

# INFORMAL PUBLIC TRANSPORT PASSENGER SATISFACTION IN SELECTED WEST AND SOUTHERN AFRICAN CITIES

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## ABSTRACT

Formal bus and rail operating companies routinely undertake passenger satisfaction surveys to inform service improvement and business strategies. Informal public transport vehicle owners or owner associations seldom, if ever, administer such surveys. Consequently, less is known about informal public transport passenger satisfaction than formal public transport passenger satisfaction. This paper reports the findings of an (n=7 407) informal public transport passenger satisfaction survey administered in five West and Southern African cities. A standardised questionnaire enabled comparisons across cities. Satisfaction with various attributes of informal public transport service was analysed, finding that, in general, IPT services are negatively perceived by passengers in Sub-Saharan Africa, but that perceptions vary across cities. The highest rated service attribute was found to be service coverage, and the lowest, vehicle comfort. While the five case cities have similarities in organisation and regulation, they also have notable differences. Relationships between passenger satisfaction and variations in operations and regulations were explored, finding that better treated drivers provide better quality services. It is therefore recommended that strategies that define acceptable driver labour relations, and that advance vehicle crew working conditions, should form an important part of informal public transport improvement policies.

## 1. INTRODUCTION

Formal bus and rail operating companies routinely undertake passenger satisfaction surveys to inform service improvement and business strategies. While there have been a small number of academic studies, informal public transport vehicle owners or owner associations seldom, if ever, administer such satisfaction surveys. Consequently, less is known about informal public transport passenger satisfaction than formal public transport passenger satisfaction. What is known, is learned from a limited number of contexts. For most countries in Sub-Saharan Africa, there has been no research on passenger satisfaction with informal public transport quality-of-service.

Most academic research undertaken on the subject has focussed on satisfaction with minibus-taxi services in South Africa. Some of these papers have compared relative satisfaction with conventional large bus and rail services (Behrens & Schalekamp, 2010, Govender 2014a, 2014b; Vilakazi & Govender, 2014). Other papers have focussed on satisfaction with minibus-taxi services performing feeder roles in multi-modal public transport networks (Behrens *et al.*, 2018, Saddier *et al.*, 2019). Further South African studies have explored methodological improvements (Behrens & Schalekamp, 2011; Govender, 2016), and investigated correlations between operator compliance and passenger satisfaction (Chinomona *et al.*, 2013). Elsewhere in Sub-Saharan Africa, Agyemang (2013) measured satisfaction with trotro services in Ghana, and Koimur *et al.* (2014) compared 14-seater matatu service satisfaction with that of larger capacity buses in Nairobi.

The research presented in this paper is drawn from a larger project titled *Transitioning the policy debate, stakeholder relations and informal transport services for a low carbon future* (TRANSITIONS). The scope of this project was restricted to informal public transport services provided by midi- and mini-buses. The correct terminology to describe these services has been the subject of considerable debate in recent years, with different authors favouring terms ranging from 'informal transit', 'paratransit', 'popular transport', 'shared transport', to 'artisanal transporteur' (in francophone Africa). For consistency purposes, only the term Informal Public Transport (IPT) is used in this paper, which should be interpreted to be synonymous with the above terms.

The starting point for the TRANSITIONS project was the recognition that, for the large majority of Sub-Saharan cities, IPT is the mass transit service meeting daily population travel needs. In the context of the climate crisis, rapid urbanisation and increasing congestion, and considering the long timescales involved in implementing high-capacity formal public transport, IPT is expected to continue to play a strong role in the decades to come. In order to understand how the benefits of IPT could be strengthened, and how the problems associated with the sector might be overcome, the project sought to: (1) better understand the IPT sector in a selection of case cities in Sub-Saharan Africa; and (2) develop a 'routemap' for how public authorities, IPT unions and associations, and financial institutions might work together in pursuit of a clean (low emission), operationally efficient, affordable, and safe transport network, with IPT as a core element.

The case cities in the project represent a range of contexts: from Freetown, which can be considered to have limited regulatory oversight of the IPT sector; to Accra and Kumasi, where regulations are more developed, but poorly enforced; to Maputo, where there is a history of regulation, but with weak or irregular enforcement; to Cape Town, that has taken positive steps to put in place both a regulatory framework and positive initiatives to support professionalisation (Durant, 2022).

The 'routemap' guidance brings together findings from: (1) a literature review (Behrens *et al.*, 2021); (2) semi-structured interviews with government officials, representatives of the IPT sector and related industries; (3) passenger satisfaction intercept surveys; and (4) fuel consumption surveys. The 'routemap' presents a series of self-appraisal questions to assist practitioners in understanding the current situation in a city and the degree of preparedness to move forward, as well as a possible sequence of steps leading towards improved IPT services (Durant *et al.*, 2023; <https://www.hvt-transitions.info/>).

