MIKAILALSYS
Journal of Multidisciplinary Sciences

e-ISSN : 2987-2286
p-ISSN : 2987-3924

Index : Dimensions, Scilit, Crossref, Garuda, Semantic, Lens,Google Scholar,Base, etc

https://doi.org/10.58578/mikailalsys.v3i2.6676

Examining the Impact of Socio-Economic Characteristics on Commuting Patterns and Transportation Among University Students in Ogun State, Nigeria

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Article Info:

Submitted:	Revised:	Accepted:	Published:
Jul 1, 2025	Jul 26, 2025	Aug 7, 2025	Aug 12, 2025

Abstract

This study presents a comprehensive demographic and transportation analysis of students and staff at Bells University and Covenant University, examining commuting patterns in relation to socio-economic characteristics such as age distribution, marital status, and income levels. Results indicate that Covenant University has a higher proportion of younger respondents (38% aged 15–18) compared to Bells University (28%), with the majority at both institutions being single (77% at Bells; 83% at Covenant), reflecting a predominantly young, unmarried student population. Income data show that 56.5% of Bells staff earn above ₦114,000, while 44% of Covenant students receive allowances between ₦30,001 and ₦50,000. Trip analysis reveals that most journeys are under 30 minutes (69% at Bells; 76% at Covenant), with longer trips over one hour accounting for 17% and 11%, respectively. Car use is higher at Covenant, reflecting greater access to private vehicles, while walking and public transport use remain relatively low at both institutions. Trip purposes shift over the day, with initial trips primarily for educational purposes, especially at Covenant followed by increased shopping and recreational travel, suggesting a balance

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between academic and social activities. The findings highlight the need for targeted, sustainable transportation policies that address the mobility needs of university communities while enhancing campus accessibility and livability.

Keywords: Demographic Analysis; Socio-Economic Characteristics; Transportation Patterns; Trip Characteristics; Campus Mobility

INTRODUCTION

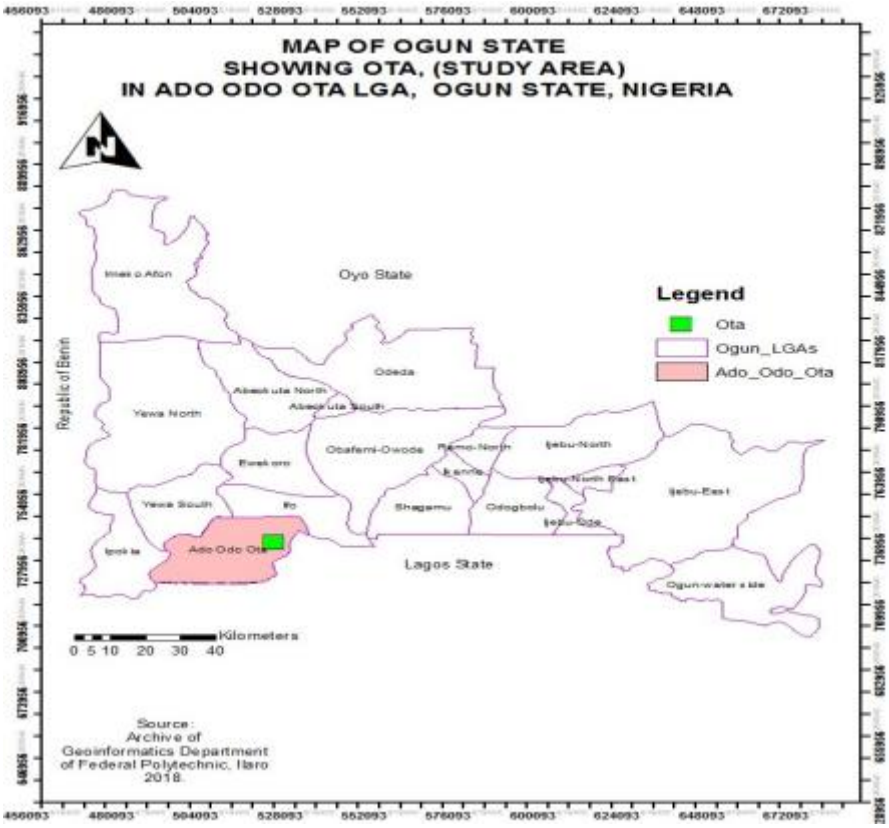
University campuses have unique transportation requirements with a high concentration of trips throughout several peak periods; hence transportation plays a vital role in campus life for any university community (including students, faculty, staff, and visitors) Miller & D'Este, 2020. Transportation in university societies has indeed gained significant attention in recent years, particularly regarding commuting trends and sustainable transport options. Recent studies highlight the importance of understanding commuting behaviors within university communities to promote more sustainable transportation practices. Cunha and Cadima (2024) emphasize the need to assess university students' mobility patterns, focusing on factors such as social behavior, socioeconomics, and spatial location. Cunha *et.al* (2024) indicates that understanding these patterns is crucial for developing effective transportation policies that encourage active travel, such as walking and cycling, which can significantly reduce reliance on motorized transport.Universities around the globe are progressively adopting strategies to promote sustainable transportation at their campuses. Additionally, research conducted at Otago Polytechnic (2024) explores the motivations behind sustainable commuting among international students, identifying key factors influencing their choices, such as the availability of public transport and the influence of their home countries' transportation norms. University communities typically possess many characteristics that make the use of alternate transportation modes convenient and a necessity. Furthermore, universities are more well-suited places for conveying the concept of sustainable travel habits among young travelers that could prove valuable later in their life. Therefore, the university community's travel patterns play an essential part in shaping the sustainability of the campus itself and that of the university environment (Delmelle et al. 2012). Transport is an important element in economic development and it affords the social and political interaction that most people take for granted (Ogwude, 2011). The aim of the study is to examine the demographic

