Association between mobility problem, performance dimension, performance indicator category and performance indicator. References available at Table 1. Literature review

Problem	Description	References (problem)	Performance	Indicator Category	Indicator  Average PT (Public Transpotation) commute in AM peak [min]  Average PT commute in AM peak [km]  Peak period speed of PT [km/h]	References (indicators)  Bruun & Behrens (2016)
Traffic Congestion	Roads in African countries are heavily congested, especially during peak hours.	Cervero & Golub (2007)	Regularity	Level of traffic	Travel time to relevant points of interests Average commuting time by private and public transport Average commuting distances Delay	- Onatere et al. (2014)
				Velocity	Average speed Passengers' vehicle speed Bus speed Passengers' speed Ratio of speed of bus to passenger vehicle	- - Gholami & Ziaee (2017) -
Unscheduled time	Transport frequency is strongly variable depending on the time of the day. This results in a lack of reliability	Cervero & Golub (2007), Godard (2013), Behrens et al. (2015), Saddier et al. (2017)	-	Reliability	Public transportation headway Entire system average headway Reliability Average waiting time	- Gholami & Ziaee (2017)
Viability	The transportantion infrastructures are limited and tend to be very overcrowded		-	Viability	Punctuality Number of concrete roads Width of access roads Average number of vehicles Number of lanes	Onatere et al. (2014)
					Number of stops properly signaled  Number of vehicles per terminal per hour	
Pollution	As a conseguence of the traffic congestion, the air in SSA cities is polluted.	Cervero & Golub (2007), Parnell & Walawege (2011)	Environmental sustainability	Level of noise pollution	Level of noise from urban transport [decibel]  Vehicle fuel consumption	
				Level of consumption	Old vehicles still in use Fuel consumption per capita Level of emission	Gholami & Ziaee (2017)
				Level of emission	Emission by the vehicle make Carbon dioxide [CO2] Sulphur dioxide [SO2] Carbon monoxide [CO]	- Gholami & Ziaee (2017) - - - Onatere et al. (2014)
					Particulates Volatile organic compounds [VOCs] Number of fatal accidents	-
Road Accidents	Many road accidents happen in African cities, mainly due to the unregulated behaviour of drivers and lack of maintenance.	Sietchiping et al. (2012), Ehebrecht et al. (2018)	Safety	Road Accidents	Number of injury accidents Number of fender bender Number of fatal accidents per capita Number of injury accidents per capita Number of fender bender per capita	- - - -
					Number of fatal accidents per vehicle Number of injury accidents per vehicle Number of fender bender per vehicle Number of fender bender per vehicle-km Number of finjury accidents per vehicle-km	Gholami & Ziaee (2017)
					Number of fender bender per vehicle-km Number of traffic accidents Number of people killed/seriously injured in traffic accidents	- Onatere et al. (2014)
Maintenance of vehicles	Vehicle often breaks during their working time. The lack of maintenance can cause serious accidents as well.	Godard (2013), Behrens et al. (2015)		Maintenance	Mechanically deficient vehicles still in use Old vehicles still in use Distribution age of public transport vehicles presence / absence of concrete or paving	Onatere et al. (2014)
					Average frequency of maintenance intervention per transport  Number of breakdowns per transport  Frequency of breakdowns	
Verbal and physical aggression	Verbal and physical aggression by the personnel and other passengers happen on board. Women are often victims of these situations.	Porter (2008), Porter et al. (2011), Sietchiping et al. (2012)		Personal risks	Number of vehicle check per day Personal Safety at motor parks/stps Personal Safety on board Incidence of commuter being attacked by armed robbers	- . Onatere et al. (2014)
				Control	Change in speed behaviour Effective Police Patrols teams	Onatere et al. (2014)
Unregulated behaviour of the drivers	Drivers often do not respect safety and road codes and conduce the vehicle in a dangerous way for its passengers.	Behrens et al. (2015), Sohail et al. (2006)		Unregulated behaviour of drivers	Use of seatbelts Incidence of driving under the influence of alchool/drugs	- - - Onatere et al. (2014)
					Incidence of red light running Percentage of tranied/certified drivers Percentage of drivers using uniform Incidence of changing routes Incidence of not stopping or yelding in junctions or at pedestrian crossing	
Sexual harassments	People in public transportation are very tight and men take advantage of the situation getting very close		-	Sexual harassment	Number of reports about sexual harassment Level of overcrowding per route Number of complains about sexual	
