ESTIMATING HOUSEHOLDS' MARGINAL BENEFIT FOR AIR QUALITY IMPROVEMENT OPTIONS USING CHOICE EXPERIMENTAL DESIGN: EVIDENCE FROM KLANG VALLEY, MALAYSIA

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ABSTRACT: This study aimed to estimate willingness to pay of households for air quality improvement and marginal benefits that household derived from the improved air- quality management plan in Klang Valley, Malaysia. A choice experiment study was administered to 300 households and the data was analysed using the multinomial logit model. It was found that number of sick days, air pollution index, medical expenditure, outdoor activities, ethnic, city, age, and respiratory symptoms are significant variables, which affected the willingness to pay of the respondents in Klang Valley. The mean willingness to pay for the new air quality management programme derived from choice experiment multinomial logit model is MYR1.99 per litre of fuel, consumer-compensating surplus is 0.04 and estimated marginal benefit is 1.83. The results reveal that households are willing to pay significant amounts in terms of higher fuel price to ensure the air quality improvement and reduce environmental and health risks in Malaysia. Hence, this study would help to produce multiple policies and recommendations to improve the air quality. It is also possible to develop efficient and equitable motor vehicle rules and promote technology advancement in this area. Effective measures in managing and planning city development should be emphasised to reduce vehicle travel and congestion, travel time, traffic jam and pollutant emissions in Klang Valley metropolitan region.

KEYWORDS: Choice experiment, multinomial logit model, willingness to pay, air quality improvement, households marginal benefit

I. INTRODUCTION

For the past 20 years, land transport has dominated more than 70%air pollution in Malaysia. The four main local sources of air pollution in 2017 are vehicular emissions, power plants, industrial processes, and open burning at solid waste dumpsites [1]. Private cars and motorbikes are emitting more air pollutants among other vehicle types. These sources are especially significant in Klang Valley.

The total number of registered vehicles in Malaysia was approximately 21.25 million 2009 and increased to 53.32 million in 2018[2]. The trend is expected to increase further. The increasingthe trend of registered vehicles leads to sever traffic congestion and increased air pollution. It is also a barrier for free movement and business in urban areas [3]. In Malaysia, the transport sector was contributing approximately 97 percentage of Carbon Monoxide (CO). About 70% of the days with unhealthy air quality in the Klang Valley in 2002 were due to high levels of Particulate Matter (PM_{10}) while the remaining 30% was due to high ozone levels.

The focus of the study would be the households in Klang Valley, many of who had been suffering from respiratory diseases caused by air pollution [4]. Given the importance of improved air quality in people's lives, it was high time that every citizen in this country should realize the need to maintain the air quality, and as such, they had the responsibility to help in these efforts. The government alone could not do it because of budgetary problems, aside from the traditionally low priority given to transport sector. All stakeholders should realize that

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the key to sustainable environment was effective air quality management. The outcome from this study would help matching the affordability of supply of government and public demand for air quality improvement programs.

II. THEORETICAL FRAMEWORK

The theoretical framework of CE has been developed based on the theory of Sarabdeen *et al.[5]*, Cropper *et al[6]*, Alberini *et al.[7]*, and Cropper and Freeman[8]. According to them, the utility function of an individual is decided by good consumed (X), leisure time (L), individual's characteristics (Z), and the individual's health status (S). In this model, an individual's health status refers to the number of sick days (NSD) due to the respiratory symptoms (RS) which are assumed to be due to air pollution. It is simplified as in Equation 1;

$$U = U (X, L, Z, S) \quad (1)$$

The health status or NSD of an individual depends on certain biological factors, environmental quality, medical expenditures (ME), and socio-economic factors. This model considers the biological factors as constant. Environmental quality refers to the air pollution index (API) in Klang Valley which depends on the concentration of different air pollutants. In Klang Valley, API is above the standard level, and is regarded as affecting the environmental quality and indirectly affecting the health status of the individuals. The ME is also an important factor to determine an individual's health status. It is shown in Equation 2:

$$S = S (Q, M, Z) \quad (2)$$

Where Q is the API, M is ME, and Z is the socio-economic factors. Here, ME refers to the individual's cost for medicines, hospitalisation, pathological tests, doctor's consultation, travel to doctor's clinic, and health insurance cost. Socio-economic factors such as individual's household income (HIC), age (AGE), gender (GEN), number of dependent members and city (CITY), and environmental variables such as RS, outdoor activities (OA), and environmental consciousness (EC) were included in the model.
Then, the respondent's utility function becomes Random Utility Theory (RUT) as follows in Equation (3):

