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Project title: **Perceptions of the general public in Hong Kong towards the notion of Transport Quality of Life (TQoL)**

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Declaration

I, Chan Wing Yin declare that this work has not been submitted previously for examination to any tertiary institution.

Abstract

Transport Quality of Life (TQoL) has been a newly emerging theme when the urban planners decide on how to have the transportation in a specific region. In the United States, researchers started to evaluate the citizens' TQoL for the policymaking process related to transport planning to improve citizens' TQoL in the future. Researchers have developed a framework for assessing the TQoL in the 3 major aspects and they are the Physical Well-being (PWB), Mental Well-being (MWB) and Social Well-being (SWB). However, there is a lack of related studies have been carried out to evaluate the current TQoL of the citizens in Hong Kong despite the rapid urban development in building new communities. This study aims to bridge the gap in the TQoL of residents in Hong Kong by inviting the Hong Kong residents to fill in the online questionnaire. The collected valid data will be analyzed by employing the IBM statistical software SPSS 26.0. The findings were as follows: (1) there are statistically significant positive relationship between the physical well-being and mental well-being; (2) the Transport Quality of Life between the urban cores and the periphery showed no significant difference; (3) the percentage of active travelling did not correlate with the betterment of physical well-being; (4) the income level did not correlate with the betterment of the Transport Quality of Life. Despite the fact that the sample size of this study was only N=141, further study on this topic could be conducted in a more extensive way in order to cumulate and analyze the data with higher significance.

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Acronyms

SWB	Social wellbeing
MWB	Mental wellbeing
PWB	Physical wellbeing
TQoL	Transport Quality of Life
QoL	Quality of Life

1. Introduction

1.1 Background

Transport has long been a demanding mobility service for people living in a modern city. People need to commute for distances to school or their workplace so as to complete their daily errands. However, the transportation option that individuals has chosen might impact greatly on various aspects of their quality and satisfaction of life. In their publication, Mattision et al. (2015) suggested that the duration of commute that one has used might adversely affect their different forms of social interactions and physical activities. Studies also found that if the duration of the trip to school / workplace is longer, there are a higher probability that the individuals would result in a poorer life satisfaction. (Chng, et al., 2016; Hansson, et al., 2011; Nie and Sousa-Poza, 2016)

Quality of Life (QoL) has been an emerging topic when it comes to the future development of a place. In Hong Kong, there are numerous reports that have studied the QoL of Hong Kong residents so as to track which of the aspects did the Hong Kong residents satisfied and dissatisfied with. Along with the current identification of how the commute time would impact the individuals, there are studies related to the Transport Quality of Life in countries, such as the United States. For instance, as stated in Burbidge (2010), it has been a priority for the Wasatch Front Regional Council incorporate the notion of public health into its regional transport planning process. The attempt to put forth the idea of citizens' QoL was thus not a brand-new proposition to adopt in the policy making process.

1.2 Research objectives

With the given limited research studies on the notion of TQoL in Hong Kong, the research gap has been identified and the study. Along with the formulated study topic, several hypotheses have also been proposed. The hypotheses are as follows: (1) the respondents who live in the urban cores (Kowloon, the Hong Kong Islands) have a better TQoL; (2) the respondents who have better PWB will have better MWB accordingly; (3) the respondents who have a higher income level have a better TQoL; (4) the respondents have a higher percentage of active travelling have a better PWB.

In this paper, the previous studies and literatures on Quality of Life and the framework of Transport of Quality of Life will be first discussed. After that, the research methodology of this study will be proposed and explained thoroughly. As for the results and the part on data analyses, the IBM SPSS 26.0 will be employed in analyzing the data, correlation, central tendency and analysis of variance (ANOVA) will be utilized in the analysis. Thenceforth, there will be the part on the discussion and limitation on the result from the study.

2. Literature Review

2.1 Quality of Life (QoL)

Prior to the introduction of TQoL, the foundation of QoL should be better known, in order to adapt QoL to the transport domain specific QoL. A plethora of frameworks and definitions of QoL have been constructed to address the variations of QoL. For instance, the traditional objective or the subjective indicators would omit either side of the measurement, in which the QoL measurements will lack the encyclopedic portrayal of the respondents. According to Lee and Sener, the QoL was first adopted in the fields of health, philosophy and psychology.

In the first place, the World Health Organization (1997) has configured the definition of QoL with the multidimensional understandings:

> "Quality of Life as individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment."

Inferred from its definition, WHO did address the multi facets nature of the Life. Instead of using either the objective or subjective definitions of QoL, WHO has adopted a combination of objective and subjective definition. With the combination of both subjective and objective

definitions, the measurements carve under this definition could better resemble the holistic view of life. To date, the definition proposed by the WHO is still vastly adopted by the organizations when it comes to assessing the QoL. Putting forth the definition mentioned by the WHO, these indicators could be still functionable in different domains in QoL measurements.

Adding on to the definition proposed by the WHO, scholars have even differentiated the indicators into 2 major categories. In his publication, Ferkany (2012) suggested that the combined objective and subjective components in the assessment of the Quality of Life (QoL) can be named as “how well one is doing” and “how things are going”. With both the subjective and objective indicators, a more comprehensive and holistic view of the QoL can become more reliable and accountable as the reference for the policy making stage.

