OPTIMIZING INTERCITY PUBLIC TRANSPORT IN NIGER STATE: INSIGHTS FROM PASSENGER DEMOGRAPHICS AND TRAVEL BEHAVIOR

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ABSTRACT

The study investigates intercity traffic composition and the characteristics of public passenger transport in Niger State, Nigeria. Intercity transportation plays a vital role in shaping social and economic interactions, yet there is limited research specifically focused on Niger State, hindering the development of targeted policy measures. The study employs a survey methodology across nine major cities in Niger State, capturing diverse dynamics of intercity transportation and passenger demographics. Findings reveal significant gender imbalance among passengers, with males comprising a higher proportion (56.8%; 43.2%), and the majority falling within younger age brackets (85.2%). Students represent the largest occupational group (45.3%), emphasizing the importance of addressing the transportation needs of educational institutions. Household sizes and income levels vary, indicating disparities in access to transportation services. Moreover, trip origins and destinations highlight Minna's central role as a hub, with substantial traffic volumes (18,527 Trips) to other major cities like Bida and Suleja. Commercial motor parks dominate the landscape, reflecting a dynamic and competitive market environment. Understanding trip purposes reveals the multifaceted motivations driving intercity travel, with work-related trips (29%), education (38.8%), and business-related trips (34.4%) constituting significant proportions. These insights offer valuable guidance for transportation planning and policy formulation, emphasizing the need for tailored services to meet the diverse needs of passengers and optimize the efficiency of intercity transportation systems in Niger State. Addressing disparities in access, enhancing connectivity, and promoting sustainable transportation options are crucial steps towards fostering economic development and improving overall mobility within the region.

Key words: Traffic, Intercity, Public, Passenger, Transport, Mobility & Accessibility

1. Introduction

Transportation is essential to the functioning and survival of any society and economy as it influences the location and range of extended activities, it is also a vital quintessence of the multiple connections that exist between the physical environment, and patterns of social and economic development (Gbadamosi & Ibrahim, 2013). Consequently, it has been argued that transportation performs a vital function in human society with an overall contribution to the process of social and economic interaction because, to a large extent, the economic and social

development of nations is pivoted on the transportation system (Emmanuel, Jonathan & Otchere, 2013; Olorunfemi, 2020).

Mobility and accessibility provided by the public transport system have been playing a significant role in shaping countries, influencing the location of social and economic activity and the form and size of cities (Ojekunle, Akinola & Owoeye, 2018). An efficient public transportation system should be seen as a factor that unites the entire economy and facilitates development (Olorunfemi &Basorun, 2013).Intercity transportation in Nigeria has mainly been under the control of private operators who dictate largely the modes of operation in terms of facility provision, services, and standards in the industry. Consequently, such decisions are usually profit-driven and, most times, not totally in favour of the welfare of intended passengers.

1.2 Statement of Research Problem

The provision of efficient and accessible intercity public transport services is crucial for the socioeconomic development of Niger State, Nigeria (Adebayo & Ogunleye, 2020). However, the lack of reliable data and comprehensive understanding of the socioeconomic characteristics and travel behavior patterns of intercity public transport passengers has hindered effective planning and policy formulation in Niger State (Ogunleye & Adebayo, 2021).Without a detailed analysis of passenger demographics, trip purposes, modal preferences, and other key determinants of intercity travel demand, policymakers and transport providers are unable to tailor services that adequately meet the diverse needs of the population (Adebayo et al., 2019).This study aims to address this knowledge gap by examining the socioeconomic profile of intercity public transport users in Niger State and analyzing their travel patterns, with the goal of providing evidence-based insights to optimize the intercity public transport system and enhance mobility across the region (Ogunleye et al., 2022).

3. Literature Review

Intercity traffic composition and the characteristics of public passenger transport in Nigeria have been extensively studied by various scholars, providing valuable insights into the

dynamics of transportation systems in the country. Awoyemi, *et. al.* (2013)conducted an assessment of intra-urban mass transit operators in Ibadan metropolis, Nigeria, highlighting operational aspects within the city; Basorun&Rotowa (2012),focused on a regional assessment of public transport operations in Nigerian cities, particularly examining Lagos Island, contributing to the understanding of transportation systems in urban centers while, Eboli, &Mazuzulla, (2001),developed a methodology for evaluating transit service quality based on subjective and objective measures from passengers' perspectives, enhancing the understanding of service quality in public transport; Wole (2003), conducted a study modeling inter-urban road passenger traffic in Niger State, Nigeria, emphasizing factors influencing passenger traffic such as trip frequency, population, distance, and cost of transport

