

THE BURDEN OF INTERMODALITY IN SUB-SAHARAN AFRICAN CITIES

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ABSTRACT

Integrated transport and intermodality are of little concern to decision-makers in large sub-Saharan African cities. In response to the low level of transport supply, city dwellers are implementing “de facto” integration and intermodal travel which has, as yet, been subjected to little study. The aim of this paper is to analyse intermodal and multimodal practices in three cities of sub-Saharan Africa. Comparisons between Conakry, Douala and Lyon (France) reveal that in the two African cities intermodality takes forms that are more disadvantageous for the population. The proportion of intermodal trips is higher and they mostly involve a combination of public transport and walking. In Lomé, where the motorbike taxi plays a primary role, intermodality makes it possible to travel all over the city, but it frequently entails long walking trips and has a high cost for users. Multimodal practices are also frequent and aim to reduce transport expenditure. In these large African cities, intermodality is very constrained and far from the dominating model in the North. Urban transport policies should take into account transport integration to improve accessibility.

Key Words. Intermodality, Multimodality, Transport Integration, Daily Travel, Trip segment, Public Transport, Walking, Mode of transport, Conakry, Douala, Lomé, Sub-Saharan Africa

INTRODUCTION

In the cities of the North , the integration of the different types of passenger transportservices to form a coherent system is the subject of much debate and an increasing number of applications. Integration sets out to enhance the sustainability of transport systems and accessibility at low cost. Integration can be seen as a set of technical and organizational tools that set out to make the best use of existing transportation networks, by combining them with the use of personal modes when this is possible. Integration may also take more ambitious forms and attempt to align transport policies with those for other sectors.

However, in the cities of sub-Saharan Africa, where walking is the rule and the majority of trips are made by informal public transport, integration arouses very little interest on the part of public authorities and operators. Nevertheless, when one focuses on transport demand, an examination of daily mobility reveals that “de facto” integration, while admittedly limited and complex, exists between the different components of transport supply. The frequency of trips that are interrupted to change vehicles, long last legs on foot, differences in outbound and return journeys in order to cope with variations in supply all testify to the constraints that weigh on a large number of African city-dwellers.

The purpose of this paper is to gain a better understanding of this de facto integration between different urban transport modes in sub-Saharan Africa. To achieve this we shall study three cities: Conakry (Guinea), Douala (Cameroon) and Lomé (Togo). The first section discusses transport integration and defines the concepts of intermodality and multimodality. Section 2 outlines the surveys that were used for the case studies of Douala, Conakry and Lomé. Section 3 measures the extent of intermodal practices in Douala and Conakry and compares it to the situation in Lyon, the third largest conurbation in France which is used to illustrate the general situation in the major cities of the North. Then, in the case of Lomé, where motorbike taxis dominate transport supply, we shall conduct a detailed analysis of intermodal trips and note the importance of multimodal practices in the context of commuting trips (Section 4). The conclusion (Section 5) underlines the need for urban transport policies to take into account transport integration to improve accessibility.

1. TRANSPORT INTEGRATION, INTERMODALITY AND MULTIMODALITY

Under pressure from the financial crisis and the need to limit car traffic in order to create cities that are more sustainable, the public authorities in the developed world advocate integration as the basis for transport policies. However, it is important to distinguish between different forms of integration (Potter and Skinner, 2000; Viegas, 2004). While an initial level of integration aims to ensure that the transport system is internally coherent, more ambitious projects set out to achieve consistency between transport policies and land use, or even, more comprehensively, to harmonize the policies for different sectors (for example transport and local economic development, or transport and access to healthcare, etc.). At times the term transport integration may thus refer to highly operational measures which are frequently focused on transport supply, and at others to strategic issues that relate to general goals (May et al., 2006).

In this paper we shall deal only with integration within the transport sector. Adopting the distinction made by Potter and Skinner (2000), this integration may be either modal or functional. Modal integration aims to facilitate transfers between different transport modes and attempts to improve interchange points and synchronize the timetables of different services. Functional integration involves integrating pricing so that a change in transport mode does not generate additional user costs as these may be dissuasive. In both cases the primary aim is to promote the successive use of several transport modes during the same trip. Chaining different modes in this way can be referred to as either intermodality or multimodality, with both terms being occasionally used synonymously in the same paper (Potter and Skinner, 2000; Hine and Scott, 2000; Gorter et al., 2000; Martens, 2004; Martens, 2007). However, in some cases multimodality can refer to the use of different transport modes at different times of the day or the week depending on the trip purpose or the location of the destination (Nobis, 2007; Parkhurst et al., 2012). The ability to distinguish between the two would seem to be important when analysing mobility, as they result from partially different modal choices and behavioural adaptations in response to constraints. In this paper we shall use the term intermodality to describe the chaining of transport modes within the same journey and multimodality to describe differences in modal use between outbound and return trips.