analysis of university students and staff with a view to suggesting adequate provision for mobility requirement for the commuters. Despite the increasing focus on sustainability, there is a notable lack of comprehensive research addressing the modal choices and trip purposes of university students. This gap in knowledge can hinder the development of effective transportation policies that cater to the diverse needs of the university community. Consequently, universities may struggle to provide adequate services that promote sustainable commuting practices, leading to increased congestion and environmental impact. In order to achieve the aforementioned aim, the objectives towards achieving that include examine the socio-economic characteristics of the university staffs and students (campus commuters), assess the trip frequency of the campus commuters, appraise the modal choice of campus commuters and examine the travel time of university campus commuters.

METHODOLOGY

Ota is a town within Ado-Odo/Ota local government area of Ogun state, south-Western Nigeria. It is located in an extensive undulating plain characteristic of the south western part of Nigeria. It has much of its land area rising gently from the coastal plain to about 100m above the sea level. The city lies within the tropical rainforest and has an average annual rainfall of 154cm with 290C average daily temperature (Oyesiku and Kadiri, 1992) Ota is located on the latitude 6°40'29.57"N and longitude 3°11'52.99"E. It is bounded in the south by Agege and Alimoso in Lagos state, in the North by Ifo and Agbado of Ifo local government of Ogun state, Owode Idi-Iroko, a border town to Benin Republic form the boundary in the west.(See figure 1) The structure of development in Ota can best be explained with the frame work of the two primary roads that intercepted within the city. The roads connect the city to Lagos (the commercial hub of the country) and also to Cotonu (international trade route). Owode - idiroko Road is a trunk 'A' road, constructed to link Sango-Ota to the border town of Idiroko and the Benin Republic (Cotonu). It is a two way road that serves as intercity transit corridor as well as international corridor. The basic features of the road include: dua carriage way of 24meters road width; No drainage and good shoulders; the road is divided with concrete barrier between Sango and Winners Chapel location; the road provides access to all abutting plots with no restriction to parking. Sango-Winners corridor of the road is a distance of 10.5km. This

section provides access to major land uses such as the industrial estate, Ogun State housing Estate; Ota Judicial complex, Ogun state hospital, Ota; the Bells University of technology; Covenant University, Obasanjo Farms and a host of other industrial and commercial land uses including major city market.