Even with the ideation of the measurement of the QoL with both the objective and subjective components suggested, the measurements of QoL are still manifestly to address the universal, all-rounded aspect of QoL. With the research on the specific domains, like Health-related Quality of Life (HQoL) or the focus of this research study, Transport Quality of Life (TQoL), the results from the assessment would be more focused and precisely align with the specific field of study (Atkinson, 2013).

2.2 Transport Quality of Life (TQoL)

In the previously designed Transport Quality of Life (TQoL) frameworks, researchers do put more focus on satisfaction and subjective well-being of the individuals. Abou-Zeid and Ben-Akia (2014), Ettema et al. (2010) and Delbosc (2012) have addressed the TQoL from the perspective of subjective well-being and the travel behaviour models. Although Duarte et al. (2010) did evaluate the relationship between the level of satisfaction and the transport policy decision-making process, the elementary focus is still on the subjective well-being, in which the TQoL is not comprehensive enough for extensive evaluation (Spinney et al. 2009).

In their publication, Lee and Sener (2016) has formulated their own framework of the QoL in the domain of transport planning. With the integration of the various aspects as suggested by the World Health Organization (1997), physical well-being, mental well-being, economic well-being and social well-being are addressed in their framework. Furthermore, with the aid of the current framework available and the interaction between the built environment, mobility and vehicle traffic, the uniquely designed TQoL domain-specific measurement. According to Lee and Sener (2016), the relationship between the components listed on the framework did show the relationships. For instance, when an individual is adopting the mode of active transport (i.e., cycling or travelling on foot), the individual would have a subordinate benefit that improve their mental health. According to Sha, et al. (2019), active transport could be a means to foster the well-being of the individuals if they could adopt

active transport in their commute.

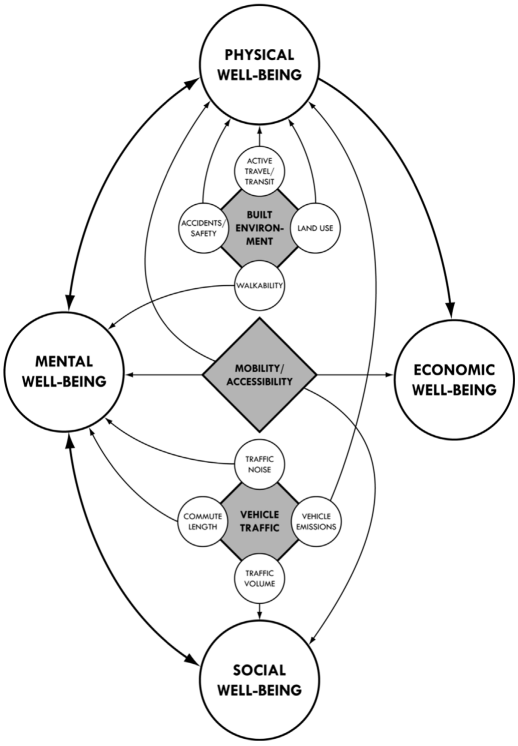

Fig. 1. Conceptual framework for TQoL adapted from Lee and Sener (2016)

Currently, there are limited measurements of the QoL have taken the built environment and the social environment in the study of TQoL. In their publication, Leung and Lee (2005) pinpointed that the policies or initiatives that give access to the leisure and entertainment activities can foster individual's Quality of Life. One of the ways to engage more people in the participation of leisure activities could be the aid of mobility services. Research have suggested that there are two major types of the leisure activities, for instance, the place-centred leisure activities and people-centred leisure activities. (Spinney et al., 2009). In a contrary, there were also agencies starting to evaluate and address the negative health impacts that brought by the failure in the transportation system to the citizens.

2.3 Transport Characteristics study in Hong Kong

In Hong Kong, the Transport Department (2020) has carried out the Annual Traffic Census on a yearly basis to assess the yearly traffic flow in the major screen lines in Hong Kong. Anyhow, the collected data from the Transport Department were with the majority of objective quantifications. With the help of the traffic census, the traffic flow and patterns were understood.

Apart from the annual traffic census, Transport Department (2014) has released a Transport Characteristics Survey 2011 of the Hong Kong residents. With the provision of the final report, most of the transport characteristics, such as the residents' travel duration and their mode of transportation, even the opinions of them were collected and the study was comprehensive. Still, the survey did not measure specifically on how the Hong Kong residents perceived their transportation mode with regards to the specific transport domain of QoL. Majority of the data collected was on the objective side of the respondents' travel characteristics. Therefore, there are still rooms for the comprehensive TQoL measurements in Hong Kong. Even if the objective indicators did prove Hong Kong has a great objective transportation development, but there are no subjective indicators provided by the users, the objective indicators can only confirm half of the prosperous transport development story.

3. Methodology

3.1 Study Target

The residents who live in Hong Kong were eligible for participating in this study. As this study was to explore how does the Hong Kong citizens' perception on the TQoL, so as long as the citizens have used the transportation in the past week at the time that they filled in the online questionnaire, they will be valid to fill in the questionnaire and the data collected will accepted.

3.2 Questionnaire Design

The questionnaire has been designed with reference to the study on TQoL by Lee & Sener (2016) with modification to fit the needs of this study. The questionnaire has been divided into 5 parts which were the transport mode & usage, transport-related physical well-being, transport-related mental well-being, transport related social well-being and the sociodemographic information of the respondents. The time needed for the respondents to fill in the questionnaire is within 7 minutes.

