ASSESSMENT OF SCHOOL TRAVEL BEHAVIOR AMONG TEENAGERS IN SAMARU COMMUNITY ZARIA, KADUNA STATE, NIGERIA

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ABSTRACT

This study examined the factors influencing modal choice of school travel behavior among teenagers in Samaru community, Zaria. Existing modes of trips, home to school proximity, sex and income level are among the factors examined. The study examined three (3) public secondary schools with the total population of about 11,999 of male and female students. A total of 387 copies questionnaire were randomly administered to students from age 13-18 years old among which 372 were returned. Descriptive statistics were used to analyze the collected data. Findings of the study revealed that, use of parent cars to/from school by the female students is higher (1.6%) compared with male students (0.76%) while walking alone or in group (52.5% and 53.5%) and sometimes cycling alone or in group (26% and 35%) are the major alternative trips mode among teens as a result of home to school proximity, income level and absence of functional school bus among other factors, which might lead to lateness, exhaustion, poor performance, amongst others particularly those teens that walk and bike to/from the school. Additionally, results also find out that, used of other modes (tricycle, motorcycle, public bus and private car) for commuting to/from school were mostly by the high income students which account for 22% followed by medium with 15.7% and least low income 8.8% respectively. From the above result, it indicates that income affect trip behavior of student mode choice in the study area. The study recommends that, stakeholders and Kaduna state government should provide appropriate support to families with lower incomes to assist them with their school travel needs such as functional school bus for this public secondary schools so as to mitigate students trip mode behavior and also parents of low income should make sure that their children leave early to school.

KEYWORDS: School; Travel; Behavior; Teenager and Samaru

1.1 Introduction

The term teenage is commonly used to describe the transition stage between childhood and adulthood. Macmillan Dictionary (1981) defines teenage as the period of psychological, social and physical transition between children and adulthood. This age begins from 13 years and continues till maturity. While the world Health Organization (WHO) defines
teenage as the period of life between 10 and 19 years of age. In contrast, in the United States, adolescence is generally considered to begin somewhere between ages 12 and 14 and end at 19 or 20. In addition, Smith, (2000) defined the term teenager as a person who is thirteen to nineteen years of age.

Thus, most teenagers are found attending secondary schools given their ages. This leads to variation in the manner they transport themselves to and from school. School transportation involves complex issues. School trips are one of the main points of urban trips and planning. Child’s mode of travelling to school is influenced by, or dependent on, parental choices. Thus, an increasing proportion of car trips may reflect parental choices and constraints. Whether a parent can escort their children to school may depend on their scheduling and spatial constraints, for instance, work schedule and job location in relation to home and school locations (Datz et al., 2005).

More so, schools have become large trip generators in local areas which cause morning and afternoon traffic congestion on streets (McMillian, 2007). Therefore, walking and cycling to school has become a major concern for public health, policy makers and transport planners around the globe during recent years. Roads are becoming more congested and children have less physical activity and are more likely to used motorized trip modes to go to school. This lead to safe route programs in some countries in order to encourage and enable children to walk or bike to school (Marchetti, Jones and Pullen, 2007).

In light of the above, the EU Commission (2002) developed a working document (Kids on the Move) to assist local politicians, teachers, and parents with efforts to improve the mobility and health of Europe’s 90 million children. Kids on the Move presents research evidence that children’s health is at risk from current transportation practices in Europe. Record showed that, between 15 and 20% of journeys made involve children and young people. Also, 50% of children do not play outside and EU citizens are dissatisfied over the actions taken by the public authorities for the protection of the environment. Kids on the Move discusses methods for reducing the volume of traffic in areas where children travel, making public transport more accessible and attractive for parents and children to patronize and give room for little walk.