$$U_{ij} = V_{ij} (X, L, Z, S) + \varepsilon_{ij} \quad (3)$$

The indirect utility function under the random utility model can be illustrated by observable (*Vij*) and unobservable (*εij*) components on individual choice. The most common approach is to assume that ε is independently and identically distributed random variables with an expected value of zero[9,10]. Because of the unobservable component, the individual's choices cannot be predicted perfectly by the researcher. It leads to the expression for the probability of choice.
Since CE is developed based on random utility theory, the purpose of this method is to present the respondents with the task of selecting one choice from many alternatives. In CE, there will be more than one alternative in the choice set and the respondent will be asked to choose one choice from the set of alternatives. In CE, the probability of any household respondent prefers the option *j*, in the choice set to any alternative options *k*.

The utility level depends on a particular choice is a combination of the weighted attributes based on the relative importance of each of them. The easiest model is the linear model as in Equation (4)

$$V_{ij} = ASC + \beta_1 NSD_{ij} + \beta_2 ME_{ij} + \beta_3 API_{ij} + \beta_4 BID_{ij} + \varepsilon \quad (4)$$

Where, V_{ij} is utility associated with the air quality option, β is a vector of marginal utility parameters and *X* is a vector of attributes (*k)* from a choice set. ASC is alternative specific constant in order to capture any variation in choices that cannot be explained by either socio-economic variables or attributes; it helps to improve the model fit[11].

A multinomial logit interaction model (MLIM) with interaction was used to capture insight into the sources of heterogeneity and to identify the social, economic and demographic characteristics, equation (5);

$$V_{ij} = ASC + \beta_1 NSD_{ij} + \beta_2 ME_{ij} + \beta_3 API_{ij} + \beta_4 BID_{ij} + BID * EDU + BID * HIC + BID * CITY + BID * AGE + BID * ETH + BID * OA + BID * RS + \varepsilon \quad (5)$$

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III. MATERIALS AND METHODS

Stated preference method

A number of techniques for placing a value on non-marketed goods and services are available.. The stated preference techniques have the capability to confirm the non-values of environmental goods and estimate the wide range of commodities, which are not traded in the markets. In addition, these techniques are the only way to estimate non-use value of environmental resources. Contingent valuation method and choice modeling are the main techniques of stated preference method. CM includes the, paired comparisons, contingent rating, contingent ranking and choice experiments (CE). However, only CE is reliable with respect to utility maximizing behaviour and consumer theory in which a compensating variation of WTP can be derived for each attribute[12]. The value and statistical significance of all parameters of CE can easily reported compared to other choice modelling approaches[13]. Moreover, CE is becoming a popular method due to its remarkable advantages such as increasing attribute variation, data collection efficiency, and investigation of non-existing alternatives or options. CM has been used by many authors to estimate non-market values for various environmental and recreational servicers of ecological goods [14,15,16], waste management [17,18] environmental policy assessment[15], tourism study[19], health care researches[20,21,21], educational study [23] and political analysis [24]. Many researchers have also tried to value transportation analysis using choice modelling [25,26, 27].

Selection of attributes and their levels of CE

Selection of attributes heavily depends on literature, focus group discussion (FGD), and pilot study. Most of the attributes were initially taken from existing literature[7, 8, 23-33]. The duration of this study is two years from May 2013 to May 2015. In this study, primary and final FGD were conducted. The primary FGD was conducted among two groups with three members in each group on May, 2013. The first group members for the primary FGD were selected from professors and research fellows in the area of air pollution. The final stage of FGD took place with three groups at the Resource Centre of Kulliyyah of Economics and Management Centre, International Islamic University Malaysia on December, 2014. The members of the three groups of final FGD were selected from lower, middle, and higher income households and each group comprised three members. The final FGD was conducted to gather the information about the payment vehicle. After considering all the suggestions from FGD, pilot study for the CE was conducted among 30 respondents in Klang Valley. Four attributes such as sick days (SD), medical expenditure (ME), air pollution index (API) and fuel price (BID) were derived after the FGDs and the pilot study. Whilst three of the four attributes are non-monetary (SD, ME and API) the other attribute (BID) is monetary attribute.

Payment vehicle

In many countries such as Japan, U.S.A, Sweden, and Norway, increase in the fuel price is considered as one of the policy options to improve air quality. Thus, fuel price is used as payment vehicle in this study.

