

Building Mobility Justice in Informal Transport: Theory, Policy and Practice

Tamara Kerzhner,
UC Berkeley, City and Regional Planning



New minibus route,
Kampala, Uganda,
March 2023



Kampala, Uganda:

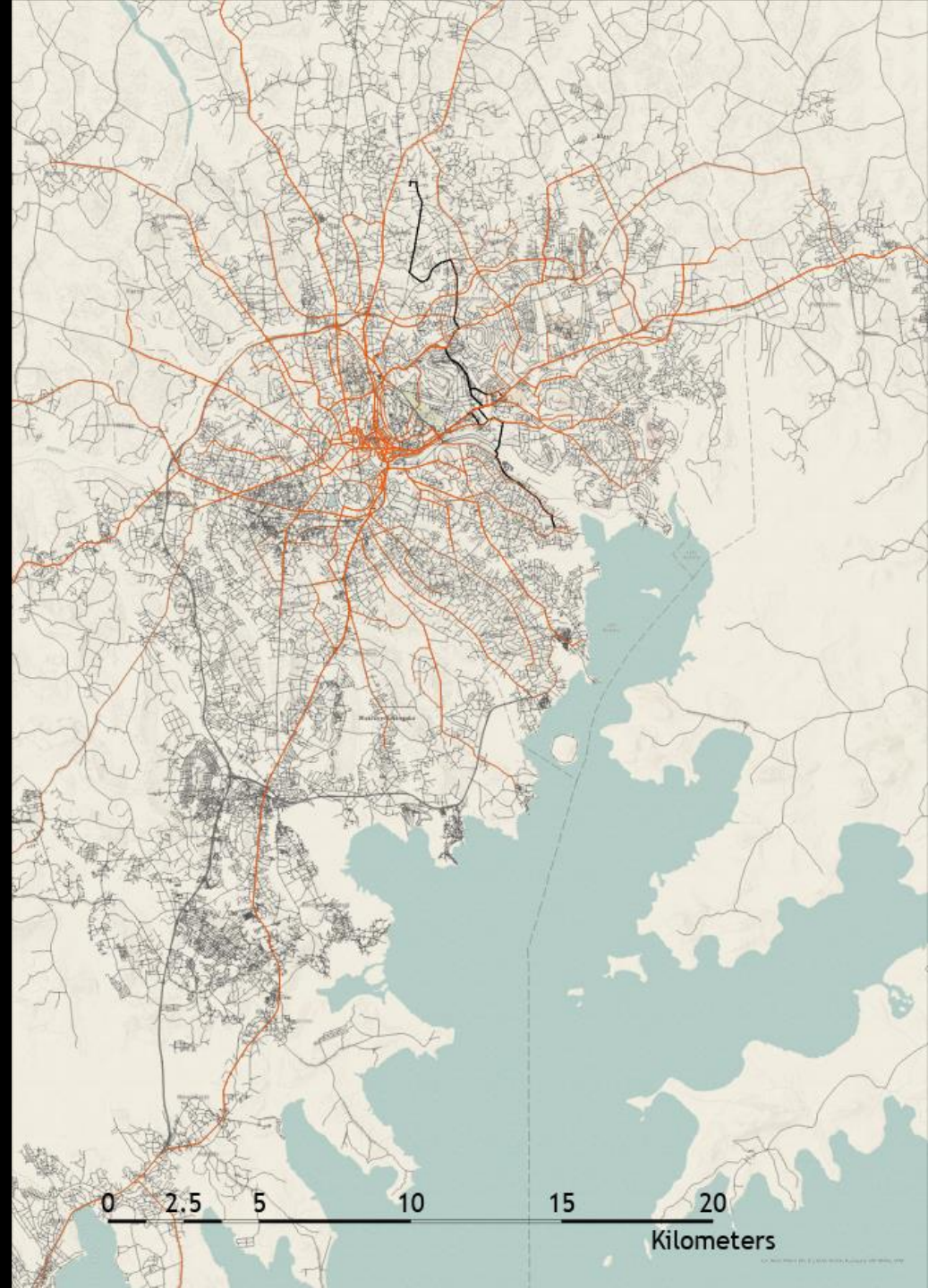
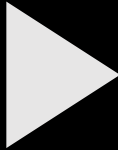
Population:

0.5 Million, 1980

1.2 Million, 2000

3.2 Million, 2020

7.0 Million, 2035



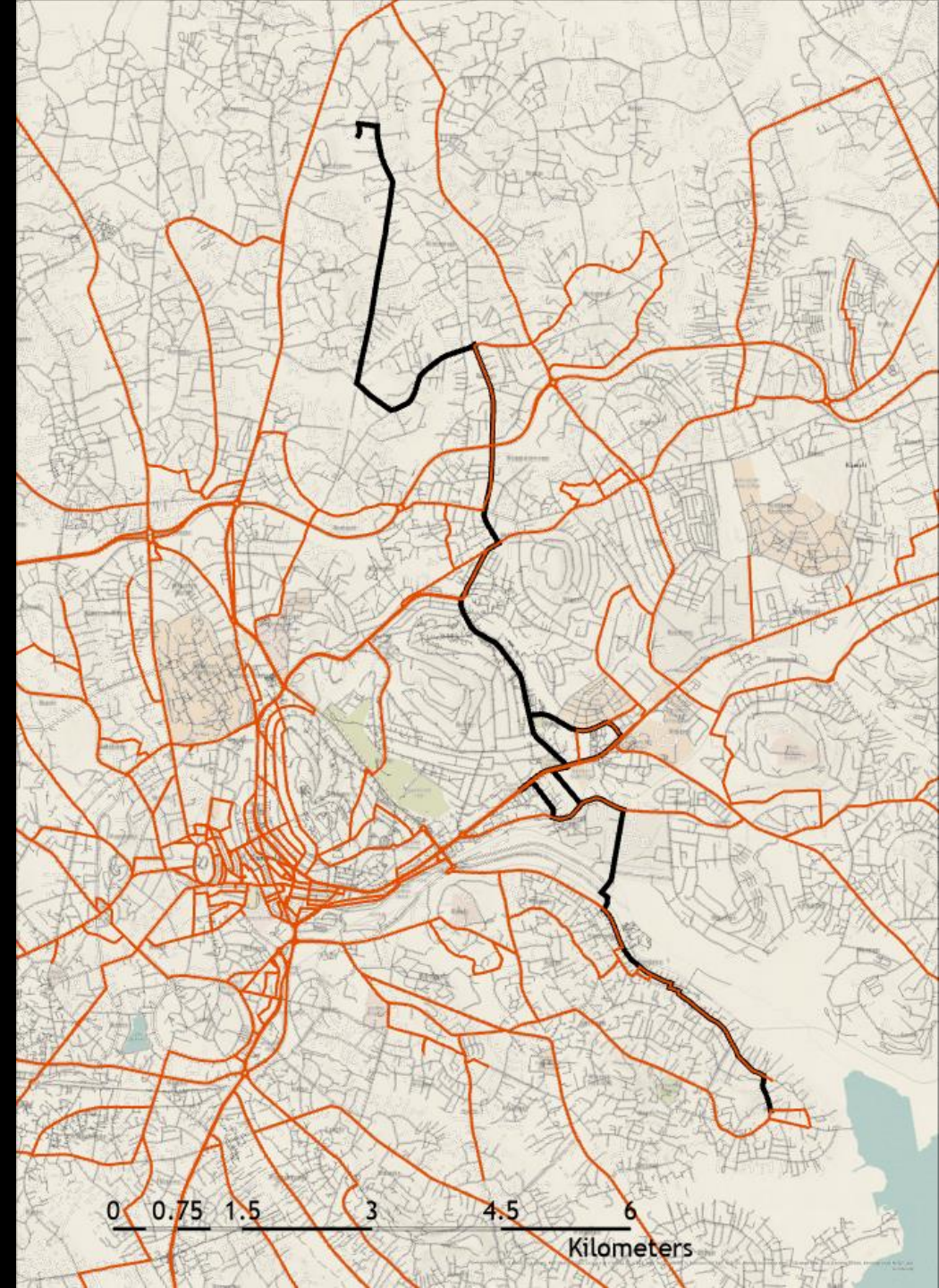
Transportation:

Walking – Over 50% of trips

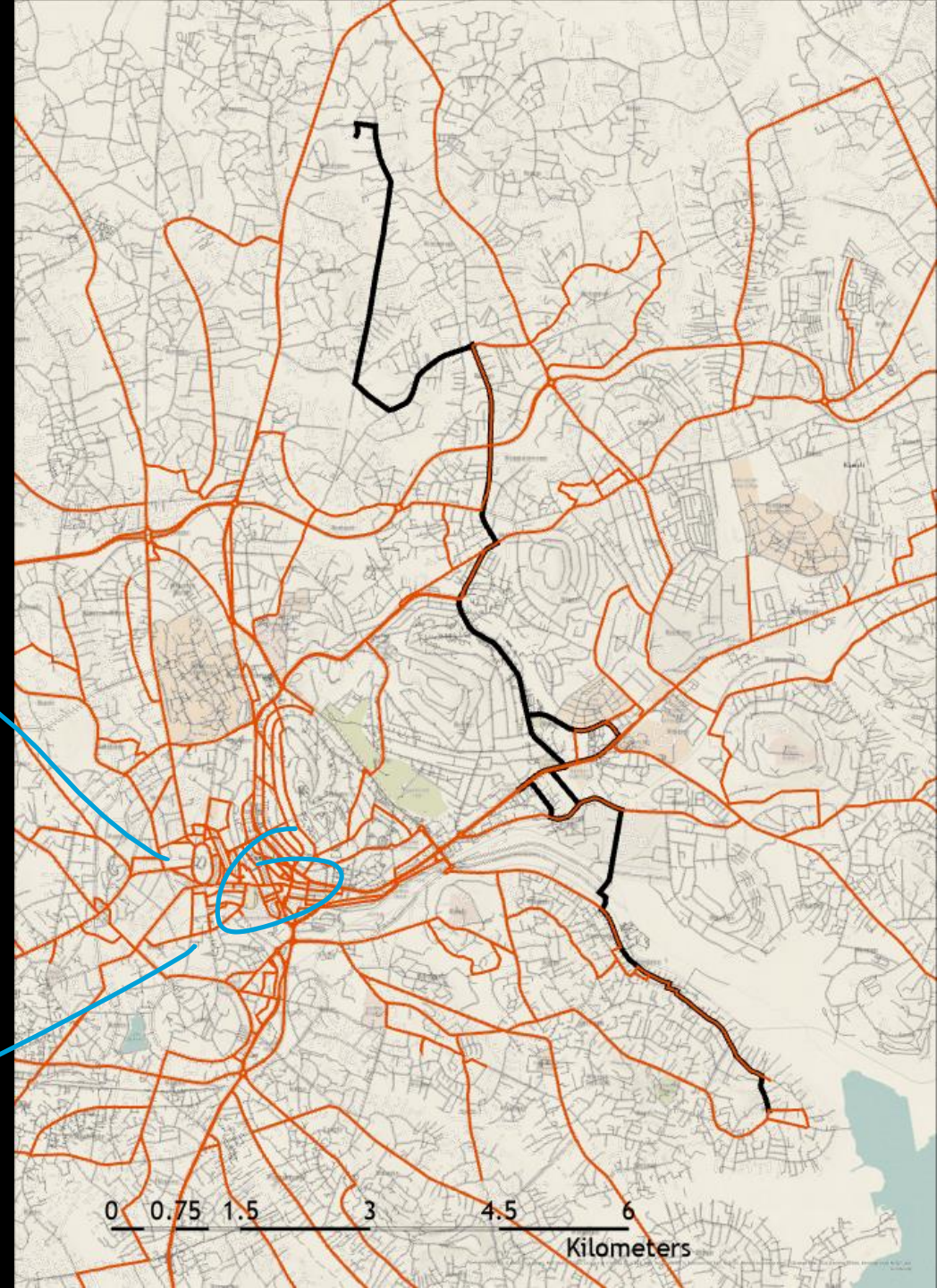
Minibus taxis – 60-80% of trips

Boda-boda – 10-20% of trips


Private Car – 10-20%



Radial Minibus Network:




