

## School Travel Characteristics and Attitude Towards Ride Sharing: A Case Study of St. George East School District, Trinidad

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**Abstract:** This paper reports the results of a survey conducted in St. George East School District, Trinidad on the characteristics of transport modes used by students to and from school. It also reports attitudes of students, parents and guardians on ride sharing for school trips. Most (74%) of school trips in the study area are made with motorised transport modes. Primary school students do walk to school more than secondary school students, who in turn ride shared modes (public transport and van-pooling) more than primary school students. Both primary and secondary school students ride private car mode in the similar proportion. Older students are more likely to walk to school than riding motorised transport, and they are more likely to ride shared modes more than private car. As the number of cars per household increases, share of private car mode increases at the expense of other modes. A student from a household owning a car is more likely to be driven to school than walking. The share of private car mode has increased between 1980 and 2004, but the shares of other modes remain unchanged. Majority of respondents are willing to participate in school bus, and car-pool programmes. Those who support car-pooling are more likely to support school bus programme and vice versa. Likewise the majority would like to see the school bus programme be funded by the government. Either primary school respondent or older student is more likely to suggest that any school bus programme be funded by the government, while a respondent from a household owning a car would suggest that school programme be funded privately. High use of private cars for school transport and increasing trend of private car ownership in the country imply that more school trips will be served by private cars unless some significant shift in school transport policy is made. School children, parents and guardians are major stakeholders in any school transport programme, and therefore design of a successful and effective school transport programme should take into account their sentiments.

**Keywords:** Characteristics of school transport modes, ride sharing for school trips, Trinidad

### 1. Introduction

The term "school travel/transport" in this paper is limited to trips made by primary and secondary school children to and from school. It excludes preschool trips, post-secondary education trips, college trips, and trips made by schoolteachers and school staffs. The current school transport system in Trinidad and Tobago (T&T) is car dependent, informal, uncoordinated and inefficient. It is characterised by high use of private cars. A mini study on school transport at the beginning of 1980's indicated a significant proportion of school trips made by private vehicles (Underwood and Rasul, 1984). The system is disadvantageous to the students, to the parents/ guardians, and to the society at large.

In the last few decades, the country has experienced an increasing number of vehicles due to both flourishing

economic development and accessibility to cheap foreign used vehicles. Extensive use of private cars is the main cause of traffic congestion and associated impacts (such as excessive traffic delays, higher fuel consumption, aggressive driving habits, devaluation of abutting properties served by congested roadways, and degradation of human health from vehicle pollutants).

Residents in T&T are aware of the difficulties of commuting during regular school days. It is common to hear the public in T&T objecting construction of schools in their area for the fear of anticipated traffic congestion. With increasing vehicle ownership trend in the country, more school trips will continue to be made by private vehicle and hence aggravate already high level of congestion on the nation's road network. Decreasing the number of vehicles on the road without decreasing

number of person-trips is one of the mitigation measures used to reduce traffic congestion; the most common form is mass transit. Although the country is planning a light rail mass transit, it is not known whether such action alone will mitigate congestion in a comprehensive manner.

The need of addressing school transport problem is apparent. Efficient school transport not only will mitigate traffic congestion, it will enhance safety and security of school children. Success of such measures on one hand depends on the reception of stakeholders. This paper presents the results of a questionnaire survey administered to primary and secondary school children in St. George East School District in T&T. The questionnaire sought to quantify shares of different travel modes, and solicit respondents' opinions and attitudes towards use of high-occupancy vehicle transport modes.

## 2. School Transport System in T&T

School transport impacts academic performance, health, and social behaviour of school children. The manner in which school travel is made may also impact general public's quality of life. In this paper discussion of school transport system in T&T is limited to the quantity of trips, average trip length, non-motorised modes, and motorised modes.

### 2.1 Quantity of Trips

All students in T&T travel between homes and schools everyday, generating significant amount of school trips. Government's efforts of increasing number of schools and intakes for pre-school, primary and secondary educations systems to achieve the goal of education for all are increasing transport demands placed on the national road network (T&T, 2002).