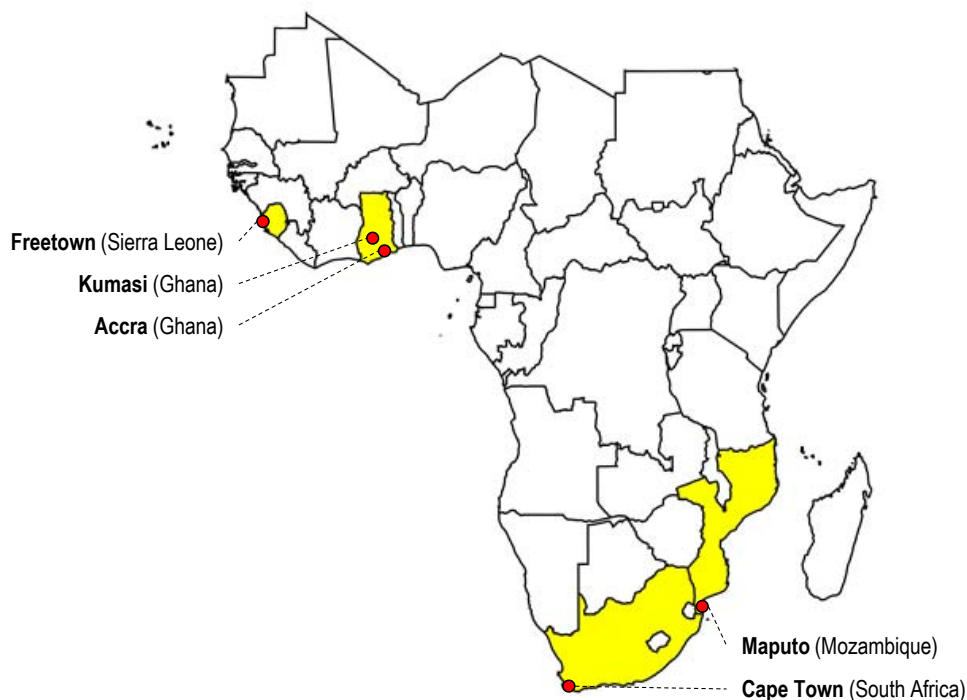
A standardised passenger satisfaction intercept survey administered across five Sub-Saharan case cities offered a unique opportunity to broaden knowledge of satisfaction with

IPT services on the subcontinent. This paper reports the findings of these surveys. Its aim is to explore relationships between passenger satisfaction and variations in operating practices and regulatory regimes across the case cities, and to discuss implications for policies seeking to improve quality-of-service amongst incumbent IPT operators.

The paper is divided into five sections. In the following section, the respective industry organisation, business operating practices, and regulatory regimes in the five case cities will be reviewed, in order to identify similarities and differences. Section 3 will present the method followed in administering the passenger satisfaction intercept surveys, and in analysing the data collected. Section 4 will present findings regarding both passenger satisfaction with service attributes, and relationships between satisfaction and case city variations in organisation, operation, and regulation. Section 5 will draw conclusions and discuss policy implications.

## 2. CASE CITIES

This section describes the prevalent industry organisation, business operating practices and regulatory regimes in the five case cities (see Figure 1).



**Figure 1: Case city (and country) locations**

### 2.1 Industry Organisation and Business Operating Practices

IPT minibuses are known by different colloquial names in the five case cities: ‘trotro’ in Accra and Kumasi; ‘minibus-taxi’ in Cape Town; ‘poda-poda’ in Freetown; and ‘chapas’ in Maputo. Table 1 presents recent estimates of the extent of IPT services in the case cities, as well as of city population dynamics. The size of the city vehicle fleets vary, from ~3 250 chapas in Maputo, to ~14 200 minibus-taxis in Cape Town. The extent of IPT route networks also vary, from ~124 routes in Freetown, to ~792 routes in Cape Town. City population estimates range between 1.2 million in Freetown, to 4.6 million in Accra and Cape Town, with all cities experiencing growth rates above the global average (1.6%).

**Table 1: Service characteristics, by case city**

	ACCRA	CAPE TOWN	FREETOWN	KUMASI	MAPUTO
<b>All informal transport services</b>	trotro (minibus) okada (motorcycle)	minibus-taxi (minibus) amaphela (sedan)	poda-poda (minibus) taxi (sedan) okada (motorcycle) kekeh (motor-tricycle)	trotro (minibus) okada (motorcycle) pragia (motor-tricycle)	chapa (minibus) MyLove (flatbed truck)
<b>IPT service involved in study</b>	trotro	minibus-taxi	poda-poda	trotro	chapas
<b>Fleets</b>	~11 000 trotros ~22 000 sedans	~14 200 minibus-taxis	~5 500 poda-poda	~9 000 trotros	~3 250 chapas
<b>Modal shares (motorised modes only)</b>	62%	23%	55%	50%	61%
<b>Routes</b>	315 (originating from Accra Metropolitan Assembly only)	792	124	437 (both intra- and inter-city operations)	189
<b>Weekday VKT</b>	150-175 km	260-300 km	150-190 km	150-190 km	206 km
<b>Population</b>	4 600 000	4 600 000	1 200 000	3 400 000	2 600 000
<b>Pop. growth rate/annum</b>	2.07%	1.84%	2.87%	3.78%	2.05%

Data source: Durant *et al.*, 2023

Table 2 presents IPT industry organisation characteristics in the case cities. In all the cities there are varying degrees of hierarchical self-organisation:

- In Accra, trotro operators are organised into ~25 owner and driver unions or ‘branches’, with each branch operating a specific route or set of routes. It is mandatory for all trotro operators to be a member of a registered union, the largest of which is the Ghana Private Road Transport Union (GPRTU), which represents around 70% of operators.
- In Cape Town, minibus-taxi owners are organised into ~106 route associations. Unlike the West African case cities, drivers are excluded. The majority of route associations are affiliated to six regional supra-associations (known as ‘motherbodies’). There are two national supra-associations: the South African National Taxi Council (SANTACO); and the National Taxi Alliance (NTA).
- In Freetown, poda-poda organisation members are drivers, not vehicle owners. The Sierra Leone Drivers’ Union and the General Motor Transport Workers Association have established an unknown number of district branches, which are divided further into ‘park’ committees.
- In Kumasi, trotro operators are organised into ~24 registered owner and driver unions in the Kumasi Metropolitan Assembly, and a further eight and three unions in Ejisu and Tafo respectively. In addition to larger unions (GPRTU, PROTOA and GCTA), there are 21 smaller unions, some of which are organised under an umbrella body called the Ghana Road Transport Coordinating Council (GRTCC).
- In Maputo, chapas operators are organised into ~10 owner associations, affiliated to a national supra-association called FEMATRO (Mozambican Federation of Transport Associations).