Distinguishing between the two is made even more important by the fact that they are considered separately in surveys. Multimodality is relatively easy to identify by observing the sequence of trips, but to measure it accurately data must be collected over a long period of time. The underestimation of intermodality is even more marked. Conventional surveys pay little attention to short walking trips and underestimate the role of walking trips during mechanized trips even more (Behrens et al., 2004; Clifton and Muhs, 2012;). An important consequence of this is that the role of walking in the daily travel of city-dwellers is seriously underestimated. In a study of the Netherlands, Rietveld (2000) has shown that walking becomes the most used mode when pedestrian segments are considered, with its share of movements rising from 18 to 59%. These “commonplace” practices show that urban residents are genuinely implementing integration in the transport sector.

In the cities of the South, whose transport systems rely essentially on informal operators (Cervero and Golub, 2007), the thinking about intermodality is at a much less advanced stage (Yeh, 2008; Rivasplata, 2001). Indeed, it is almost nonexistent in the cities of sub-Saharan Africa. There are two main reasons for this. Large African cities are characterized by deregulated transportation systems which are unsubsidized, self-organized and dominated by a large number of informal operators which are in competition with each other. This mode of operation is not conducive to the development of complementary transport services, whether by the public authorities or the transport operators themselves (Cervero and Golub, 2007; Diaz Olvera et al., 2012a; Behrens et al., 2012). Functional integration would seem to be out of reach due to the inadequate resources of the public authorities, central government and the local and regional authorities as well as the fragmentation of the sector. Looking at the situation from the supply side, modal integration appears to be rare, in particular because the interchange stations are more a setting for confrontation between stakeholders than genuine intermodal interchange (Lombard and Steck, 2004). However, an examination of the daily mobility of African city-dwellers shows that intermodal and multimodal practices are extremely widespread. Surveys that collect detailed data on all trips and the legs that make them up are however necessary in order to reveal them.

2. EMPIRICAL DATA

The travel surveys were conducted in Conakry (Guinea) and Douala (Cameroon) in 2003 and involved, respectively, 627 and 600 households. Data collection concerned the household (composition, characteristics of its dwelling, access to urban facilities, ownership of two- or four-wheeled vehicles) and each member aged over 10 years (sociodemographic characteristics, occupational activity, income, weekly expenditure on transport). The 2,703 and 1,885 respondents in Conakry and Douala respectively also described any trips they had made on the previous day (Monday to Saturday), which amounted to 10,061 and 8,474 trips respectively. The mode or modes used during each trip, the times and locations of departure and arrival and the trip purpose were thus available for comparative analyses of daily mobility.

Sampling for the surveys was conducted in 30 residential zones in the urban area which had been selected after a prior geographical stratification of the city. Given that population census data was not available and in order to reflect the socio-demographic structure of populations, raking weights were computed on the basis of large-scale household surveys that had been conducted shortly before (Sittrass, 2004a, 2004b).

The Household Travel Survey (HTS) that was conducted in the Lyon region in 2005-2006 was much larger (more than 11,000 households). For the analyses that were conducted for this research the urban area taken into account is restricted to Greater Lyon (5,749 households, 12,461 individuals of over 4 years of age and 44,097 trips made on Monday to Friday).

In view of the fact that the Conakry and Douala surveys were methodologically fairly similar to the Lyon HTS, in particular as regards the collection of travel data, and because of their statistical representativeness, we can use the results to conduct a comparison. The analyses were conducted on Monday to Friday travel of individuals aged over 10 years, and at an aggregate level.