Raji, (2021) examined intercity commuting patterns using railway services in South-Western Nigeria, highlighting the influence of service improvements on passengers and the characteristics of intercity travelers in different transport units.While existing studies have illuminated various aspects of transportation across Nigeria, few have thoroughly explored the specifics of intercity travel within Niger State. Furthermore, some scholars have directed their attention towards understanding the dynamics of transportation in Niger State, Nigeria, particularly concerning intercity traffic composition and the attributes of public passenger transport. Orji et al. (2019) stressed the significance of developing sustainable pathways for intercity passenger transport, emphasizing the need to tailor research to the unique context of Nigeria, including factors like environmental sustainability and economic feasibility.

In a different context, Tang et al. (2019) conducted a case study on sustainable development pathways for intercity passenger transport in China, highlighting the importance of grasping the characteristics of intercity transportation to formulate effective policy measures. Similarly, Xiaowei et al. (2020) investigated intercity multimodal choice behavior in a touristy city, underscoring the necessity of analyzing travel patterns to enhance transportation planning and management strategies. These findings underscore the relevance of conducting similar investigations specific to Niger State's intercity traffic dynamics.

Moreover, Usanga*et al.* (2020) explored trip generation rates for residential land use in Uyo, Nigeria, indicating a broader interest in transportation research within the country. Nonetheless, there remains a noticeable gap in studies dedicated explicitly to intercity traffic composition and public passenger transport in Niger State. Addressing this gap could provide valuable insights into the region's transportation infrastructure, aiding policymakers and transportation authorities in making well-informed decisions. Therefore, conducting a comprehensive literature review on intercity traffic composition and the characteristics of public passenger transport in Niger State is essential to lay a robust foundation for future research endeavors in this domain.

4. Study Area

Niger State as shown in Figure 1 is one of the 36 States in Nigeria and the largest in landmass. The State covers 76,363 km². Niger State borders the Republic of Benin to the west, Kebbi and Zamfara States to the north, Kaduna and Federal City Territory (FCT) to the east, and Kogi and Kwara to the south. Niger state, a potential hotbed for economic activity, produces large quantities of rice, millet, maize and yam for local consumption and export. The state also has mineral deposits like gold, iron, copper, lead and columbite.

Niger State has many major urban centres, Minna (state capital), Bida, Suleja, Kontagora,Mokwa, Mashegu, Shiroro, Borgu and Lapai which are rapidly growing, putting tremendous strain on the ability of the state government to provide essential urban infrastructure services.The Nupe, Gbagyi, Kamuku, Kambari, Dukawa, Hausa and Koro form the majority of numerous indigenous tribes of Niger State. The state is named after the river Niger. It has an estimated population of 3,954,772 (NPC, 2006) and 6,584,982 projected in 2023 with annual growth rate of 3.71%.

Figure 1: Nigeria in the Context of Niger State
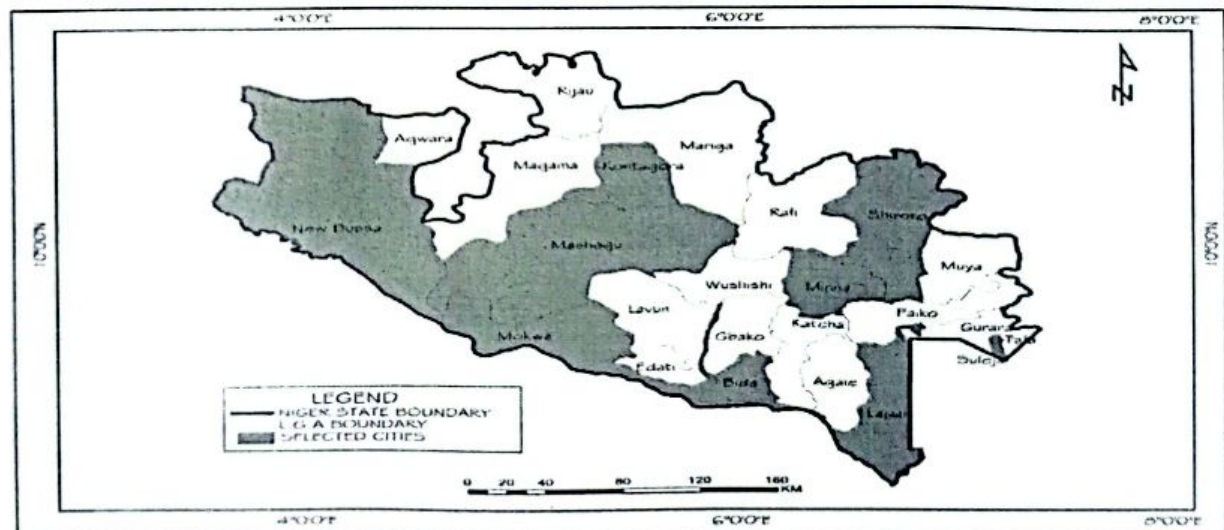Source: Niger State Ministry of Lands and Housing Minna, (2023)