**Table 2: Operator organisation, by case city**

	ACCRA	CAPE TOWN	FREETOWN	KUMASI	MAPUTO
<b>Supra-organisation</b>	Ghana Private Road Transport Union (GPRTU) Progressive Transport Owners Association (PROTOA) Ghana Co-operative Transport Association (GCTA)	South African National Taxi Council (SANTACO) National Taxi Alliance (NTA)	Sierra Leone Driver's Union General Motor Transport Workers Association	Ghana Private Road Transport Union (GPRTU) Progressive Transport Owners Association (PROTOA) Ghana Co-operative Transport Association (GCTA) Ghana road transport Coordinating Council (GRTCC)	FEMATRO (Mozambican Federation of Transport Associations)
<b>Regional organisation</b>		1 provincial body (WC SANTACO) 6 'mother bodies'			
<b>Local organisation</b>	25 unions	106 route associations	district branches 'parks' (unknown number)	24 unions	10 associations
<b>Membership</b>	vehicle owners and drivers	vehicle owners	vehicle drivers (including informal for-hire services)	vehicle owners and drivers	vehicle owners
<b>Member benefits</b>	represent industry interests in negotiation with government rank management	support for operating licence applications rank management	represent driver interests in negotiation with government	represent industry interests in negotiation with government rank management	represent industry interests in negotiation with government route management
<b>Driver remuneration</b>	commission system (monthly salary and daily allowance)	target system (some commission)	target system	commission system	target system

Data source: Durant *et al.*, 2023

With regard to business operating practices in the case cities, two main driver remuneration models were found (commission and target systems):

- In Accra, both GPRTU and GCTA require the payment of a month salary to drivers that is double the 'target' payment to vehicle owners. In addition, vehicle crews receive daily allowances from the remaining daily farebox revenue after the vehicle owner's target and fuel costs have been deducted.
- In Cape Town, drivers collect cash fares, out of which they pay a vehicle rental to the owner (i.e., the daily target), all fuel costs, and the wages of a conductor (known as a 'gaatjie') (although not all drivers make use of gaatjies). Some owners and associations have introduced a commission model.
- In Freetown, vehicle owners recruit drivers who operate the poda-podas and pay the owners a share of farebox revenue at the end of each day. Their income is whatever they make after they have earned the 'master money' (i.e., the daily target).
- In Kumasi, trotro drivers enter into commission agreements with owners regarding the portion of farebox revenue that needs to be shared at the end of each month.
- In Maputo, drivers collect fares and pay a daily target to the vehicle owner.

## 2.2 Regulatory Regimes

The case cities represent different situations in terms of the complexity and maturity of competition regulation. The central form of regulatory control – route licensing – is in place in all the cities to some degree (with the exception of Freetown where change is occurring and the outcome is uncertain).

A common feature of the case cities is an element of self-regulation parallel to public authority regulation. This self-regulation usually involves a form of market entry control imposed by operator associations, in order to protect their interests in certain areas or routes. Public authorities often require affiliation to a union or association when processing operating licences for specific routes.

**Table 3: Market entry, operating, and fare regulation, by case city**

	ACCRA	CAPE TOWN	FREETOWN	KUMASI	MAPUTO
<b>Regulatory authority</b>	Metropolitan, Municipal and District Assemblies (MMDAs)	Provincial Regulatory Entity (PGWC), City of Cape Town	Sierra Leone Road Safety Authority (SLRSA)	Departments of Transport of the Metropolitan, Municipal and District Assemblies (MMDAs)	Municipality of Maputo Transport Department
<b>Mandatory association membership</b>	Yes – membership is compulsory	Yes – an association must support an Operating Licence application	No	Yes – membership is compulsory	No
<b>Quantity licensing</b>	Yes – licences obtained from Metropolitan, Municipal or District Assemblies (Permit type A – 1 year)	Yes – operating licences for routes are issued by the Provisional Regulatory Entity (route operating licence – 7 years)	Unclear – public authorities are now seeking to establish a suitable framework	Yes – licences obtained from Metropolitan, Municipal or District Assemblies	Yes – annual operating licences are issued by the Municipality of Maputo
<b>Driver licensing</b>	Yes (commercial) – drivers should hold a licence and demonstrate experience	Yes (commercial) – drivers must be in possession of a Professional Driving Permit	Yes – a driving licence is required	Yes (commercial) – drivers should hold a valid commercial vehicle licence	Yes – drivers should have a ‘public service driving licence’
<b>Vehicle quality standards</b>	Partial – union checks the condition of vehicle including tyres	Yes – specified by National Department of Transport	No – vehicle quality checks not undertaken or enforced	Partial – union checks the condition of vehicle including tyres	No
<b>Public authority fare-setting</b>	Yes	No – fares are decided within associations	Yes – drivers’ union undertakes negotiations with national government	Yes	Yes

Data source: Durant *et al.*, 2023

Table 3 summarises the regulatory regimes imposed by public authorities in the case cities:

- In both Accra and Kumasi, the national Road Traffic Regulations Legislative Instrument 2180 requires all public transport operators to be members of a transport union and to belong to a 'station'. Moreover, a licence should be obtained to operate on specified routes from the local administration (Metropolitan, Municipal and District Assemblies). Fares are negotiated with, and set by, the state.
- In Cape Town, each minibus-taxi is required to have an 'operating licence' which indicates the route or routes, and their respective start and end points ('A' and 'B' points), on which the vehicle is allowed to operate. A sticker is applied on vehicles to indicate the authorised route numbers. Unlike the other case cities, fares are set by the minibus-taxi associations, without intervention from the state.
- In Freetown, the government is currently developing a regulatory framework for podapoda operators. So, most regulation takes the form of self-regulation, but fares are negotiated with, and set by, the state.
- In Maputo, chapas regulation stems from the Transport Regulations for Automobiles (RTA-Decreto No 35/2019, 10 May) that authorises collective transport services through licences. In 2019, the Municipality of Maputo stopped licensing new 15-seater minibuses, allowing only the renewal of annual licences for this vehicle type. The intention is to promote a migration to 26-seater vehicles. MyLoves are not licenced to operate. Fares are negotiated with, and set by, the state.

