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FUEL PUMP PRICE INCREASE EFFECTS ON TRAVEL BEHAVIOURS OF BAUCHI URBAN RESIDENTS, NIGERIA.

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ABSTRACT

Recently, intra–urban travel has increased enormously acrossurban areas. Socio-economic factors of individual attitudes regarding preferences on travel are important determinants of urban travel patterns and have significant impact on travel behaviours. Generally, income, travel distance, travel mode and cost are the main factors influencing travel behaviour. Fuel pump price increased,as travel cost sources, have substantially affected urban travel behaviours, as travellers are more sensitive to the cost anxiety of travelling. It was found that, cost of travel is the most influential factor that scored 23.7% of the aggregate value, then travel distance 16.5% and travel purpose 11.2%. Convenience, safety, comfort and freedom form the moderate importance scores 9.35%, 9.03%, 8.4% and 7.8% correspondingly while, flexibility, speed and prestige formed the least frequencies of 5.6%, 5.0% and 3.4% respectively. The study explored qualitative research methodology, expert interview was used in data collection and NVivo 10.0 was used in analysis. This is because travel behaviour has multifaceted dimension of hidden explanations of people's perception, attitudes, feelings or sentiments and behaviours, qualitative method is more appropriate instrument to explore these complexity.Therefore, fuel pump price increased, as travel cost sources had affected the attitudes of vehicle usage and travel behaviours across all the income levels of the urbanites. Policy makers should consider the multiplier effects on fuel subsidy removal on people wellbeing.

Keywords Travel behaviour, Travel demand, Travel cost, Fuel pump price.

1.0 INTRODUCTION

Urbanisation means a process of population and physical expansion of urban areas into the urban fringe with multiple land uses. In the last few decades, Sub-Saharan Africa countries have been experiencing heighten urbanisation. Many urban areas, experienced unprecedented scale of urbanisation, rapid population growth and spatial expansion (sprawl) into marginal agricultural or forest land in the immediate vicinity of urban areas and the fringe areasaccommodate and cope with varying land uses(UN, 2014).The United Nations (2014) reported that developing countries have been experiencing a faster rate of urbanisation than developed nations. According to Meyer & Turner (1992), urbanisationis fuelled by increasing population, economic land use, land cover, and changing utilization of space which have great impact on the land use pattern that re-design (altered) the urban landscape.Also Patra et al., (2018)emphasised, urbanisation has important implications not only for changing the demographic characteristics but transforming the physical landscape leading to changes in land–uses and expansion of land cover substantially. Sugiartoet

al., (2014)concluded that as urbanisation keeps expanding urban areas outwards, the suburb absorbed much of the influx population.

Urbanisation in Sub-Saharan Africancountries, is often associated with a widespread rural population migrating to urbanareas.Urbanization has been an important facet in the process of human and urban development, particularly when viewed as an impetus to economic development, centres of diversity, innovation and changes not a threat(Ghani, 2017). Urbanisation in developing (Sub-Saharan African) countries is generally characterised as rapid and uncontrolled, which posed a major alarm as it creates a set of constraints to general economic growth and development if the process is not well managed. Similarly, itcreates related problems such as social, land use, traffic issues, increases in spatial distances and transportation costs, increases in automobile use and dependence, increases in energy consumption (transportation), climate and environment issues (worsening air and environmental quality).

Travel activities, is one of the greatest important aspect in man's daily routine activities between origin and destination such as travels for subsistence, official, social, etc. and travellers involved can make their preferred choices among the range of transport modes available. Urbanisation generally resulted not only to population growth but also physical expansion of urban built-up areas which is accompanied by increasing distance connecting different activities areas; leading to a corresponding growth in travel demand and increase the necessary use of urban motorised and private transports(Yu & Zhou, 2016; Cao & Huang, 2013; Garcia–Palomares, 2010; Zhao, 2010&Pucheretal., 2005).Similarly, Pucheret al., (2005) upheld that urbanisation of Indian cities have sprawled outward in all directions beyond initial boundaries, resulting in increased distance of trips, and forcing reliance on motorised transport to overcome long distance trips. Due to urban physical expansion, this may lead to long distance travel, more car dependent, need for private vehicle usage, high monetary cost, high traffic volume, congestion, air and noise pollution and longer travel time**.** Garcia–Palomares (2010**)** pointed out that, urban expansion usually associated with increasing distance connecting different separated urban places accordingly, increases travel demand and ultimately encouraged use of cars (motorise modes). Among the effects of urbanisation, includes land use and land cover changes which are inherently connected to travel demand and influences travel behaviour especially when land use activities are further separated in different locations it will potentially attract increasing trips (travel demand)(Cao & Huang, 2013; Boarnet, 2011 & Yang & Gakenheimer, 2007). Therefore, urban land uses expansion, pattern and land cover changes influences travel distance, demand, time, cost and behaviours, by placing origin and destination far away.