Figure: 2 Map of the Selected Study Area
Source: Author's Field work (2024)

Methodology

The research employed a survey methodology to examine the inter-city traffic patterns and passenger demographics of public transport in nine major cities across Niger State. The selection of these cities, as shown in Figure 2; Minna, Bida, Kontagora, Suleja, Mashegu, Mokwa, Shiroro, New Bussa, and Lapai, was based on criteria such as high population density, direct public transport links to the state capital, economic significance, transportation hub capacities, proximity to major cities, demographic diversity, well-developed

infrastructure facilitating accessibility, and organized intercity bus terminals. This strategic selection aimed to capture the diverse dynamics of intercity transportation in Niger State by encompassing both urban and rural areas to reflect varied travel behaviors associated with these distinctions. The survey method was utilized to gather data on traffic composition over a four-week period.

Additionally, data on traffic frequency and composition were obtained through volumetric traffic counts at designated parks during a four-week field survey in the selected cities, a total of 90,775 passengers utilized public transport services provided by both government-owned (Niger State Transport Authority - NSTA) and private operators. Specifically, 40,940 passengers opted for NSTA services while 49,835 passengers chose private operators. The study employed a systematic random sampling technique to ensure equal representation of commuters as respondents. Primary data collection involved administering structured questionnaires to passengers at selected garages to gather information on socioeconomic characteristics, origin-destination patterns, purpose of travel, and mode of transport. The sample size was determined using Dillman's formula to maintain a low margin of error in the study's findings.

The formula is given as;

$$N_s = \frac{(N_p)(p)(1-p)}{(N_p-1)\left(\frac{B}{C}\right)^2 + (p)(1-p)} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where;

Ns = Complete sample size needed (notation often used is n)

Np = Size of population (notation often used is N)

P = Proportion expected to answer a certain way (50% 0r 0.5 is most conservative) = 11,889

B = Acceptable level of sampling error (0.03) = (3%)

C = Z statistic associated with confidence interval (2.17) = 97% Confidence level

Source: Author's Field Survey (2024)

$$N_s \approx \frac{(90,775)(0.5)(1-0.5)}{(90,775-1)\left(\frac{0.03}{2.17}\right)^2 + (0.05)(1-0.5)}$$

Table 1: Population and Sample Size of Public Passengers

S/No	City	Names of Parks	Population of Passengers (Sample Frame)	Sample Size	Questionnaires Returned
	Minna	Abdulsalam, Mobil & NSTA	18,527	263	255
	Kontagora	Kontagora Central Park	10,162	145	141
	Bida	Etsu Nupe Garage	10,267	146	139
	Suleja	Old Garki Garage	10,637	151	148
	Mokwa	Mokwa Garage	9,012	128	125
	Mashegu	Mashegu Garage	5,832	83	83
	Shiroro	Shiroro Garage	8,572	122	119
	Lapai	Lapai Garage	8,891	126	98
	New Bussa	Dantoro Garage	6,875	126	122
	Total		90,775	1,290	1,230

$$\approx \frac{(90,775)(0.25)}{(90,774)(0.000191)+(0.25)}$$

$$\approx \frac{22,693.75}{17,587834}$$

$$\approx 1.290$$

Table 1 provides details on the population and sample size of public passengers across various cities and parks within the study area. The population of passengers, representing the sample frame, is listed for each city's designated parks, along with the corresponding sample size selected for the study. For instance, in Minna, which has multiple parks including Abdulsalam, Mobil, and NSTA, total population of passengers' is 18,527, with a sample size of 263 selected for the study. Similarly, other cities such as Kontagora, Bida, Suleja, Mokwa, Mashegu, Shiroro, New Bussa, and Lapai exhibit varying populations of passengers at their respective parks, with sample sizes ranging from 146 to 83. Overall, the total population of passengers across all parks is 90,775, with a total sample size of 1,290 selected for the study. A total of 1,290 questionnaires were administered to the respondents out of which 1,230 were completely filled and returned valid. These statistics form the basis for understanding the demographics and behaviors of public passengers in the identified cities, aiding in the formulation of insights and recommendations for transportation planning and management.