### 3. RESEARCH METHOD

This section describes the method followed in administrating the passenger satisfaction intercept surveys, and in analysing the data that were collected.

The objective of the passenger satisfaction surveys was to: (1) capture passenger attributes in terms of demographic information, trip characteristics, and satisfaction with service attributes; and (2) identify the key areas in which passengers require quality-of-service improvement.

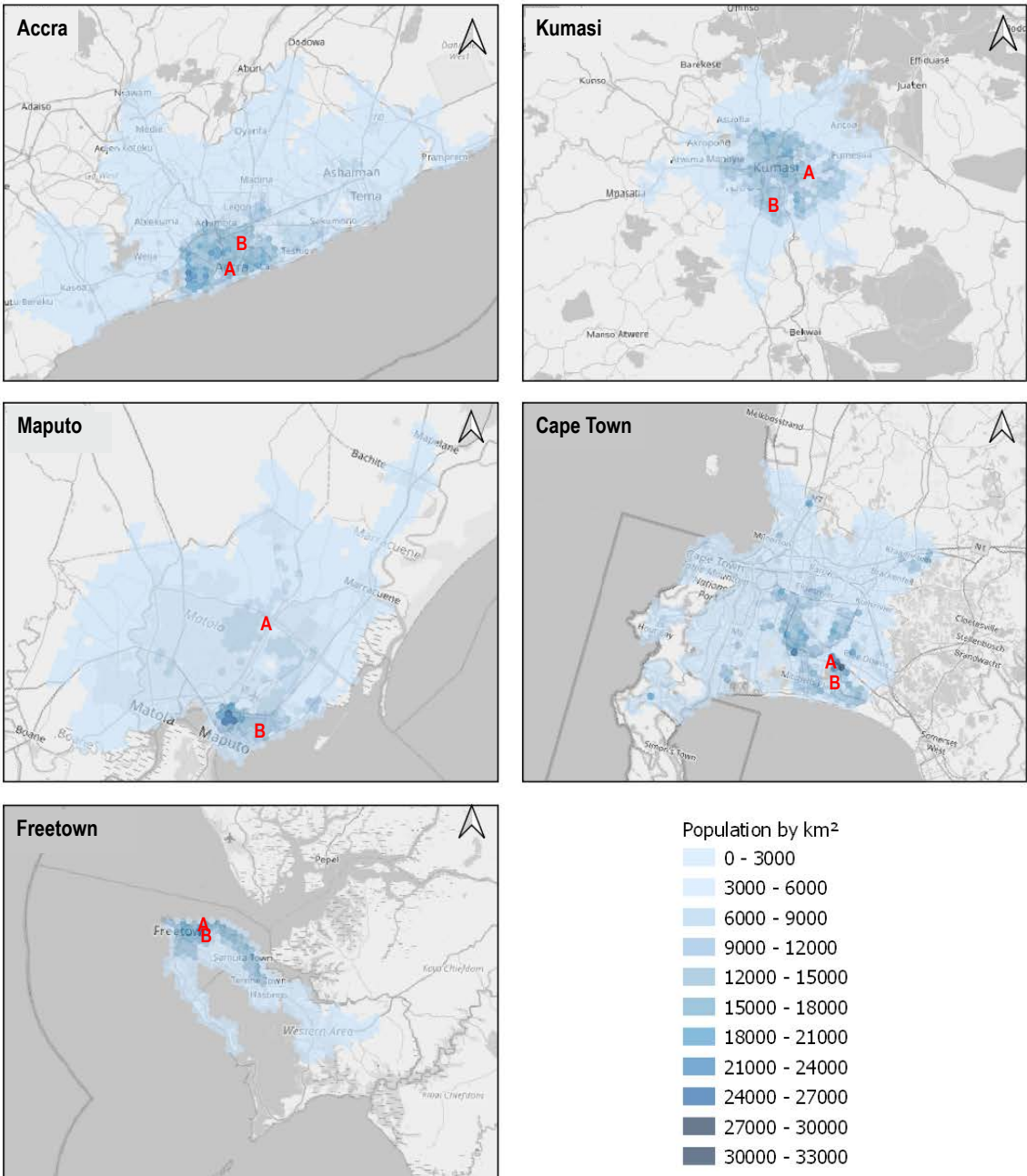
The questionnaire included 19 questions, covering three main themes:

- socio-demographic information, including sex, age, occupation, and income;
- travel information, including trip purpose, trip frequency, and intermodal transfers; and
- service attribute satisfaction rating information, including waiting time, coverage, affordability, vehicle crew, comfort, safety, and security.

*QuickTapSurvey* software, on smartphone devices, was used in data collection, which occurred between November and December 2021. IPT passengers were intercepted at two IPT ranks in each case city (see Figure 2). The interviews were administered in English, except in Maputo where Portuguese was used. Intercept interviews took an average of 5 minutes and 7 seconds to complete.