New Route: "counter-connectivity"



Komamboga
Bahai Temple
Kisaasi
Bukoto
Lugogo Bypass
Nakawa Market
Industrial Area
Namuwongo
Bukasa


EXPRESS
NEW SERVICE

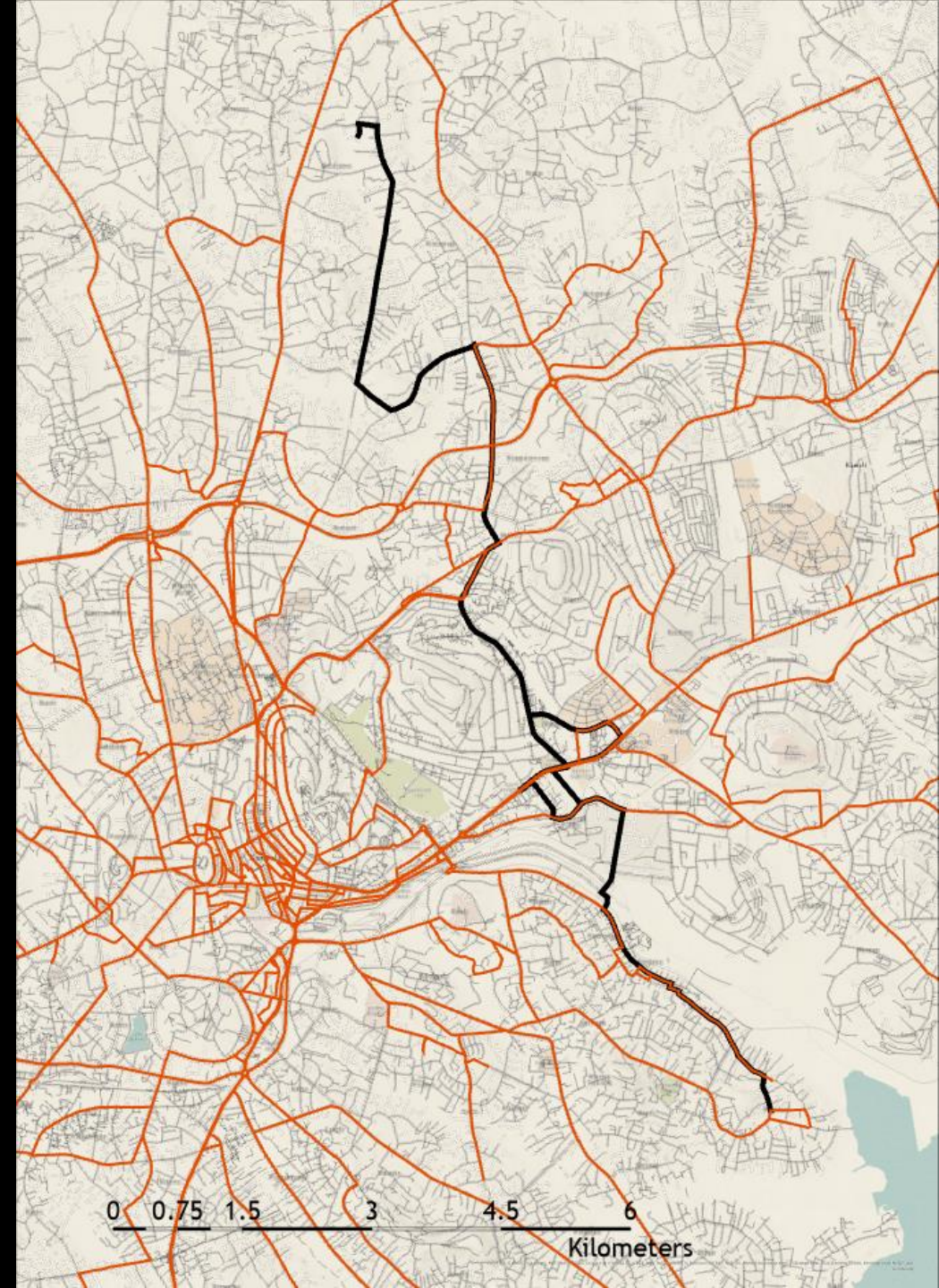


**Avoid
Congestion
Go Direct!**

Komamboga Stage: Juma Ssewaalinte **0700992919**
Namuwongo/Bukasa Stage: Kalibala Willy Kawalya **0705108436**

Scan code for detailed map



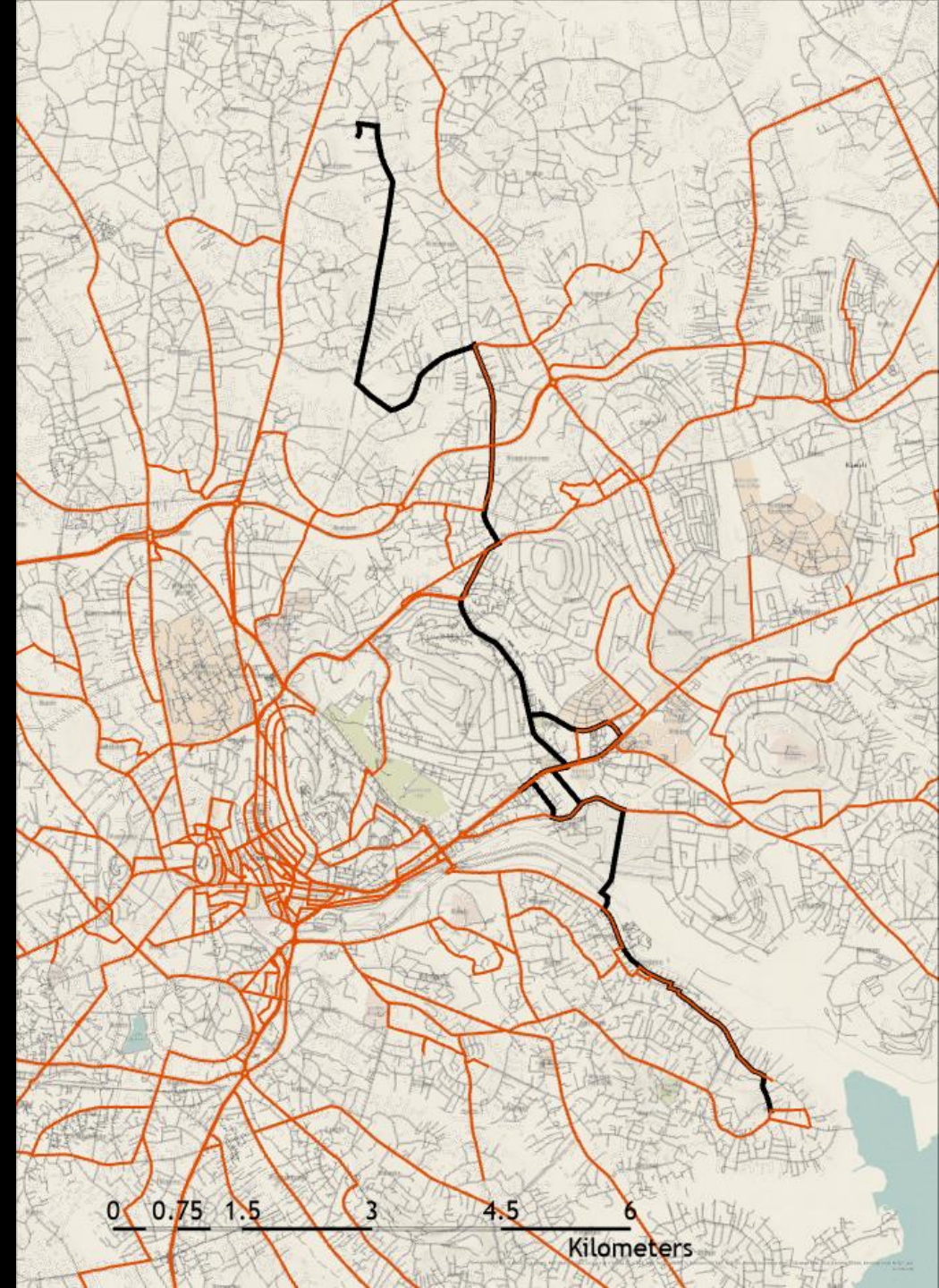


New Route:

17 km long (11 miles)

6-9 vehicles per day

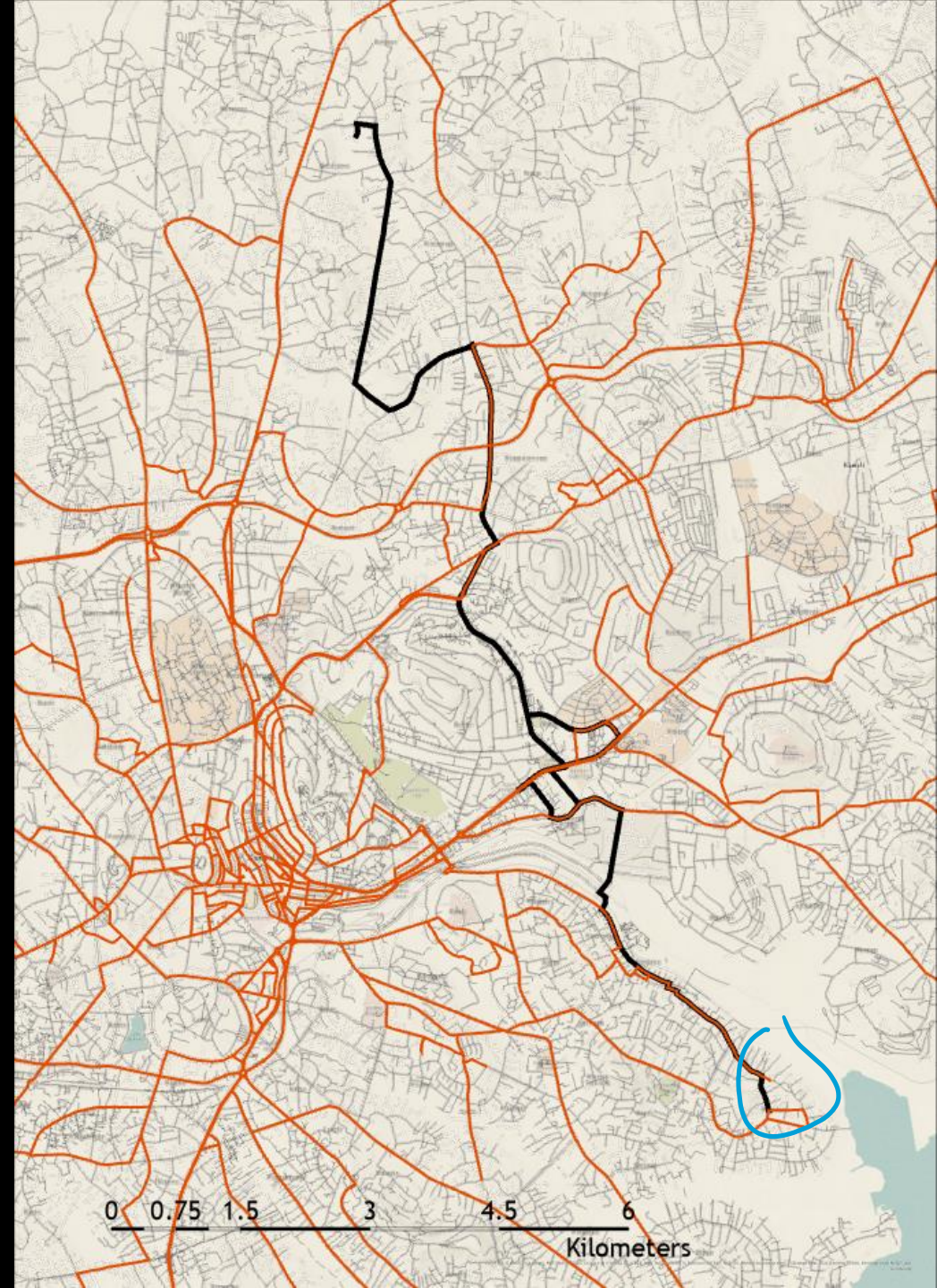
500 – 4000 shillings per trip
(0.18 – 1.46 CAD)