In the first part of the questionnaire, 7 items on the transport mode & usage from the respondents were collected. The items are the most used means of transportation in the past week, numbers of days using the aforementioned transportation, duration to the workplace / school, price ($HKD) per trip, numbers of bus route(s) available within the 5-minute walk from

home, the presence of Mass Transit Railway (MTR) & Light Rail Transit (LRT) stations within the 5-minute walk from home and the percentage of active travelling in their whole trip.

In the second, third and fourth parts, there are 19 items asked to assess respondents transport-related physical, mental and social wellbeing. As aforementioned, the 19 items were slightly modified to fit the needs of this study on the TQoL in Hong Kong. A 10-point Likert type of scale was adopted to evaluate the respondents' responses, and the scale was ranged from "1 – Extremely Disagree" to "10 – Extremely Agree". With the 10-point Likert scale, this can reflect the higher accuracy of the respondents' opinions. Also, the even numbers of the Likert scale can show tendency of "agree-ness" or "disagree-ness". As there is no neutral point in the Likert scale with even numbers, so the analysis could be done in a clearer picture. After the data collection stage, further analysis in the correlation of the items were utilized.

In the last part, there are several indicators that measure the sociodemographic information of the respondents. The indicators of the sociodemographic information include gender, age group, occupation status, personal monthly income and the district of residence. These sociodemographic data collected could be utilized for further analyze of the patterns that the respondents' group have.

3.3 Sampling Method & Data Analysis

In this study, an online questionnaire was created with the above-mentioned items and distributed to collect the data from the respondents. A voluntary response sampling under the category of non-probability sampling was adopted for this study. With the voluntary response sampling method, the respondents who are willing to complete the questionnaire

SPSS 26.0 was employed to analyze the data collected from the online questionnaire. Statistical methods such as correlation and ANOVA tests were carried out to analyze the data collected.

As to examine the internal consistency and reliability between the items on transport-related physical, mental and social wellbeing, Cronbach's Alpha Test developed by Cronbach (1951) was used. Before the Cronbach's Alpha tests for the indicators were carried out, PWB3, 4 & MWB3, 4 have been reverse coded for the calculations. Along with the study by Taber and Taber (2018), there are qualitative descriptors developed to describe the values of Cronbach's Alpha in order to make the values more understandable for people. Among the items in the transport-related physical wellbeing, the value of Cronbach's Alpha based on standardized items was 0.569, which has aligned with the qualitative descriptor of "acceptable". As for the items in the transport-related mental wellbeing, the value of Cronbach's Alpha based on standardized items was 0.826, which has aligned with the qualitative descriptor of "robust".

However, for the items in the transport-related social wellbeing, the value of Cronbach's Alpha based on standardized items was 0.334, which was reported to be "not satisfactory" according to Taber and Taber. Reasons attributed to the "not satisfactory" Cronbach's Alpha value might be inappropriate and the internal consistency of the items in SWB should be reviewed.

4. Results

4.1 Transport Mode & Usage Characteristics

As indicated in Table 1, the total number of respondents are 141 and all of the questionnaires filled in by the respondents are valid. The most used means of transport in the past week were bus (34.8%), MTR (28.4%) and walking (13.5%).

Most of the respondents used the most used transport for at least 3 – 6 days in the past week by the time that they complete the questionnaire. The preponderance of respondents lied on the “16 – 30 minutes” (29.8%) and “31 – 45 minutes” (27.7%) when it came to the question on their duration of trip to workplace or school. As for the price (HKD$) of the trip to workplace or school, a majority of respondents rated their fee of trip were “$1 – 10” and “$11 – 20”, which have accounted for 41.1% and 29.1% respectively. It was noteworthy that there are

With regards to the account of percentage of active travelling in their whole trip, there were 30.5% of the respondents declared that “11 – 20%” were the percentage that active travelling played in their whole trip, and it followed by 27.7% of respondents reported only “1 – 10%” of their trip were using the mode of active travelling.

There was a slightly higher proportion of respondents, which accounted for 59.6% of the total respondents, reported that there was an absence of MTR / LRT stations within their 5-minute walk from home.

Table 1. Transport Characteristics

	Number	%		Number	%
Most used means of transport in the past week			*Price (HKD$) per trip*		
Walking	19	13.5	$0	21	14.9
Bicycle	1	0.7	$1 - 10	58	41.1
Demand Resposive Transport	4	2.8	$11 – 20	41	29.1
Taxi	2	1.4	$21 – 30	10	7.1
Bus	49	34.8	$31 – 40	2	1.4
Minibus	11	7.8	$41 – 50	2	1.4
MTR	40	28.4	$51 or above	7	5.0
Light Rail Transit	4	3.4			
Private Vehicle	6	4.3			
Tram	2	1.4			
Ferry	3	2.1			
Days of using the above mentioned transportation			*The numbers of bus routes with 5-minute walk from home*		
1 – 2 days	14	9.9	0	4	2.8
3 – 6 days	86	61.0	1 – 5	52	36.9
Everyday	41	29.1	6 – 10	31	22.0
			11 – 15	34	24.1
			16 - 20	8	5.7
			21 or above	12	8.5
Duration of the trip to school/workplace			*% of active travelling in their whole trip*		
Less than or equal to 15 minutes	23	16.3	0%	10	7.1
16 – 30 minutes	42	29.8	1 - 10%	39	27.7
31 – 45 minutes	39	27.7	11 - 20%	43	30.5
46 – 60 minutes	20	14.2	21 - 30%	18	12.8
61 – 75 minutes	11	7.8	31 - 40%	4	2.8
76 – 90 minutes	4	2.8	41 - 50%	6	4.3
More than or equal to 91 minutes	2	1.4	51% or above	21	14.9
			Presence of MTR / LRT stations within 5-minute walk from home		
			Yes	57	40.4
			No	84	59.6
			Total	**141**	**100**