RESULTS AND DISCUSSION

Socio Economic and Demographic Information

The provided table presents a comparative analysis of socio-economic demographics between two groups, "BELLS" and "COVENANT," highlighting various factors such as age, gender, marital status, education status, tribe, income per staff, and allowance per student.

The Bells group has 28% of participants between the age ranges of 15-18 years, while Covenant has a higher proportion (38%) of the respondents ranging between the age of 15-18 years. This suggests that Covenant may attract younger individuals, possibly due to its programs or location. About (51% of Bells and 49% of Covenant) fall between the age group of 19-30 years, indicating that both institutions are favored by young adults,

likely students in higher education. The percentages drop significantly in older age brackets, particularly for Covenant, where only 6% are aged 31-40. This could imply that Covenant has a younger demographic overall. A significant majority of both groups are single (77% in Bells and 83% in Covenant). This suggests that both institutions cater predominantly to younger, unmarried individuals, likely students. A large percentage of respondents in both groups hold higher education qualifications (HND/B.Sc). Covenant shows a notably higher percentage (52%) compared to Bells (45%), indicating a possibly more academically-focused environment. The higher percentage of students with advanced degrees in Covenant may attract potential students seeking rigorous academic environments.

The Yoruba tribe is the most represented in both groups, particularly in Bells (56.8%). This could indicate regional preferences or demographic trends within the institutions. Covenant has a somewhat more diverse representation of tribes. The tribal representation highlights cultural dynamics that may need to be addressed to promote inclusivity and diversity within both institutions Most respondents in both groups fall into the higher income brackets (Above N114,000), particularly in Bells (56.5%). This suggests that Bells may attract staff with higher earning potential, which could be indicative of better employment opportunities or professional advancement associated with the institution. The majority of students in both groups receive allowances between N10,000-N30,000 and N30,001-N50,000. Covenant has a higher percentage (44%) in the N30,001-N50,000 bracket, suggesting that its students might have access to better financial support or resources. The findings related to income and allowances indicate that financial support systems are crucial for student retention and success. Institutions may consider enhancing financial aid programs to better support their student populations.

TABLE 1: SOCIO ECONOMIC CHARACTERISTICS OF RESPONDENTS ACCORDING TO UNIVERSITIES

SOCIO-ECONOMIC	BELLS	PERCENTAGE	COVENANT	PERCENTAGE	TOTAL
AGE					
15-18	27	28%	107	38%	134
19-30	48	51%	141	49%	189
31-40	10	11%	18	6%	28
41-49	8	8%	18	6%	26
50 and above	2	2%	3	1%	5
GENDER					
MALE	70	74%	134	47%	204
FEMALE	25	26%	153	53%	178
MARITAL					

SOCIO-ECONOMIC	BELLS	PERCENTAGE	COVENANT	PERCENTAGE	TOTAL
STATUS					
Married	22	23%	46	16%	68
Single	73	77%	235	83%	308
Others	0	0%	4	1%	4
EDUCATION STATUS					
School Certificate	29	31%	93	32%	122
ND/NCE	4	4%	12	4%	16
HND/B.Sc	43	45%	148	52%	191
Post Graduate Certificate	19	20%	34	12%	53
TRIBE					
Hausa	5	5.3%	7	2.4%	12
Igbo	23	24.2%	74	25.8%	97
Yoruba	54	56.8%	140	48.8%	194
Others	13	13.7%	66	23%	79
INCOME PER STAFF					
₦18,000-₦30,000	0	0%	3	6.3%	3
₦30,001-₦50,000	4	17.4%	0	0%	4
₦50,001-₦114,000	6	26.1%	21	44.7%	27
Above ₦114,000	13	56.5%	23	49%	36
ALLOWANCE PER STUDENT					
₦10,000-₦30,000	37	39%	93	32%	130
₦30,001-₦50,000	33	35%	125	44%	158
Above ₦50,000	2	2%	26	9%	28

Source: Field Survey, 2024.