New Route:

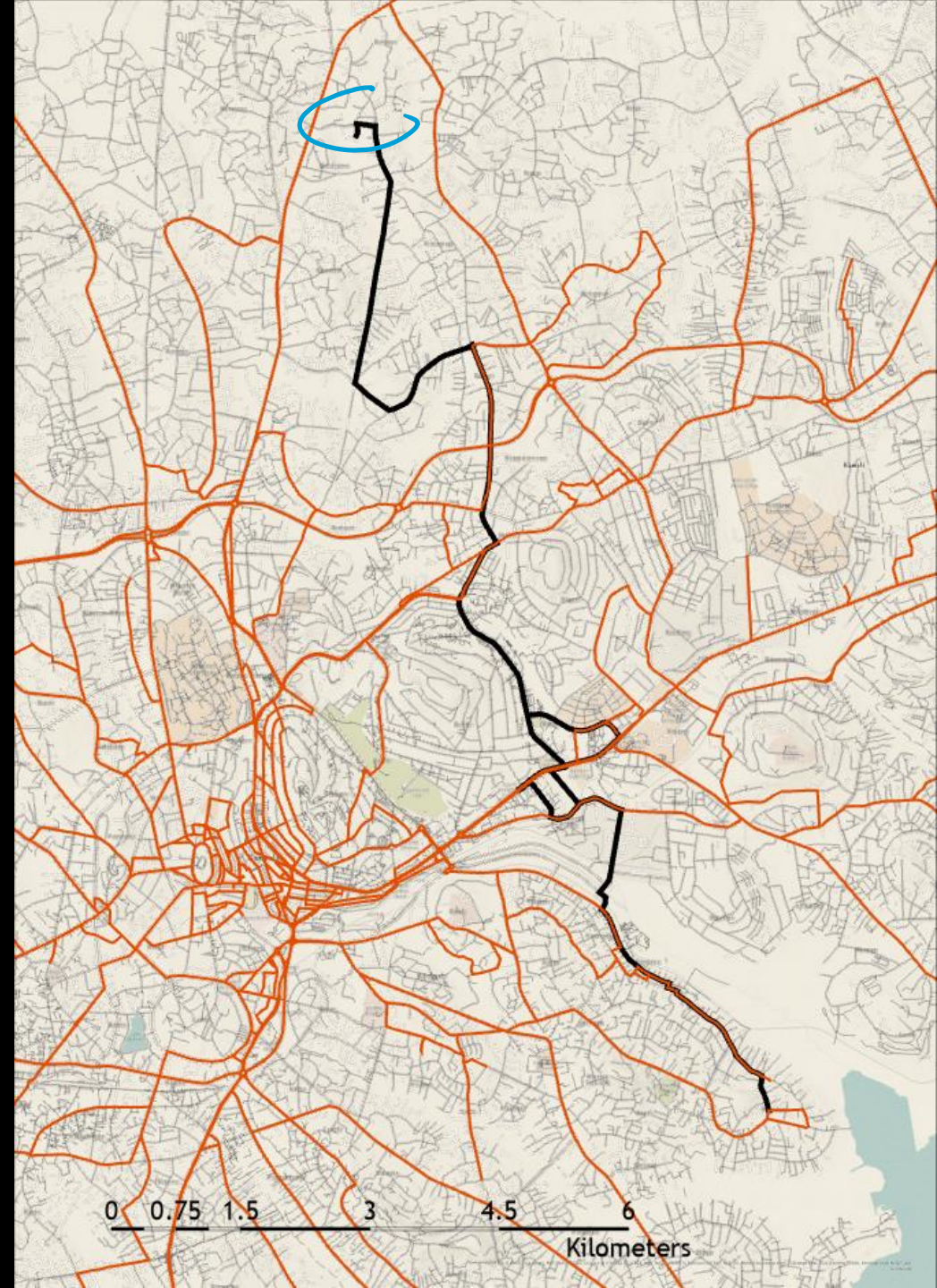


Informal settlement



New Route

Health Center



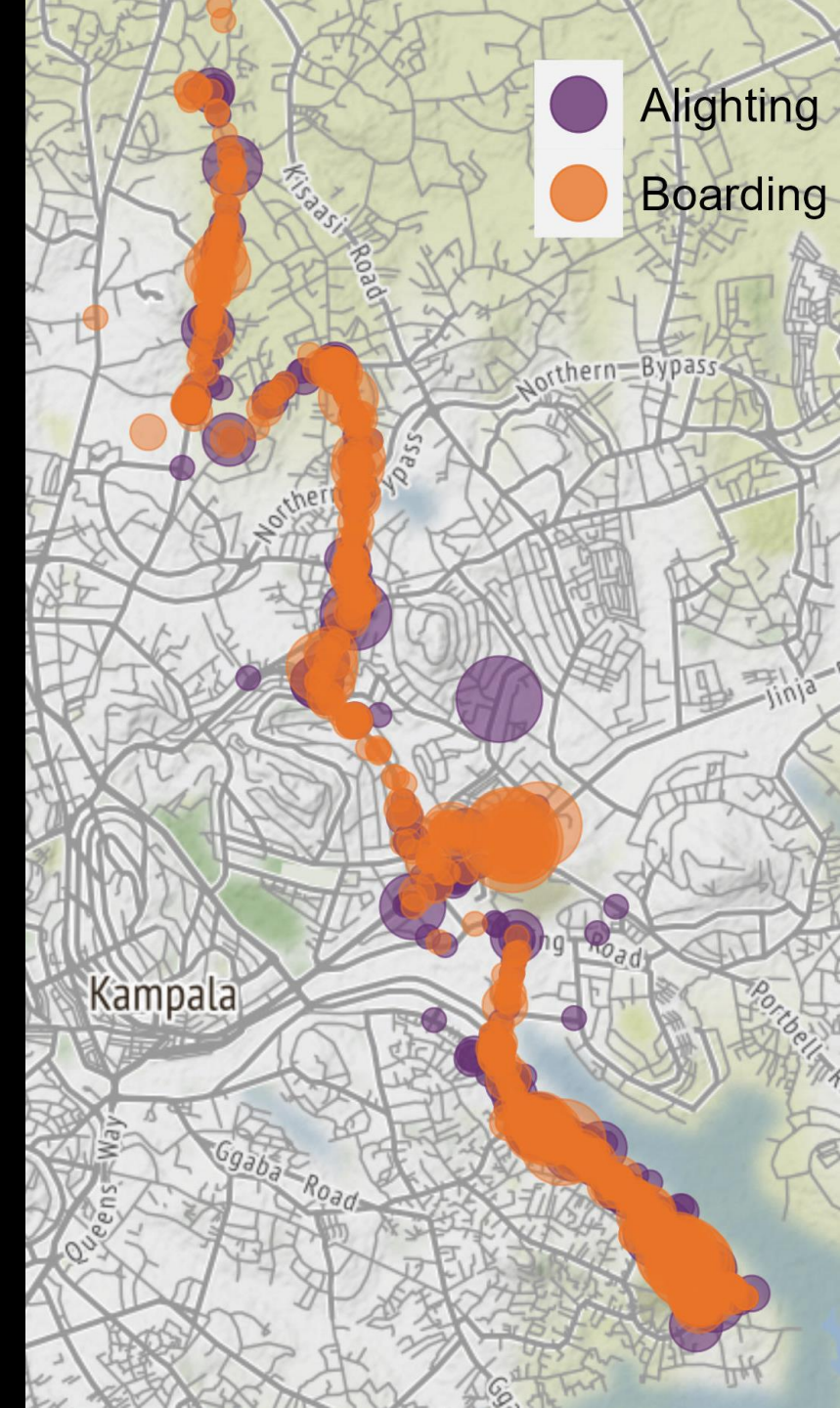
Planned Informality

Drivers recruited from existing stages

Informal operating norms

Unscheduled (fill + go)

Subsidy paid per day worked,
declining over time

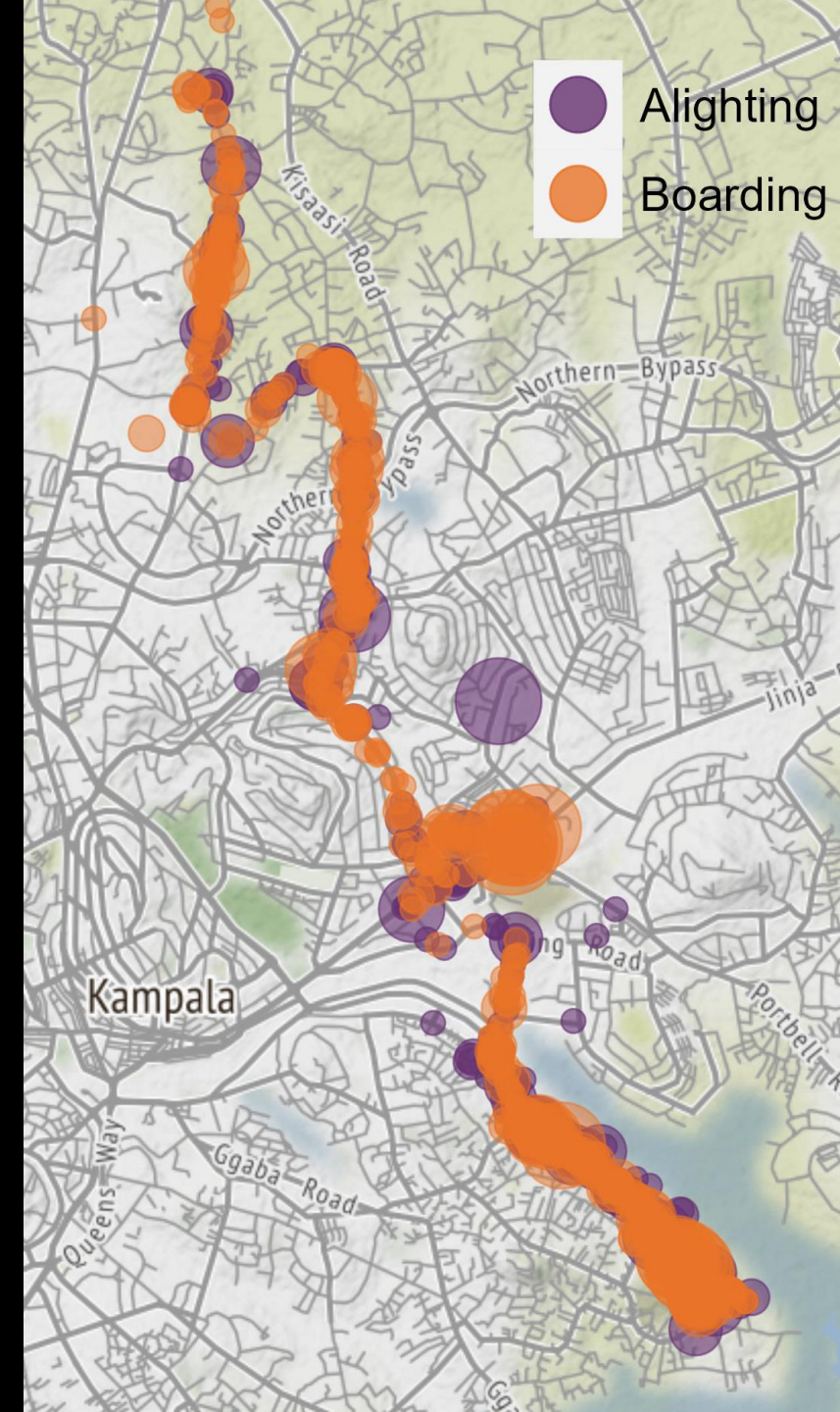


Planned Informality

22 Operating days

4,000 passengers

3-4 Million shillings revenue



Planned Informality

Nakawa – Bukasa Section:
Continuing Independent Operations



Background

What is informal transport?