The mode of data collection for the Lomé survey differed from the others, so it cannot be included in the same comparison. This survey was conducted in 2011, and related to individuals aged over 12 years who were travelling within the conurbation, mainly by public transport. The survey was conducted in public space in 10 key zones in the conurbation. 1220 individuals, 68% of whom were in work, were asked about their socioeconomic characteristics, their “current” trip¹, their usual work- and education-related trips, their use of motorbike taxis and their total expenditure on all these trips. After consolidation of the different trips, the final sample contains 3,984 trips.

The Lomé survey does not attempt to be representative of the population of the urban area as it does not cover individuals who did not travel on the survey day. The working population is no doubt over-represented and pedestrian trips, which account for a major proportion of trips in many African cities (Diaz Olvera et al., 2012b), are extremely under-represented (one in four “current” trips). However, it does have the advantage of describing in detail motorbike taxis and shared taxi use.

¹ The “current” trip is the trip the respondent was making when he was surveyed.

3. INTERMODALITY AND DAILY TRAVEL IN LYON, CONAKRY AND DOUALA

A comparison between the travel behaviours in two African cities and one French city reveals contrasting intermodal behaviours. We shall define as intermodal any trip that is made up either of at least two mechanized legs, whether these are made by the same or different transport modes, or of trips that consist of at least one mechanized leg and one walking leg that lasts more than five minutes. While individuals make a similar number of daily trips in Lyon and Conakry and slightly more in Douala (Table 1), walking plays a much more important role in the African cities (Table 2). The relative share of the mechanized modes is reversed, the private car dominates in Lyon and public transport dominates in Douala and Conakry. This is explained by the very low levels of household car ownership in Douala (11%) and Conakry (3%) compared to Lyon (78%). The difference in vehicle ownership rates and modal split affects both the frequency and nature of intermodal practices.

Table 1: Daily trips: number and modal split in Lyon, Douala and Conakry

	Number of trips	% walking trips*	% private car trips*	% public transport trips*
Lyon	3.6	32	48	17
Douala	4.5	63	4	31
Conakry	3.7	74	1	24

* Principal or only mode used for the trip

Source: Lyon HTS 2005-06, 2003 Conakry and Douala Poverty and Urban Mobility surveys. Sample: all individuals of 11 years of age and over, trips made on working days.

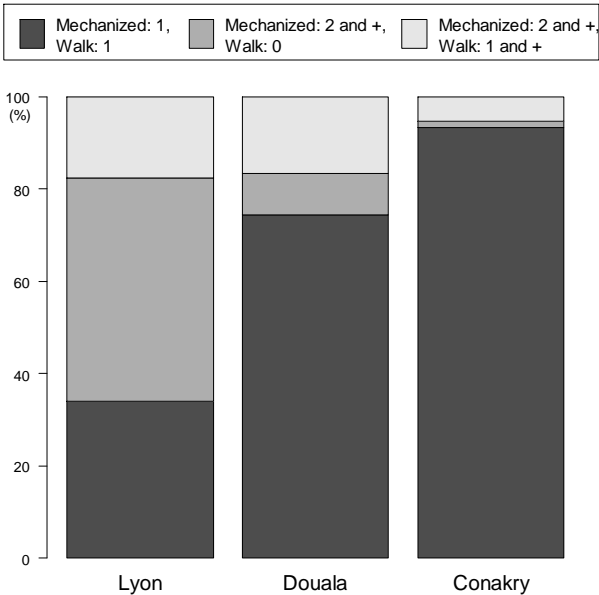
Table 2: Duration of walking trips in Lyon, Douala and Conakry

	Mean duration (mins)	% more than 15 mins	% 30 mins or over
Lyon	13	18	10
Douala	13	20	11
Conakry	15	25	14

Source: Lyon HTS 2005-06, 2003 Conakry and Douala Poverty and Urban Mobility surveys. Sample: all individuals of 11 years of age and over, trips made on working days.

The percentage of intermodal trips is twice as high in Douala and Conakry (respectively 20 and 22% of trips) as in Lyon (11 %) because of the car's dominance of modal split there. But there are also very marked structural differences between the cities (Fig. 1). In Lyon, two out of every five intermodal trips are made solely by public transport, which is as many as those that combine a walking and a public transport leg and twice as many as those that involve a private car. This pre-eminence of public transport reflects the way the network in Lyon is dominated by the city's four metro lines and two tram lines at the time of the survey. But intermodality is also encouraged by the integrated ticketing system that is in place for the different types of public transport services and the presence of park and ride facilities. The situation is quite different in Conakry and Douala where public transport does not operate in a network. Firstly, intermodality which combines use of a private vehicle and public transport is nonexistent. Secondly, trips including a mechanized leg and a walking leg greatly outnumber trips involving several mechanized legs, by a factor of three in Douala and ten in

Conakry. Walking is not only frequently used as the only mode for many trips in both cities, it is also essential in order to reach the public transport stop because of access difficulties in the outer zones.