Table 4 presents selected respondent characteristics. Across all case cities, 49% of respondents were female and 51% male, 79% of respondents were adults between the ages of 21 and 45 years, 71% of respondents were employed (including self-employed), and 38% of respondents' trip purpose was to a place of work. The total sample size was 7 407 passengers. When using an estimation of each city's IPT user target population, margins of error range between 2.34% and 2.92%. It should be noted, however, that the

random selection of respondents occurred in just two IPT ranks in each city, and it is unclear how representative these ranks might be of all city ranks. This may have introduced biases in the data analysis, which are difficult to identify.



Accra	Cape Town	Freetown	Kumasi	Maputo
A. Kinbu	A. Khayelitsha Site C	A. Eastern Police Station	A. Tech Junction	A. Zimpeto
B. '37'	B. Khayelitsha Mall	B. Regent Road	B. Sofoline	B. Combatentes

Source: Facebook Connectivity Lab and Center for International Earth Science Information Network - CIESIN - Columbia University. 2016. High Resolution Settlement Layer (HRSL). Source imagery for HRSL © 2016 DigitalGlobe. Accessed 15 May 2021.

**Figure 2: Rank intercept survey locations, by case city**



**Table 4: Survey sample characteristics**

		ACCRA	CAPE TOWN	FREETOWN	KUMASI	MAPUTO
<b>Sex</b>	<b>females (%)</b>	42	59	53	61	51
	<b>males (%)</b>	58	41	47	39	49
<b>Age</b>	<b>≤20 years (%)</b>	5	5	9	13	18
	<b>21-30 years (%)</b>	35	27	44	47	50
	<b>31-45 years (%)</b>	44	53	38	29	23
	<b>≥46 years (%)</b>	16	15	9	10	8
<b>Occupation</b>	<b>student (%)</b>	10	13	13	27	23
	<b>unemployed (%)</b>	8	13	8	7	10
	<b>employed (%)</b>	80	68	77	64	67
	<b>retired (%)</b>	2	6	2	2	0
<b>Trip purpose</b>	<b>work (%)</b>	46	52	33	27	37
	<b>education (%)</b>	3	9	5	10	11
	<b>shopping (%)</b>	18	24	39	8	15
	<b>social (%)</b>	24	12	16	49	33
	<b>personal business (%)</b>	8	3	7	5	4
<b>Margin of error (%)<sup>1</sup></b>		2.61	2.92	2.42	2.54	2.34
<b>Sample size (n)</b>		1 412	1 121	1 630	1 490	1 754

Notes: The margin of error is calculated at a 95% confidence level, using a crudely estimated IPT user target population (N). The IPT user target population estimate assumes that 25% of the city population does not travel on any given weekday, and that 65% of trips are by motorised modes. The IPT user population is then calculated as the IPT modal share of the assumed weekday motorised passengers in each city.

Each case city database was analysed independently, using the *QuickTapSurvey* software. To facilitate the combined and comparative city data analysis required to prepare this paper, the five flat-file databases were fused into a combined flat-file database. Data analysis was restricted to descriptive statistics. Recognising critiques of the utility of averaging ordinal rating data, the analysis nevertheless used mean values to analyse central tendency in Likert ratings, because mode values did not produce meaningful comparisons.

## 4. RESEARCH FINDINGS

This section presents data analysis findings regarding passenger satisfaction with the range of service attributes included in the survey, and regarding relationships between passenger satisfaction and case city variations in industry organisation, business operating practices, and regulatory regimes.

### 4.1 Service Attribute Satisfaction

Table 5 presents mean (and standard deviation) passenger satisfaction ratings for all service attributes across the five case cities. The highest combined satisfaction rating was received for service coverage (3.5), and the lowest for vehicle comfort (2.5). The table illustrates that, while the combined city mean ratings present a fairly consistent negative average satisfaction, there is considerable variability across the cities. The larger cities in the wealthier countries (Cape Town and Accra) received the best overall passenger satisfaction rating. Notwithstanding the limited number of service attributes (seven)

contained in survey, Cape Town received positive mean satisfaction ratings across all seven service attributes. In contrast, Freetown received negative mean satisfaction ratings across all seven service attributes.