4.2 Sociodemographic characteristics

As we can see from Table 2 on the sociodemographic characteristics of the respondents, there were 87 and 54 female and male respondents, which has spoken for 61.7% and 38.3%, respectively. A majority of respondents were in the age group of "21 – 30", which has accounted for 38.3% of all the respondents. There were 2 age groups ranked the second which were the age group of "31 – 40" and "41 – 50", they both have accounted for 17%. As for the occupation of the respondents, there are 46.8% of them who were employed, followed by a 27.7% of respondents were students. With regards to the fact that that an ample number of respondents was students and there were housewives, so the majority of monthly personal income (HKD$) was lying in the group of "$5000 or below", which has accounted for 31.9%.

It is noteworthy that over 50% of the respondents were in the age group of both "20 or below" and "21 – 30" and over 60% of the respondents' monthly personal income (HKD$) were lying in the group "$5000 or below", "$5001 – 10000" and "$10001 – 20000". Also, the occupation of the respondents are mainly students and with the considerable numbers of respondents who might be the in their early stage of employment. Therefore, the results of the study might be bias towards the young adults in Hong Kong.

On the subject of district of residence among all the respondents, 40.4% of the respondents were from Kowloon, and 37.5% of the respondents were form the New Territories, and the remaining 22% were the residents on the Hong Kong Islands.

Table 2. Sociodemographic characteristics

	Number	%
Gender		
Male	54	38.3
Female	87	61.7
Age		
20 or below	17	12.1
21 – 30	54	38.3
31 – 40	24	17.0
41 – 50	25	17.7
51 – 60	10	7.1
61 – 70	11	7.8
71 or above	0	0
Occupation		
Employed	66	46.8
Retired	5	4.3
Student	39	27.7
Self-employed	15	10.6
Unemployed	3	2.5
Housewife	12	8.5

		Number	%
Monthly Personal Income (HKD$)			
$5000 or below		45	31.9
$5001 - 10000		13	9.2
$10001 - 20000		37	26.2
$20001 - 30000		22	15.6
$30001 - 40000		14	9.9
$40001 - 50000		4	2.8
$50001 - 60000		4	2.8
$60001 or above		2	1.4
District of Residence			
Hong Kong Island	Central and Western	4	2.8
	Eastern	9	6.4
	Southern	9	6.4
	Wan Chai	9	6.4
	Sub-Total	**31**	**22.0**
Kowloon	Kowloon City	32	22.7
	Kwun Tong	9	6.4
	Sham Shui Po	5	3.5
	Yau Tsim Mong	4	2.8
	Wong Tai Sin	7	5.0
	Sub-Total	**57**	**40.4**
New Territories	Kwai Tsing	4	2.8
	North	4	2.8
	Sai Kung	5	3.5
	Sha Tin	15	10.6
	Tai Po	7	5.0
	Tsuen Wan	3	2.1
	Tuen Mun	9	6.4
	Yuen Long	6	4.3
	Sub-Total	**53**	**37.5**
	Total	**118**	**100**

4.3 Transport-related Quality of Life of the respondents with respect to district of residence

The physical, mental and social aspects of the TQoL are summarized in Table 3, 4 and 5. In the category of transport-related PWB, the respondents in the New Territories have reported the highest sum of the means in the PWB indicators, whereas the Kowloon ranked the second and the Hong Kong Islands ranked the third. Nonetheless, as the indicators PWB5 and PWB6 asked the waiting time of the transportation that one's need to search for the mode of transportation that he / she has indicated in Part I. So, the when the time that the individuals need to search for and wait for the transport is shorter, this should be inferred that a part of their PWB is better. Consequently, taking only PWB1, 2, 3 and 4, there were still no significant PWB difference between the 3 districts.

In spite of that, in the categories of MWB and SWB, the respondents who reside on the Hong Kong Islands ranked the first among the residents living in both Kowloon and the New Territories. However, we cannot conclude that the residents living in the urban cores (Kowloon, Hong Kong Islands) did have a higher TQoL than to those living at the peripheries of the urban cores. Further studies might be carried out to investigate more thoroughly on the differences between the TQoL in districts.