Choice experimental design and questionnaire design

An orthogonal experimental design is used in this study to develop the combination of attribute levels for the choice sets using SPSS-20. The orthogonal design choice sets are constructed using the L^{MN} X N approach [34]; where L is the level of attributes, M is the number of alternatives and N is the number of attributes. The arrangement of all possible combinations is called the “full factorial”. The total number of combinations of full factorial is 6561. All possible combinations should be limited, and is known as “fractional factorial”. The fractional factorial contains 16 choices or options of various combinations of the attributes and their levels (2^2x4). These 16 options are blocked into four choice sets in each questionnaire, each choice set with two improved options plus a base option.

The respondents were given four choice sets and asked to state their preferences for the current situation or the new improved options in each choice set for improving the air quality in Malaysia.

Before the survey began, the respondents were informed about the purpose of the research and the importance of the information in this study. Figure 1 illustrates the example of a show cards presented to the respondents. The information was given in three show cards as follows:

- In Malaysia, the air pollution in the form of ash, dust, and smoke is caused by mainly by three sources. They are mobile sources (cars, motorbike, buses, and commercial vehicles), stationary sources (industries, power plants, fuel burning for the industries, domestic), and open burning (solid waste and forest fire). Air pollution can cause fever, sneezing, coughing, asthma, running nose and sore throat, chest discomfort, and eye irritation. People are in pain and/or discomfort approximately five days per month due to the respiratory sick. (Show card 1)

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- The air pollution can increase the extra household expenditure for the mitigation activities such as doctor consultation, medicine, hospitalisation, pathological tests, travel to clinic and health insurance cost. In Malaysia, the average medical expenditure is MYR 50 per month. (Show card 2)
- Due to rapid growth in the economy and population, deterioration of air quality is a major issue in Klang Valley. Motorcycles and private cars are the major vehicle categories comprising almost 98% of total vehicles in Klang Valley. Klang Valley is experiencing unhealthy air quality conditions in the forms of dust, haze, smoke, NOx, SO2, CO and PM_{10}. It has exceeded the Malaysian API of 100 $\mu g/m^3$. If API is between 101 and 200, the air quality is unhealthy. Such has been the condition has for more than half of last 10 years, in Klang Valley and would affect human health. It also reduces daylight visibility. (Show card 3).

Figure 1: Sample Show Card

The questionnaire has four sections. In section one, the respondents were asked whether they have experienced any ill health episodes related to air pollution such as cough, sneezing, fever, running nose, sore treat, asthma, chest discomfort, and eye irritation during the last three months. The respondents were presented with the health impact of air pollution, the causes of ill health episodes. They were asked to rank air pollution effects from the most to the least dangerous. In section two, the respondents were asked to choose from the choice sets to express their WTP for improving air quality in Klang Valley. In section three, the respondents' socio-economic information was gathered such as their occupation, level of education, monthly household consumption, ethnic and number of children, and smoking habits. Lastly, in section four, some questions were asked to validate their answer.

Sample size and data collection

The number of respondents were 300 for this study after considering Bennett has cited Louviere *et al[35]*; Hensher, *et al.[36]* The total sample was divided into three groups.

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Survey design and sampling method

Survey method is a crucial tool for estimating an accurate value of an individual for non-market goods and services. Since air quality is an intangible good, this research is highly dependent upon the survey method. Direct face-to-face survey strategy is employed in this study. Klang Valley has six urban areas: Shah Alam, Petaling Jaya, Batu Muda, Kuala Lumpur, Klang, and Kajang. From these six urban areas, Shah Alam, Petaling Jaya, and Batu Muda are selected which are considered high, medium, and low polluted areas respectively within Klang Valley. Four sections were selected from the three urban areas. Lastly, 300 households were selected randomly from these four sections. The reasons for selecting the above mentioned urban areas were that these areas had high economic growth were recognised as unhealthy air quality regions by the Department of Environment [1].

The respondents, the head of the family was surveyed selected from the households using stratified method. The interview was administered by means of a 10-15-minutes. The survey was undertaken in April 2015 after the ethical approval of centre for postgraduate studies in international Islamic University Malaysia.