Generally, different modes are available for movement of students to schools, these includes: walking, bicycle, motorcycle, taxi and buses. Each mode has its advantages and disadvantages. Mode of transport could either be public or private; public mode of transport relating to motorcycles, shuttle buses, cabs among others and private mode of transport is related to individual’s private-owned vehicle. These two modes of transportations are very important in University and college transportation planning. Polat (2012) identified fare, travel time (walk access time and accessibility of transport, waiting time, in-vehicle (journey) time), service quality, comfort, reliability, availability and costs of alternative travel modes, time of travel, purpose of travel and the level of public transport dependency as public transport demand determinants.

Many studies have been conducted elsewhere on travel demand considering cities, towns and region; some of them include; (Aderinlewo, Ajala, Olayiwola and Afolayan 2020; Mukhlis, Muhamad and Muhamad 2020; Mintesnot 2016; Shukla, Nishra and Dalal2019; Sue and
Based on the empirical studies reviewed above none of these studies were carried out in the study area. It is against this backdrop that, this study attempts to conduct an assessment of school travel behavior among teenagers in Samaru community Zaria specifically with thousands of teenagers attending schools hence the presentation of the study.

1.2 Need for the Research
A vast majority of travel behavior studies address adults, leaving a gap in the literature on investigating the factors that affect teenagers’ travel behavior. Moreover, the growing trend of escorting underage persons by car added to their invisibility as transport consumers. In fact, young persons in transport studies are characterized as “victims” or “problems” but not until recently when several studies viewed themas complex actors whose views, attitudes, and travel behavior are worthy of investigation (Davis et al., 1996; Jones et al., 2000; NCB, 1998; Thomsen, 2004; Simpson, 1997).

Besides attending schools and private lessons, teenagers also attend sports activities, entertainment activities, visiting friends, parks and a host of other destinations. Those trips have significant environmental, economic and safety impacts on society and also have short and long term health impacts on the teenagers (Antoniou et al., 2009; O’Brien and Gilberd, 2003).

Samaru community of Zaria metropolis is among the areas affected by congestion with walking, cycling and vehicles relied upon by teenagers for school trips and other activities. This usually occurs at peak times during the start and end of school day. Walking, bicycle, motorcycle, tricycle, private cars, school buses and public buses are the most common modes of transport for children to go to school. Very often, children walk and cycle in groups, this leads to traffic constraint and calls for concern by the parents and all stakeholders. Study of this nature exposes the dangers of this trip pattern for safer and a more sustainable transport system in Samaru, Zaria.

1.3 Literature Review
Muklis, Muhamad, and Muhamad, (2020) reviewed childrens’ distinctive travel behaviors including their mode choice of trips to and from school. The study discovered that, many factors influenced mode choice behavior of children’s school trips. The study used expert’s opinion in gathering data. Each opinion has a special and important attention of the factors. The study formulated important factors from various opinions about the factors influencing mode choice behavior of children’s school trips. The study also simplifies these factors into four (4) factor clusters firstly the family environment which includes parental influence, gender, age, household income, risk and safety perception, number of students, car availability and characteristics of family members; secondly social environment includes level of spatial interaction between households, travel environment, active travel culture, season or weather and nationality; thirdly the school environmental factors are characteristics of children and schools, schools location, travel companion and efforts to educate children about active travel while the fourth factor is the policy environmental factor which includes; home to school proximity/distance, household socio-economic attributes, urban forms, land-use patterns, urban infrastructure among others factors.

Shukla, Nishra and Dalal, (2019) analyzed mode choice behavior of school going children were various factors of...
school students’ travel behavior such as mode of travel, travel cost, travel distance, travel time and the relationship between mode of travel to school and the full range of factors that might affect mode choice in the city of Ahmedabad, India. The study included existing mode choices; as private vehicles, public vehicles or school vehicles. Data were collected through preparation of web based questionnaire and descriptive analysis and a questionnaire survey were conducted where students, parents and school authorities were requested to provide travel habits and daily travel information. The results indicate that, factors influences potential mode switching of school going children from private vehicle to shared vehicles like three-wheeler, school van and school bus. The study recommends that, routes taken by the drivers and number of school going children plays vital role in shared vehicles also personal vehicle users are encouraged to use van or bus for the school trip purpose.