Sample: all individuals of 11 years of age and over, trips made on working days.
 Source: 2005-06 Lyon HTS, 2003 Conakry and Douala Poverty and Urban Mobility surveys.

Fig. 1: Distribution of intermodal trips according to the number of legs and the mode used per leg in Lyon, Douala and Conakry

The observed differences between the two African cities stem from differences in their urban form and transport systems. The centre of Conakry is located at the end of a peninsula and the elongated form of the city (35 km long and 6 km wide at the most) concentrates public transport traffic on two radial roads, which reduces the need to change vehicle. However, the deplorable condition of the transverse roads that provide access to districts generally means it is necessary to walk to reach the paved roads in order to board a minibus or a shared taxi. Douala, which is also a port city, is less confined geographically. Its transport system is characterized by a sharing of the market between shared taxis, motorbike taxis (*bendskins*) and, to a lesser extent, minibuses. The state of the road barely troubles the *bendskins* so they can easily travel into peripheral residential areas, which makes walking less necessary. However, they are more expensive and need to link up with a shared taxi, a minibus or another motorbike taxi which encourages intermodality between public transport modes. The transport user survey conducted in Lomé in 2011 describes the characteristics of intermodal trips and gives us a more precise understanding of the reasons for intermodality and its impacts in terms of travel time and monetary cost.

4. INTERMODALITY AND DAILY TRAVEL IN LOMÉ

At the time of the survey, public transport supply in Togo’s capital city consisted of shared taxis and motorbike taxis, with a few buses run by the publicly-owned operator Sotral. In contrast to Douala, in Lomé the motorbike taxis dominate to a very high degree (Guézéré,

2012). The *oleyias* or *zemidjans*, as motorbike taxis are known locally, are the principal providers of public transport in the city centre and the less densely populated outskirts.

Public transport trips, which mostly consist of home-work or home-school trips, are also dominated by motorbike taxis. Table 3 shows the distribution of the different combinations of modes during the respondents' "current" trip. The *oleyias* are used in slightly more than eight out of every ten public transport trips. However, in one in every four cases, the *oleyia* is used in combination with at least one other transport mode (either motorized or walking). Shared taxi users more often make intermodal trips than *oleyia* users, and these trips account for more than half their trips. These figures reveal two important types of intermodality in Lomé, each of which applies to more than 10% of public transport trips:

- the combination of one segment in public transport and one pedestrian segment (rarely two segments) lasting at least 10 mins;
- the combination of two (rarely three segments) mechanized segments (usually by *oleyia* and shared taxi), sometimes with a pedestrian segment lasting at least 10 mins.

As in Douala and Conakry, intermodal practices involving a personal and a public transport mode are fairly rare in Lomé.