Trip Characteristics

Analysis of trip frequency of respondents on Monday according to Universities shows that respondents in Bells University take 215 trips that are less than 30 minutes with a percentage of 69% and respondents in Covenant University take 720 trips that are less than 30 minutes with a percentage of 76%, respondents in Bells University take 44 trips that range between 30 minutes and 1 hour with a percentage of 14% and respondents in Covenant University take 122 trips that range between 30 minutes and 1 hour with a percentage of 13%, respondents in Bells University take 52 trips that are more than 1 hour with a percentage of 17% and respondents in Covenant University take 101 trips that are more than 1 hour with a percentage of 11%. The study shows that majority of the trips taken by respondents at Bells University is less than 30 minutes with a percentage of 69%

and majority of trips taken by respondents at Covenant University is less than 30 minutes with a percentage of 76%.

TABLE 2: SHOWING TRIP FREQUENCY OF RESPONDENTS FOR MONDAY ACCORDING TO UNIVERSITIES

Duration	Bells	Percentage	Covenant	Percentage
< 30 mins	215	69%	720	76%
30mins – 1 hr	44	14%	122	13%
>1hr	52	17%	101	11%
Total	311	100%	943	100%

Source: Field Survey, 2024.

Modal Choice of Campus Commuters

For the first trip on Monday, the number of participants walking is relatively low for both groups, but higher for Covenant. This suggests a preference for other transportation modes. Covenant shows significantly more car usage compared to Bells, indicating a possible greater reliance on personal vehicles or better car access. The use of buses/taxis is moderate for both groups, with Covenant having slightly higher numbers. Both modes are minimally used, with no significant preferences indicated for either group. For the second trip, there is a noticeable drop in walking for both groups, suggesting that participants may have opted for more efficient transport modes for the second trip. Covenant still shows higher car usage compared to Bells, but there's a decline in overall trips. There is a slight increase in bus/taxi usage, particularly for Covenant. These modes remain low in usage, with no significant changes. For the third trip, walking increases slightly for both groups, which may indicate a return to more sustainable transport choices or perhaps shorter distances. Car usage decreases, suggesting participants are less reliant on personal vehicles for the final trip. This category sees a slight increase for Bells, while Covenant remains stable These modes continue to show low usage, reinforcing earlier trends.

For the fourth trip, very few participants from both groups choose to walk, suggesting a preference for quicker or more convenient modes of transport. The usage of cars is relatively low, with Covenant showing slightly higher numbers. This may indicate limited access or preference for personal vehicles. This mode shows a modest number of users, indicating some reliance on public transport. Covenant has a higher usage, potentially reflecting greater availability or acceptance of this mode. Both groups show minimal use, indicating that tricycles are not a preferred choice. For the fifth trip, there's a slight increase

in walking for both groups, suggesting a possible change in circumstances or distances being shorter. Car usage decreases, indicating a possible shift to other transport modes, perhaps due to availability or cost. This mode sees an increase, particularly for Bells, suggesting a greater reliance on public transport for this trip. Usage remains steady, with Covenant showing a slight preference. Again, very low usage, reinforcing earlier trends. For the six trip, There is a further increase in walking, indicating a trend towards more sustainable transport choices. Car usage dips again, potentially indicating constraints such as availability or cost. Continues to be favored, with Bells showing higher numbers, suggesting improved access or convenience. Usage remains fairly consistent, indicating that it's a reliable option for some participants. Usage remains low, indicating that it is not a preferred mode of transport among participants.