IV. RESULTS AND DISCUSSION

Profiles of the respondents

The respondent's demographic profile is analysed in this section. The respondent's sex distribution in the sample is 34.2% male and 65.8% female. In this survey, 46.3% of the respondents were aged between 20-30 years, 30.7% were 31-40 years, 15.5% were 41-50 years, and 5.5% were 51-60 years. The majority of the respondents were Malay (81%), 14.3% were Chinese, and 4.7% were Indian. The average total number of family members of the respondents is four and ranged from three to six total family members. Total number of dependents of the respondents, 63.4% had one-three dependents, 16.6% had four-six dependents, 2.3% had seven and above dependents, and 17.7% had no dependents. As for educational attainment, the majority of the respondents have a diploma and above (60.9%). The highest income level of the respondents (41.8%) was reported between RM 3001-RM 6000, 37.8% earned between RM 1001- RM 3000, 7.7% earned between RM 6001-RM 9000, 7.5% of earned RM 9001 and above, and 5.2% had the least income level of RM 1000 and below.

Response rates of the respondents

Choice experimental design was used to ask the respondents how much they are willing to pay for the air pollution reduction to avoid the health effects. The respondents who reported a WTP value greater than zero were treated as acceptant of WTP. The respondents who reported zero were treated as rejection of WTP. The majority of the households (57.3%) is willing to pay for the air pollution reduction to avoid the health effects. 42.7% are not willing to pay for the air pollution reduction to avoid the health effects. The reasons for the rejection of the WTP were asked. Some respondents chose more than one reason for their rejection of the WTP. 23.5% of the households indicated they do not have reasons for not willing to pay for the air pollution reduction. 8.3% reported that they do not have extra income to contribute and 8.3% stated that it is the government's responsibility to improve the air quality. 5.3% stated that it is the responsibility of those who polluted the air, 4.0% of the respondents felt that there cannot make changes in air pollution, and 3.7% stated that air quality improvement is not that important. It is worth stating that the additional information was given to the respondents to make the CE valuation survey more realistic.

Health experience of the respondents

In the survey, the respondents were asked whether they experienced any respiratory symptoms such as fever, sneezing, coughing, asthma, runny nose, chest discomfort, sore throat, and eye irritation during the last three months. Majority of the respondents (83.5%) reported that either respondent or any of his/her family members, staying with him/her, experienced respiratory symptoms such as fever, sneezing, coughing, asthma, runny nose, chest discomfort, sore throat, and eye irritation during the last three months. Only 16.5% of the respondents reported that either respondent or any of his/her family members, staying with him/her, did not experience the respiratory symptoms.

It can be concluded that fever, sneezing, sore throat and cough were experienced by at least 50% of the respondents. Asthma, eye irritation and chest discomfort are experienced by atmost 20% of the respondents. It is found that fever, sneezing, sore throat and cough are the most common diseases experienced by the respondents. The details of the health experience of the respondents are summarized in Table 1.

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Table 1: Frequency of Health Experience of the Respondents

Health Status	Percentage
Fever	50.3
Sneezing	56.7
Cough	61.7
Asthma	17.2
Chest Discomfort	13.0
Runny Nose	36.0
Sore throat	49.2
Eye Irritation	21.5

*All the Respondents Chose More than One Symptoms

Respiratory Symptoms of the Respondents

Table 2 presents the relationship between respiratory symptoms and socio-economic variables using the chi-square analysis. It is hypothesized that there is significant relationship between respiratory symptoms and socio-economic variables. It is found that there is a significant difference between health experience and socio-economic variables between gender, age, ethnicity, number of family members, total number of dependents, educational level and income. The finding shows that female respondents experienced respiratory symptoms more than the male respondents did. This is a strong indication that females are sensitive to air pollution than males.

With regards to age group, respondents who are between 20 to 30 years age group experienced respiratory symptoms higher which is 38.33%, followed by 31-40 years age group (25.83%), 41-50 years age group (13.66%), and 51-60 years age group (5.66%). The reasons that young age group experienced more respiratory symptoms could be the possibility to exposure to outdoor activities due to their job and recreational time than old people.