Travel behaviour is the choice or processes a traveller use to arrange his time, social responsibilities and cost; to choose transportation modes and travel routes, to meet the needs for reaching destination according to the available options. In the contemporary time, by using the state–of–art technology, motorised vehicles are the main carriers of the urban transportation and are dominated by people's travel behaviours. In travel behaviours, based on psychological factors, people choose between diverse transports modes, each having certain characteristics, advantages and disadvantages as well as cost and mode choice can vary over time and purpose of travel (Beira'o & Cabral, 2007).In travel behaviours rational decision making, sensibility of individuals' feelings and sentiments play significant role where travellers express a more efficient travel guidance based on socio-economic factors as a strategy to arrive at a best choice (Yu & Zhou,

2016). Likewise, cost of trips/travel is one of the factor influencing travel behaviours of urban dwellers. As urbanisation set up, urban areas experienced physical expansion of the built-up areas into the urban fringe (sprawl) which complemented by increasing distance connecting different land use activities areas. This will eventually result to experiencing changes in transportation pattern, dramatic growth of travel distance, longer travel time, motorised dependent, and high monetary cost (Zhao, 2010).Ahmadzai, Rao &Ulfat (2018) expounded, in recent years, road transportation has increased enormously in developing countries in different ways due to numerous reasons, such as high level of urbanisation, expansion of urban areas, boom of different modes of transport and rise in private vehicle ownership which increased urban travel using private motorised modes vehicles. Urban long distance travel often attract motorised mode usage, car dependent, more private vehicle usage which increases motor vehicle traffic and make walking and cycling less feasible (Yu & Zhou, 2016; Cao & Huang, 2013; Garcia–Palomares, 2010, Zhao, 2010&Pucheret al., 2005). Indeed, whenever urban long distance travel attracts motorised mode usage, obviously it incur some monetary cost for either commercial transport fare or fuelling private vehicles.

Socio-economic factors are important determinants for urban travel patterns where individual socio-economic status, travel distance, travel purpose, travel cost, travel time, safety, comfort, convenience, flexibility, attitudes regarding preferences on travel mode choice have significant impact on travel behaviours.Generally, income, travel distance, trip features, travel mode and cost are the main considerations influencing choice behaviour of a traveller(Celikkol–Kocaket al., 2017; Liet al., 2016; Yu & Zhou, 2016; Tranet al., 2014; Yang et al., 2014&Sietchipinget al., 2012). Tran et al., (2014) and Yang et al., (2014) added, vehicle ownership and purpose of trips have significant impact on the mode choice behaviour. Yang &Gakenheimer (2007) and Pucheret al., (2005) claimed, rising income, changing life style (psychology), cost of fuel and prevalent vehicle ownership, all affect people choice to use given travel mode. While Yu & Zhou (2016) argued travellers attitudes, preferences and behavioural responses are influential factor of mode choice in travel behaviour. Thus, Tran et al., (2014) presented that when urban travellers is to make decision between different transport modes, regarding medium and long distance travel, time and cost are the major determinants of mode choice while, these attributes may not be the most important factors persuading mode choice in the context of short trips.Purpose of travel and habit in using motorised vehicles sometimes is important factor inducing the use of car (vehicles) for short trips rather than cost. Cheng et al., (2013) argued, low income people largely are more sensitive to travel cost and relied on low cost travel modes, such as walking, bicycle, electric motorcycle, tricycle, public bus and trainwhile attitude of motorised vehicle usage may lead to the use of car for short trips.Verma & Ramanayya (2015) admitted, most of the urban poor are deprived of the basic means of transportation, they mostly rely on walk/cycling, even the low public transportation cost is also not affordable to many of them. Whereas, Sietchiping et al., (2012) affirmed, even for a relative long distance to the place of work, when the travel cost is unaffordable, low income people trek or cycle for their subsistence trips in urban areas.Pucheret al., (2005) declared, in India, as in many developing countries, a high proportion of travels are made by walking and cycling as a necessity, because majority of such people are economically poor and cannot afford commercial motorised or public transport.

Public transport system provides travel services for all at a low-cost and as an important alternative to private vehicle usage. In many developing countries especially Sub-Saharan African nations, where economic crisis is itching deep are characterised with inadequate public transportation facilities to satisfy the travel demands of the populace which necessitated the adoption of informal commercial vehicles. Provision of urban public transport system is capital intensive considering geographical spread of urban areas and demand relied heavily on public investment (government).Economic capability of many developing countries to adequately pursue urban public transport system is limited to effectively and efficiently provide. Al–Hassanet al., (2014) in their study affirmed, economic crisis in developing countries coupled with inadequacy of public transport system and insufficient transport facilities to meet with the demands of their people, gave rise to the prevalence of informal commercial transport services. Equally, Sietchipinget al., (2012) reported that many cities in Sub–Saharan Africa have inadequate public transport system, services and transport options are limited and with deteriorating transport infrastructure. Therefore, public transport system non-met demands in many developing countries,including Nigeria, have granted leverage to range of urban informal modes of transport. Sietchipinget al., (2012) observed, many Sub-Saharan African countries urban centres are positioning approaches towards car–dependent at the expense of other modes or else developing range of public, private and informal transportation options that will complement conventional public transportation system. These necessitated urban people to embrace or forced to use other modes of transportation to overwhelm the inadequacy of public transport.