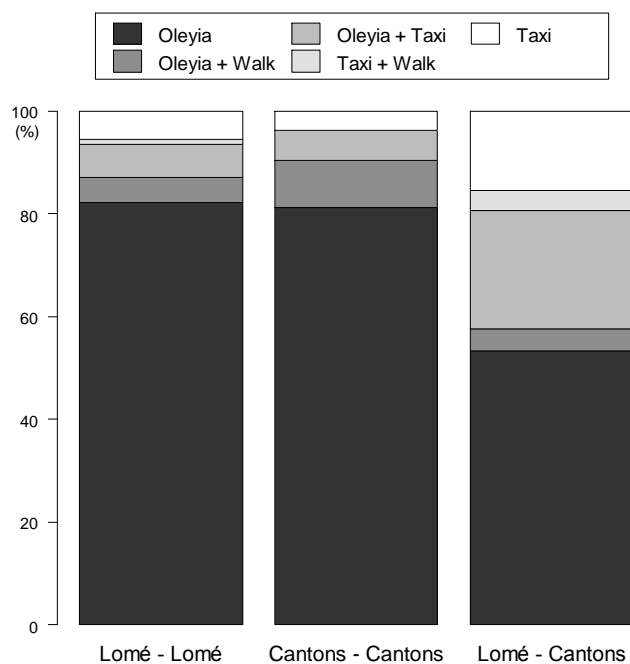
Table 3: Public transport use in Lomé

	% of total public transport use	% of total <i>oleyia</i> use	% of total shared taxi use
<i>Oleyia</i> on its own	64.6	77.8	
<i>Oleyia</i> + Walking ≥ 10 mins	7.6	9.1	
<i>Oleyia</i> + Other Mode	1.6	2.0	
<i>Oleyia</i> + Shared taxi	9.2	11.1	36.3
Shared taxi on its own	12.1		47.8
Shared taxi + Walking ≥ 10 mins	3.9		15.4
Shared taxi + Other mode	0.1		0.5
Other public transport modes*	0.9		
Total	100.0	100.0	100.0

* Mainly Sotral buses and university buses.
Source: 2011 Lomé Survey

4.1. Intermodality is valuable

The making of intermodal trips is linked to the distance covered. They are made on the longest and most complex trips between the municipality of Lomé and the peripheral cantons (Fig. 2). In particular, trips which combine *oleyia* and shared taxi use are common. On the other hand, the proportion of intermodal trips becomes much smaller for internal trips within the municipality of Lomé or the cantons. In the outskirts, the higher frequency with which *oleyia* use requires a walking segment before or after it is explained by the low residential densities, the limitations of the road network and the longer distances that need to be covered in order to reach the loading point from one's home.



Taxi=Shared taxi
Source: 2011 Lomé Survey

Fig. 2: Distribution of public transport trips in Lomé according to origin and destination

The distribution functions for travel distances² show that short and medium distance trips (with or without the use of walking as a feeder mode) are the market segment for which the use of *oleyas* is the most common (Fig. 3a). Almost 90% of such trips have a crow's flight distance of less than 5 km while more than half of shared taxi trips and almost two-thirds of combined shared taxi and *oleyia* trips are longer than this. However, *oleyas* dominate transport supply to such an extent that they are still used for more than half the trips that exceed 5 km.

The same hierarchy is apparent with increasing trip duration (Fig. 3b). The *oleyia* (with or without the use of walking as a feeder mode) gradually gives way to the shared taxi, and then combined use of the *oleyia* and the shared taxi. The median durations and distances clearly reveal the different market segments of motorbike taxis and shared taxis (Table 4).

Table 4: Median trip durations and distances for different types of public transport use in Lomé

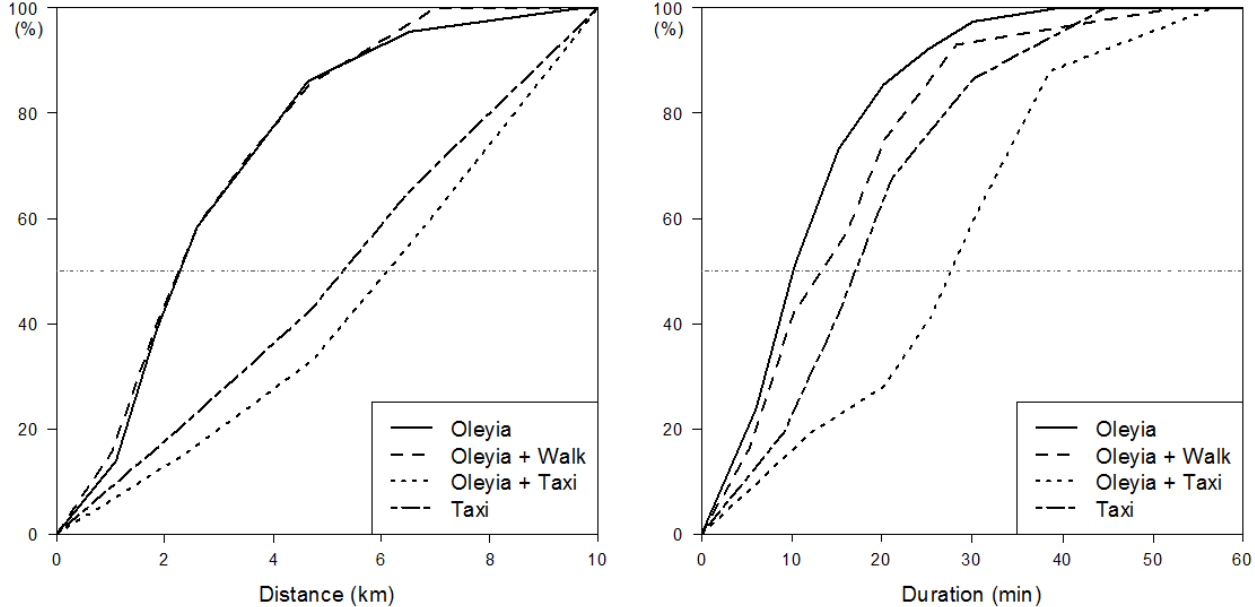
	<i>Oleyia</i> on its own	<i>Oleyia</i> + Walking	Shared taxi	<i>Oleyia</i> + Shared taxi
Duration (mins)	10	14	17	28
Crow's flight distance (km)	2.3	2.3	5.3	6.4