TABLE 32: SHOWING MODE OF TRANSPORTATION FOR FIRST TRIP ACCORDING TO UNIVERSITIES

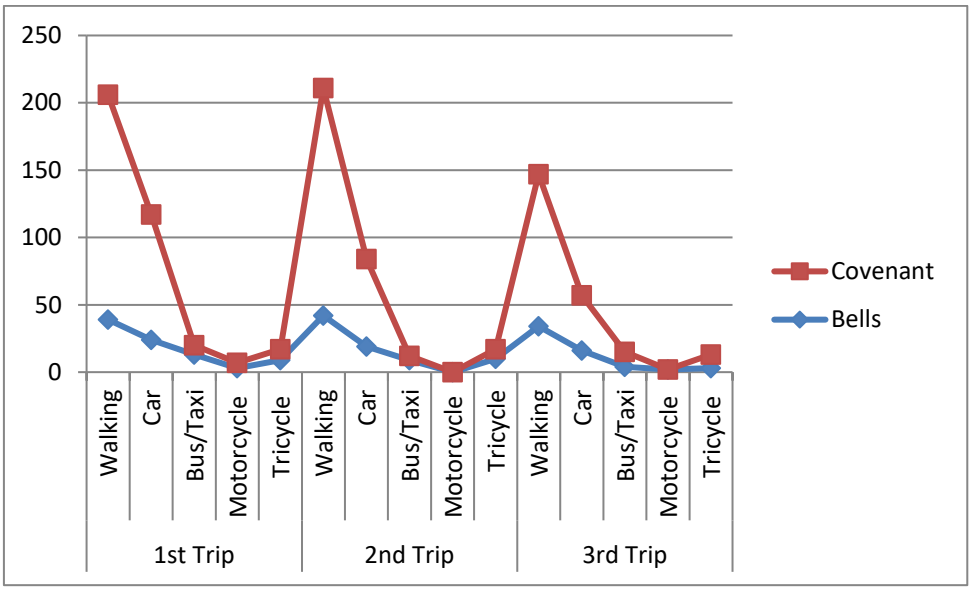


Figure 1

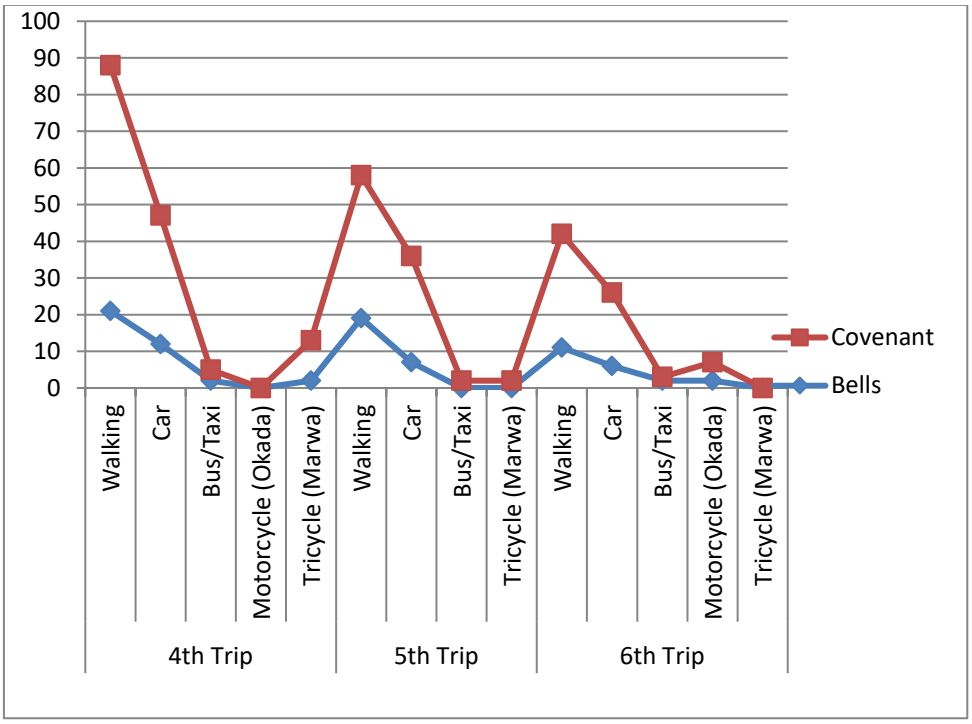


Figure 2

Respondents Purpose for Each Trip on Monday