Al–Hassan et al., (2014), noted that the inability to meet the transportation demands of urban dwellers in Nigeria, is fuelled by the poor economic situation of the country and inefficient transport infrastructures and services is frightening challenge which resulted to proliferation of informal transport modes and services which are comparatively affordable. These includes motorcycle taxi, tricycle as taxi and car taxi which are most feasible modal choice considered comparatively affordable options. Informal commercial transport service thought as an alternative means due to vacuum created by the formal transport system, rail, buses and cars that are often unavailable and or unaffordable (Al–Hassan et al., 2014 &Sietchiping et al., 2012). The upsurge of informal transport modes and services as means of urban travel is fundamentally a response to high urban travel demand, socio-economic and shortage of conventional transportation system and are fulfilling the demand gaps. Thus, in 1997 tricycle as taxi was first introduced and launched as a commercial transportation through National Poverty Alleviation Eradication Programme (NAPEP) in Lagos, by the then Lagos State Military Governor, Colonel Muhammadu Buba Marwa. Subsequently, national office of NAPEP launched 2,000 tricycle in the Federal Capital Territory (Abuja) in 2001 and in 2004, distributed 5,000 units to 36 states with the aim of providing employment, fair, affordable transport options in order to eradicate poverty and improve peoples' quality of lives (Ismail et al., 2018 &Ipingbemi& Adebayo, 2016).

These informal transportation modes as an alternative means, have some comparative advantages over the traditional conventional commercial transport. They provide convenient door–to–door service, charges can be moderate (user bargain charges), users often have control over their destination, can fly on poor road, save time (can sail to avoid traffic congestion), convenient for a short distance trip, among others (Ismail et al., 2018; Ipingbemi & Adebayo, 2016; Al–Hassan et al., 2014 &Sietchiping et al., 2012). These informal modes of transport alternative are characterised by easy entry and exit, low capital outlay to enter the service, self–employment,

small vehicles, self–regulated operation, low service performance, etc. (Ismail et al., 2018; Ipingbemi & Adebayo, 2016 &Al–Hassan et al., 2014). Indeed, proliferation of informal transportation mode as taxi (minicab) in urban Nigerian transport corridor is basically to satisfy the urban travel demands by the vacuum created by insufficient public transport and it creates economic capthat persuades operators into the service as self–employed which bolster economic growth and improved people's wellbeing and quality of lives.

The idea of subsidy, is injecting money to industry to surrogate/ substitute the production cost with intensions to lower the involved product(s) price by government or philanthropies. In Nigeria, fuel subsidy was introduced in 1977 by the then Head of Military Regime General Olusegun Obasonjo when the Price Control Act was promulgated to regulate prices of general goods including petroleum products. The subsidy had retained petrol (Premium Motor Spirit [PMS]) pump price cheap all these decades, for example, from 2010–2021, the price ranges between₦65.00 ($0.14) to ₦140.00 ($0.25) per litre and in 2022, the price reached₦185.00 ($0.33) per litre. On May, 29th 2023, during the inauguration of newly elected government of President Bola Ahmed Tinubu, after the swearing–in, in his maiden speech, President Tinubu,announced the removal ofthe fuel subsidy which causes a vertical increase in the pump price of petroleum products (petrol, kerosene, diesel, and LPG)directly and jeopardised possible economic and social discontent or nervousness(Abayomi, 2023).

Now fuel subsidy come to an end (removed) and the benefits of enjoying low fuel pump price has also ended. What will be the implications on people travel behaviour trajectory? Although, President Tinubu admitted, the decision will obviously impose extra burden on Nigerians and called on Nigerians to bear with the decision to save the country. The decision will save Nigeria about 7 Trillion Naira annually and the pains will not be in vain, the most vulnerable Nigerians will be protected from the negative impacts, by repaying through colossal investment in healthcare, education, transportation infrastructure, regular power supply, and other public utilities that will improve the quality of lives of the Nigerians (Abayomi, 2023 &Al Jazeera News Agencies, 2023).