Source: 2011 Lomé Survey

The household travel surveys conducted in sub-Saharan Africa cities all show the way an individual's neighbourhood and its immediate vicinity dominates the spatial distribution of daily trips, but also the need to travel throughout the conurbation due to the functional specialization of urban space (Diaz Olvera et al., 2012b). The results given above for Lomé

² The distance used here is the crow's flight distance between the centroids of the origin and destination zones.

show that intermodal combinations, especially those that involve the use of more than one public transport mode, make it possible for city dwellers to travel to parts of the city that are far from their home. In spite of the fact that transport services are fragmented and uncoordinated, intermodality is valuable for city-dwellers ... but it comes at a price.



Taxi=Shared taxi
Source: 2011 Lomé Survey

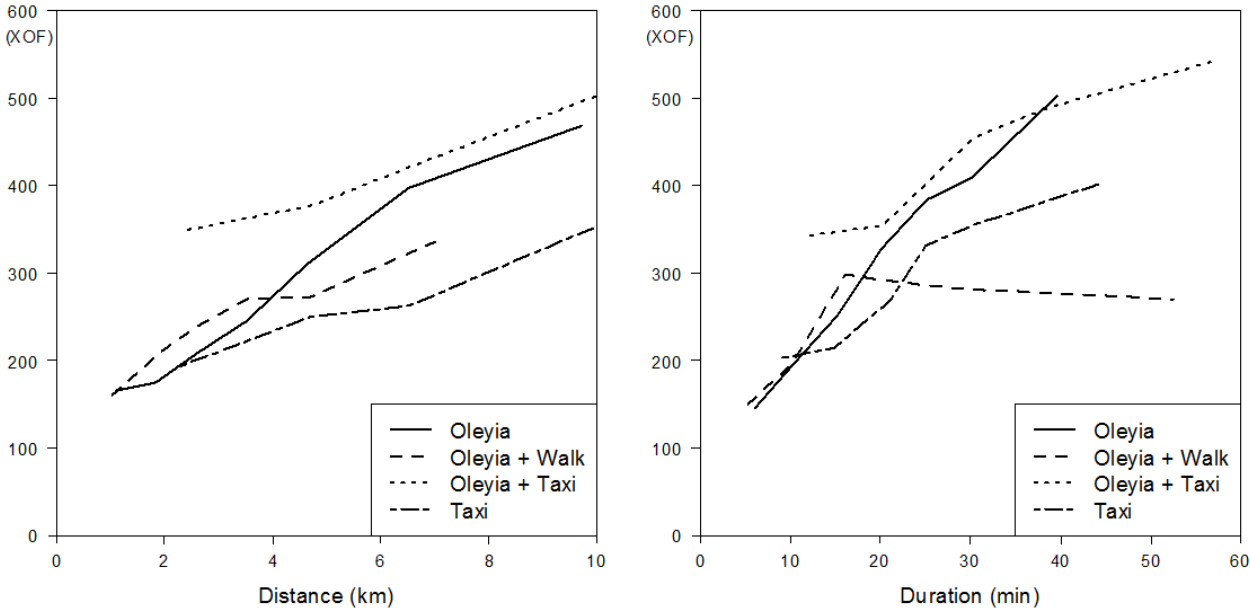
Fig. 3 a and b: Distribution functions for distances and trip durations according to public transport mode in Lomé