### 2.2 Average Trip Length

During colonial era, education was for small segment of the society viewed as elites. Few schools were needed and placed in towns. In 1970's, the government adopted a policy of "education for all". To cope with increasing enrolments resulting from this policy, more schools were established in rural communities and "shift" system for secondary schools introduced. However, introduction of new schools in rural communities did not cut down average trip length because elite schools continued to be favoured by many. Reports indicate that students attending schools in rural areas have been performing poorly in the Secondary Entrance Assessment (SEA) examinations consistently.

Today, most students attend schools of their choice based largely on religious preference and academic performance in SEA examination. Distance between home and school has a big influence on transport mode choice. Cycling and walking are preferable for short distances, beyond which motorised transport is the only

option. As long as distance between school and home is not weighted appropriately when selecting a school for a child, resulting trip lengths are likely to be longer. Others had estimated that some students travel as much as 58 kilometres a day (UNC, 2004). Even those who travel shorter distances, the resulting travel time is higher due to traffic congestion. Experience indicates that students are forced to wake-up early than usual in order to beat the traffic. Stromquist (1989) cited studies in developing countries, in which distance to school was identified as the reason for dropping from school.

### 2.3 Non-Motorised Transport Modes

Non-motorised transport modes such as walking and cycling are more healthy and environmental friendly. They support safer streets, cleaner environment, and increased activity that gives children much needed exercise that may help to fight childhood obesity and type II diabetes. A study on school transport in some areas of St George East School District, Trinidad in 1980 indicated that only 22% of school children in the sample walked or cycled to school (Underwood and Rasul, 1984).

With regards to road safety, pedestrians and cyclists in T&T are the most vulnerable road users. This is not surprising because pedestrians and cyclists facilities such as sidewalks, pedestrian crossings, bike lanes and routes are inadequate and in poor conditions. The problem is even worse for school children, who cannot drive and take care of themselves due to their smaller ages. In 2003 the Ministry of Works and Transport embarked on the project of installing improved zebra pedestrian crosswalks at schools in the country to improve pedestrian safety.

Besides facilities, school children are disadvantaged by lack of road safety measures such as school speed zoning, and inadequate road safety education for the young road users, which would have equipped them with tools required for safer walking and cycling. School children are also faced with increasing social evils such as murder and kidnapping on their way to and from school. Local media have reported school children who walk to and from school facing risks of kidnapping and physical attack.

### 2.4 Motorised Transport Modes

Three motorised transport modes used for school transport are: 1) private car, 2) van/mini-bus pooling, and 3) public transport. Working parents and/or guardians driving children to school while combining school and work trips results in extra travel distances and inconveniences when the school is not located on the route to the work place. High usage of private cars leads to traffic congestion resulting into late arrival at school or home on the part of the student. Such delays affect student's academic performance as more time is spent in travelling leaving less time for study and social activities at home.

“Shared modes” serving school trips include public transport and van-pooling. Public transport consists of route-taxis, maxi-taxis, and Public Transport Service Cooperation (PTSC) buses. School children using public transport are unsupervised resulting into an opportunity for students to engage in evil social behaviours (vandalism, aggressiveness, theft, substance abuse, and gang participation, etc.). Peters (2004) observed that negative ads placed in maxi-taxis might contribute towards school children’s bad behaviours. Van-pooling arrangements between parents and van operators are not officially coordinated and it is questionable if they are efficient. Because they are informal, they are not treated differently from the general traffic. In countries where formal school transport exists, both motorists and transport regulating authorities treat favourably school buses.

Besides regular public passenger service, PTSC operates the school bus programme to those who qualify utilising PTSC buses and contracted maxi-taxis. The service has been in operation as early as 1970’s. By then school transport used to receive higher priority from PTSC. However, after PTSC restructuring in the late 1980’s, most welfare services including school transport were downsized resulting into poor quality services (Mutabazi, 2004). Vandalism, unreliability, and negative public perception are the major negatives associated with PTSC school bus programme. By 1977, vandalism was identified as one of the problems facing PTSC (T&T, 1977).