In contrast, Mintesnot, (2016) studied cycling, walking and all other alternative-to-driving modes of transportation used by teenagers that promote physical activity, which is important for creating a healthy and sustainable community. The study found that, most younger United State teens are being driven by their parents to and from school and other activities, which gives them fewer opportunities for physical activities. The study used the 2009 U.S. National Household Travel Survey (NHTS; USDOT, 2009), to investigate the factors affecting the mode of choice of younger teens in the United States. The results of the study revealed that, there was a strong correlation between parental attitude and younger teens’ mode choice. Factors that affect parents’ decisions to drive their teens to and from school include distance between home and school, traffic congestion, and crime along school routes.

Similarly, Sue and Ferrari (2015) analyzed pupil census data on all 26,709 secondary pupils (aged11–16) who attended schools in Sheffield, United Kingdom during the 2009-10 school year. Individual pupil data was grouped within school, and neighborhood, within across-classified multi-level model of active versus motorized modes of commuting to school. The results support the findings of other research that distance to school was key, but suggested that, socio spatial clustering within neighborhoods and school was also critical. A further finding was that, distance to school varies significantly by ethnicity, with white British pupils travelling the shortest distance of all ethnic groups.

In Nigeria, Aderinlewo, Ajala, Olayiwola and Afolayan (2020) examined the factors that influence the mode choice of students in making school trips using a multinomial logit model. Cross-sectional survey was used to sample students from secondary schools in Akure, Ondo state. Findings revealed that, parental perceptions of traffic safety vary across different socio-economic status areas. Factors affecting student’s trip patterns which include age range, distance, gender, class, parent’s occupation, and the cost of transport to and from school were analyzed and students between the age range of 11 to 15 dominate secondary schools with a percentage of 66.7% and majority of these students within this age range use school bus having a percentage of 20.6%. Also, based on the respondent’s gender, higher percentages (63.4%) were females and they prefer using the school bus as their means of transport. Government work is the major occupation of the parents of most of the students that were interviewed.
(45.7%) and students whose parent falls under this category prefer using their parent’s car as a mode of transport. It was found that students in non-neighborhood schools, students from families with high income, high school students and female students were less likely to walk or use cycling compared to other students. The increase in average distance from home to school over recent decades has also been accompanied by significant growth in the proportions of pupils travelling to school by motorized means as opposed to walking or cycling.

1.4 Material and Methods

Data for the study was obtained at the field from school authorities. Questionnaires were randomly administered to students from age 13-18 years’ old in the three (3) secondary schools in Samaru community located at different segments of the town with total population of about 11,999 young age students.

To determine the sample size for the study, 387 was adopted using Yamane formula (1967). Also in determining the sample size for each of the school, Stat Trek (2012) was adopted. Where G.G.S.S Samaru has 193, G.S.S Bomo 107 and lastly G.S.S Basawa with 87 but only 372 (97%) questionnaire were returned. 3 Result of the study were analyzed using descriptive statistics and data were presented in tables and charts within the purview of understanding travel mode choices and their relating factors among school teens. See table 1

<table>
<thead>
<tr>
<th>Sampled schools</th>
<th>Students per school</th>
<th>Population per school</th>
<th>Sampled size per school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Girls Secondary School Samaru (Senior and Junior)</td>
<td>5,988</td>
<td></td>
<td>193</td>
</tr>
<tr>
<td>Government Secondary School BomoSamaru (Senior and Junior)</td>
<td>3321</td>
<td></td>
<td>107</td>
</tr>
<tr>
<td>Government Secondary School BasawaSamaru (Senior and Junior)</td>
<td>2,690</td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>Total</td>
<td>11,999</td>
<td></td>
<td>387</td>
</tr>
</tbody>
</table>

Author’s field survey, 2022
1.5 Study Area

Samaru is a suburb town located in Sabon-Gari Local Government Area in Zaria Metropolis of Kaduna State. The town is situated within latitude 11°12’ North of the equator and 7°37’ East of the meridian at an altitude of 550-700 meters with about 13km from Zaria city on the Sokoto road, 8km to Shika and 7km to Basawa. The suburb is also referred to as university village, a cosmopolitan areain nature drawing and fusing people of divergent national and international backgrounds. In addition, Samaru community is one of the major settlements that makes up of Zaria metropolis, an educational and administrative town which brought about the establishment of new settlement for non-residents of Zaria city. It comprises of Samaru, Hayin-dogo, Bomo and Basawa as community.