Table 3. Transport-related PWB							
	Mean						
District of Residence	P1	P2	P3	P4	P5	P6	Total
Kowloon	6.5	6.6	6.09	5.16	4.9	4.1	33.2
New Territories	6.5	6.7	6.15	5.11	5.5	4.2	34.1
Hong Kong Island	7.1	6.6	6.03	4.55	3	3.6	30.8

Table 4. Transport-related MWB							
	Mean						
District of Residence	M1	M2	M3	M4	M5	M6	Total
Kowloon	4.9	5.7	5.35	4.72	5.5	7.1	33.2
New Territories	5.1	5.8	5.17	5.08	5.5	6.8	33.5
Hong Kong Island	6.9	6.9	4.1	4.1	6.7	8.2	36.8

Table 5. Transport-related SWB								
	Mean							
District of Residence	S1	S2a	S2b	S3a	S3b	S4	S5	Total
Kowloon	5.6	5.3	6.6	5.25	6.4	7.2	4.6	40.9
New Territories	6.4	5.8	6.36	4.87	5.9	7	4.98	41.3
Hong Kong Island	6.7	4.6	7.29	4.03	7.2	8.1	4.52	42.4

4.4 *Transport-related Quality of Life of the respondents with respect to the transport mode*

According to Table 6, there were 14.2% of respondents who are using the mode of active transport (i.e., walking, bicycle) in their commute, 8.5% who adopted non-public transport (i.e., Demand Responsive Transport, taxi and private vehicle) and 77.9% of respondents adopted public transport (i.e., bus, minibus, tram, MTR, Light Rail Transit and ferry) as their preferred mode of transport when they commute.

As for the indicators on the PWB1 & 2, which asked the physical environment of the transportation, the respondents who adopted non-public transport resulted the highest mean score, which was 8.89. The following was the group of active transport, which was 7.71 and lastly, the group of public transport, which was 6.63 only. It is worth noting that the physical environment for the group of active transport would be the roadside environment. With the aggregate results collected from the questionnaire, the perceived physical environment of the users in the mode of active transport was 7.71 in mean score, which ranked the 2nd among the three groups. This signified that the current transport infrastructures could provide a good TQoL for the citizens in this study.

One type of the most used public transportation – MTR reported to have the lowest mean scores in the physical environment. As for the wait time and search time of the transportation, the group of active transport resulted in the lowest among the 3 groups. It is reasonable that the wait and search time of the active transport is the lowest. Owing to the fact that it is needless for the users to in search for external instruments that supplied by the service providers as compared to other means of transportation.

Moving to the indicators on MWB, when asked about the comfortability that the spaces of the transport could give to the respondents, the group of non-public transport did show the highest among the 3 groups. The transport mode of MTR resulted to be the lowest in MWB1, 2 and 5, which signified that the respondents did not feel relieved, safe and relaxed.

Lastly, speaking of the indicators in the SWB, there are no great discrepancy between the 3 groups of transport mode that the respondents have chosen. For the questions SWB3a, 3b, the group of non-public transport has shown the greatest disruption time by traffic accidents and the respondents reported to be the lowest when it came to whether they think the extent of impacts is reasonable or not.

Apart from the disruption that brought by the traffic accidents, there were points that the transportation in Hong Kong that did good to the social life of the respondents. The respondents agreed that the transportation in Hong Kong can still keep them as the socially active persons, and the group of non-public transport has the highest mean score (8.36) among the 3 groups. When asked whether the respondents would shorten their meeting with friends because of the availability of transportation, the respondents of the 3 groups report to be of similar opinions that they would not shorten their meeting time. The flexibility of the non-public transport that given to the transit users could help them to exercise more social active lifestyle.

Yet, there are types of transport modes that serve as the “minority transport” in this study. Hence, the representativeness of the results to the minority transport might reduce greatly.

Table 6. The TQoL Data in relation to the transport mode

	Transport Mode										
	Active Transport		Non-Public Transport			Public Transport					
TQoL indicators	Walking	Bicycle	Demand Resposive Transport	Taxi	Private Vehicle	Bus	Minibus	Tram	MTR	Light Rail Transit	Ferry
Percentage of the total respondents (%)	13.5	0.7	2.8	1.4	4.3	34.8	7.8	1.4	28.4	3.4	2.1
Physical Wellbeing											
1. The spaces are comfortable	7.42	8.00	9.00	8.50	9.17	7.04	7.36	6.50	4.78	5.75	8.33
2. The spaces are tidy	6.42	9.00	8.25	7.00	9.50	6.96	6.64	6.00	5.55	6.25	8.33
3. I rarely experience noise pollution	6.26	9.00	5.25	3.00	4.17	6.02	6.91	7.50	6.33	6.50	5.00
4. I rarely experience air pollution	4.84	8.00	3.25	3.00	3.33	4.78	5.82	7.00	6.28	5.25	6.33
5. The wait time of the transport	3.95	1.00	3.25	4.50	3.50	5.71	5.00	3.50	3.98	5.50	6.33
6. The search time of the transport	3.37	1.00	3.25	7.00	4.67	4.33	5.18	2.50	3.80	3.50	4.67
Mental Wellbeing											
1. The spaces make me feel relieved	5.47	8.00	8.75	8.00	8.67	5.55	5.18	7.50	3.95	4.75	9.33
2. The spaces make me feel safe	5.79	6.00	8.00	8.00	8.17	6.35	5.64	6.00	5.08	5.00	8.00
3. The spaces rarely make me feel	3.74	5.00	4.00	5.50	3.00	4.33	4.82	3.00	5.73	4.50	3.00
4. The spaces rarely make me feel anxious	4.16	1.00	2.75	4.50	2.17	4.69	5.18	4.50	6.38	5.25	1.33
5. The spaces rarely make me feel annoyed	6.11	8.00	7.75	7.50	8.83	5.92	5.00	8.00	4.48	5.75	9.67
6. I can experience new local experience with this type of transport	7.79	10.00	8.50	6.50	8.17	7.16	7.27	8.00	6.65	6.75	8.00
Social Wellbeing											
1. Driver would provide help when needed	6.21	10.00	7.75	8.00	8.33	6.20	6.27	7.50	5.10	7.00	6.33
2a. How long does it take for you to search for the social assistance?	5.58	5.00	5.50	5.50	5.17	5.35	6.64	4.00	5.15	5.00	3.33
2b. Do you think the time needed in Q2A is reasonable?	7.11	8.00	8.00	5.50	7.00	6.37	6.18	7.00	6.63	6.75	8.33
3a. In what extent did your trip to school/workplace disrupted by the traffic accident?	3.79	2.00	4.75	6.00	6.00	5.82	4.82	2.00	4.60	3.00	1.00
3b. Do you think the impact is Q3A is reasonable?	7.68	7.00	6.75	5.00	7.00	5.63	6.18	9.50	6.38	6.25	8.67
4. The transportation mode in Hong Kong can keep me socially active	7.16	8.00	8.75	8.00	8.33	7.63	6.55	8.50	6.88	6.50	8.00
5. You rarely shorten your time with friends because of the avaliability of transportation	4.00	4.00	5.00	5.50	3.00	5.04	4.73	3.50	5.00	4.50	4.33