What is mobility justice in informal transport?



Nairobi,
Matatu, 2021
2021



Sherut Taxi,
Tel Aviv, 2018





Bajaj, Djibouti, 2019



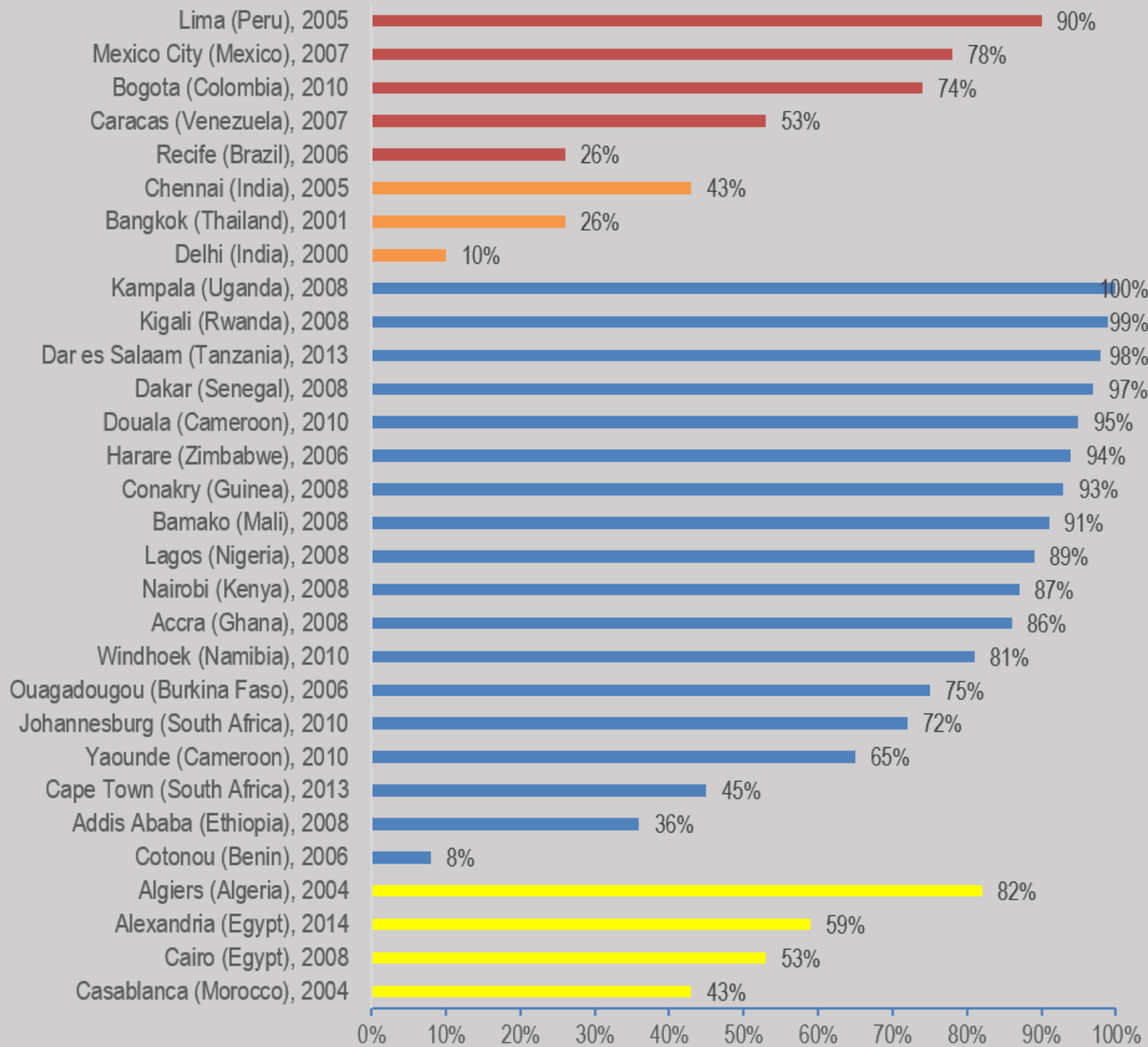
Dollar Vans, New York City, 2017
New York Daily News

Nov'moskovsk, Marshrutkii
Ukraine, 2018





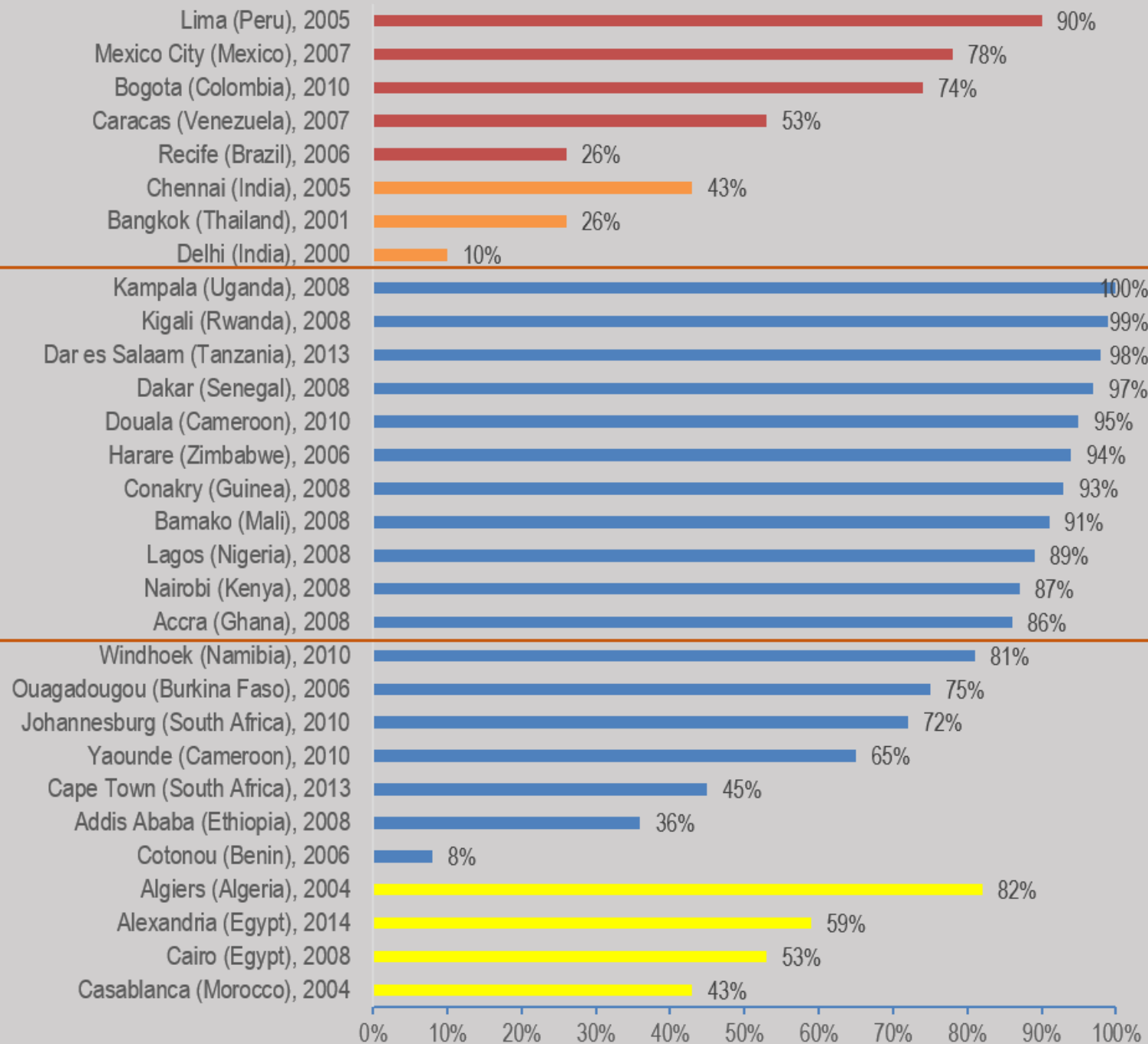
The most common transport mode in the world?



WRI, adapted from Behrens et al 2015

Mode share for 'informal transport'

WRI, adapted from Behrens et al 2015
Mode share for 'informal transport'

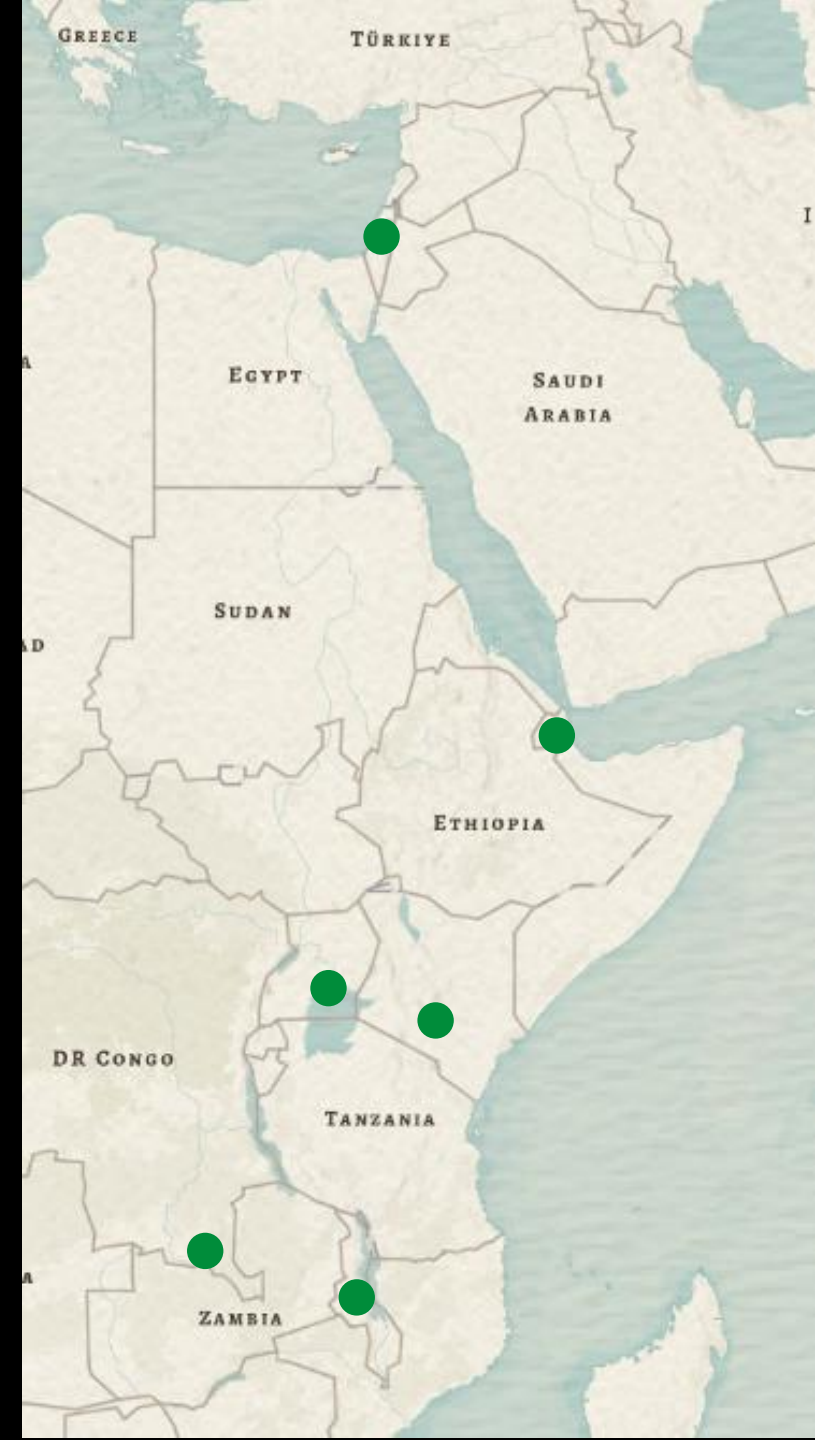


**1. Informal transport is not
'gap filling'!**

2. Where are the 'secondary' cities?

Research Projects:

- East Jerusalem, Israel/Palestine,
Paratransit politics and formalization
- Djibouti & Lubumbashi, DRC
Transport network mapping and economics
- Lilongwe, Malawi
Latent demand, gender, urban peripheries
- Nairobi – Kampala – Lilongwe
Labor organization in informal transport



What are the effects for passengers?