4.2 Intermodality is costly

The fragmented nature of public transport supply and the fact that the fares charged by informal operators are not controlled mean that fares increase automatically with distance, even if negotiation between the driver and the passenger is often possible leading to variations in the price charged for a given distance (Guézéré, 2008). Fig. 4a explains why the *oleyia*, when used on its own is above all used for short and medium distances. On average, it is less expensive than the other modes or modal combinations up to a crow’s flight distance of 2.5 km, after which it is increasingly out-priced by the shared taxi. Above a distance of 6.5 km, *oleyia* fares are barely lower than the cost of combined use of the *oleyia* and the shared taxi. The conditions that apply to the use of different modes by the citizens of Lomé allow us to see why motorbike taxis are often perceived as inexpensive. If we consider the median journey distance for each mode (see Table 4), the median *oleyia* trip costs under 200 CFA Francs, that by shared taxi 250 CFA Francs and that by *oleyia* and shared taxi combined, 420 CFA Francs.

Intermodal trips that involve the successive use of an *oleyia* and a shared taxi are systematically more expensive because of the summing of the costs for each mode, due to the absence of integrated fares. The resulting expenditure is a considerable drain on household budgets as we can gauge from two straightforward comparisons. First, the 420 CFA Francs that are paid for a median cost trip is almost equivalent to the price of a bowl of maize that provides a meal for 8 to 10 people. Second, a worker on the minimum

wage (28,000 CFA Francs) who commutes by *oleyia* and shared taxi twenty times a month would only have 11,000 CFA Francs per month left to spend on other items, including food and housing. These estimations, even though they only refer to hypothetical situations, show the level of constraints such modal practices can generate when they are repeated every day. This helps us understand why, in order to reduce the cost of their daily travel, citizens are attracted to the other main intermodal strategy based on combining the *oleyia* and walking (Fig. 4a and b). The cost differential between the two types of intermodal trips (*oleyia* sole or the combination of *oleyia* and walking) increases very rapidly once the trip duration exceeds 20 mins. For the longest trips, walking halves expenditure by reducing the distance travelled by motorbike taxi, but at the cost of a greater physical effort and discomfort.



XOF =CFA Francs. At the time of the survey, 100 CFA Francs=0.15 Euros.
 Taxi=Shared taxi
 Source: 2011 Lomé Survey

Fig. 4 a and b: Price according to trip distance and duration on public transport in Lomé

Walking slightly flattens the price-distance curve that results from the operators’ fare system. However, this statement needs some qualification. On the one hand, once the distance exceeds 3.5 km, the fare for an *oleyia* + walking trip increases much more slowly with distance than the fare for a trip by *oleyia* on its own which becomes more expensive once the distance exceeds 4 km (Fig. 4a). On the other hand, the price-trip duration curve confirms that the way to reduce the cost of *oleyia* trips is to combine them with walking (Fig. 4b). Walking seems to have two different functions in intermodal trips:

- as a feeder mode, in order to get to the nearest *oleyia* loading point. This practice has little impact on the distances covered or the cost of transport. It has more severe consequences for persons who live in the outskirts. In the city centre there is always an *oleyia* station very close to an individual’s home while in the outskirts one respondent in ten had at least a ten minute walk to reach one, and this proportion may reach one in five in the most peripheral cantons.

- as a partial substitute for a motorbike taxi, to shorten the motorized leg of the trip so as to limit the cost or because no motorbike taxi is available, for example in some areas that are distant or reputedly dangerous, particularly at night. Walking does not alter the total trip distance but it has a real impact on the relationship between the price and the trip duration because as the total duration of the trip increases the expenditure tends to stabilize.

Apart from intermodal practices, another way city-dwellers can adapt to the major constraints that restrict their public transport use is to use a different mode or combination of modes for their outbound and return journey. A description of certain multimodal practices provides a different insight into the use of walking to partially replace the motorbike taxi.

4.3. Exploring different possibilities to be able to travel

The Lomé survey provides information about the outbound and return trip of respondents' customary home-work and home-school trips (locations of home and work or school, transport mode or sequence of modes, duration and cost). As the survey collected data about respondents' customary practices it was unable to capture occasional multimodal practices. It is therefore likely that those divergences from customary practices that the survey detects underestimate the true variability between outward and return trips.