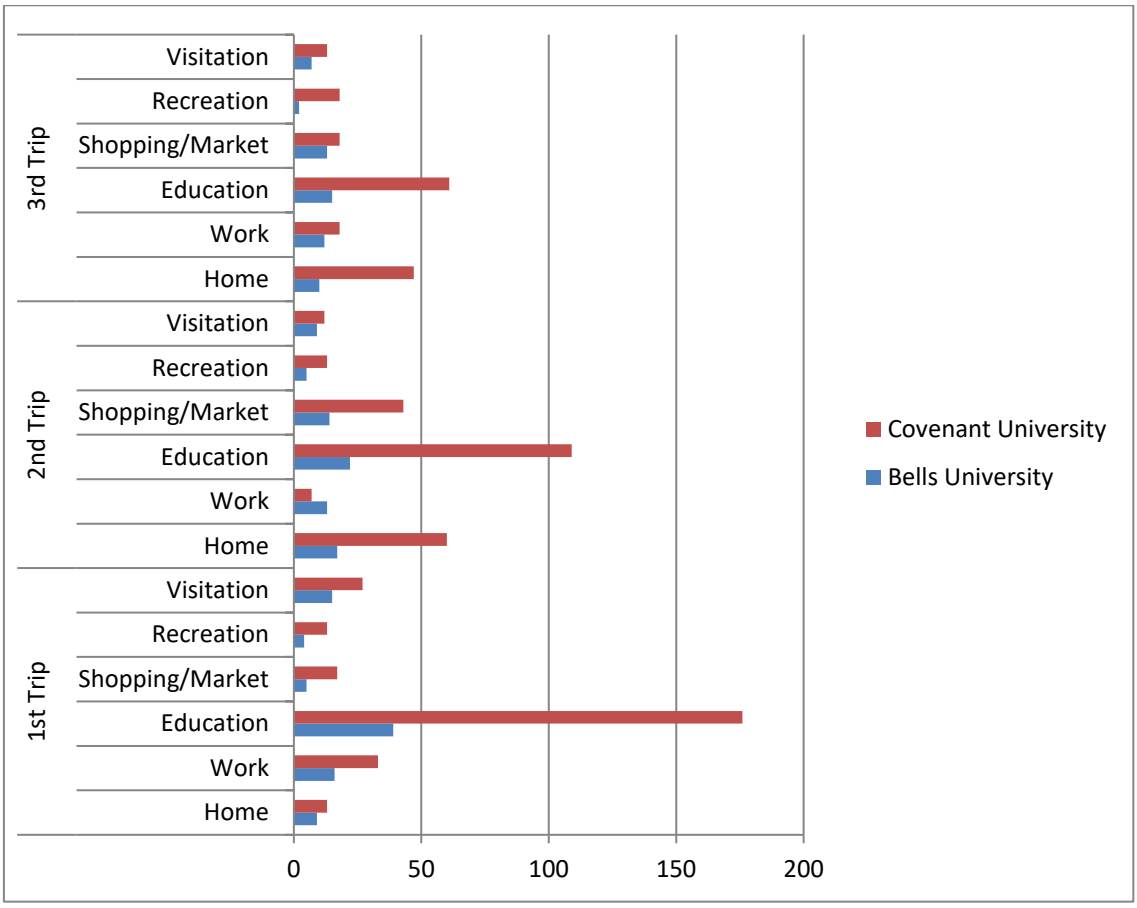
The provided graph outlines the purpose of trips taken by participants from "COVENANT" and "BELLS" universities across six trips—1st, 2nd, 3rd, 4th, 5th and 6th