Accessibility?
Experience?
Exclusion?



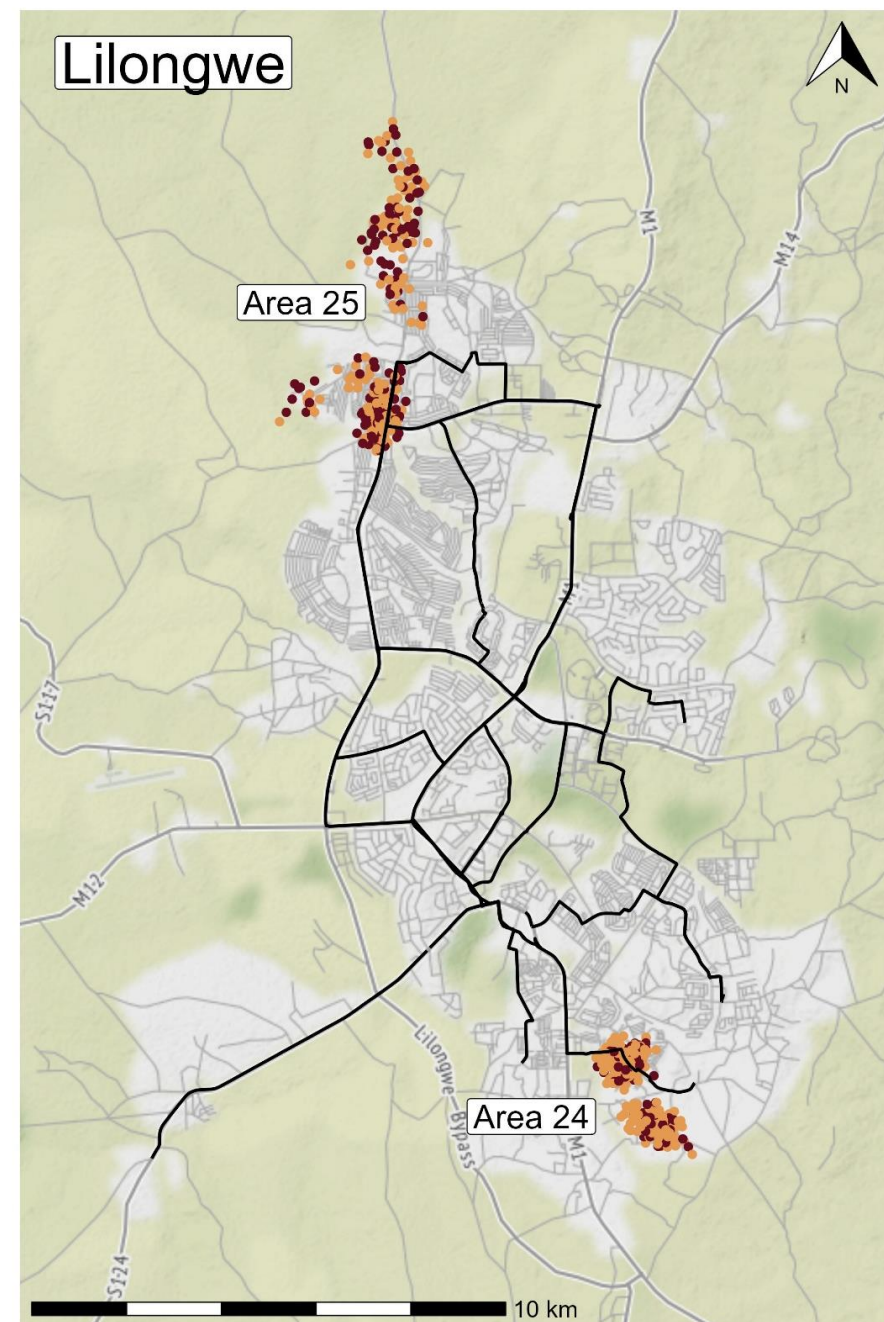
I would use a car. Is walking a go-to option for anyone? It is not. I dream of having a car one day. After I retire, the first thing I am purchasing is a car. This is the first thing I am buying. I have never doubted this. I do not have money now, but even my children know that I shall park a car here one day. I always tell them that this space is reserved for my car.

Woman, 54, Teacher

Lilongwe, Malawi

Locations of Households Surveyed (Approximate)

— Minibus Routes Respondent Gender ● Male ● Female



Missed a medical visit in the past 6 months because of travel:

29% of men

37 % of women

Missed a family or social visit in the past 6 months because of travel:

60% of men,

60% of women

I would most definitely visit my friends. I fail to visit them when they are sick and I always feel bad, but what can I do?

Female, 28, Casual Labourer

I love music. I want to go to a Black Missionaries show when they are in town. But I need transport to get there. At the same time, I have children to take care of [...] when you are determined, you travel, even though the travel cost is high. But the only trips I avoid are social and entertainment trips like music concerts.

Male, 43, Tailor



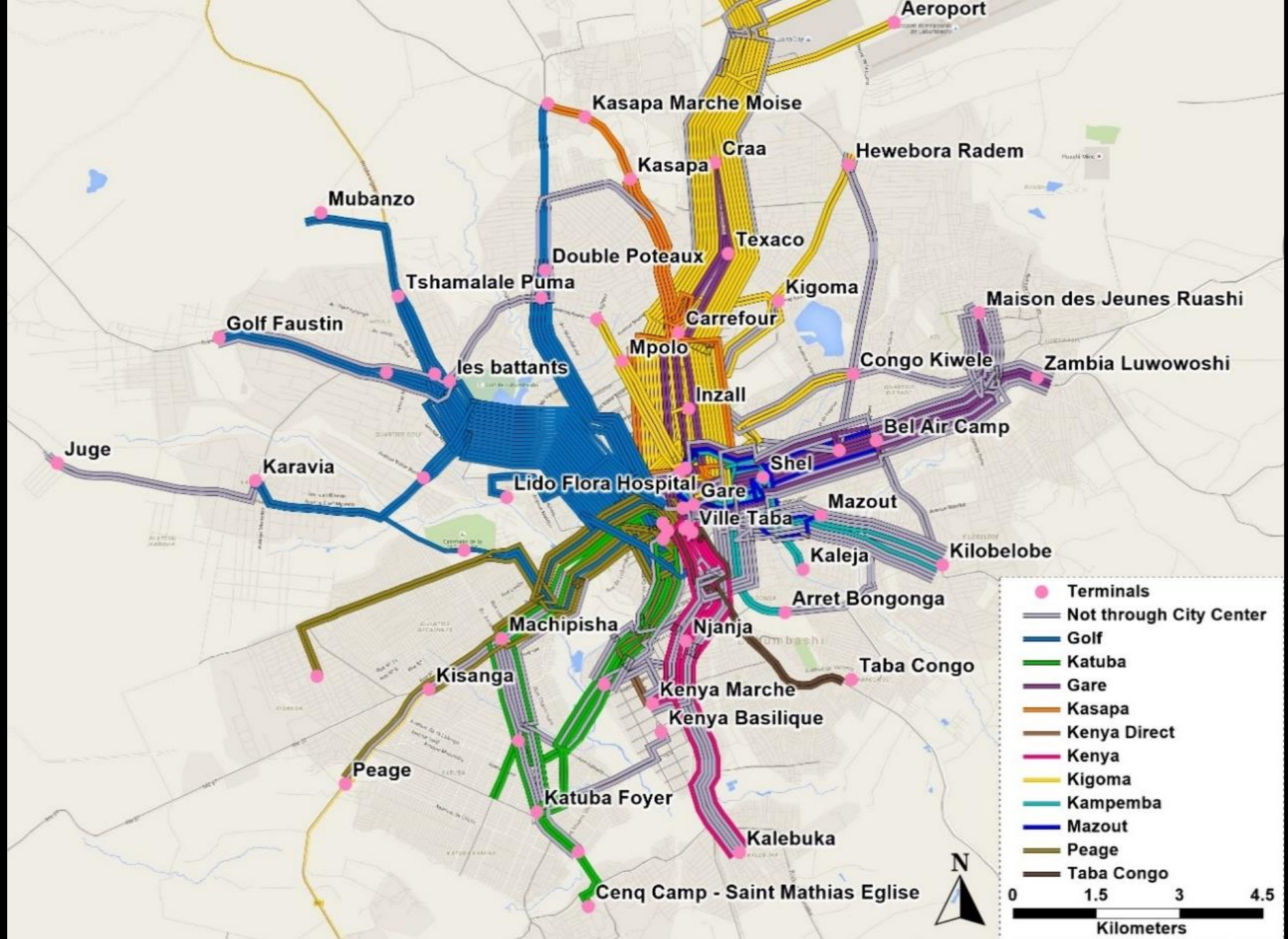
Demand Side - Passengers

- Safety
- Comfort & dignity
- Harassment
- Congestion & Inefficiency
- Emissions & Pollution
- Expensive
- **Connectivity and Access?**



Demand Side - Passengers

- Safety
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- Emissions & Pollution
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- **Connectivity and Access?**