**Table 5: Service attribute satisfaction rating, by case city (n=7 407)**

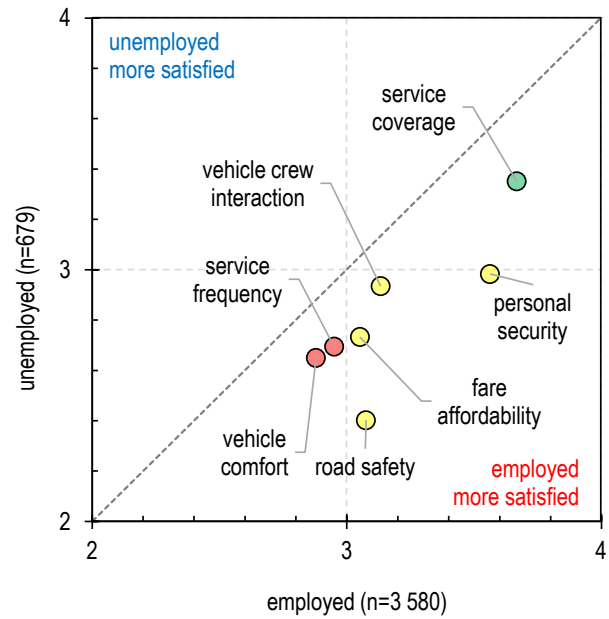
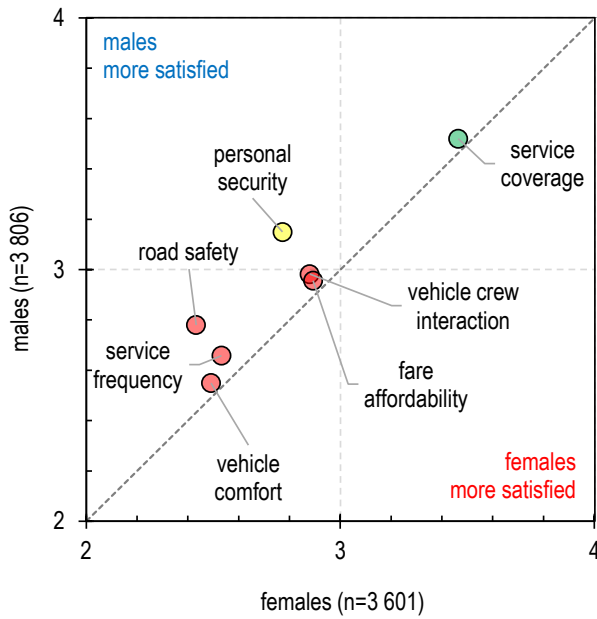
		Accra (n=1 412)	Cape Town (n=1 121)	Freetown (n=1 630)	Kumasi (n=1 490)	Maputo (n=1 754)	Cities combined	
<b>Overall quality-of-service</b>	Q: Are you satisfied with this informal transport service?	<i>mean</i>	3.4	3.9	2.6	3.0	2.1	2.9
		<i>StdDev</i>	0.8	1.2	1.2	1.0	1.3	1.3
<b>Service coverage</b>	Q: Are you satisfied with the location of pick-up and drop-off points?	<i>mean</i>	3.9	4.2	2.8	3.0	3.7	3.5
		<i>StdDev</i>	0.9	1.1	1.1	1.3	1.4	1.3
<b>Personal security<sup>1</sup></b>	Q: How do you feel about your personal security when you use informal transport?	<i>mean</i>	4.6	3.8	1.9	3.3	1.8	3.0
		<i>StdDev</i>	0.8	1.4	1.2	1.4	1.3	1.7
<b>Vehicle crew interaction</b>	Q: Are you satisfied with your interactions with the driver and the conductor?	<i>mean</i>	3.5	3.9	2.6	2.7	2.4	2.9
		<i>StdDev</i>	0.7	1.1	1.0	1.1	1.2	1.2
<b>Fare affordability</b>	Q: Are you satisfied with the amount of the fare that you have to pay?	<i>mean</i>	2.5	4.0	2.4	2.8	3.1	2.9
		<i>StdDev</i>	0.7	1.2	1.2	1.2	1.4	1.3
<b>Road safety<sup>1</sup></b>	Q: Are you worried about the risk accident when you use informal transport?	<i>mean</i>	3.8	3.3	2.1	2.7	1.6	2.6
		<i>StdDev</i>	1.4	1.4	1.3	1.5	1.2	1.6
<b>Service frequency</b>	Q: Are you satisfied with the waiting times?	<i>mean</i>	3.4	4.0	1.9	2.5	1.8	2.6
		<i>StdDev</i>	1.0	1.2	1.1	1.0	1.1	1.4
<b>Vehicle comfort</b>	Q: Are you satisfied with the level of comfort of the vehicles?	<i>mean</i>	3.1	4.0	1.5	2.5	2.0	2.5
		<i>StdDev</i>	0.9	1.1	0.9	1.1	1.1	1.3

1 = very dissatisfied; 2 = dissatisfied; 3 = neutral; 4 = satisfied; 5 = very satisfied

■ = positive mean rating (>3); ■ = neutral mean rating (=3); ■ = negative mean rating (<3)

Notes: In the questionnaire, the road safety and personal security questions asked for a respondent rating on a 3-point scale. To enable comparison, the 3-point scales were converted to 5-point scales in this analysis.

Figures 3 and 4 drill-down into passenger satisfaction by person type. Figure 3 illustrates that, for all service attributes, female respondents were more dissatisfied with service quality than male respondents (the perpendicular distance from the diagonal line measures the relative extent of the difference between the two person types). Unsurprisingly, the largest mean satisfaction rating difference across the sexes was in relation to concerns for personal security, followed by concerns for road safety. Figure 4 illustrates that, for all service attributes, unemployed respondents (used as a proxy here for wealth, because of a low response rate to the survey's question on income) were more dissatisfied with service quality than employed respondents.



1 = very dissatisfied; 2 = dissatisfied; 3 = neutral; 4 = satisfied; 5 = very satisfied

● = both positive ratings (>3); ● = both negative ratings (<3); ● = mixed positive and negative ratings

**Figure 3: Mean service attribute satisfaction, by sex (n=7 407)**

**Figure 4: Mean service attribute satisfaction, by employment status (n=4 259)**

#### 4.2 Relationships Between Satisfaction and Variations in Organisation, Operation, and Regulation

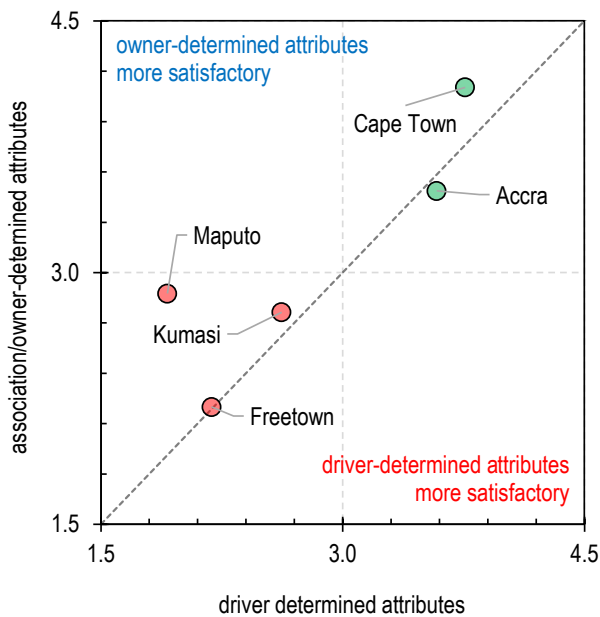
The preceding review (in Section 2) of similarities and differences in industry organisation, business operating practices and regulatory regimes across the five case cities raises a number of questions.