4. Discussion and Findings

Table 2: Socio-economic Attributes of Passengers

Gender	Frequency	Percentage
Male	699	56.8
Female	531	43.2
Total	1230	100
Age of the passenger	Frequency	Percentage
15 - 25 years	574	46.7
26 - 35 years	282	22.9
36 - 45 years	192	15.6
46 - 55 years	94	7.6
Less than 15 years	58	4.7
Over 55 years	30	2.4
Total	1230	100
Marital Status	Frequency	Percentage
Single	754	61.3
Married	422	34.3
Widowed/Widower	20	1.6
Separated	18	1.5
Divorced	16	1.3
Total	1230	100
Occupation	Frequency	Percentage
Student	557	45.3
Self-employed	200	16.3
Trader/business owner	168	13.7
Civil servant	132	10.8
NYSC	46	3.8

Apprentice	43	3.5
Unemployed	29	2.4
Military/paramilitary	22	1.8
Artisan	19	1.6
Retired	8	0.7
Others	6	0.55
Total	1230	100
Household size	Frequency	%
4-6	355	28.4
1-3	333	27.1
6-8	348	28.3
Over 8	288	23.4
Total	1230	100
Income level of the Passengers per month	Frequency	Percentage (%)
Less than N30,000	394	32
N31,000 – N60,000	300	24.4
N61,000 –N90,000	204	16.6
N91,000 - N120,000	128	10.2
N121,000 - N150,000	80	6.5
N151,000 - N180,000	68	5.5
N181,000 – N210,000	44	3.6
Over N210,000	12	1.2
Total	1230	100
Education level of the Passengers	Frequency	Percentage (%)
Secondary	169	13.7
Tertiary	840	68.3

Primary	48	3.9
Informal	101	8.2
No education	73	5.9
Total	1230	100

Source: Author's Computation (2024)

Table 2 shows the socioeconomic characteristics of intercity public transport passengers in nine major cities in Niger State and unveils several key insights. Firstly, there is a notable gender imbalance with males comprising a higher proportion (56.6%) than females (43.4%). Secondly, the majority of passengers are in younger age brackets, with the 15-25 age group being the most prevalent (46.9%). Thirdly, a significant portion of passengers are single (61.46%), followed by married individuals (34.11%). Fourthly, students form the largest occupational group (45.4%), followed by self-employed individuals (16.3%) and traders business owners (13.7%). Households typically consist of 4-6 individuals (28.4%). Lastly, a considerable number of passengers earn less than N30,000 per month (33.9%), with a majority having tertiary education (68.3%).

These findings have implications for transportation planning and policy formulation in Niger State. Understanding passenger demographics can aid in tailoring services to meet the needs of specific groups, such as young adults and students. Addressing the predominance of single passengers may necessitate flexible ticketing options, and initiatives to support student mobility could be beneficial. Strategies to address income disparities, particularly among lower earners, could improve equitable access to transportation services. Lastly, prioritizing accessible transportation options for educational institutions and promoting lifelong learning opportunities aligns with the emphasis on tertiary education. Overall, these findings provide valuable insights for policymakers aiming to develop inclusive and responsive transportation systems in Niger State.

The table provided offers insights into the socioeconomic characteristics of intercity public passenger transport in Niger State. The gender distribution shows that male passengers constitute 56.8% (699) of the total, while female passengers make up 43.2% (531). In terms

Table 3 Traffic Volume of Public Passengers in Selected Cities in Niger State

TABLE 3 ORIGIN-DESTINATION MATRIX OF PASSENGERS TRIP

ORIGIN/DESTINATION	MINNA	BIDA	SULEJA	KONTAGORA	LAPAI	SHIRORO	MOKWA	MASHEGU	NEW BUSSA	TOTAL NUMBER OF TRIP
MINNA										18,527
BIDA										
SULEJA										
KONTAGORA										
LAPAI										
SHIRORO										
MOKWA										
MASHEGU										
NEW BUSSA										
TOTAL NUMBER OF TRIP										
GRAND TOTAL NUMBER OF TRIP										90,775

Source: Author's Computation (2024)