UNC’s comments on the traffic accident involving PTSC school bus were that PTSC should compensate student victims for injuries, trauma, damage of clothes and books; and parents be compensated for extra money spent to take children for medical attention (UNC, 2004). It is the opinion that such compensations are the responsibility of the vehicle insurer and not the service provider. It was also observed that school transport irregularity and lateness results into children missing school.

Students riding public transport experience hardships during peak hours; causing stress on school children, poor attendance, and late arrival at school thereby affecting their academic performance. Public transport drivers are screened for good character before licensed for passenger transport services. However, public media carries stories of students’ mistreatment and sexually harassment by some drivers. Litman (2003) highlights sexual harassment to female students by privately operated public transport in developing countries. Maxi taxi drivers in their quest to maximise revenue force passenger to drop off before they reach their regular destination resulting into passengers paying fares twice, spend longer trip length and inconvenienced. Closure of roads due to landslides, protesting drivers, or roadblocks by protesting residents is other thorns on school transport.

Comparing public school transport systems between

times when railway system was in place and after it was abolished in T&T, Lochan (2002) observed that train system was more reliable and effective towards achieving school objectives of creating learning environment and building a moral society. Today children are deprived and even placed at tremendous risk on their way to and from school. School children are seen loaded in the truck open areas, while a young schoolgirl was seen carried on a bicycle that has no backseat.

### 3. Data Collection and Analysis

The questionnaire survey was administered to public school students/parents in St. George East School District in north-central Trinidad between 2003 and 2004. The district was chosen because of researchers’ convenience. All public primary and secondary schools were asked to participate in the study. Questionnaires were delivered to schools for distribution to students and collected at a later date. School principals were asked to provide the number of enrolment, and daily school opening and closing times.

Usable data from the questionnaire includes student’s demographic factors (gender and age), name of the school enrolled at, family characteristics (residential street address, number of vehicles, school travel mode), and opinion on school travel shared modes (willingness to carpooling, willingness to participate in school bus programme, its funding and comments). Table 1 summarises sample descriptive statistics with regards to respondents’ age and vehicle ownership.

**Table 1.** Sample descriptive statistics

Age (yrs)	School Category		
	Primary	Secondary	All
Minimum	5	11	5
Maximum	14	18	18
Mode	11	15	11
Average	8	14	12
5-6	25 (2.8%)	-	25 (2.2%)
7-8	145 (16.1%)	-	145 (12.5%)
9-10	319 (35.4%)	-	319 (27.5%)
11-12	354 (39.2%)	16 (6.3%)	370 (31.9%)
13-14	56 (6.2%)	96 (37.5%)	152 (13.1%)
15-16	3 (0.3%)	102 (39.8%)	105 (9.1%)
17-18	-	42 (16.4%)	42 (3.6%)
Unclassified	69	-	69
<b>Car Ownership</b>			
No. of vehicles	Primary	Secondary	All
0	403 (42.6%)	67 (26.6%)	470 (39.2%)
1	355 (37.5%)	96 (38.1%)	451 (37.6%)
2+	188 (19.9%)	89 (35.3%)	277 (23.2%)
Unclassified	-	-	29

#### 3.1 School Characteristics

The study area has 61 primary and 18 secondary public schools with total enrolment of 15,531 and 6,656

respectively. Forty-seven (i.e., 61%) of schools indicated their daily opening and closing hours. Schools open and close within time windows of about an hour in the morning (7:55 to 9:00 AM) and in the afternoon (2:15 to 3:15 PM) respectively. Experience with daily traffic pattern in T&T suggests that these time windows coincide with AM and PM peak traffic periods in the area.

**3.2 Response Rates**

Table 2 shows schools participation rate and questionnaire response rates. A school participation rate of 77% and a questionnaire response rate of 62% were considered satisfactory for the purpose of this study.