Immediately after the speech, ittriggered fuel (PMS) pump price increase astronomically,nearly tripled, from ₦185.00 ($0.33) per litre to suddenly ₦500.00 ($0.67) an hour after the announcement (over 270% increased) across the country. After a week, the pump price rose to ₦630.00($0.84) per litre an increase of 341% and now trying to stabilise at ₦700.00 ($0.94) per litre, consequently this increased cost of travel sharply. Subsequently, after the soaring fuel pump price, it significantly affected Nigeria's daily fuel consumption which fell from 66 million to 40 million litres (Abayomi, 2023).It is a common belief and happening,when vehicle riders pay more on fuel, it also increases the cost of travel and transport fare automatically, increases by the resembling increase in fuel pump price. This implied many vehicle users are more economically sensitive in their decisions and travel behaviours or affordabilitywhich led to dropped in fuel consumptions. The prevalent high cost of fuel, will consequently increase the operation cost and travel cost will eventually increase for both private vehicle users and commercial transport fare on passengers next, will absolutely stimulate effects on the peoples' travel behaviours.Li et al., (2016) hypotheses, travel cost sources, have significant effects on both public and private vehicle users as a major factor influencing travel choice behaviour. Celikkol–Kocak et al., (2017) admitted, travellers are more sensitive to the cost of travel which is very important factor influencing

decisions choice behaviours between private vehicle and public transportation.Yu & Zhou (2016) concluded, travellers experiences on travel cost stress due to the excessive cost of running a private vehicle can affect many vehicle owners' personal income budgets, attitudes of vehicle usage and travel behaviours. It is against this backdrop, that this study investigated the effects of an upward change in the fuel pump price onurban residents' travel behaviours which has not been well researched yet.It is intended to provide an in-depth and interpretive study on how fuel price increases,influences the travel behaviours (demands)of urban residents

2.0 METHODOLOGY

The research, employed qualitative method of data collection and analysis, an expert interview was used as the instrument for the research data collectionas suggested by Creswell (2014), Ritchie (2013) and Gibson and Brown (2009).Personal interview of one-to-one (interview that engaged individual research participant for inquiring research phenomenon) method and semi-structured interview question format were employed, for thorough investigation of the research phenomena from people's personal opinions and experiences for in-depth theme coverage and understanding of the research contextual issues (Creswell, 2014, Ritchie, 2013,Gibson and Brown, 2009,Naoum, 2007 & Berg, 2001). English language was the medium of communication used for the interviews although, vernacular (Hausa), in some cases, was also employed. This method provides opportunity for detailed investigation of each person's personal point of views and experiences, for an in-depth understanding of the circumstances within which the research phenomenon is situated (Lewis, 2013).

In drawing the research samples, a non-randomor stratified sampling of quota and opportunistic (convenience) sampling techniques were used, where the participants were selected because the researcher is guided by their differences in socioeconomic status and travel demandsamong the study population that of interest to the research.Also because of their accessible and willing to participate in the research as recommended by Creswell (2014), Ritchie, (2013),Kumar (2011), Williman (2011)and Ritchie, Lewis, & Elam (2003)which will enable detailed exploration and understanding of the central themes.

In qualitative research some scholars suggested small-scale sample size hence, sample in qualitative research is not meant to be statistically representative but the characteristics of the population are used as the basis of selection that makes them well suited to small-scale (Creswell, 2014; Ritchie, 2013; Bhattacherjee, 2012; Stake, 2010 & Adams, Khan, Raeside, & White, 2007).Therefore, in this research, non-proportional judgement sampling was used, to achieve a minimum sample size, where fourteen(14) participants were selected, as a sample for the research data sources as **Table 1** indicated. By coincidence,among the sample, six were civil servants, seven business and a senior citizen (retiree) while on gender, only three are female. Expert interviews were conducted in August,September,Octoberand November, 2023, at different dates and English Language and vernacular were used as the communication medium.

The interview transcripts, were cautiously examined and the textual themes were identified for coding the data and content analysis was usedas suggested by Creswell (2014) and Ritchie (2013). The purpose of content analysis is to illustrate the content of the research respondents'/participants' comments systematically and classify various meanings expressed. This involved presenting information in the form of a connected narrative or by means of a series of verbatim quotations taken from the research participants' interviews. Another way is to tell a story,

that is, to explain the key issues, the key points and the context within which the issues and problems are being investigated.

Study area is Bauchi metropolis and it is basically an administrative town, right form inception before colonialism, being a headquarter of Bauchi Emirate since 1809, a Provincial capital in 1926, a Native Authority headquarter after independent in 1960 and a State and Local Government headquarter since 1976 (Encyclopaedia Britannica). The population of Bauchi metropolis as at 2023, is estimated, hence last census was conducted in 2006, to contain 670,280 people (**www.worldpopulationreview.com**). In the last three decades, the town experienced high level of urbanization, both population and spatial expansion, as a result of civil strife in the neighbouring Plateau state and Boko–Haram in the Northeast sub–region.