Table 3 illustrates an origin-destination matrix for intercity passenger trips within Niger State, showcasing travel patterns among major towns. Minna stands out as a key hub with the highest total number of trips (18,527), underscoring its central role in intercity travel. Prominent outbound trips from Minna are directed towards Suleja (3,883), Bida (3,186), and Kontagora (3,124), highlighting strong connectivity with these towns. This significant volume of trips originating from Minna points to a need for improved transportation infrastructure and services to manage high passenger numbers and facilitate efficient travel. Other towns also display distinct travel patterns, with Suleja, Bida, and Kontagora generating considerable trip numbers, reinforcing their importance in the regional transport network. For instance, Suleja has significant outbound travel to Minna (3,581) and Bida (1,046), while Kontagora shows substantial connectivity with Minna (2,178) and Bida (1,556). These travel distributions highlight the necessity for targeted transport policies to address specific route demands, such as enhancing road conditions, increasing service frequency, and potentially introducing direct routes to streamline passenger movement across the state. The overall high trip volume (90,775) indicates an active intercity transport system that requires ongoing development to meet growing demand and improve passenger travel experiences.

The findings suggests that transportation policies should focus on upgrading infrastructure and expanding services to accommodate the high volume of intercity trips, especially from key hubs like Minna. This includes enhancing road quality, increasing service frequency, and possibly adding direct routes to improve connectivity and efficiency. Targeted improvements

will help manage the substantial passenger flow, ensuring a reliable and efficient intercity transport system in Niger State.

Table 4: **TRIP DISTANCE IN KM**

S/NO	ORIGIN	MINNA	BIDA	LAPAI	SULEJA	MOKWA	KONTAGORA	SHIRORO	MASHEGU	NEW BUSSA
1	MINNA	44	89	70	100	217	195	68	240	319
2	BIDA	89	35.5	71	161	131	223	154	189	233
3	SULEJA	108	162	91	45.5	291	298	169	342	393
4	KONTAGORA	195	224	203	299	177	39.5	254	79	186
5	LAPAI	70	71	35.5	91	200	262	133	259	302
6	SHIRORO	68	154	133	169	282	253	34	297	385
7	MOKWA	216	131	200	291	51.5	177	282	117	103
8	MASHEGU	238	189	259	342	117	79	297	39.5	126
9	NEW BUSSA	318	233	302	393	103	186	385	126	51.5

Source: Author's Computation (2024)

The findings in Table 4 regarding trip distances within Niger State offer valuable insights into the generation of intercity trips and the patterns of public transport passengers. Notably, there is a significant variation in distances traveled between different origin-destination pairs, indicating diverse travel demands across the state. For instance, shorter distances are observed between neighboring locations like Minna and Bida, while longer distances are evident between more distant destinations such as Minna and Borgu. This variation suggests that trip generation and passenger patterns are influenced by factors such as geographic proximity, economic activities, and the availability of transportation infrastructure.

These findings are consistent with existing research on intercity travel behavior and trip generation patterns. Scholars like Golob (2003) highlight the role of distance decay effects in shaping travel behavior, where shorter distances tend to have higher trip frequencies, and vice versa. Additionally, studies by Ji et al. (2019) underscore the impact of urbanization and economic development on travel patterns, with longer distances often associated with economic hubs and regional centers.

The implications of these findings for transportation planning and policy formulation are significant. Policymakers can use insights into trip distances and travel patterns to optimize public transport services, route planning, and infrastructure investments. For instance, shorter-distance trips may require frequent, localized services, while longer-distance routes may benefit from higher-capacity transportation modes or express services. Furthermore, addressing the diverse travel demands across different origin-destination pairs can improve

accessibility and connectivity within Niger State, thereby contributing to economic development and enhancing the quality of life for residents.