**Table 2.** School participation and questionnaire response

School Academic Level	Number of Schools		Number of Questionnaires	
	Total	Participating	Distributed	Returned
Primary	61	50(82%)	1,525	977(63%)
Secondary	18	11(61%)	450	257(57%)
All	79	61(77%)	1,975	1,234(62%)

A similar study conducted in 1980 in the areas of Curepe and St. Joseph - a subset of St. George East School District attained a response rate of 53% (Underwood and Rasul, 1984). Primary schools attained higher participatory and questionnaire response rates than secondary schools (p-value of 0.032 and 0.004 respectively). A higher response rate from primary schools could be a reflection of the difference in levels of confidentiality and/or levels of priority and seriousness to matters not related to academic issues between the two school categories.

**3.3 Travel Modes**

Respondents were asked to indicate mode of transport used to and from school among the seven travel modes of: - private car, school bus, PTSC, maxi-taxi, taxi, bicycle, and walking. Discussion of these results is presented in the following subsections.

**3.4 Mode Split**

Table 3 shows the mode split reported in this study, and a comparison with mode split observed in the 1980 study, while Table 4 compares mode split between this study and other countries. In comparing mode shares between 1980 and 2004, it is shown that the use of motorised transport in 2004 (i.e., 79.5%) is slightly higher than that in 1980 (i.e., 78%), however the difference is not statistically significant (i.e., p= 0.275).

Non-motorised transport mode shares seem to stabilise over years between 1980 and 2004 probably due to unchanged spatial distribution of schools and their catchment areas. However, the share of private car in 2004 (41%) is statistically significantly higher (i.e., p=0.004) than in 1980 (33%) at the expense of decreased percent of “shared modes”. Increased use of private car with time was also observed in the United Kingdom (UK) where in 2002 the usage had doubled to 32% in comparison to 1985 (Osborne, 2005).

In comparison with other countries (see Table 4), higher shares for non-motorised modes have been attained elsewhere making an achievable target. In T&T and Kuwait where most school transport is made by motorised transport, they share two things in common of cheap fuel and they are producers of oil. While the cost of fuel in Kuwait was US\$ 0.50 per gallon (Koushki, et al., 2002) in T&T it costs between US\$ 0.43-0.47 per litre.

**Table 3.** School transport mode split

School Category/ Study Year	Motorised Transport						Non-Motorised Transport (%)	
	Private Car (%)	Shared Modes (%)				Motorised Total (%)	Cycle	Walk
		School Bus	PTSC	Maxi-Taxi	Taxi			
Primary (N=971)	30.9	7.0	1.1	14.7	14.2	67.9	0.0	32.1
Secondary (N=256)	31.6	16.0	2.7	31.6	12.5	94.5	0.0	5.5
All (N=1,227)	31.1	8.8	1.5	18.2	13.8	73.4	0.0	26.6
2004 Study <sup>1</sup> (N=317)	41.0	8.8		29.7		79.5	0.0	20.5
1980 Study <sup>2</sup> (N=1,783)	33.2	9.7		35.0		78.0	0.4	21.6

Remarks: <sup>1</sup>Sixteen schools within the boundaries of 1980 study; <sup>2</sup> Calculated from Underwood and Rasul (1984, p.73)

**Table 4.** International comparison of mode split (%)

Mode	Developed Countries				Developing Countries	
	Denmark <sup>1</sup>	UK <sup>1</sup>	USA <sup>1</sup>	Australia <sup>2</sup>	St. George East School District, Trinidad	Kuwait <sup>3</sup>
Cycling	50	2	-	-	-	<10
Walking	25	44	13	9.9	27	
Public	13	22	38	0.3	42	
Car	12	32	49	89.8	31	

References: <sup>1</sup>Osborne (2005); <sup>2</sup>Morris et al. (Undated) - Only for primary school trips; <sup>3</sup>Koushki et al. (2002)

### 3.4 Factors Influencing Mode Choice

Three factors of “student’s age” (years), “academic level” (primary vs. secondary), and “family’s car ownership level” (number of cars) were analysed for their influence in mode choice decisions. In T&T, car goes beyond its role as mode of transport to one of image and social status. Most times in classic mode share modelling, car ownership and household income are used together to represent social-economic characteristic of the trip maker. It was not expected that some respondents such as school students might possess accurate information on household income. For this study, the number of cars owned by the household was used as a good indicator of household financial well-being, i.e., as a surrogate measure of household income. Ewing et al. (2004) found that car ownership was more influential than household income.