Table 1: Research Participants Attributes/ Profile

Participants	Gender	Age	Education Level	Occupation	GL	Vehicle Ownership	Vehicle Type
Participant 1	M	37	Diploma	Civil/Servant	8	Yes	Motorcycle
Participant 2	M	53	Degree	Civil/Servant	14	Yes	Car
Participant 3	M	44	Certificate	Business	N/A	Yes	Motorcycle
Participant 4	F	42	Degree	Civil/Servant	13	Yes	Car
Participant 5	M	27	Diploma	Business	N/A	Yes	Bicycle
Participant 6	F	38	Degree	Civil/Servant	10	Yes	Car
Participant 7	F	29	Degree	Business	N/A	None	Nil
Participant 8	M	38	HND	Civil/Servant	9	Yes	Motorcycle
Participant 9	M	58	Degree	Civil/Servant	15	Yes	Car
Participant 10	M	41	Degree	Business	N/A	Yes	Car
Participant 11	M	28	Diploma	Civil/Servant	6	None	Nil
Participant 12	M	47	Degree	Civil/Servant	12	Yes	Motorcycle
Participant 13	M	31	Diploma	Business	N/A	Yes	Motorcycle
Participant 14	M	68	Degree	Retiree	N/A	Yes	Car

Source: Researcher 2023. **Note: GL = Grade Level; N/A = Not Applicable**

3.0 RESULTS AND DISCUSSION:

3.1 Coding Incidence for Mode Choice of Urban Travel Behaviours:

TheCoding Incidence for Mode Choice of Urban Travel Behaviours is presented in Table 2

Uncontrolled rapid urbanisation with enlarge sprawling urban scale, increases travel demands, travel distance, use of vehicular modes, pressure on urban roads, and considerable external cost to travellers.In Bauchi metropolitan area, especially in recent decades, witnessed rapid urbanisation with widen sprawling scale which significantly escalated the demand for public transport services. However, efficient transport infrastructure, low transport cost simplified by government subsidies, normally, makes distances to destinations in urban travel immaterial. Indeed, on the other hand, when there is inefficient transportation system, deteriorating transport infrastructure and services, and no significant support (subsidy) from government, urban travel strife to specifically low and medium income earners hence, mode of mobility are highly reliant on income.Buses, cars, train, motorcycles and tricycles are more appropriate for relative longer distance urban trips, while cycling and trekking are suitable for short trips. As urban areas increases in size, travel distance also increases which may necessitate the use of cars and motorcycles principally,when alternative

public transport system are not available. So, probable impacts of travel distance and travel cost, is undoubtedly affects travellers travel behaviours of the urban people.

Deficient economic circumstances of the country, resulted to inefficient transport infrastructures and services, which for intra–urban trips, necessitated the use of either private cars, motorcycle, or bicycle or else walking. The rapid urbanisation of Bauchi metropolitan area, has triggered a correspondingly rapid in intra–urban travel demand, overwhelming scanty public transport system, limited transport infrastructure and services. This dictated the proliferation of informal commercial transport modes and services such as motorcycle and tricycle as taxi to satisfy the growing demands. This confirmed Sietchiping et al., (2012) study reports, many urban areas in Sub–Saharan Africa are insufficiently having public transport system, services and transport options. However, in every intra–urban travel, a traveller have to choose between different transportation modes available considering their respective cost, advantages and disadvantages particularly given unsatisfactory alternative and unsafe transport services. **Table 2** below, summarised the coding occurrencesthat influenced urban travel mode choice behaviours:

Table 2: Coding Incidence for Mode Choice of Urban Travel Behaviours

Coding Sources	Travel									
	Purpose	Distance	Cost	Convenience	Comfort	Safety	Speed	Freedom	Flexibility	Prestige
Participant 1	2	3	4	2	2	2	1	2	1	–
Participant 2	2	5	4	3	3	3	2	2	2	2
Participant 3	2	3	5	2	1	2	2	2	1	2
Participant 4	3	5	5	3	3	3	1	2	2	3
Participant 5	1	2	4	2	2	2	–	1	–	–
Participant 6	4	5	5	3	2	2	2	3	2	1
Participant 7	3	4	6	–	–	1	–	–	–	–
Participant 8	2	3	3	3	3	3	2	3	2	1
Participant 9	3	4	4	2	2	4	3	2	3	1
Participant10	2	3	6	3	2	2	–	2	1	–
Participant11	3	4	7	1	–	–	1	–	–	–
Participant12	3	3	6	3	3	2	–	2	1	–
Participant13	3	3	7	3	2	1	2	1	1	1
Participant14	3	6	7	–	2	2	–	3	2	–
Sub–Total	**36**	**53**	**76**	**30**	**27**	**29**	**16**	**25**	**18**	**11**
Grand Total	**321**									

Source: Researcher 2023.

From the coding frequency for mode choice as **Table 2** indicated, cost of travel is the most influential factor which scored 23.7% of the aggregate value, followed by travel distance and purpose with scores of 16.5% and 11.2% respectively. Convenience, safety, comfort and freedom form the moderate importance of scores 9.35%, 9.03%, 8.4% and 7.8%correspondingly while, flexibility, speed and prestige formed the least frequencies of 5.6%, 5.0% and 3.4% respectively. This signified that travel cost, distance and purpose are largely the determinants for mode choice of urban travel behaviours while prestige is negligible influential factor.