There are only three (3) public secondary schools within Samaru community which were chosen as the sample population. The schools are: Government Girls Secondary School Samaru (both senior and Junior), Government Secondary School Bomo, Samaru (both senior and Junior) and Government Secondary School Basawa (both senior and Junior) see figure 1.

1.6 Results and Discussions

Table 2 shows the existing modes of trips available for the teens’ school trips to/from the school in the study area. Where walking to/from alone or in group is the major trips behavior in the study area with about 52.5% and 53.4% respectively. This is followed by cycling to/from alone or in group with about 26% and 35% respectively. More so, about 18.5% and 12.3% of the teens used motorcycle, tricycle and public transit to/from school as their mode of trip behavior. While the use of parent car is the least mode with about 1.6% and 0.7% for teens trip to school.

1.6.1 Existing modes of school trips behavior for school teenagers in the study area

Table 2: Existing modes of school trips behavior for school teenagers in the study area

<table>
<thead>
<tr>
<th>Trips mode</th>
<th>Going to school</th>
<th>Back from school</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Respondents</td>
<td>Percentage</td>
</tr>
<tr>
<td>Walking Alone</td>
<td>117</td>
<td>31.5</td>
</tr>
<tr>
<td>Walking in Group</td>
<td>83</td>
<td>22.4</td>
</tr>
<tr>
<td>Cycling Alone</td>
<td>56</td>
<td>15.0</td>
</tr>
<tr>
<td>Cycling in Group</td>
<td>41</td>
<td>11.0</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>34</td>
<td>9.0</td>
</tr>
<tr>
<td>Tricycle</td>
<td>22</td>
<td>6.0</td>
</tr>
<tr>
<td>Public Transit/Taxi</td>
<td>13</td>
<td>3.5</td>
</tr>
<tr>
<td>Parent car</td>
<td>06</td>
<td>1.6</td>
</tr>
<tr>
<td>School Bus</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>372</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Authors field survey, 2022

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The findings revealed that, walking and cycling to/from alone or in group by the teens is the major alternative trip mode behavior for the teenagers due to the fact that, majority of the teens’ parent’s level of income is low and most of the schools are within the walking distance from the surrounding communities. Findings also revealed that, the absence of public school bus for commuting students to/from in the study area allows the teens to embark on school trips themselves using bicycle, motorcycle, tricycle and public transit.

The implication is that, many students arrived school late and that greatly affect their performances because they might arrive the school premises exhausted. On the positive note, trekking or walking and cycling to or from school is a form of exercise that helps them to be fit and healthy because there are number of them who do not do any form of exercise.

![Figure 2: Modal choice for school trip behavior for student by level of income](image_url)

The figure 2 describes the trip behavior by income level (high, medium and low income) of students in the study area. Jensen (2008) suggested that, level of income does not significantly influence students travel mode choice, this study does not support that conclusion. Because the result of the findings shows that, student from high income level which account 4.8% are the least and less likely to used walking and cycling alone or in group to/from school as their trip mode choice behavior when compared with the low income level students with 32% followed by medium income with 17.2% as their mode choice for school trip in the study area.

Additionally, results also find out that, used of other modes (tricycle, motorcycle, public bus and private car) for commuting to/from school were mostly by the high income students which account for 22% followed by medium with 15.7% and least low income 8.8% respectively. From the above result, it indicates that income affect trip behavior of student mode choice in the study area.

