thailand hereafter, the log-normal cumulative probability distribution model was used.

Table 12 Value of Willingness to Pay for Insurance Fee

Statistical Value	Calculation Result
Intercept (μ)	5.6699
Scalar	0.5159
The average value of willingness to pay	331.28
The average value of willingness to pay at a 95% confidence level	303.23-359.33

Table 12 shows that foreign tourists in Thailand had an average willingness to pay insurance fees of 331.28 Baht. When calculating the value of willingness to pay insurance fees by ranges to represent the upper and lower bounds of foreign tourists' willingness to pay, with the determined 95% confidence level, the study found that foreign tourists visiting Thailand had an average willingness to pay insurance fees between 303.23 Baht and 359.33 Baht.

5. Conclusion

From a survey of 405 foreign tourists visiting Thailand during the year 2019, the study characterized tourists into 4 groups based on nationalities and regions: 1) Chinese tourists, 2) European-American tourists, 3) Korean-Japanese-Indian tourists, and 4) ASEAN tourists. The study showed that more than 80% of the foreign travelers had bought insurance to ensure their safety before entering Thailand, with the highest proportion of 98% of the Chinese visitors confirmed at least holding one type of insurance. The results of the analysis on the willingness to pay for road safety improvement of foreign visitors found that the visitors were willing to pay for insurance premiums. By calculating the willingness to pay for insurance premium in the form of Log-normal Probability Distribution with or without an independent variable, it was found that the average value of willingness to pay for insurance premium was 331.28 Baht. This amount had been confirmed by the experts from tourism and insurance businesses that the appropriate range would be 300 - 350 Baht per 30 days per person. Therefore, this obtained value of willingness to pay could be applied to the decision-making level as the guidelines for designing insurance policies and premiums in order to reduce the risks of the loss of life and assets caused by road accidents and enable foreign tourists to gain benefits and coverage as the security while traveling in Thailand.

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