Hence, intra–urban public transport system not exist or else crashed, necessitated the use of private cars, motorcycles, tricycles, bicycles as well as commercial motorcycles taxi and

tricycles taxi to accomplish trip demands. In general, use of private vehicle is more attractive in intra–urban travel especially considering social attributes of convenience, comfort, safety, freedom, flexibility and prestige as personal experience advantages. As some of the research participants expressed particularly those who own a mobility even though, those without mobility, acknowledged convenience, comfort, safety, freedom and flexibility are important in controlling travel behaviours:

> *"You know, when you are using commercial vehicles, you only have control over the destination, and nothing more than that, even manner of riding and speed, the motorcycle (vehicle) rider is responsible. But if it is yours, you drive with care at your convenience and comfort" (Participant 11).*

> *"Yes, you know, the vehicle is not yours, the owner is just concerned with the pay and time, and he will ride with dangerous speed (high speed) to take you to the destination quickly so that he can get another passenger. You cannot stopped him. Well, I personally feel more comfortable, convenient and safer to use tricycle than motorcycle, but all of them, one have no freedom in using them. Flexibility, well, the only thing is, you determine where to go and where to stop, that all" (Participant 7).*

> *"Indeed, using these commercial motorcycles, one is at risk, your only convenience is that, they are available, flexible and provide door–to–door services at negotiated price.This is the only convenience, nothing more (Participant 5)".*

3.2 Effects of Fuel Pump Price on Transportation Cost and Weekly Travel Behaviour

The effects of fuel pump price on transportation cost weekly travel behaviour is presented in Table 3

Intra–urban travels behaviours are complex as it cuts across large heterogeneous urban socio–economic structure;low to high income groups with different social strata. These various layers of urban society, generated differentials in individuals' perception, feelings,emotions, attitudes, sentiments and behaviours which play significant roles in their respective travel behaviours. Indeed, cost of travel, among other factors, is crucial determinant that cut across all economic strata of the urban dwellers.

As Bauchi metropolis, in the recent years, witnessed sprawling development, travel distances has increased that warrants use of cars, motorcycles and tricycles that most use fuel (petrol). When the fuel subsidy was removed, 29th May, 2023, the fuel pump price immediately skyrocketed from ₦185.00 ($0.33) per litre to abruptly ₦500.00 ($0.67) and now ₦ 735.00 ($0.74) a 395% increase which directly influenced the cost of travels. Fuel pump price increase has significantly increased the cost of travelling in both the intra and inter–urban trips. This is because of its multiplier effects on travel attributes as cars, motorcycles and tricycles are the most attractive travel modes.

All the research participants agreed that, fuel pump price increase has increased the cost of travelling, as a result of disproportionate cost of running vehicles and eventually altered or modified their daily routine travel behaviours. Even those who own private vehicles, fuel pump price increase has increased the cost of running vehicles and cost of travelling and were forced to change their daily routine travel behaviours by stopping all unnecessary trips. Similarly, some of them indicated that when the trip is short or else when noticed low level fuel in the vehicle, they opt to using commercial motorcycles and or tricycles because is comparatively cheaper.Where

cost modified their mode use and frequencies in week travel behaviours. The followings are the experiences of some research participants:

> *"Indeed these unprecedented fuel price increase, has badly affected my traveling behaviours. Now I cannot fuel my car as I used to, buying ₦ 5,000.00 fuel will hold a week, going to office and make some running around. But now buying ₦ 5,000.00 fuel, will take only two days, just going to and from office, without making other trips. So, one have to adjust, all unnecessary trips were automatically avoided and neglected" (Participant 2).*

> *"This petrol price increases, one find it very difficult to buy enough fuel for the travel demands. I only fuel the car (₦ 20,000.00 instead of ₦ 5,000.00) for the purpose of going to work (office) and come back. All other trips were cancelled unless it is necessary" (Participant 4).*

"As a senior citizen, I parked my car, I don't go anywhere because I cannot afford fuelling the car to run around. Only during the rainy season I used the car for the purpose of going to farm and now it is over unless when it is necessary occasionally I use the car or else use commercial motorcycle taxi and when the distance is not far, I trek" (Participant 14).

Convenience, comfort, safety and freedom were identified as most influential factors for using private vehicle irrespective of the cost of fuelling the vehicles especially lamented by participants 4 and 6. This concurred with Cheng et al., (2013) finding in their study of Huzhou city, China. This may not be unconnected with their gender (females) who are more sensitive to safety, comfort, freedom and convenience.In the travel behaviours, issues of prestige, power, sensation, superiority, status, time savingand flexibility were not even counted but only cost of travel matters which is contrary to the findings of Pucher et al., (2005).