Influence of “academic level” and “family car ownership” factors in mode choice were analysed at both aggregate and disaggregate levels; while “student’s age” factor was only analysed at disaggregate level. As shown in Table 3, Chi-square ( $\chi^2$ ) test for independence (aggregate level analysis) on the 2004 data set indicates that secondary school students use shared modes more than primary school students who in turn use the

walking mode more than secondary school counterparts (p-value < 0.0001). At disaggregate level analysis, it shows that school academic level is a significant factor when mode selection involves walking. Primary school students are more likely to walk rather than riding motorised transport. These trends may suggest that: - 1) Smaller age of primary school students whom parents/guardians would not trust to travel without supervision in shared modes; and 2) Higher density of primary schools than secondary schools, which may result in more primary school students living within walking distances to schools.

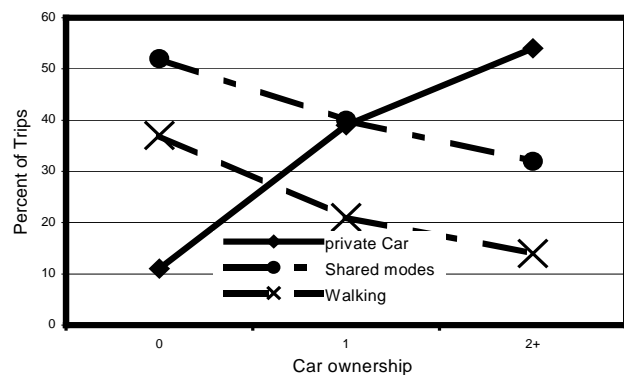
Table 5 shows the summary of disaggregate analysis using multinomial modelling. The odds that a student who is one more year older will take a private vehicle instead of walking are 0.743 times than that for a younger student. The pattern of older students more likely to walk than taking motorised transport was also observed by Zwerts and Wets (2006) in Belgium. The odds that a student who is one more year older will ride a “shared mode” instead of private mode are 1.249. Similar pattern of older students riding “shared modes” than private car mode was observed by Rhoulac (2005) in the USA.

**Table 5.** Regression model predicting school transport mode shares

Mode Comparison	Variable	Estimate	Std. Error	Wald Statistic	Sig. (p-value)	Odds Ratio
Riding <b>Private</b> vehicle instead of <b>Walking</b>	Vehicle Owner	2.273	0.215	112.038	<0.000	9.710
	Age	-0.297	0.053	31.743	<0.000	0.743
	Primary School	-2.910	0.403	52.168	<0.000	0.054
Riding <b>Shared</b> modes instead of <b>Walking</b>	Vehicle Owner	0.165	0.158	1.084	0.298	-
	Age	-0.075	0.047	2.541	0.111	-
	Primary School	-2.575	0.367	49.219	<0.000	0.076
Riding <b>Shared</b> modes instead of <b>Private vehicle</b>	Vehicle Owner	-2.108	0.202	108.780	<0.000	0.121
	Age	0.222	0.046	23.007	<0.000	1.249
	Primary School	0.335	0.284	1.392	0.238	-

Figure 1 shows the relationship between mode shares and level of car ownership for the three transport modes of: - 1) private car, 2) walking, and 3) “shared modes”. Aggregate level analysis in Figure 1 indicates that shares for private car increases with the increase of cars in the household, while the shares for walking and shared modes decreases with the increase of cars in the household (p < 0.0001). Disaggregate analysis in Table 5 indicates that vehicle ownership is significant in differentiating trips made by private vehicle over the other two modes. Students from households owning a car are more likely to take private car or shared mode instead of walking. Similar patterns were observed by Ewing et al. (2004). With increasing vehicle ownership, private car attracted much of its additional riders from those who were using public transport. This trend increases pressure on parents and reduces their productivity because they have to take time off from

their busy activities to chauffeur their children to and from school.