1.7 Home to school proximity

Obviously, spatial characteristics have an influence on trip behavior of school children (Handy et al., 2002; Van Acker et al., 2007; Saelens and Handy, 2008; Hammadou et al., 2008). Distance from home to or from school among school
children determines the mode choice for school trip in the study area. The Table 3 shows the clear differences in the mode choice of transport based on the location of the school in relation to the place of residence of the child. About 52% of the teenagers whose trips to schools near their residence used walking (alone and in group) to or from school while only 14% walked (alone and in group) to school far away from their residence followed by cycling (alone and in group) with 33.38% within and 40.8% from outside the school location.

Table 3: Home to school proximity

<table>
<thead>
<tr>
<th>Trips mode</th>
<th>Location of school within town</th>
<th>Location of school outside town</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Respondents</td>
<td>Percentage</td>
</tr>
<tr>
<td>Walking (Alone &amp; Group)</td>
<td>195</td>
<td>52.4</td>
</tr>
<tr>
<td>Cycling (Alone &amp; Group)</td>
<td>124</td>
<td>33.3</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>26</td>
<td>7</td>
</tr>
<tr>
<td>Tricycle</td>
<td>18</td>
<td>4.8</td>
</tr>
<tr>
<td>Public Transit/Taxi</td>
<td>03</td>
<td>0.8</td>
</tr>
<tr>
<td>Parent car</td>
<td>06</td>
<td>1.7</td>
</tr>
<tr>
<td>School Bus</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>372</td>
<td>100</td>
</tr>
</tbody>
</table>

Author’s field survey, 2022

Those students that are close to schools and used bike were 33% as against those that used bike to a far school location that account for 41%. About 46% of school children used other modes such as motorcycle, tricycle, public bus and parent car to attend schools that are far away from their residences. On the contrary, only 14% used this mode for trips to or from school that are close to their residences. The implication is that, 14% of the students that walked might be late and exhausted for lesson and this would have a significant negative impact on their performances in the school.
Figure 3, shows the school trip behavior among teenagers by sex in the study area. The trip pattern by sex indicates that walking to and from school either alone or in group accounts for the largest proportion of school trips performed by males. This trip type accounted for 22.4%. For the females, the most dominant trip type was made using tricycle of about 11.5%. The second most dominant school trips by sex reveals that cycling 15.0% and walking 10.4% were made by males and females respectively.

Similarly their reliance of public transit and parent cars also vary by sex. Indeed, females accounted for public transit 7.8% and parents car 3.7% which are considered much greater than that of males with public transit 4.8% and parent car 1.4%. Walking and cycling are expected to be behind other modes (motorcycle, tricycle, public bus and parent cars) except on few occasions when there is traffic congestion. The implications of this finding indicate that males and females differ in the way they travel to and from school. Consequently, female students might perform better in the class than their male counterpart given that; they arrive earlier and not exhausted.

1.8 Recommendations
The result indicates that students with parents that have lower income are more likely to walk or bike to school. While Parents with higher average of monthly income have more transportation options to send their children to school; therefore their children are less likely to walk to and from school. More so, females are less likely than males to prefer walking or biking relative to traveling by school buses and parent cars. It was also confirmed that students in neighborhood schools walk and bike to/from school more due to home to school proximity. In addition, existing modes, sex, level of income, school proximity affect a student’s mode choice in the study area. Therefore, the paper recommends that, stakeholders and
Kaduna state government should provide families with low incomes to assist them with their school travel needs such as functional and effective school bus to all public secondary schools in study area. Low income parents should make sure that, their children leave early to school because a large number of them trek or walk. This will help them arrive in time get rested before lesson commence. Finally, further research should be conducted to identify additional factors related to school travel behavior among teenagers in Samaru community Zaria, Kaduna state.

1.9 Conclusions

The result of this study used descriptive statistics to analyses the elements influencing modal choice for public secondary schools travel behavior among teenagers as defined by the study aged 13 to 19 years in Samaru community, Zaria metropolis, Kaduna state. The study found that, many students arrive school late because of walking and sometimes cycling. The study also revealed that level of income influences the mode of trip choice by students.

References


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