4.5 Association of PWB and MWB

Table 7. Correlations between PWB and MWB

		PWB	MWB
PWB	Pearson Correlation	1	.474**
	Sig. (2-tailed)		0.000
	Sum of Squares and Cross-products	6127.957	3954.702
	Covariance	43.771	28.248
	N	141	141
MWB	Pearson Correlation	.474**	1
	Sig. (2-tailed)	0.000	
	Sum of Squares and Cross-products	3954.702	11341.248
	Covariance	28.248	81.009
	N	141	141

**. Correlation is significant at the 0.01 level (2-tailed).

According to Table 7, there are statistically significance evidence that the PWB is correlated with the MWB. The relationship between PWB and MWB was investigated using the Pearson product-moment correlation coefficient. There were preliminary statistical analyses conducted so as to ensure that no violations of the assumptions of normality, linearity and homoscedasticity. After the Pearson correlation method was conducted, it has shown a strong positive correlation between the 2 variables, which further confirmed that PWB is statistically correlated with MWB at the 0.01 level. In his publication, Cohen (1988) suggested that there should be guidelines for interpreting the strength of the relationship, when the value of r = 0.1 – 0.29 (small), r = 0.30 – 0.49 (medium), r = 0.50 – 1 (large).

4.6 Association of income level and TQoL in general

Table 8. Test of Homogeneity of Variances for PWB, MWB and SWB

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
PWB	Based on Mean	2.612	7	133	0.015
	Based on Median	2.423	7	133	0.023
	Based on Median and with adjusted df	2.423	7	104.502	0.024
	Based on trimmed mean	2.606	7	133	0.015
MWB	Based on Mean	1.770	7	133	0.098
	Based on Median	1.653	7	133	0.126
	Based on Median and with adjusted df	1.653	7	115.265	0.128
	Based on trimmed mean	1.760	7	133	0.101
SWB	Based on Mean	1.358	7	133	0.228
	Based on Median	1.381	7	133	0.218
	Based on Median and with adjusted df	1.381	7	92.762	0.223
	Based on trimmed mean	1.342	7	133	0.236

Table 9. Anova Test on the income level and TQoL

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
PWB	Between Groups	422.642	7	60.377	1.407	0.207
	Within Groups	5705.315	133	42.897		
	Total	6127.957	140			
MWB	Between Groups	645.288	7	92.184	1.146	0.338
	Within Groups	10695.960	133	80.421		
	Total	11341.248	140			
SWB	Between Groups	210.462	7	30.066	0.659	0.706
	Within Groups	6068.644	133	45.629		
	Total	6279.106	140			

Analysis of variances (ANOVA) test was carried out to the test the association between the income level and the TQoL in general. In this ANOVA test, the independent variable was

set to be the monthly personal income and used as a predictor to predict the TQoL (i.e., dependent variable). In the test of homogeneity of variances, the significance level was higher than 0.05 which did not violate the test of homogeneity of variances. But all for that, from the results of the ANOVA test, the significance level was higher than 0.05. As a result, the model of income level and TQoL was not statistically significant.

4.7 Association of the percentage of active travelling and PWB

Table 10. Test of Homogeneity of Variances for PWB

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
PWB	Based on Mean	0.978	6	134.000	0.443
	Based on Median	1.040	6	134.000	0.4021
	Based on Median and with adjusted df	1.040	6	116.516	0.4029
	Based on trimmed mean	0.959	6	134.000	0.455

Table 11. Anova Test on the percentage of active travelling and PWB

ANOVA

PWB

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	332.591	6	55.432	1.282	0.270
Within Groups	5795.366	134	43.249		
Total	6127.957	140			

ANOVA test was also carried out to test the model of the percentage of active travelling and PWB. The independent variable in this ANOVA test was the percentage of active travelling

in the commute as to predict the PWB. In the test of homogeneity of variances, the significance level was higher than 0.05 which did not violate the test homogeneity of variances and the ANOVA test could be carried out for further analysis. However, the significance level in the ANOVA test was higher than 0.05. Therefore, the model of the percentage of active travelling and PWB was statistically insignificant.