**Figure 1.** Relationship between car ownership and mode

### 3.5 Carpooling and School Bus Programmes

Car-pooling system is not popular in T&T. Design of such a system would require that the opinion of potential users be taken into account. Fifty-six percent of 1,198 respondents indicated their willingness to participate in the programme if started. This proportion is statistically significant (i.e., p-value <0.001). Through logistic binary regression analysis, significance of five factors shown in Table 6 on car-pooling preferences was investigated.

**Table 6.** Support for car-pooling

Parameter or Factor	Estimate	Std. Error	Wald Statistic	Sig. (p-value)	Odds Ratio
Age	-0.025	0.040	0.401	0.527	-
Car Ownership	-0.178	0.146	1.482	0.223	-
Shared Modes vs. Private	-0.151	0.170	.790	0.374	-
Walking Mode vs. Private	-0.197	0.192	1.057	0.304	-
Primary School	-0.177	0.257	.474	0.491	-
School Bus Support	1.780	0.170	109.560	<0.001	5.933

“School bus support” was the only parameter that was statistically significant in differentiating those who support and don’t support car-pooling. The odds ratio to support car-pooling by those who support school bus is 5.933 times those who do not support school bus programme i.e., those who support bus are more likely to support car-pooling.

Similar analysis (as for car-pooling) was done for school bus programme support. The “mode” variable with three category levels (including private vehicle, walking, shared modes) was replaced by a binary variable (shared modes, otherwise) in order to check the acceptance of school bus programme by those who already use shared modes. Out of 1,218 respondents, 71% indicated that they would be ready to participate in the school bus programme. The proportion is statistically significant (i.e., p-value <0.001). Table 7 summarises the summary of logistic binary regression analysis on the support of school bus programme accounting for: 1) car ownership, 2) student age, 3) transport mode in use, 4) academic level (school type), 5) car-pooling support, and 6) school bus funding option. Funding school bus was collapsed into two main levels (i.e., by government and by private).

Only “support car-pooling” was the only parameter that was statistically significant in differentiating those who support and who don’t support school bus. The odds ratio to support school bus by those who support school car-pooling is 4.7 times those who do not support car-pooling programme i.e., those who support car-

pooling do support school bus programme as well.

### 3.6 School Bus Funding

Respondents were asked to identify who should fund the school bus programme. The responses were categorised into three classes of 1) Government, 2) Parents, and 3) Others. Out of 901 respondents, 71% expect the Government to fund the programme, while 28% and 1% expect the programme to be funded by Parents and “Others”, respectively. Because of very small proportion of respondents who suggested school bus funding by “Others”, this group were dropped in the binary logistic analysis.

Table 8 summarises binary logistic analysis results. It is shown that age, car ownership, and academic level were statistically significant. Older students and primary school students are more likely to propose Government funding for school bus programme, while students from households owning a car are more likely to propose that the programme be funded privately.

**Table 7.** School bus support

Parameter	Estimate	Std. Error	Wald Statistic	Sig. (p-value)	Odds Ratio
Age	-0.042	0.092	0.204	0.652	-
Car Ownership	-0.432	0.341	1.606	0.205	-
Primary School	0.192	0.544	0.125	0.724	-
Support for Car-Pooling	1.547	0.351	19.410	<0.001	4.700
Funding School Bus Privately	-0.419	0.317	1.743	0.187	-
Using Shared Modes	0.347	0.313	1.231	0.267	-

**Table 8.** School bus funding privately?

Parameter	Estimate	Std. Error	Wald Statistic	Sig. (p-value)	Odds Ratio
Age	-0.160	0.048	11.213	0.001	0.852
Car Ownership	0.735	0.175	17.633	<0.001	2.086
Primary School	-1.032	0.302	11.684	0.001	0.356
Using Shared Modes	-0.109	0.168	0.418	0.518	-
School Bus Support	-0.252	0.307	0.674	0.412	-