Indeed, travel behaviour of the urban inhabitants, across all the income levels, have been altered or scaled down, only necessary trips were considered important and it was found that those without private vehicles, travel behaviour have lower frequencies than those with private vehicles. This is similar t to the findings of Cheng et al., (2013) that they tend to make fewer trips and of shorter distance and often, they rely on low cost travel modes and or trekking.

Table 3: Vehicle Owners'Weekly Travel Behaviours

Participants	Before Subsidy Removal			After Subsidy Removal		
	Used private	Used commercial	Trek/Walk	Used private	Used commercial	Trek/Walk
Participant 1	7	–	–	3	3	1
Participant 2	7	–	–	3	3	1
Participant 3	5	2	–	4	2	1
Participant 4	7	–	–	7	–	–
Participant 6	7	–	–	7	–	–
Participant 8	7	–	–	4	2	1
Participant 9	5	2	–	3	3	1
Participant 10	5	1	1	3	3	1
Participant 12	7	–	–	3	2	2
Participant 13	4	2	1	2	3	2
Participant 14	3	2	2	1	4	2
Total	**64(83.1 %)**	**9 (11.7%)**	**4 (5.2%)**	**40(52 %)**	**25 (32.4%)**	**12 (15.6%)**

Source: Field Work 2023.

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

Fuel pump price increased, as travel cost sources (due to the excessive cost of running vehicles), have substantially affected vehicle users' travel behaviours, as travellers are more sensitive to the cost anxiety of travelling which is very important factor influencing travel behaviours. This affected the attitudes of vehicle usage and travel behaviours across all the income levels of the urbanites travel behaviours and both private vehicles owners and others.

4.2Recommendations

Fuel subsidy removal led to hike in fuel pump price which directly affected the social wellbeing of people. Therefore, policy makers, should consider the multiplier effects on fuel subsidy removal on people wellbeing and to provide alternatives to cushion the effects.

REFERENCES

Abayomi, O. (2023). Consequences of fuel subsidy removal on Nigeria's balance of trade. Vanguard News Paper, Nigeria. https://www.vanguardngr.com/2023/06/consequences-of-fuel-subsidy-removal-on-nigerias-balance-of-trade/ Retrieved 120923

Adams, J., Khan, H. T., Raeside, R. & White, D. I. (2007).*Research methods for graduate business and social science students.* SAGE publications, India.

Ahmadzai, F., Rao, K. M. L. & Ulfat, S. (2018). Assessment and modelling of urban road networks using Integrated Graph of Natural Road Network (a GIS–based approach). Journal of Urban Management. *https://doi.org/10.1016/j.jum.2018.11.001*

Al–Hassan, A. Z., Momoh, S. & Eboreime, L. (2014). Urban poverty and informal motorcycle transport services in a Nigerian intermediate settlement: A synthesis of operative motives and satisfaction. *Urban, Planning and Transport Research, Vol. 3(1),* Pg. 1 – 18. http://dx.doi.org/10.1080/21650020.2014.978950

Al Jazeera News Agencies (2023) Fuel subsidy cut will save Nigeria but impose burden: President. https://www.aljazeera.com/news/2023/6/12/fuel-subsidy-cut-will-save-nigeria-but-impose-burden-president Retrieved 12/09/23

Beira'o, G. & Cabral, S. J. A. (2007). Understanding attitudes towards public transport and private car: A qualitative study. *Transport Policy 14*, Pg. 478–489.

Berg, B. L. (2001).*Qualitative research methods for the social sciences 4th ed.* Allyn & Beacon, Oston.

Bhattacherjee, A. (2012).*Social science research: Principles, methods, and practices, (*2ndEd.). The Global Text Project, Zurich, Switzerland.

Boarnet, M. G. (2011). A broader context for land use and travel behaviour, and a research agenda. *Journal of American Planning Association, Vol. 77(3),* Pg. 197–213.

Cao, X. & Huang, X. (2013). City – level determinants of private car ownership in china. Asian Geographer, Vol. 30(1), Pg. 37 – 53.http://dx.doi.org/10.1080/10225706.2013.799507

Celikkol–Kocak, T., Dalkic, G. & Tuydes–Yaman, H. (2017). High – Speed Rail (HSR) users and travel characteristics in Turkey. *Procedia Engineering 187*, Pg. 212 – 221.

Cheng, L., Bi, X., Chen, X. & Li, L. (2013). Travel behaviour of the urban low–income in china: Case study of Huzhou city. 13th COTA International Conference of transportation professionals (CICTP 2913). *Procedia - Social and Behavioral Sciences 96,* Pg. 231–242.

Clifton, K. J., & Handy, S. L. (2001). Qualitative methods in travel behaviour research. Paper presented at the International Conference on Transport Survey Quality and Innovation, Kruger National Park, South Africa, August

Creswell, J. W. (2014). A frame work for design. In Creswell, J. W. (Ed.). *Research design: Qualitative, quantitative & mixed methods approaches,* (2ndEd.). SAGE Publication, New Delhi, India.