5. Discussion & Limitation

5.1 Discussion

Correlation between PWB and MWB

With the results shown on the above section, we can conclude using the above statistically significant data to prove there are positive correlation between PWB and MWB. In their publication, Erikson, et al. (2010) suggested the with the physiological mechanism of human, when the physical activities and environments of the individual are in good conditions, the grey matters in one's brain can perform their functions and the mental conditions would improve accordingly. The results did show the linkage between PWB and MWB.

TQoL is higher in the urban core (Kowloon & Hong Kong Islands)

When comparing the mean values of the TQoL with respect to the districts of residence, the data in Kowloon and on the Hong Kong Islands have a slight excel than the value than the data in New Territories. Even so, there are the mean values could not display a vast distinction between the 2 groups. It might also be a indicator that the transportation development in the 3 major districts are of similar quality, so the respondents responded the similar values in the TQoL. The insignificant difference of the TQoL between the urban cores and the periphery might be owing to the factors listed below. To begin with, the demand of the residents in the urban core might be higher than those living in New Territories in this study.

Association of income level and TQoL

As shown in section 4.5, there are no statistically significant results on the model of income level and TQoL. In their publication, Bills and Walkers (2017) stated that there should be the equity on the transportation provision to the people, no matter they are rich or poor. In this research study, the transport equity in Hong Kong has been proven. As different modes of transportation can be easily accessible by everyone in town, so even when there are differences between the various groups representing different income levels, the TQoL still did not vary much.

Association of the percentage of active travelling and PWB

Along with the result in section 4.6, there are no statistically significant results showing that the percentage of active travelling in their trip did improve the PWB of the respondents. Despite the fact that Hong Kong is a densely populated and compacted city, people might utilize the public transportation in their daily commute. The discrepancy between the results of the previous studies and this study might be the owing to the fact that previous studies were taken place in Europe and the United States and their results might be as comparable to the study area in Hong Kong.

5.2 Limitation

As the sampling method of this study was voluntary responses sampling method, the respondents who were willing to response to this online survey might already have some insights or opinions towards the transport development in Hong Kong. In this way, the results shown might be skewed.

Moreover, the sample size of the study was only N=141. Making reference with the similar research studies that have been done and published in the past, the probable sample size should be of at least N=1000. With the wide range of study target and the regard of the theme of this study, the sample size should be larger in order to obtain a more representative in the understanding the TQoL of the residents in Hong Kong. For examples, when the TQoL data is collected and needed to analyze with the transport mode that the respondents adopted, the results of the transport modes that with limited samples might be biased and might show a great discrepancy. With the limitation in resources, individual interviews on the respondents' opinions are not able to carry out. In this way, the more critical and valuable opinions might be missed and hence the research study would need inquiries. The small sample size of this study will attribute to the contradiction from the results in this study than in the research studies that have done by the scholars previously. For instance, the association between the percentage of active travelling method and the betterment in the PWB of the respondents was insignificant in this study.

6. Conclusion

In this study, the transport-related information was discussed, and this has shown the implications for the future transport planning development in Hong Kong in a relatively humanistic approach.

It is noteworthy that the respondents of using the transportation mode MTR have shown the below par in this TQoL study. The physical environment of MTR is the lowest among all types of transportation. In this case, there should be the large rooms of improvements for the physical environment in MTR. Measures, such as the higher frequency of the regular cleaning services.

COVID-19 also might also have an impact towards the choices of transportation and the frequency of commute as there are policies enacted by the companies or schools that the people affected accordingly would have to adopt “Work from Home” under the new norm. People might become more aware of the physical spaces and the physical interpersonal connection that might happen on the transportations, and this might make their rating on the TQoL even stricter.

The study has only explored the transport data with the small sample size of Hong Kong residents, which suggested the further study could be made with a larger scale when the

resources are ample and there could be a longitudinal study carried out. As the study on the TQoL might give another aspect for the policymakers and the urban planners who specialize in transport planning a better picture in the future transport development. Moreover, there could be case studies and comparisons between Hong Kong and the counterparts such as Singapore, Japan, Taiwan, Korea, *et cetera*. By these means, researchers could evaluate the differences of TQoL in different regions, so as a way to try to maintain and learn from other regions empirical practices. What is more, it could give suggestion that public consultation for the government officials to attend to the opinions of the mass public before carrying out the practical transportation development in the communities. By this means, this might bring the betterment of the TQoL of the citizens in the future.

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8. Appendix

Appendix I – Questionnaire

交通相關生活質素感知問卷調查

一名香港教育大學社會科學系地理科的學生現正進行一項有關交通相關生活質素的問卷調查。這項調查旨在了解現今香港的市民對於交通工具生活質素的感知。這項調查大約需要 10 分鐘，將詢問您的出行方式、交通方式對生活質素的影響、以及社會經濟背景等。閣下的參與純屬自願性質。並享有權利在任何時候退出這項研究。凡有關閣下的資料將會保密，綜合結果將以論文形式公佈。 如閣下對這項研究的操守有任何意見，可隨時與香港教育大學人類實驗對象操守委員會聯絡(電郵: hrec@eduhk.hk)。