	3 3.7, 2000				harassment  % population within 1 km of PT facility % population within 15 min walt to PT facility Average walking distance to PT facility Mobility measure (how many locations can be reached in 60 minutes) Contour measure (how many health facilities can be reached in 60 minutes) Gravity measure (how many health facilities can be reached in 60 minutes moltiplied by a time decay function)	Bruun & Behrens (2016)  Campbell et al. (2019)
			Accessibility	Service coverage	Usage of different modes of transport  Density of stops per line or per route  Number of transport modes from POI (Point of Interest) to POI  Number of POIs accessible within a specific time interval from a specific area or point of the city  Travel time (vehicle) from POI to POI  Distance of PT stop from POI	

Availability	The transportation system is scarse both in terms of service coverage and service provision, many citizens have difficulties to access it and arrive the specific destination.	Olvera et al. (2013), Behrens et al. (2015)		Service accessibility	Km of path side Km of cyclist line Number of transport with ramps for wheelchairs Average number of places reserved for the elderly and disables for transport mode	
					Bus frequency Average bus system frequency Bus capacity per capita Frequency of public transport	Gholami & Ziaee (2017)
					Number of lines per transport Number of stops per line	Onatere et al. (2014)
				Service provision	Public transport trips [number]  Load Failure = Number of transport modes from POI to POI	
			Reliability		Number of unexpected changes in routes in time  Congestion periods	
					Excessive waiting time at PT stop  Number of POIs accessible within a specific time interval from a specific area or point of the city	
				Routes	Crowd at POI Number of transport per ticket	
			Integration and Coordination	Price	Number of digital payments  Number of traditional payments  Variability of price on equal distances	
				Operator	Number of operators Number of operators per transport type	
Economic Affordability	The transportation system is unaffordable for part of the population.	Fouracre et al. (2006), Diaz Olvera et al. (2008)	Affordability	Affordability	Average fare/trip (Rail) Average fare/trip (Bus) Average fare/trip (Minibus) Annual PT fare/GDP per capita (Rail) Annual PT fare/GDP per capita (Bus) Annual PT fare/GDP per capita (minibus)	- - - Bruun & Behrens (2016)
					Average % household income spent on PT Fare for disadvantaged people / Normal fare Fare for students / Normal fare	-
Overcrowding	Collective transport in SSA carry more people than those allowed, leading to strong level of saturation of the vehicle which makes the trip very uncomfortable and dangerous.	Cervero & Golub (2007), Godard (2013)	Quality	Comfort	Average daily load factors (per transport) PT spaces / 1000 people	- Bruun & Behrens (2016)
					Crowding during peak hours  Ratio of standing passengers to tatal passengers at buses  Volume / Capacity	Onatere et al. (2014)
					Public transportation peak hour load factor Public transportation hour I load factor Percentage of public transportation passengers	Gholami & Ziaee (2017)
Rude behaviour of personnel	The personnel often behave rudely with its passengers, lack of information provided and rude manners to answer	Behrens et al. (2015)		Level of service	Customer service  Complaints handling and effective resolution  Average time to process claims  Percentage of complaints total	- Onatere et al. (2014)
	the question.			Revenues	Behaviour of drivers/conductors  Total commercial revenue/Total cost	-
	Operators have difficulties in self financing their business and economically survive.		Financial sustainability	Investments	Public transport expenditure in % of GDP	
Financial Sustainability				Cost	Road network expenditure in % of GDP Cost of travel Private cost of transport (private transport companies) Public cost of transport (governmental)	
					Cost of public transportation / private one	
Lack of proper Education and Communication	Personnel lack the necessary competencies and the awareness of population regardig important thematic is missing		Education and Communication	Education	Number of Trainings Frequency of training	
				Communication	Percentage of participation to the trainings  Number of communication campaign about sexual harrasment  Number of communication campagn about	
Justice	Corroption and inequalities undermine a proper development of transportation		Justice	Working Equality	sustainable mobility Percentage of female drivers Percentage of female collectors	
Fragmentation	companies  The system is strongly fragmentated in a wide number of operators. In particular, paratransit are charcterized by a consistent number of individual business.	Sohail et al. (2006), Bruun & Behrens (2016), Klopp et al. (2019)		Bribery -	Number of anonymous reports for bribes	