Firstly, does the inclusion of drivers in IPT unions in the three West African case cities (and the exclusive membership for drivers in the case of Freetown) on the one hand, and the exclusion of drivers in IPT associations in the two Southern African cities on the other, lead to different levels of passenger satisfaction with service attributes associated with driver behaviour? In other words, is there evidence to suggest that some collective negotiating power, even if weak compared to owners, leads to more compliant and constructive driver behaviour.

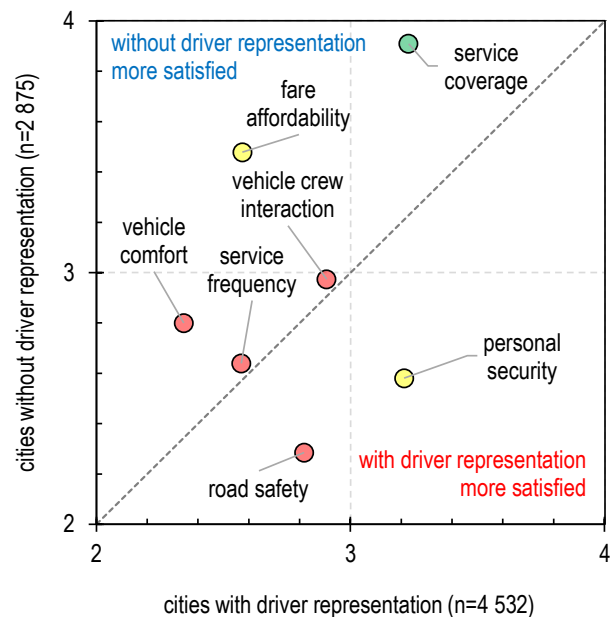
Recognising that a variety of factors beyond driver and owner actions can influence service attribute quality, Figure 5 plots those service attributes that owners (and associations) have greater control over, against those service attributes that drivers have greater control over. The plot reveals minimal differences in the case of the West African cities, and greater dissatisfaction with driver-determined service attributes in the case of the Southern African cities. This pattern suggests that, in contexts where driver interests are unrepresented in industry organisations and drivers have little stake in businesses, poorer passenger satisfaction results from less courteous customer interactions, less safe driving behaviour, and less responsive service headways.

Figure 6 explores the association that different levels of driver representation in industry organisation might have with individual service attribute satisfaction. The figure suggests that safe driving behaviour is the attribute satisfaction rating that increases the most when

drivers are better organised and represented. (Personal security also records a sizable difference, but this is an attribute that can be argued to be largely out of both owner and driver control).



**Figure 5: Mean driver- and owner-determined service attribute satisfaction, by case city (n=7 407)**



**Figure 6: Mean service attribute satisfaction, by driver representation in industry organisation (n=7 407)**

Fig. 6 Notes:

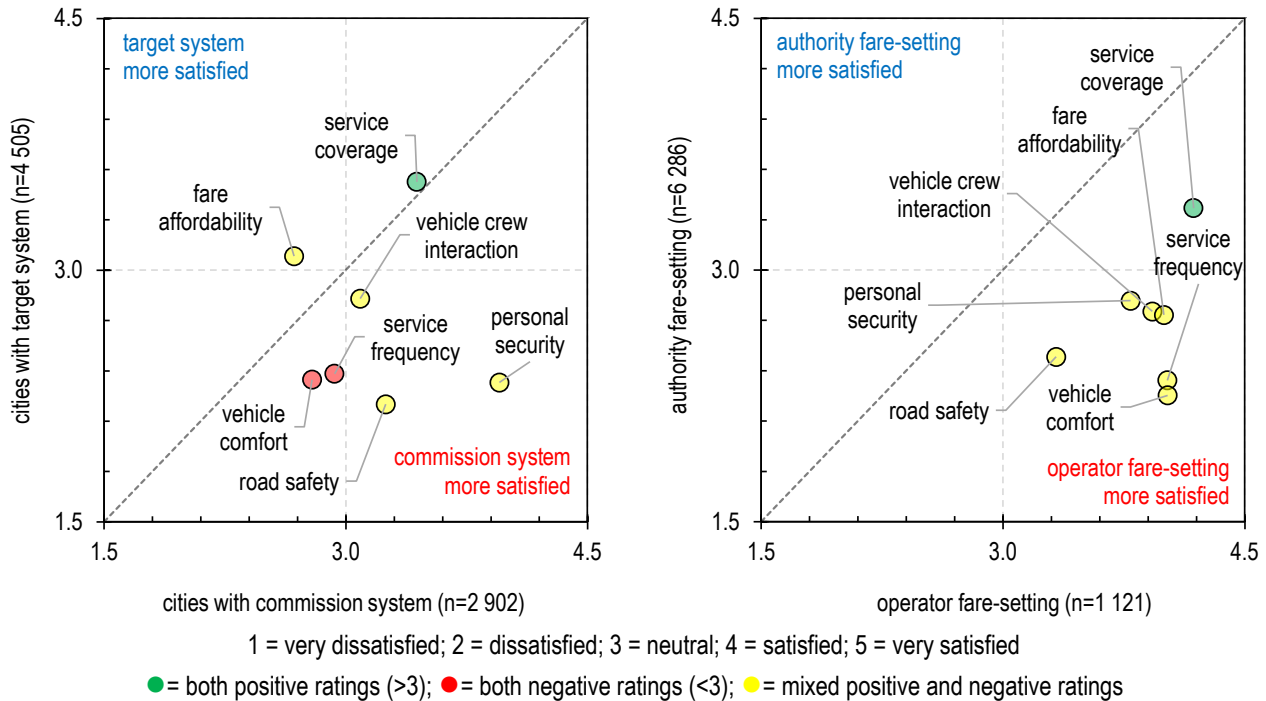
1. Driver-determined service attributes include: vehicle crew interaction; service frequency; and road safety.
2. Association or owner-determined service attributes include: service coverage; and vehicle comfort. To facilitate comparison, while association-determined, Cape Town's fare affordability is excluded from this mean value.