謝謝閣下有興趣參與這項問卷調查。

第一部份 – 交通模式

1. 請問你在過去的一星期中最常使用的交通模式是以下的哪一項？

☐ 步行 ☐ 單車 ☐ 電單車 ☐ 需求主導交通工具（例如：Uber） ☐ 的士

☐ 巴士 ☐ 小巴 ☐ 電車 ☐ 港鐵/輕鐵 ☐ 私家車 ☐ 船隻

2. 請問你在過去的一星期中有多少天使用上述的交通模式？

☐ 0 天 ☐ 1 – 2 天 ☐ 3 – 6 天 ☐ 每天

3. 請問你每次前往工作/上學地點的時間為多長？

☐ 少於 15 分鐘 ☐ 16 – 30 分鐘 ☐ 31 – 45 分鐘 ☐ 46 – 60 分鐘

☐ 61 – 75 分鐘 ☐ 76 – 90 分鐘 ☐ 91 分鐘或以上

4. 請問你每次前往工作/上學地點的車資為多少？

☐ $0 ☐ $1 – 10 ☐ $11 – 20 ☐ $21 – 30 ☐ $31 – 40 ☐ $41 – 50

☐ $51 或以上

5. 請問地鐵站/火車/輕鐵站位於你家的五分鐘步程之內？

☐ 是 ☐ 否

6. 請問位於你家的五分鐘步程之內可乘搭的巴士路線數目？

☐ 0 ☐ 1 – 5 ☐ 6 – 10 ☐ 11 – 15 ☐ 16 – 20 ☐ 21 或以上

7. 請問非機動交通模式(即步行、單車)佔你所有行程時間的百份比是：

☐ 0% ☐ 1 – 10% ☐ 11 – 20% ☐ 21 – 30% ☐ 31 – 40% ☐ 41 – 50%

☐ 51% 或以上

第二部份 – 使用交通模式的生理狀態

請根據你在問卷第一部分所回答最常使用的交通模式來回答以下的問題。

1. 交通工具內的空間的座位舒適。

非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

2. 交通工具內的空間整潔。

非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

3. 當你乘搭交通工具的時候，你經常會受到噪音污染問題影響。

非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

4. 當你乘搭交通工具的時候，你經常會受到空氣污染問題影響。

非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

5. 你所選擇的交通模式的輪候時間為

短 1 2 3 4 5 6 7 8 9 10 長

6. 當你需要使用該項交通模式的時候，你所需要尋找的時間為

短 1 2 3 4 5 6 7 8 9 10 長

第三部份 – 使用交通模式的心理狀態

1. **交通工具內的空間讓你壓力減低。**

   非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

2. **交通工具內的空間讓你感到安全。**

   非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

3. **交通工具內的空間讓你感到焦慮。**

   非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

4. **交通工具內的空間讓你感到煩躁。**

   非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

5. **交通工具內的空間讓你感到輕鬆。**

   非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

6. **我能夠透過使用不同的交通模式體驗不同的經歷（例如：接觸新事物、在地旅遊、歷險）**

   非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

第四部份 – 使用交通模式的社交狀態

1. **交通工具中的司機會主動在有需要的時候提供適當的協助。**

   非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

2. **a/ 當你需要尋找社區支援（例如：前往診所、前往醫院、前往社區中心）時，你所花費的交通時間：**

   短 1 2 3 4 5 6 7 8 9 10 長

   b/ 承上題，你認為以上前往場所尋找社區支援所花費的交通時間 (Q2a) 是否合理？

   非常不合理 1 2 3 4 5 6 7 8 9 10 非常合理

3. **a/ 在每次的工作/上學的通勤過程中，你有多大程度會被路面所發生的交通事故影響你的通勤時間？**

   非常不大程度 1 2 3 4 5 6 7 8 9 10 非常大程度

   b/ 承上題，你認為以上的影響程度(Q3a)是否合理？

   非常不合理 1 2 3 4 5 6 7 8 9 10 非常合理

4. **香港的交通模式能讓我保持社交活躍。**

   非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

5. **你經常因交通工具的營運時間而縮短和朋友聚會的時間。**

   非常不同意 1 2 3 4 5 6 7 8 9 10 非常同意

第五部分 – 基本個人資料

1. 性別

☐ 男 ☐ 女

2. 請問你在過去最近一個月生日的年齡組別是以下哪一項？

☐ 20 歲或以下 ☐ 21 – 30 歲 ☐ 31 – 40 歲 ☐ 41 – 50 歲

☐ 51 – 60 歲 ☐ 61 – 70 歲 ☐ 71 歲或以上

3. 請問你的職業狀態是？

☐ 受僱 ☐ 退休人士 ☐ 學生 ☐ 自僱人士 ☐ 失業人士 ☐ 家庭主婦

4. 個人每月基本入息

☐ $5000 或以下 ☐ $5001 – $10000 ☐ $10001 – $20000 ☐ $20001 – $30000

☐ $30001 – $40000 ☐ $40001 – $50000 ☐ $50001 – $60000 ☐ 多於 $60000

5. 居住地區

☐ 中西區 ☐ 東區 ☐ 南區 ☐ 灣仔 ☐ 九龍城 ☐ 觀塘 ☐ 深水埗 ☐ 油尖旺

☐ 黃大仙 ☐ 離島 ☐ 葵青 ☐ 北區 ☐ 西貢 ☐ 沙田 ☐ 大埔 ☐ 荃灣

☐ 屯門 ☐ 元朗