Table 2 :Respiratory Symptoms of the Respondents

Characteristics	**Item**	**Percentage**	**Chi-Square Value**
Gender	Male Female	27.66% 55.83%	60.16 (0.000)
Age	20-30 years 31-40 years 41-50 years 51-60 years	38.33% 25.83% 13.66% 5.66%	2.12 (0.000)
Ethnicity	Malay Non-Malay	68.33% 15.16%	6.21 (0.000)
Number of Family Members	1-3 members 4-6 members 7 and above	29.33% 39.83% 14.33%	302.09 (0.000)
Total Number of Dependent	No dependent 1-3 members 4-6 members 7 and above	13.5% 50.16% 17.16% 2.66%	434.17 (0.000)
Educational Level	Below Diploma Diploma and above	34.16% 49.33%	500.80 (0.000)

Household Monthly Income	Below RM 1000 RM 1001- RM 3000 RM 3001- RM 6000 RM 6001- RM 9,000 RM 9,001- and above	4.16% 29.83% 36.5% 6.33% 6.66%	396.93 (0.000)

In this survey, it is found that higher number of people who experienced respiratory symptoms are Malays which is 68.33%, while 15.16% of respondents who experienced respiratory symptoms are non- Malays. The respondents who have 4-6 family members experienced respiratory symptoms high, which is 39.83%. While 29.33% of the respondents who experienced respiratory symptoms have 1-3 family members, 14.33% of the respondents have the family members of 7 and above.

Econometric Approach for Influencing factors of willingness to pay in choice experimental design

Simple multinomial logit model (SMLM) and interacted multinomial logit model were used to investigate the influencing factors of WTP for air quality improvement in Klang Valley.
The McFadden R^2 (0.16) indicates that the overall good fit of the SMLM (Johnson *et al.[6,7]*) and all the coefficients are statistically significant. It is found that NSD (*p* value = 0.000), ME (*p* value = 0.000), API (*p* value = 0.000) and BID (*p* value = 0.091) are significant variables in the choice of options for air quality improvement in Klang Valley holding other variable constant.

As projected, the coefficient of API and of NSD is positive and significant at 1% level. Moreover, the coefficient of ME is positive and significant at 1% level. The coefficient of bid is negative and significant at 10% level of significance which supports the other studies [10,17]. The odds of willingness to pay reduces by 84% for the respondents who are willing to pay relative to the respondents who are not willing to pay. Moreover, as the coefficient of ASC is negative (-1.049) and significant, it is proven that there is no status quo bias. It is clear that the respondents are more likely to prefer air quality improved option than status quo.

In the multinomial logit interaction model (MLIM), the significant variables; education (EDU), household income (HIC), city, age, ethnicity (ETH), outdoor activity (OA) and respiratory symptoms (RS) were selected from the preliminary study to be interacted with the monetary attribute BID (RM/Liter) in order to modify the effect of bid on the probability of choice.

Table 3 reports the estimation results of the multinomial logit interaction model. The coefficients of the attributes, NSD, ME and API are significant and have the expected positive signs at 1% level. The coefficient of Bid (RM/litre) is negative and significant at 10% of significance level in line with theory.

The McFadden's R^2 value in multinomial logit interaction model is 0.17, which is more than the R^2 value in SMLM. The larger the value of the McFadden R^2, the better the fit of the model to the observed data [37]. Therefore, MLIM with covariates is the superior model. The marginal WTP was estimated from MLIM.

The marginal WTP of each attribute in CE choice sets is obtained by dividing the coefficient of a given attribute by the coefficient on monetary attribute (BID)[38]. For example, the coefficient of number of sick days is divided by the coefficient of monetary attribute.

The respondents are more concerned about the air pollution index, for that, they are willing to pay more for the air pollution index which is 61 cents. Moreover, on average, the respondents are willing to pay 32 cents for extra payment for fuel price (RM/litre) for medical expenditure and 26 cents for extra payment for fuel price (RM/litre) for number of sick days. This keeps other factors constant in the MLIM.

Table 3: Factors Included in Interaction Multinomial Logit Model

Variable	**Coefficient**	**Standard error**	**Change in odds (e^{β})**
NSD	0.235	0.044 (0.0000)	1.26
ME	0.295	0.052 (0.0000)	1.34
API	0.323	0.053 (0.0000)	1.38
BID*EDU	0.411	0.413	1.50

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		(0.3207)	
BID*HIC	0.056	0.095 (0.5530)	1.05
BID*CITY	-0.164	0.075 (0.0295)	0.84
BID*AGE	-0.023	0.006 (0.0003)	0.97
BID*ETH	-0.723	0.180 (0.0001)	0.48
BID*OA	0.417	0.102 (0.0000)	1.51
BID*RS	0.835	0.164 (0.0000)	2.30
BID	-2.068	1.106 (0.0616)	0.12
ASC_OPTION2	0.874	0.511 (0.0871)	2.38
Summary Statistics No.of observations Log Likelihood(L(B)) McFadden-R^2	 1200 1158.049 0.171		
Note: The dependent variable is respondent's utility *(1 = choice of option, 0 = non choice),* ASC = alternative specific constant for option 1 &2. NSD = number of Sick Days, ME = Medical Expenditure, API = Air Pollution Index, BID =Extra payment for fuel price (RM/liter), EDU = Education, HIC = Household income, CITY = city, Age = Age, ETH =Ethnicity, OA = Outdoor Activities, RS = Respiratory Symptoms.			