Table 5: Passengers Trip Duration

SNO	ORIGIN	BIDA	LAPAI	SULEJA	MOKWA	KONTAGORA	SHIRORO	MASHEGU	NEW BUSSA	MINNA
1	MINNA	2hr 15min	1hr 42min	2hr 3min	4hr 22min	4hr 1min	1hr 19min	6hr 23min	6hrs 22min	1hr 1min
2	BIDA	1hr 8min	2hr 36 min	4hr 9min	2hr 15min	5hr 223	3hrs 36min	4hr 45min	4hr 15min	2hr 15min
3	SULEJA	4hr 9min	1hr 21min	41min	6hr 4min	5hr 52min	3hr 8min	8 hr 8min	8hr 4min	2hr 1min
4	KONTAGORA	5hr 23min	5hr 31min	5hr 53min	3hr 59min	1hr 8min	5hr 6min	2hr 13 min	4hr 15min	3hr 54min
5	LAPAI	2hr 34min	48min	1hr 28min	4hr 46min	5hr 34min	2hr 56min	7hr 17min	6hr 46min	1hr 43min
6	SHIRORO	3hr 32min	2hr 54min	3hr 17min	5hr 40 min	5hr 8min	38min	7hr 30min	7hr 40min	1hr 17min
7	MOKWA	1hr 43min	4hr 49min	6hr 28min	52min	4hr 1min	5hr 48min	2hr 50min	2hr 3min	4hr 26min
8	MASHEGU	4hr 48min	7hr 21min	8hr 18 min	2hr 49min	2hr 15min	7hr 28min	1hr 8min	3hr 5min	6hr 15min
9	NEW BUSSA	4hr 16min	6hr 49min	8hr 19min	2hr 1min	4hr 16min	7hr 45min	3hr 5min	1hr 30sec	6hr 24min

Source: Author's Computation (2024)

The discoveries concerning the duration of intercity trips across various origin-destination pairs in Niger State as shown in Table 5 offer valuable insights into the generation of these trips and the trends in public passenger transport. It is evident that trip durations vary considerably depending on the distance between the starting and ending points. For instance, shorter durations are noted for journeys between proximate locations like Minna and Bida, whereas longer durations are evident for trips involving more distant destinations such as Minna and Mashegu or Borgu. This indicates that trip duration is influenced by factors like geographic distance, road conditions, and the availability of transportation infrastructure.

These findings align with existing research on intercity travel behavior and trip generation patterns. Studies by Schmöcker et al. (2006) and Guo et al. (2017) underscore the correlation between trip duration and distance, with longer trips typically associated with greater distances traveled. Moreover, research by Currie and Delbose (2010) emphasizes the impact of infrastructure quality and travel conditions on trip duration, where longer travel times are often linked to poorer road conditions or congestion.

The implications of these findings for transportation planning and policy formulation are significant. Decision-makers can utilize insights into trip duration to optimize public transport services, plan schedules, and make infrastructure investments more effectively. For example, longer-duration trips may necessitate the incorporation of additional amenities or comfort measures for passengers, whereas shorter-duration trips may benefit from enhanced connectivity and increased service frequency. Additionally, addressing the variability in trip duration across different origin-destination pairs can lead to a more efficient and accessible transport system overall.
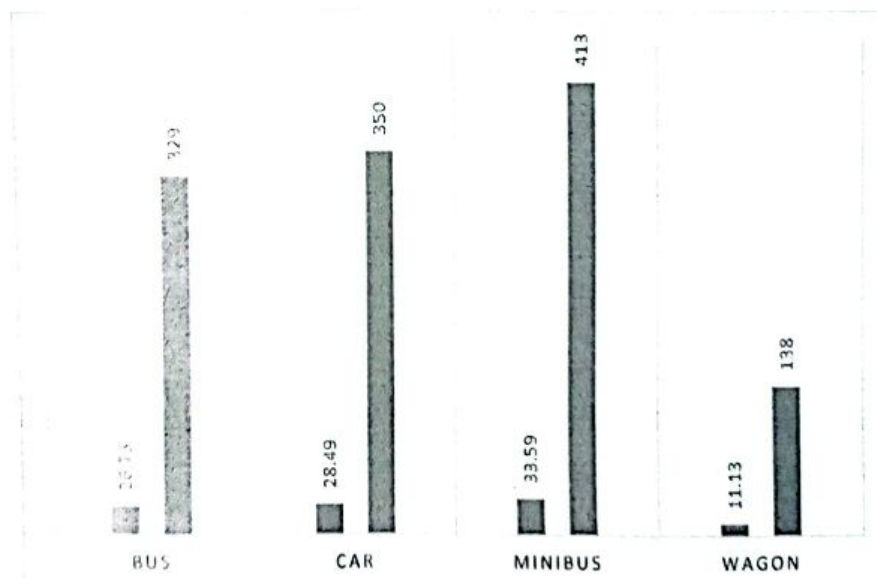

Figure 3: Distribution of Different Modes of Intercity Transport used by Passengers
Source: Author's Computation (2024)

Figure 3 shows the distribution of different modes of intercity transport used by passengers in Niger State, based on percentage and frequency of usage. Minibuses are the most commonly used mode of transport, accounting for 33.59% of the trips, with a frequency of 413. This is followed by cars, which constitute 28.49% of the trips (350 trips). Buses are also widely used, making up 26.73% of the trips with a frequency of 329. Wagons are the least utilized mode, representing 11.13% of the trips, with a frequency of 138.