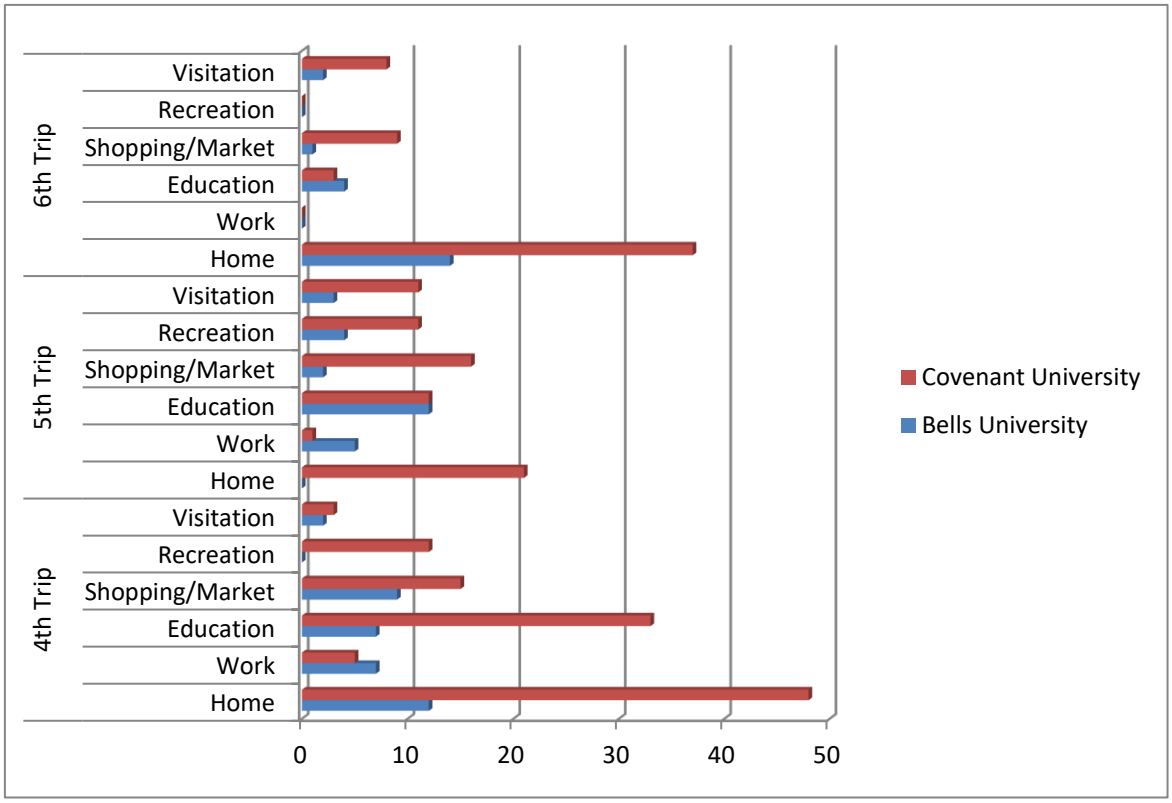
For 1st trip the purpose of the trip is for education purpose, this category shows the highest frequency of trips for both groups, particularly for COVENANT, suggesting that education-related activities are a primary reason for travel. There are moderate levels of visitation trips, indicating social interactions are also significant. This purpose shows low numbers, indicating that shopping is not a primary reason for travel in this trip. Very few trips are recorded for work-related purposes, which may indicate that many participants do not engage in work activities during this trip. The home category is also minimal, suggesting that participants are likely staying on campus or nearby. For the 2nd trip, there is a notable increase in shopping/market trips, indicating a shift in priorities or needs among participants. Recreation is slight increase, suggesting a growing interest in leisure activities. Education is significant but lower than the first trip, indicating that while education is important, other activities are gaining relevance. The visitation trips remain steady, indicating consistent social interactions. For the work and home purpose, these categories continue to show minimal trips, similar to the first trip. For 3rd trip Education-related trips