Estimating equilibrium values

It is also feasible to recognise the trade-offs between the non-monetary attributes that will leave individuals on the same utility level. This helps the recognition of a reference implicit price, which is then divided by the implicit price of interest, i.e. NSD/NSD, ME/NSD, API/NSD as shown in Equation (6);

Equilibrium values = WTP (referred attribute) / WTP (searched attribute) (6)

The relative importance of each attribute to households, based on the implicit price for NSD, suggests the relative importance of each attribute, API, ranks top, followed by ME and NSD.

Estimating compensating surplus (CS)

The CS represents the amount of money an individual is willing to pay to gain an improvement in air quality. Marginal benefit is the estimated welfare gain that households derive from the improved air quality management. Marginal benefits indicate the incremental fuel price that households are willing to pay in addition to the amount that they are currently paying for fuel price. The marginal benefits (MB) were calculated by subtracting the current fuel price from the calculated CS.

The households in Klang Valley are willing to pay an additional fuel price per litre between RM 0.43 and RM 0.34 for simple and interacted conditional models respectively. The CS is between 0.04 and 0.07 and the MB is between 1.83 and 1.86 due to air quality improved options in this study.

V. CONCLUSION AND POLICY IMPLICATIONS

This study discovers the households are willing to pay extra fuel price in order to improve the air quality improvement from transport sector in Klang Valley. The price of fuel reflects the opportunity costs of competing uses, as well as the environmental cost of fuel extraction and consumption. This study will help the researcher to uncover economic valuation for the air quality improvement using CE. Although CE was not a new concept, its application in Malaysia is limited. The current research differs from earlier studies conducted in Malaysia [39,40] in the sense that the previous studies used CVM only. Thus, a new Random Utility Theory of

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CE to estimate the WTP of the respondents for air quality improvement in Klang Valley, Malaysia, may be arrived at.

It was found that number of sick days, air pollution index, medical expenditure, outdoor activities, ethnic, city, age, and respiratory symptoms were significant variables which affected the WTP of the respondents in Klang Valley. In CE 57.7% of the respondents reported a positive WTP (WTP>0). The marginal benefit for the new air quality management programme derived from CE multinomial logit interaction model is MYR1.86 per litre of fuel. The respondents reported a higher WTP for air quality improvement in Klang Valley. This high percentage of willingness is a welcomed development in the process towards a sustainable air quality programme in Malaysia. It shows that younger people are more willing to pay than older people are. This could be due to more respiratory symptoms they experienced than older people could. In this study, aged group 20-40 (64%) experienced respiratory symptoms higher than the aged group 41-60 (19.32%). The possibility to exposure to outdoor activities due to their job and recreational time of the young aged group could be the reasons for them to be experienced more respiratory symptoms. Moreover, the non-Malays tend to support increase in fuel price to improve the air quality relative to the Malays. The households could be encouraged through campaigns and publicity provided by the media and government initiatives to motivate their beliefs and lifestyles. Awareness towards protecting environment must be given to all the citizen of the countries. This should begin from the schools and colleges by introducing the topic on different environmental problems in their syllabus. If they learn it at school or college, it would be easy for them to adopt environmental improvement practices later in life.

As transport sector is the main cause for the air pollution in Malaysia, the policy makers could consider reversing the situation where people could go for transport that is more public. The city planner and city council should take effective measures in organising and planning the city transport development. Sustainable transport development shall be the priority for future. The single, biggest air quality project under the economic transfer project (ETP) is the mass rapid transit system (MRT) for Kuala Lumpur and the Klang Valley, which might be a game changer for the environment in greater Kuala Lumpur. The MRT project made significant progress in 2013, with work continuing on the system's elevated guide way foundation and underground station excavation following the delivery of ten Tunnel Boring Machines (TBMs) to various sites. In June 2013, the Land Public Transport Commission presented its final implementation plans for MRT Line 2 and Line 3 to the Economic Council. However, the challenge remains for the government concerning how to promote the use of greener technologies as all of these strategies involve a huge amount of funding.

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