Passenger
Flow, Daily,
Two-Ways

○ terminals

roads

≤5,000

≤10,000

≤20,000

≤40,000

≤60,000

≤80,000

≤100,000

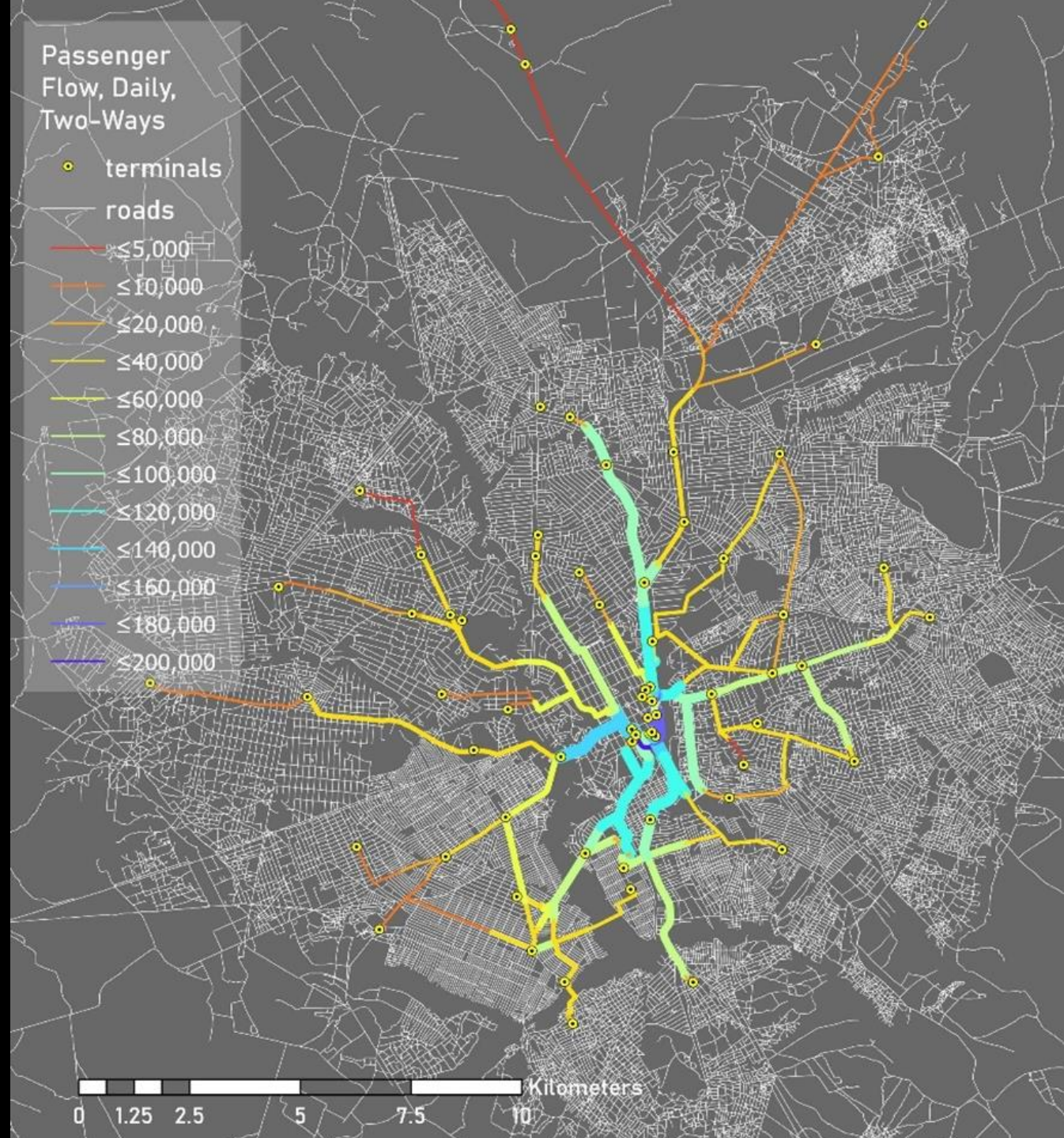
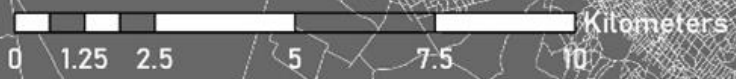
≤120,000

≤140,000

≤160,000

≤180,000

≤200,000



Drivers Labour Conditions:

- Driver pays daily lease to vehicle owner (“The Target System”)
- Driver pays all daily operating costs
- Only keeps profit above the lease
 - >>> Regardless of earnings



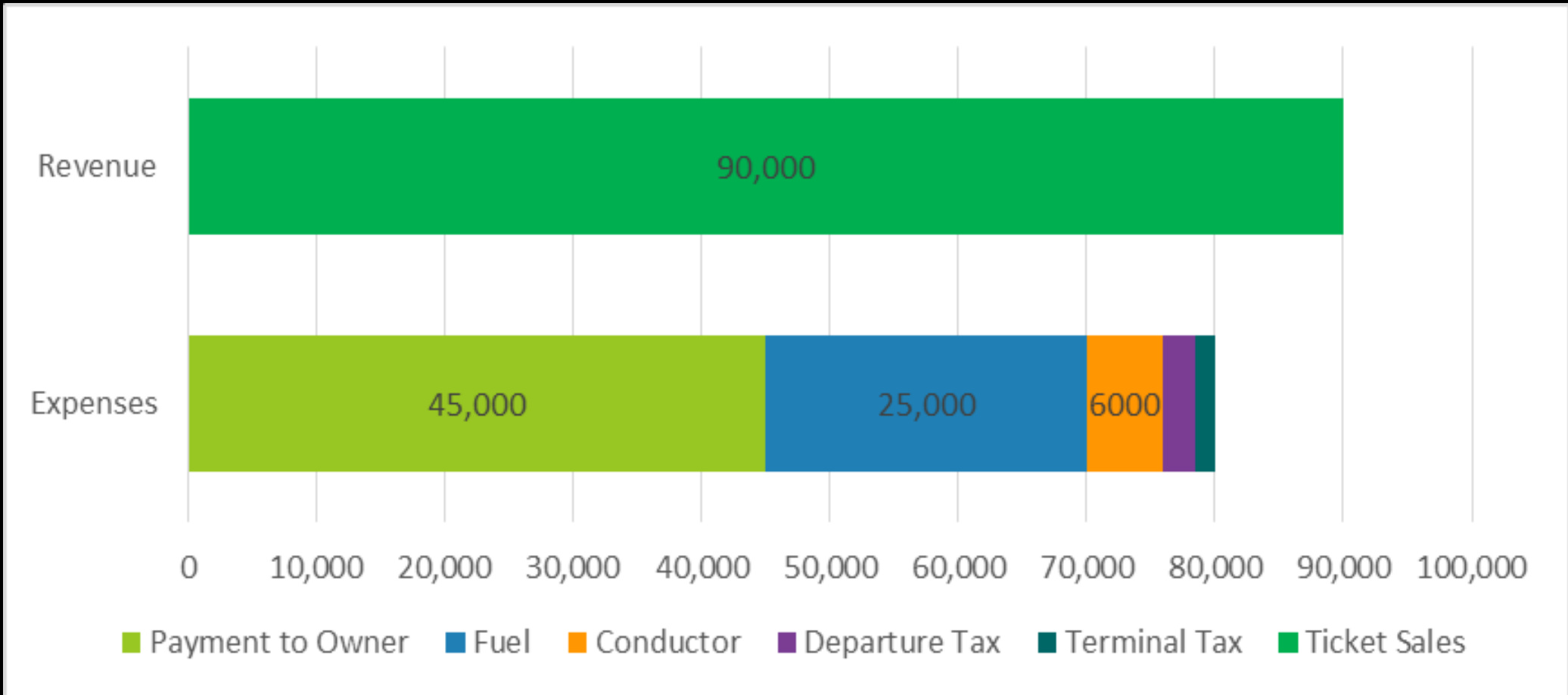
Drivers Labour Conditions:

Informal: Dependence on vehicle owner
owner >>>>>
but **carriage of all risk.**

No recourse to labour law or
protections

No Employer-Employee relationship

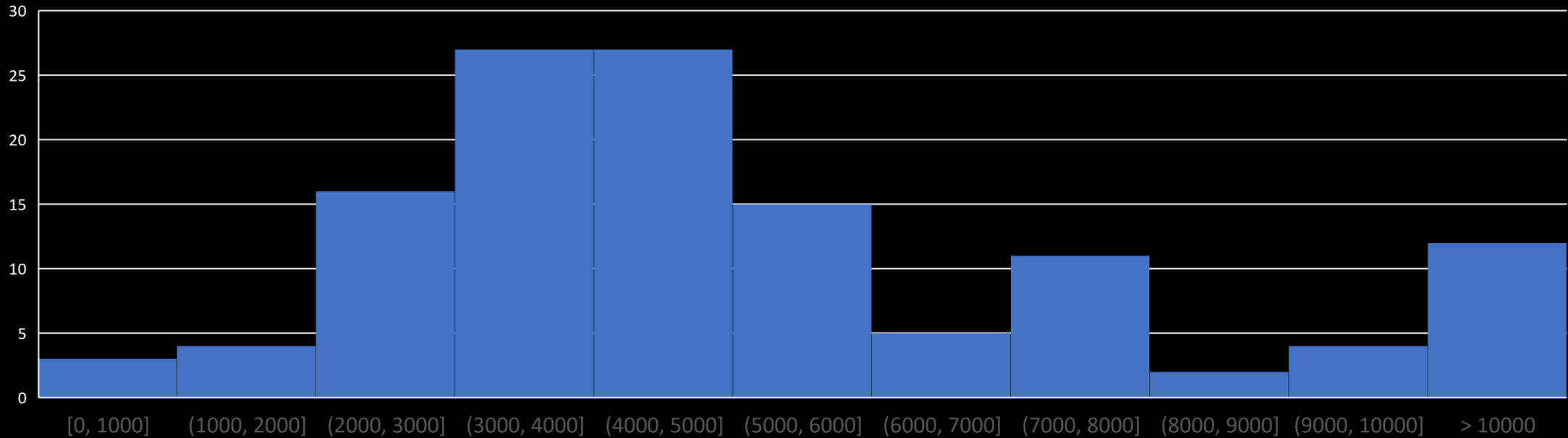




Average Daily Income -
 Driver: 7 USD
 Conductor: 6-7 USD
 Bus Owner: 45 – 50 USD

Lubumbashi,
 Driver Survey
 N=289
 900 francs = 1 USD

Daily Take-Home After Target+Expenses (2 people)



(1000 francs = 5.5 US Dollars)

Average pay – 7-10 USD per person, **18, 20 hour work days**

Legit operating expenses – Khat and Coca Cola

Djibouti, 2019-2020

“I get concerned because sometimes I overwork and I am usually stressed when things do not work out on the road that day...It is too much and I believe it is the reason I will die so fast. ”

Minibus Driver, Lilongwe

**Routes - Metropolitan
Desire
Paths?**



Metropolitan Desire Paths?

Competition,
In-tune to local travel needs,
Individual driver
responsiveness
and flexibility?



Metropolitan Desire Paths?

How are new informal
transport routes formed?

Nairobi – Kampala - Lilongwe



**Who decides where
the bus goes?**

**Drivers? Owners?
Passengers?**



“Most of us drivers are used to certain routes. We make money on these routes and there is no need to search out new routes. Why should we?”

Driver, Lilongwe

Market Limits and Failures

Coordination failure:

- Multiple small firms/operators settle in a poor equilibrium
- No incentive to invest in development in vehicles, service quality or varied markets
- Difficult to pool resources
- No protection from competition on new investments

Market Limits and Failures

Hotelling's Law (Hotelling, 1929):

- Competing businesses cluster > searching out the densest area of the market
- For competing transport vehicles > preference for popular corridors > gaps in low density locations



“It is in our culture - if a new stage, a new branch, is to start, this must be done by the mother-stage of that area.”

*National Association Management Member, **Kampala***

Malawi Transport Associations:
National Level
Not Local!



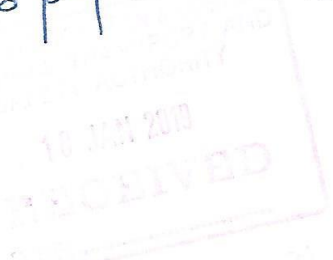


KILILETON COMMUTER SERVICES SACCO LTD.

P.O Box 19127 - 00100, Nairobi.
Office: 020-2166031 Mobile: 0727 -555 375
Email: kililetonsa2010@gmail.com

Copy

16th January 2019



The Director,
Registration and licensing,
National Transport and Safety Authority,
P.O BOX
NAIROBI.

Dear Sir/Madam,

**RE: REQUEST FOR ROUTE EXTENSION FROM KIBERA TO ST. MARY'S
LANG'ATA**

The above matter refers;

Kilileton Commuter Services Sacco operates its passenger service vehicles from Town-
Westlands-Kileleshwa-Lavington-Yaya and Kibera. The Sacco currently has 112 public services
vehicles which are compliant.

The Sacco requests for a route extension as per the above subject to enable it meet its customers'
needs besides decongesting the CBD as this route will not be terminating within CBD

We are fully committed to compliance, partnership and obedient to traffic rules and regulations
even as we humbly wait for your positive consideration

Thanking you in advance.