### 3.6 Comments on School Bus Programme

Comments on school bus programme varied from “too general” to possess any additional information to “detailed” specific issues. Comments which were “too

general” or difficult to interpret were left out in the analysis. Comments were grouped based on respondent’s willingness to participate in the school bus programme. Nine and four categories were constructed for willing and unwilling to participate in a school bus programme, respectively. Table 9 shows the frequency of comments categories, while the Annex-1 details the comments from respondents willing to participate, except “avoid walking” category. Statistical analysis was not pursued because of very few observations in most categories.

It is noted that security/safety issues appear in both

“willing” and “unwilling” lists implying of mixing feelings/understanding of safety and security of a bus system. It appears that safety and security are used in different context by different respondents, although safety should be restricted to vehicle accident related issues while security relates to social evils (such as kidnapping). Another explanation for varying opinions on a school bus programme could be that different school bus models are assumed by respondents based on their experience of either the existing PTSC school bus programme or from elsewhere.

**Table 9.** Comment frequency distribution on school bus programme

Respondent Attitude	Category of the Comment	School Category		
		Primary	Secondary	All
Unwilling	Negative issues towards the programme <sup>1</sup>	15	8	23
	Inconvenience <sup>2</sup>	4	6	10
	Security and/or safety concerns	13	4	17
	Live near the school	42	2	44
Willing	Avoid Walking	9	7	16
	Efficient Transport Mode	73	25	98
	Fun and amusement	5	1	6
	Live at a far distance	14	2	16
	Safety and security	25	6	31
	Social benefits	6	3	9
	Convenience	17	12	29
	Hassle with current system	22	2	24
Pre-conditions	14	3	17	

Remarks: <sup>1</sup> Overcrowding, lack of supervision, irresponsible staff, low reliability/efficiency, intimidation, expensive, and dislike company of Children.

<sup>2</sup> Incompatible with parents’/guardians’ or students’ timetable.

Comments given by those who are unwilling to participate clearly demonstrate that Parents/Guardians who insist on driving their children to school is not for economic reasons because school bus may well be cheaper than the total cost of driving. It is about security, safety, time pressure and convenience. Similar reasons were found in North Carolina where “parents’ schedule” and “student behaviour” were the main reasons for many children not taking school bus (Rhoulac, 2003). Parental safety concern was also cited in Australia study (Ridgwell et al., 2005). In this study, living close to school is also one of the main reasons for not having a desire to participate in a school bus programme.

With exception of “live near the school”, the remaining comments from the “willing” group may impact bus programme utilisation if not addressed at planning and operational stages of any planned school bus programme. This underlines the importance of involving stakeholders in the planning and implementation process for school bus introduction or enhancement. Even those who are willing to participate in the programme but did not give any comment, they have some level of expectations that need to be recognised.

#### 4. Discussions

Transport needs and nature in the school district of St. George East, Trinidad differs between primary and secondary school students, partly due to differences in student ages, and distances between homes and schools. Primary school students walk often to school because they live closer to school compared to secondary school students, who ride “shared modes” than primary school students as they are mature enough to handle the hassles of public transport. However, proportions of both primary and secondary school students riding private cars are similar.

An older student is more likely to walk to school than riding motorised transport, and is more likely to ride shared mode than riding a private car. Increase of cars in a household was associated with increase in the share of private car mode and decrease in shares of “shared modes” and walking mode. A student from a household owning a car is more likely to ride car to school rather than walking.

While the share of motorised modes has gone down by 5 percentage points between 1980 and 2004, the use of shared modes as opposed to private cars has not changed significantly. Experience indicates that private car ownership has overgrown other type of vehicles in T&T. Large population of private cars together with

government subsidised fuel results in school transport that is dependent on private car, inefficient, and costly. Increasing car-dependent school transport is not a problem for T&T alone; literature indicates that it is a worldwide phenomenon (Osborne, 2005; Koushki et al., 2002; Morris et al., undated). The only difference is that in T&T there are no efforts in place to reverse this trend.