remain high for Covenant but decrease for Bells, suggesting a potential difference in engagement or academic activities between the two institutions. There is a slight increase in visitation trips, indicating growing social interactions over time. For recreation, the category continues to grow, suggesting a trend towards leisure activities among participants. The frequency of shopping trips remains stable, indicating that this is becoming a more regular activity. Both categories continue to show low numbers, reinforcing that these activities are not a primary focus for participants.

For 4th trip, Education-related trips show significant numbers for both universities, indicating that academic activities remain a core focus. The visitation purposes are notably high, suggesting a strong emphasis on social interactions among students. Recreation category shows moderate participation, which indicates that leisure activities are also valued. There are few trips for shopping/market purposes, suggesting that this may not be a priority at this stage. Very few trips are recorded for work, indicating that students may not be engaged in employment during this time. Minimal trips recorded for home visits suggest that students are largely staying on campus or are not frequently returning home. For 5th trip, there is a slight decrease in education-related trips, yet it remains a significant reason for travel, particularly for Covenant. Visitation trips remain high, indicating that social interactions continue to be important. There is a noticeable increase in recreation, suggesting a growing interest in leisure activities. The number of shopping trips remains low, indicating that this purpose is still not a major focus. Work-related trips remain minimal, similar to the 4th trip. Home visits continue to be infrequent, reinforcing the idea that many students are not returning home often. For 6th trip, Education trips show a further decrease for Bells but remain relatively high for Covenant. This may suggest different engagement levels or academic pressures. There is a slight increase in visitation trips, reinforcing the importance of social connections. Recreation shows a continued upward trend, indicating that students are increasingly prioritizing leisure activities. The number of shopping trips is still low, suggesting that these activities are not a primary concern. Work-related trips remain low, indicating a consistent trend in limited student employment engagement. Home visits remain minimal, suggesting continued campus residence.

TABLE 4: SHOWING RESPONDENTS PURPOSE FOR FIRST TRIP ON MONDAY ACCORDING TO UNIVERSITIES





Average Daily Trip in Each University

Analysis of average trip per person for Monday according to university shows that Monday trip aggregate for Bells University is 311 with 3.5 as the average daily trip per person Monday. And the Monday trip aggregate for Covenant University is 943 with 3.2 as the average daily trip per person for Monday. Analysis of average trip per person for Friday according to university shows that Friday trip aggregate for Bells University is 300 with 3.4 as the average daily trip per person for Friday. And the Friday trip aggregate for Covenant University is 843 with 2.9 as the average daily trip per person for Friday.

TABLE 5: SHOWING AVERAGE TRIP PER PERSON FOR MONDAY AND FRIDAY ACCORDING TO UNIVERSITIES

UNIVERISITIES	TRIPS AGGREGATE FOR MONDAY	AVERAGE DAILY TRIP PER PERSON
BELLS UNIVERSITY	311	3.5
COVENANT UNIVERSITY	943	3.2

SOURCE: FIELD SURVEY, 2024.

CONCLUSION

The demographic analysis of university students and staff at Bells University and Covenant University reveals significant insights into the commuting patterns and transportation needs within these academic environments. The study indicates that the majority of trips taken by both groups are short, typically under 30 minutes, suggesting a reliance on accessible transport options. However, differences in demographic characteristics, such as age, gender, and socio-economic status, highlight the need for tailored transportation solutions that cater to the diverse needs of the university communities.

Furthermore, the analysis underscores the impact of commuting on students' academic performance and overall well-being, with longer travel times associated with increased stress and reduced engagement in campus activities. The findings emphasize the importance of sustainable transportation practices to alleviate congestion and enhance the quality of university life.

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