Yours Faithfully

Jairus O. Omusikoyo

Secretary

2010: Government requires matatus
to organize into route-based
associations (SACCOs)

>>> Creates professional
management class

>>> take initiative on route creation

Labor rights eroded between gov.
and vehicle owners

Mob: 0782-848400
0757-171344



P.O. Box.....
241

OFFICE OF THE CHAIRMAN
CENTRAL ZONE LC1 -KOMAMBOGA
Komamboga Parish, Kawempe Division, Kampala District

Our Ref: CZ 241
Your Ref:.....

Date: 27/Jan/2013

To the Chairman and Executive
Mperewe stage - Old Taxi Park
Kampala. ATTN TO SERWALINE JUMA

Sir,
RE: REQUEST TO EXTENT YOUR TRANSPORTATION
SERVICE TO KOMAMBOGA CENTRAL

I salute you and commend ^{you for} the transportation services you offer to our people.
I am writing to request you to extend your transportation services to the people of our area is due to the high population and accessibility health services since we have a KCCA Health center whose population need an early transport. Besides other parts of Kampala we are the only people who are left behind.

So please accept our humble request.
Thank

Signature of Serwalia Nuly
CHAIRMAN
KOMAMBOGA
KAWEMPE DIVISION
KAMPALA DISTRICT
Together we can enhance development

RE: REQUEST TO EXTENT YOUR
TRANSPORTATION SERVICES TO
CENTRAL

I salute and you and commend you for the transportation service you offer to our people.

I am writing to request you to expand your transportation services to the people of our area. This is due to its high population and accessibility of health services, since we have a KCCA Health center, whose population need an early transport. Besides other parts of Kampala we are the only people who are left behind.

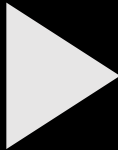
So please accept our humble request,

Lilongwe	Kampala	Nairobi
National-level associations of passengers, workers, owners	Worker-based associations at route level to national union.	Owner-based SACCOs at route level.
No investment in new routes	Start-up costs from drivers and management at stages	Start-up costs from owners, via SACCO
Conflict primarily between drivers and rent-seeking factions from outside transport industry	Conflict between drivers and stages avoided by regional associations	Competition/conflict between SACCOs tacitly accepted as norm
Little expansion	(Slow) expansion to new locations	Focus on competition for existing corridors

New minibus route,
Kampala, Uganda,
March 2023



“Overcoming Coordination Failures in informal Urban Transport Services”



“Overcoming Coordination
Failures in informal Urban
Transport Services”

IGC

International
Growth Centre



Berkeley City & Regional
Planning

Urban Action Lab The text "Urban Action Lab" is in green, followed by three circular icons: a red book, an orange building, and a green globe.

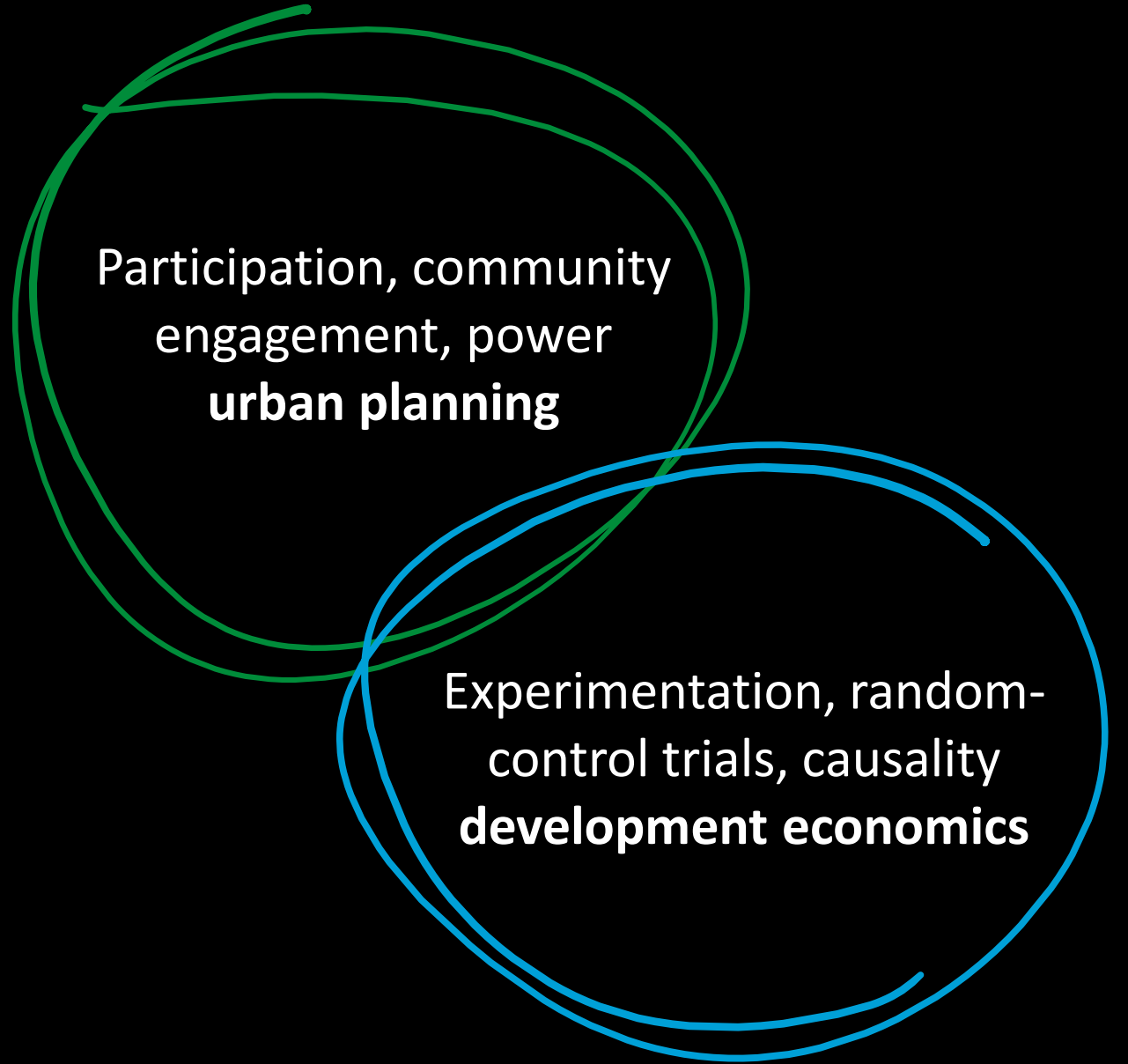
Questions:

**Is the system
responsive?**

**Are there underserved
groups?**

**Can we identify latent
demand patterns?**

Methods and Approaches:



Findings

- 22 Operating days
6 Feb – 8 March 2023
- ~4,000 passengers
- 541 trips
- 12 drivers (between 2 and 22 days)

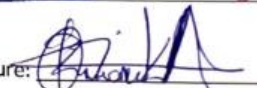
BUKASA-KOMAMBOGA ROUTE
Day 1 28/02/23

Driver name: LATIMBA RICHARD
 Driver contact: 0706708201
 Conductor name: KIVINKIKA ANDREKI
 Conductor Contact: 0703360904
 VEHICLE NUM: URYI 296P
 Home Stage: NAMUWONGO-BUKASA / MPEREREWE

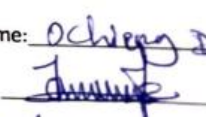
<p>DEPARTED ★ 28 FEB 2023 ★ STAMP HERE Komamboga Stage 6:26am</p>	<p>ARRIVED ★ 28 FEB 2023 ★ STAMP HERE Bukasa Stage 10:25am</p>
<p>DEPARTED NAMUWONGO STAMP HERE ★ 28 FEB 2023 ★ 10:46am</p>	<p>ARRIVED KITALA ★ 28 FEB 2023 ★ STAMP HERE Komamboga Stage 12:13pm</p>
<p>DEPARTED KITALA ★ 28 FEB 2023 ★ STAMP HERE Komamboga Stage 12:40pm</p>	<p>ARRIVED ★ 28 FEB 2023 ★ STAMP HERE 09:58pm</p>
<p>DEPARTED NAMUWONGO ★ 28 FEB 2023 ★ STAMP HERE Bukasa Stage 02:28pm</p>	<p>ARRIVED KITALA ★ 28 FEB 2023 ★ STAMP HERE Komamboga Stage 04:00pm</p>

Payment for this day:
100% of Operations Costs

Lease payment: 80000
 Fuel: 35000 x 2 = 70,000
 Driver income: 25,000 X
 Conductor income: 15,000 X
 Meals: 4000 x 4 = 16,000 X
 Night parking: 5000 X
 Withdraw fee 4500
TOTAL: 211,000 159000/=

Driver signature: 

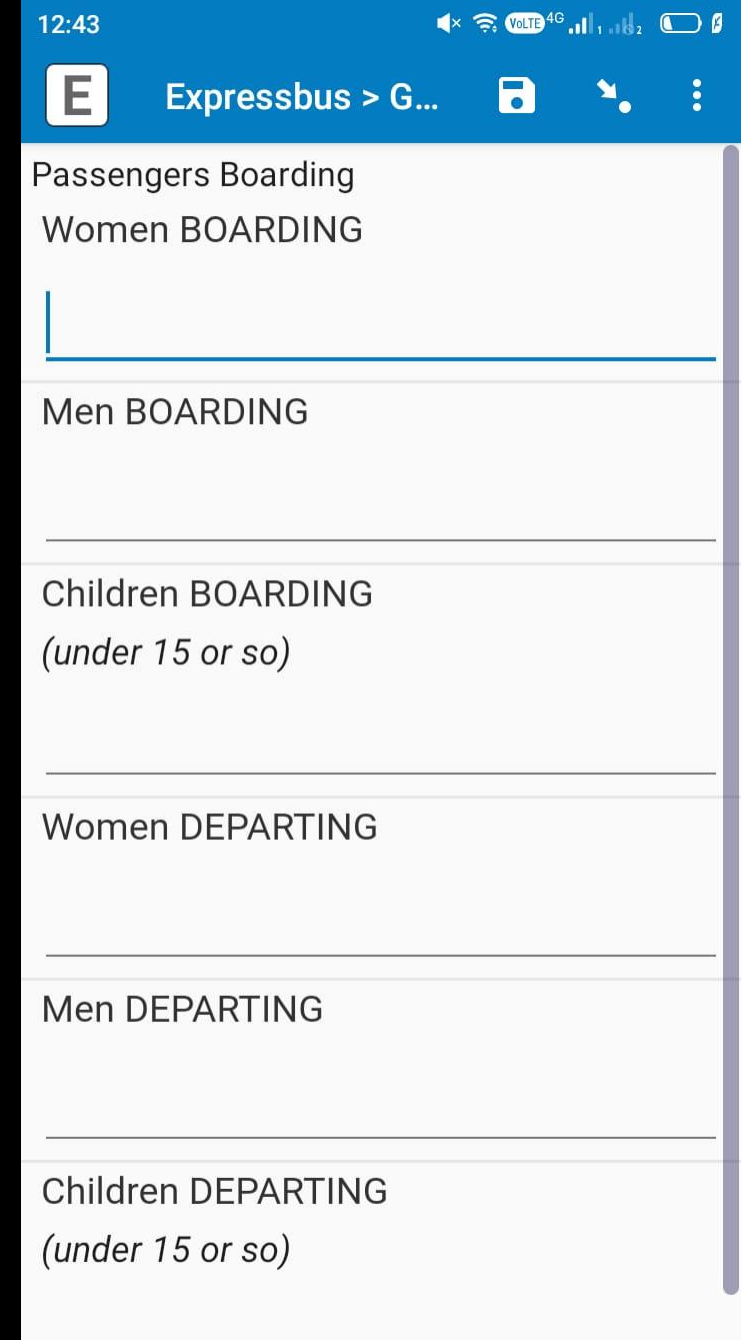
On receiving full payment

Project staff name: Ochieng Daniel Ogoe
 Staff Signature: 