Majority of respondents support both car-pooling programme and a school bus programme, but the proportion that supports school bus (71%) is higher than that in support for car-pooling (56%). Most respondents do not view car-pooling as a viable mode for school transport as opposed to school bus, partly because car-pooling had never been popular in Trinidad.

Those who support school bus are also likely to support car-pooling and vice versa. While the majority expects the government to fund the school bus programme, primary school students or their parents, and older students are likely to suggest that the school bus programme be funded by the government. On contrary, respondents from households that own a car are likely to suggest that the school bus programme be funded privately.

Parents are inclined to transport their children to and from school by private cars because of parents' fear for insecurity (such as kidnapping), inefficient public transport, and readily affordable private cars. Morris et al., (Undated) ranked highly the concerns over traffic safety and personal security as the main reason of using private car to school, followed by the reason of increasing travel distances. It was observed that respondents referred school bus programme safety and security interchangeably. However, in the context of T&T environment we interpret that security as the major concern among respondents. Thull and Lausterer (2003) partly attributed increasing of private car usage for school transport in New Zealand to cheap second-hand Japanese vehicles. Hauer (1997) noted that the confusion between safety and security of transportation facilities do sometimes encroach to transportation safety professionals as well.

## 5. Conclusion and Recommendations

In recent years, Trinidad and Tobago have witnessed a rapid growth of vehicles on its road network. Increased vehicle ownership is blamed for traffic congestion, traffic crashes, air pollution, and excessive fuel consumption. Existing transport to and from school in Trinidad and Tobago is car dependent, informal, uncoordinated and inefficient.

With current increasing trend in number of private cars in the country and increasing personal insecurity (mainly kidnapping), more school trips would depend on car unless efforts are made to address the issue. There is a need to formulate school transport policy which would balance the two main objectives of 1) smoothly transporting children to and from school where they will

attain quality education that is a foundation for a secure future for us all; 2) providing school transport that will combat the appalling traffic congestion.

Development of a successful bus programme should encompass input from parents and school children during planning and operational stages. Further research on T&T school transport is deemed necessary to complement findings from this study. In particular factors that influence the distance to school, such as school choice, school setting and school development guidelines, academic quality and funding of schools requires a deeper understanding and consideration in developing school transport policies in the country.

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### **Social Benefits**

- Children will learn to take care of each other.
- Meet new friends.
- Sympathy with disadvantaged groups.
- Get time to go to other places after school.

### **Convenience**

- Wake up early.
- Pick-up is unreliable.
- Convenient and less strain to both students and parents/guardians.
- Near bus route.
- More relaxed.
- Relief from driving.
- Less responsibility to parents/guardian.
- Easier to transport heavy books.

### **Hassle of Current System**

- Guaranteed transport.
- Parents have no car.
- Difficult of getting transport.
- Happy to get transport.
- Easier to get to school.
- Avoid confrontation with drivers.

### **Pre-conditions**

- If by government.
- If vehicle, staff, and schedule are reliable.
- If its is free.
- If passing in the area.
- If vehicles are clean.
- Depend on cost and reliability.

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### **Annex-1:**

Comments for willing to participate in school bus programme

#### **Efficient Transport**

- Brings children to one service.
- Pick-up for present arrangement is unreliable.
- Less car/traffic on the road.
- Less traffic jam.
- System is more efficient.
- Save ozone layer.
- Burn less gas.
- Frequent breakdown of my car.
- Punctual.
- Everything would be more arranged.

#### **Fun and Amusement**

- Will be fun.
- Learn new things.
- Like to travel.

#### **Live at a Far Distance**

- Live far.
- Because of distance.

#### **Safety and Security**

- Safer.
- Children risk by walking.
- Reduced accidents.
- Security.
- Prefer to travel with people whom I know.

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