Secondly, does the commission model of driver remuneration that is prevalent in Accra and Kumasi on the one hand, and the target system prevalent in Cape Town, Freetown, and Maputo on the other, lead to different levels of passenger satisfaction with service attributes associated with driver behaviour?

The commission system of remuneration provides the driver with greater income assurance (e.g., on a bad revenue collection day, a farebox of R350 with a R300 target would result in R50 driver income, whereas a R350 farebox with a 50% commission would result in R175 driver income). Figure 7 compares attribute satisfaction ratings in those cities where the commission system dominates, with those cities where the target system dominates. The commission remuneration system is associated with greater passenger satisfaction ratings in all attributes, with the exception of fare affordability (which drivers generally do not have control over), and to a lesser extent service coverage (also often with little driver influence). This pattern suggests that the more assured driver income of the commission system contributes to less aggressive driver behaviour and therefore higher passenger satisfaction.

Thirdly, does fare-setting by owner associations without state interference in Cape Town on the one hand, and fare-setting by the state in consultation with industry groups in the other case cities on the other, lead to different levels of passenger satisfaction with service affordability?

Figure 8 compares attribute satisfaction in Cape Town where operators have fare-setting autonomy, with the other cities where they do not. Notwithstanding the limitation of comparing one city with five, passenger satisfaction with fare affordability (and indeed with all the other service attributes) was found to be lower in the cities where the state negotiates and sets fares.



**Figure 7: Mean service attribute satisfaction, by driver remuneration model (n=7 407)**      **Figure 8: Mean service attribute satisfaction, by fare-setting authority (n=7 407)**

Fig. 7 Notes: Given that in Cape Town a minority of vehicle owners have replaced the target system with a commission system, but the relative proportion of the two systems is unknown, this analysis was repeated with the Cape Town data removed. In this test, the direction of findings remained unchanged.

## 5. CONCLUSION

This paper set out to explore Sub-Saharan African passenger satisfaction with IPT services in general, and to investigate relationships between satisfaction and observed variations in IPT organisation, operation, and regulation in particular.

Regarding passenger satisfaction, it was found that, in general, IPT services are negatively perceived by passengers in Sub-Saharan Africa, but that perceptions vary across cities. While not strong, overall IPT satisfaction in the larger and better resourced cities of Cape Town and Accra was positive. Across all cities, the highest rated service attribute was service coverage, manifested in the spatial distribution of boarding and alighting locations. While the combined lowest rated service attribute was vehicle comfort, but this varied across cities (fares in Accra, and crash risk in Cape Town and Maputo).

Regarding relationships between satisfaction and variations in organisation, operation, and regulation, findings were intuitively sensible. Stronger organisation of collective driver interests, together with less exploitative labour relations (i.e., the commission remuneration system), were associated with greater passenger satisfaction. In essence, better treated drivers were found to provide better quality services. Interestingly, no evidence was found

to suggest that state intervention in IPT fare-setting yields greater passenger satisfaction with fare affordability.

What then are the implications of these findings for the formulation of policies and strategies to improve quality-of-service amongst incumbent IPT operators?

A first, obvious, implication is that general IPT quality-of-service needs to be improved, and that this should form an important focus of Sub-Saharan African transport policies. Within such policies, a recommendation emerging from the findings would be that strategies are developed and implemented to define acceptable driver labour relations and to advance vehicle crew working conditions. With respect to fare regulation, a comparison with just one case city with industry fare-setting autonomy – particularly when the city in question has a record of supportive IPT interventions (e.g., fleet renewal incentives, rank infrastructure provision, and road space prioritisation) – does not enable a firm policy recommendation to be made. But the limited insight gained from the passenger survey data does suggest that there might at least be cause to question whether the opportunity costs associated with allocating state resources to negotiating, setting, and enforcing IPT fares can be justified. A well-contested market can prevent exploitative fares, or at least when industry pricing cartels exist, they appear to be sensitive to the affordability constraints of the passenger market they serve. The occasional reporting of exploitative fare price surges in West African cities, happens despite state fare regulation, not because of its absence.

## **6. ACKNOWLEDGEMENTS**

This research was funded by UKAID through the UK Foreign, Commonwealth and Development Office under the High Volume Transport Applied Research Programme, managed by DT-Global (Reference number HVT/044). The views expressed in this paper do not necessarily reflect the UK government's official policies.

The support and leadership of the TRANSITIONS city cluster research coordinators – Simon Saddier and Mark Zuidgeest – is acknowledged, as is the contribution of Charles Adams, Marion Hoyez and Joseph Macarthy in their role as case city research leaders. The authors are also grateful for the assistance of Alexandra Newlands in cleaning and fusing the five case city survey databases.

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