Policymakers in Niger State should focus on enhancing the intercity public passenger transport system by addressing the specific needs and challenges of each transport mode. This includes investing in minibuses by ensuring their safety, efficiency, and availability through fleet upgrades, improved maintenance standards, and enhanced service frequency.

Additionally, support for car travel can be achieved by improving road infrastructure, providing adequate parking facilities, and introducing carpooling incentives to reduce congestion. Bus services should also be enhanced by improving comfort, reducing travel times, and ensuring punctuality to make them more attractive to users. Furthermore, understanding the reasons behind the lower usage of wagons can help develop strategies to make this mode more appealing, possibly by targeting specific user groups or improving service conditions. By addressing these specific needs, policymakers can enhance the overall efficiency and user satisfaction of intercity public passenger transport in Niger State.

Table 6: Passengers Distributions across Selected Terminals in Niger State

Name of the Motor Park	Commercial(Private Owned)	Public (Government-Owned)	Total	(%)
Etsu Nupe Park Bida	79	31	110	9
Central Park Kontagora	81	42	123	10
Lapai Park	82	35	117	9.5
Abdulsalam Park Minna	221	5	226	18.4
Mobil Park Minna	128	12	140	11.4
NSTA Park Minna	22	20	42	3.4
Mashegu Central Park	25	13	38	3.1
Mokwa Park	119	8	127	10.3
Old Garki Park Suleja	100	43	143	11.6
Shirero Park	63	15	78	6.3
Dantoro Park New Bussa	75	11	86	7
Total	995	235	1230	100

Source: Author's Computation (2024)

Table 6 details the distribution of intercity trips from various motor parks in Niger State, distinguishing between commercial (private-owned) and public (government-owned) transport services. Abdulsalam Park in Minna is the busiest, generating 226 trips (18.4% of the total), predominantly through private operators (221 trips). This underscores Minna's role as a central hub for intercity travel, especially via commercial transport. Similarly, Mobil Park in Minna is significant, contributing 140 trips (11.4%), further highlighting Minna's importance in the state's transport network.Studies such as those by Banister and Button

(1993) and Hensher (2007) have emphasized the importance of understanding commuter preferences and behaviors in shaping transportation policies and infrastructure development. The implication of these findings underscores the need for investment in public transportation systems, particularly in enhancing the availability and efficiency of minibuses, to accommodate the high demand and alleviate congestion on roads. Additionally, efforts to promote alternative modes of transportation such as carpooling and cycling could help address environmental concerns and improve overall mobility within the region (Litman, 2009).

Other key motor parks include Old Garki Park in Suleja, which generates 143 trips (11.6%), and Mokwa Park with 127 trips (10.3%). Most of these trips are managed by private operators, indicating a strong reliance on commercial transport services statewide. Although less dominant, government-owned services are crucial in parks like Central Park Kontagora and Old Garki Park Suleja. This distribution suggests a significant dependence on private transport services for intercity travel, pointing to the need for policymakers to improve regulations, infrastructure, and support for private operators to enhance service quality. Furthermore, strengthening government-owned transport services is necessary to provide reliable alternatives and ensure balanced growth in the intercity transport sector.