Garcia–Palomares, J. C. (2010). Urban sprawl and travel to work: the case of the metropolitan area of Madrid. *Journal of Transport Geography 18* Pg. 197–213.

Ghani, Z. A. (2017). A comparative study of urban crime between Malaysia and Nigeria. *Journal of Urban Management, Vol. 6* Pg. 19 – 29.

Gibson, W. & Brown, A. (2009).*Working with qualitative data.* SAGE Publications Ltd, London.

Ipingbemi, O. & Adebayo, A. (2016). Tricycle as a mode of public transportation in Ibadan metropolis. *Ife Research Publication in Geography, 14(1),* Pg. 126 – 135.

Ismail, N. A., Adeniji, T. A. & Paul, O. I. (2018). Assessment of tricycle operation as an alternative means of urban transportation in Lokoja, Kogi State. *Confluence Journal of Environmental Studies 12(1),* Pg. 53 – 62.

Lewis, J. (2013). Research design. In Ritchie, J. & Lewis, J. (Eds.) *Qualitative research practice: A guide for social science students and researchers*. SAGE Publication, New Delhi, India.

Li, X., Tian, X. & Li, X. (2016). Multi–mode choice behaviour for passenger in comprehensive transportation corridor. *Procedia Engineering 137*, Pg. 849 – 857.

Meyer, William B., & Turner, B. L. (1992). Human population growth and global land-use/cover change. *Annual Review of Ecology and Systematics, 23,* Pg. 39–61.

Kumar, R. (2011).*Research methodology: A step–by–step guide for beginners(3rd Ed*.). SAGE Publications Ltd, London.

Naoum, S. G. (2007).*Dissertation research & writing for construction students*, (2ndEd.) Butterworth-Heinemann, Elsevier, London.

Patra, S., Sahoo, S., Mishra, P., Mahapatrac, S. C. (2018). Impacts of urbanisation on land use/ cover changes and its probable implications on local climate and groundwater level. *Journal of Urban Management 7,* Pg. 70–84.

Pucher, J., Korattyswaropam, N., Mittal, N. & Ittyerah, N. (2005). Urban transport crisis in India. *Transport Policy 12,* Pg. 185–198.

Ritchie, J. (2013). The applications of qualitative methods to social research. In Ritchie, J. & Lewis, J. (Eds.), (2013). *Qualitative research practice: A guide for social science students and researchers*. SAGE Publication, New Delhi, India.

Ritchie, J., Lewis, J. & Elam, G. (2003). Designing and selecting samples. In Ritchie, J. &Lewis, J. (Eds.) (2003). *Qualitative research practice: A guide for social science students and researchers.*SAGE publications, India.

Sietchiping, R., Permezel, M. J.,& Ngomsi, C. (2012). Transport and mobility in Sub–Saharan African cities: An overview of practices, lessons and options for improvements. *Cities 29*, Pg. 183–189.

Stake, R. E. (2010).*Qualitative research: Studying how things work.* Guilford Publications, Inc. New York.

Sugiarto, Miwa, T., Sato, H., & Monkawa, T. (2014). Transportation expenditure frontier model in Jakarta metropolitan area. *Procedia - Social and Behavioral Sciences 138,* Pg. 148–158

Tran, T. M., Zhang, J., Fujiwara, A. (2014). Can we reduce the access by motorcycles to mass transit system in future Hanoi?*Procedia - Social and Behavioral Sciences 138*,Pg. 623–631.

United Nations (2014).*World urbanisation prospects the 2014 revision.* Washington, DC. USA: Population Division of UN DESA.

Verma, A. & Ramanayya, T. V. (2015).*Public transport planning and management in developing countries.* CRC Press, 6000 Broken Sound Parkway NW, London

Wang, Q., Feng, X., Liu, Y., Wang, X. & Zhang, H. (2014). Urban travel mode split optimization based on travel costs.*Procedia - Social and Behavioral Sciences 138,* Pg.706–714

Williman, N. (2011).*Research methods: The basics.* Routledge, 2 Park Square, Milton Park, Abingdon, Oxon14 4RN

Yang, J. & Gakenheimer, R. (2007). Assessing the transportation consequences of land – use transformation in urban China. *Habitat International 31*, Pg. 345–353.

Yang, L., Li, C., & Wang, Y. (2014). Bike–and–ride behaviour study in economic and technological development zone in Xi'an. *Procedia - Social and Behavioral Sciences138* Pg. 168–173

Yu, Y. & Zhou, X. (2016). Route choice behaviour analysis with unexpected delay information. *Procedia Engineering 137,* Pg. 252–258.

Zhao, P. (2010). Sustainable urban expansion and transportation in a growing megacity: Consequences of urban sprawl for mobility on the urban fringe of Beijing. *Habitat International34,* Pg. 236–243.