The respondents' reported customary practices are fairly unstable, as less than three-quarters of home-work trips and only half of home-school trips have outbound and return legs that are strictly identical in terms of modal use, duration and price (Table 5). When the outbound and return legs differ we can identify two main categories. Their size is similar for the working population, but the second category is twice the size of the first in the case of schoolchildren and students.

Table 5: Comparisons between outbound and return legs for home-work and home-school trips according to customary practices (%)

Mode(s), Duration, Cost	Home - Work	Home - School
Identical outbound and return trips (same mode(s), duration and cost)	71	52
Same mode(s), different duration and/or cost for return trip	14	17
<i>Longer duration, same cost</i>	56	75
<i>Same duration, more expensive</i>	30	13
<i>Other cases</i>	14	12
Different mode(s) for return trip	15	31
<i>Longer duration, less expensive</i>	44	64
<i>Shorter duration, more expensive</i>	24	5
<i>Longer duration, more expensive</i>	11	5
<i>Other cases</i>	21	26

Source: 2011 Lomé Survey

- Those for which the modal choice is the same but the price and/or duration differs. When individuals use the same modes for both directions of their trip, changes in travel conditions are more the outcome of the lower availability or lower modal efficiency on the outbound or return trip than a price-time trade-off. Amongst the working population, in almost all cases the

situation is worse on the return leg either because of longer durations or higher costs. The same applies to schoolchildren and students, mainly due to longer durations.

- Those in which modal use differs. The use of different modes on the return trip is either due to price-time trade-offs that differ from those made on the outbound leg because time constraints are less pressing after work or school or because conditions of public transport services change at different times of the day. When a different mode is used for the return trip, the duration and cost of the trip change necessarily. In the case of half of the workers and three-quarters of the schoolchildren and students, the changes result in less expensive travel on the return trip and durations are often longer because individuals walk part of the way. More expensive return journeys are considerably more frequent among workers than schoolchildren. The difference between the two groups is due to the low personal incomes of schoolchildren which puts them under even greater pressure to limit their expenditure.

Trade-offs between the different modes, whether in the context of intermodal or multimodal practices, take very different forms to those observed in the countries of the North where time is one of the principal parameters that determine how people live in cities (May et al., 1998) and where time savings are of central importance. The operation of the transport systems in African cities does not allow time-space compression, which is an extremely important trend in contemporary cities in the developed world (Janelle and Gillespie, 2004). In African cities, price-time trade-offs appear to be very much determined by the extremely low incomes of most public transport users. The result is that city-dwellers have very limited margins of manoeuvre with respect to the many constraints that relate to time, finance, or the operation of the public transport supply.

5. CONCLUSION

Our study of the situation in Lomé, Conakry and Douala shows the value of examining integration in the transport sector on the basis of behaviours, using daily travel data. In the cities of sub-Saharan Africa, the absence of urban transport integration policies is a major constraint on the daily travel behaviours of the urban population, particularly the poor. Intermodal or multimodal de facto practices are nevertheless common, due to shortcomings in transport services. However, the successive use of a number of modes during the same trip or the use of different modes between the outbound and return trips incur additional monetary or temporal costs for the user and increased fatigue.

This “behaviour-based” integration is necessarily incomplete and imperfect. While city-dwellers can attempt to implement modal integration by their behaviour, functional integration is obviously out of their reach. Of course, they can negotiate the price of each leg in a trip in its turn, but the ease of negotiation will depend on the time of day and the destination, and in any case, the operator will be under no obligation to take account of any other legs in the trip. In the absence of proactive policies on the part of the public authorities or the service providers, intermodality usually results in an increase in the monetary cost of the trip. There is perhaps a danger that the plans to introduce BRT in many African cities without the possibility that integrated fares will be introduced at a later date will make it even more difficult for the poor to access public transport.

More ambitious forms of integration that involve integrating transport policies and land use or transport policies and policies for other sectors, currently seem unattainable by African States and local governments which are often politically and economically vulnerable. In a

context where poverty is highly dominant, improving the accessibility of all the resources and opportunities of all types provided by the city is nonetheless a major urban policy issue. Transport sector policies that set out to improve the integration of its various components can make an important contribution to achieving this goal. To do this they must take proper account of the role walking plays in the travel of city-dwellers and move forward on the two fronts of modal and functional integration.

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