However, the presence of public motor parks underscores the necessity for government intervention to ensure equitable access to transportation services and regulate the transport sector for safety and efficiency. These findings resonate with existing literature on transportation governance and the roles of public and private actors in providing passenger transport services. Scholarly works by Gwilliam and Harpham (2016) underscore the importance of public-private partnerships in delivering transport infrastructure and services, while studies by Ostrom*et al.* (2015) stress the need for effective governance mechanisms to ensure sustainable and inclusive transport systems. In sum, understanding the distribution of motor parks between commercial and public entities yields valuable insights into the dynamics of intercity trip generation and patterns of public passenger transport in Niger State. Such insights enable informed decision-making for transportation planning and policy formulation efforts.
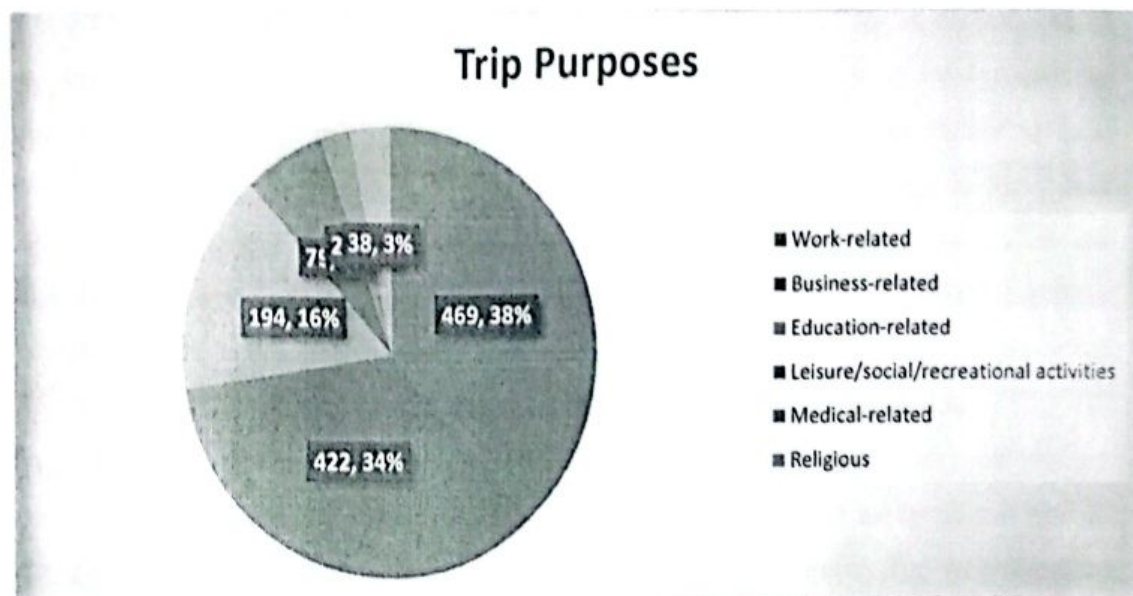
Trip Purposes

Figure 4: Trip Purposes among Public Passenger Transport Users in Niger State
Source: Author's Computation (2024)

Figure 4categorizes the purposes ofintercity trips of public transportpassengers in Niger State, revealing that work-related trips form the largest segment at 38.1%, followed by business-related trips at 34.3%. Education-related travel accounts for 15.8% of trips, leisure or social activities make up 6.4%, and medical-related and religious trips are smaller, at 2.2% and 3% respectively out of 1,230 trips.These findings hold substantial implications for transportation planning and policy formulation within Niger State. Understanding the diverse purposes behind intercity trips can inform resource allocation and guide the development of transportation services tailored to meet the specific needs of different traveler segments. For instance, offering efficient and cost-effective transportation options customized to education-related travel can facilitate access to educational institutions and foster academic mobility. Similarly, addressing the transportation demands associated with business and work-related trips can significantly contribute to economic growth and enhance productivity levels across the region.

To support the predominant work and business travel (72.4%), policies should aim to enhance transport infrastructure, focusing on reliable and frequent services, reduced travel

times, and improved connectivity between commercial and industrial areas. The significant proportion of education-related trips (15.8%) highlights the need for dedicated student services, such as school buses and discounted fares. Leisure trips (6.4%) present an opportunity to develop services catering to social and recreational needs, boosting local tourism. Although medical and religious trips are fewer, ensuring access to healthcare facilities and places of worship is essential, potentially through special transport services for medical appointments and religious events, especially for remote areas. By addressing these specific travel purposes, Niger State can improve the efficiency and convenience of its intercity public transport system to better meet the diverse needs of its population.

In conclusion, this study sheds light on the complexities of intercity traffic composition and public passenger transport characteristics in Niger State, Nigeria. The study reveals crucial demographic trends, travel habits, and infrastructure factors necessary for well-informed decision-making in transportation planning and policy development. Key demographic patterns, travel behaviors, and infrastructure considerations were identified as essential for informed transportation planning and policy formulation.

The findings underscore the need for tailored interventions to address disparities in access, enhance connectivity, and promote sustainable transportation options. By prioritizing investments in public transit infrastructure, improving service reliability and affordability, and fostering public-private partnerships, policymakers can create a more inclusive and efficient transportation system that meets the diverse needs of Niger State's residents. Overall, this study provides valuable insights that can guide future research and policy decisions aimed at optimizing intercity transportation in Niger State.

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