Date: 28/02/23

Data Collection:



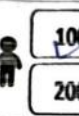





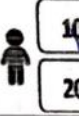


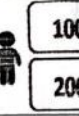

















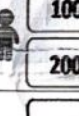





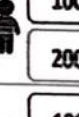





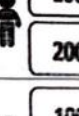


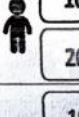

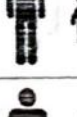
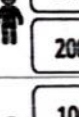


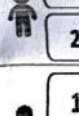


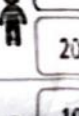






- On-Board passenger survey, n=540
- On/off GPS locations, n=1,598, 71% with GPS coordinate
- Conductor's passenger + fare record
- Follow-up interviews with passengers, 25
- Follow-up Interviews with operators & drivers, 9



Data Collection:

- On-Board passenger survey, n=540
- On/off GPS locations, n=1,598, 71% with coordinate
- Conductor's passenger + fare record
- Follow-up interviews with passengers, 25
- Follow-up Interviews with operators & drivers, 9

Name Conductor: *KIWANUKA ANDREW* Time: *06:30 am*
 Name Driver: *KAJUMBA RICHARD* Date: *04th/03/2023*
 Num Vehicle: *UAK 296P* Direction: *to BUKASA/ to KAMAMBOGO*

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2	  	<input checked="" type="checkbox"/> 1000 <input type="checkbox"/> 3000 <input type="checkbox"/> 2000 <input type="checkbox"/> 4000	12	  	<input type="checkbox"/> 1000 <input type="checkbox"/> 3000 <input type="checkbox"/> 2000 <input type="checkbox"/> 4000
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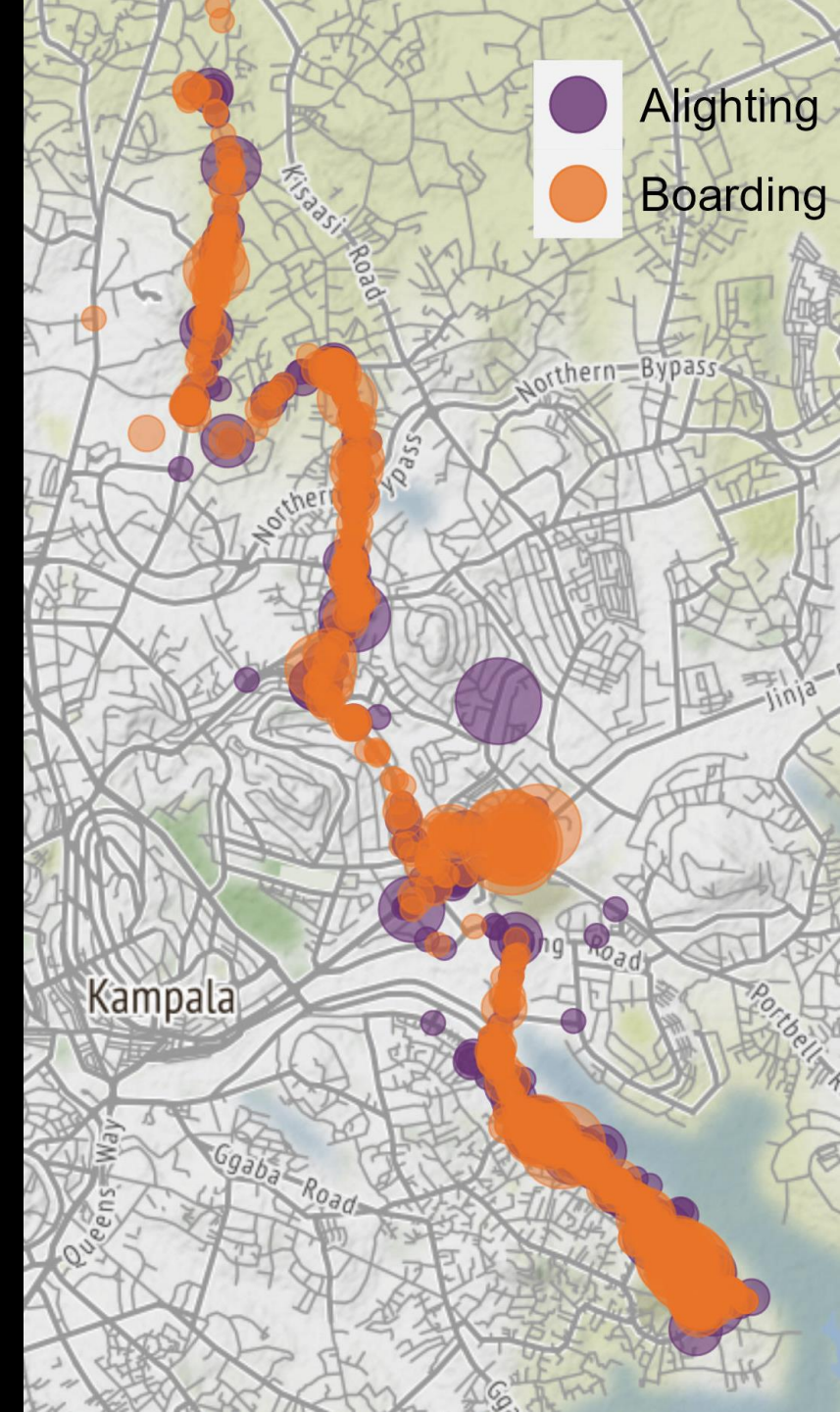
TOTAL — 25 PAX.

Findings

Mobility, Demand, Gender

Iteration, Extraction and Control

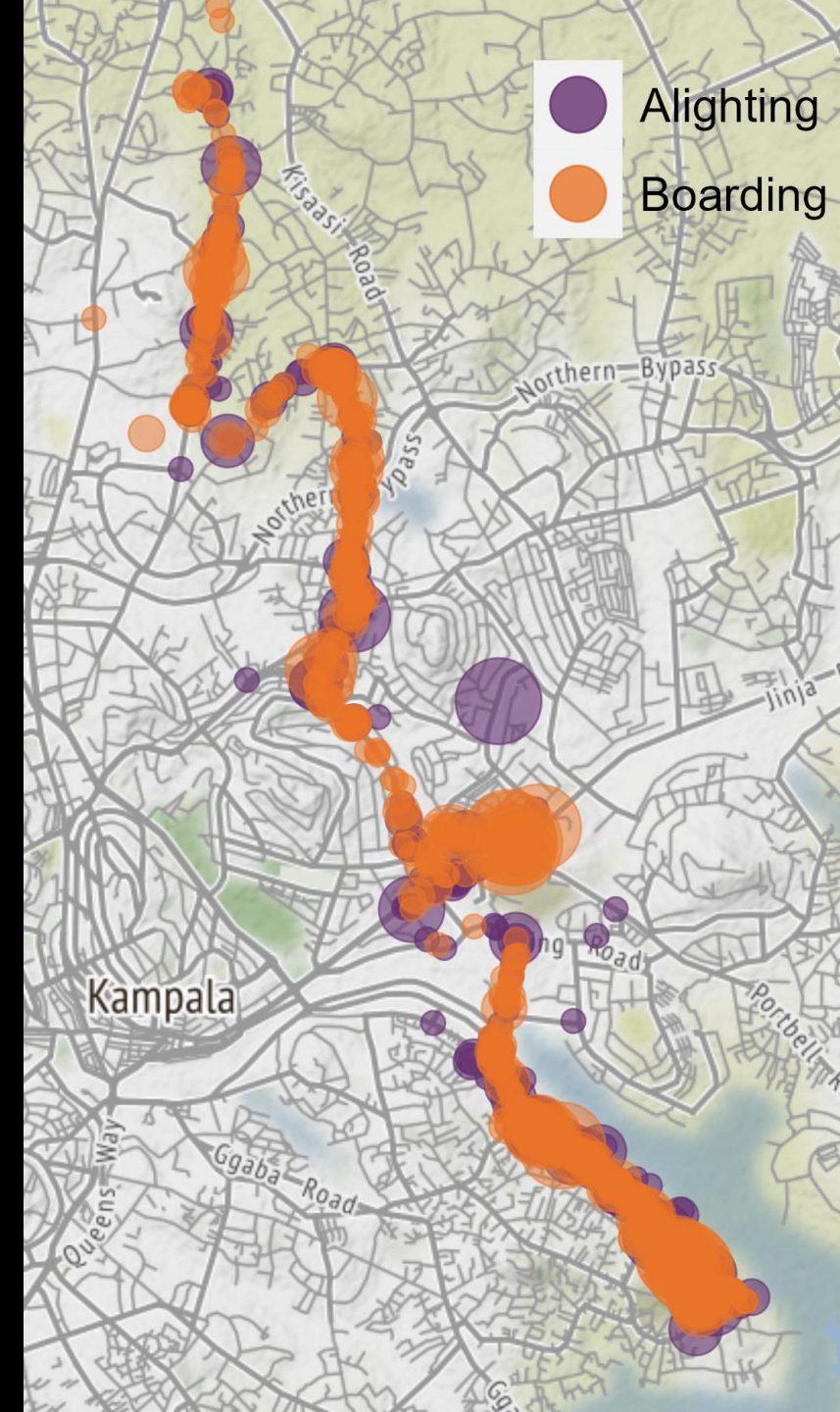
GPS On-off locations



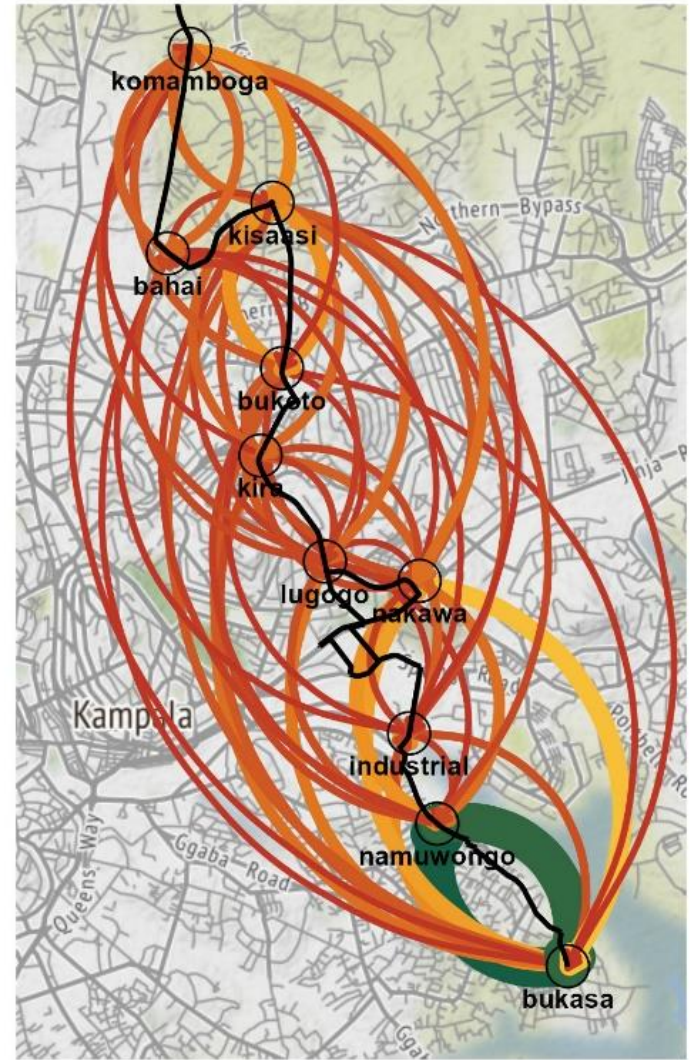
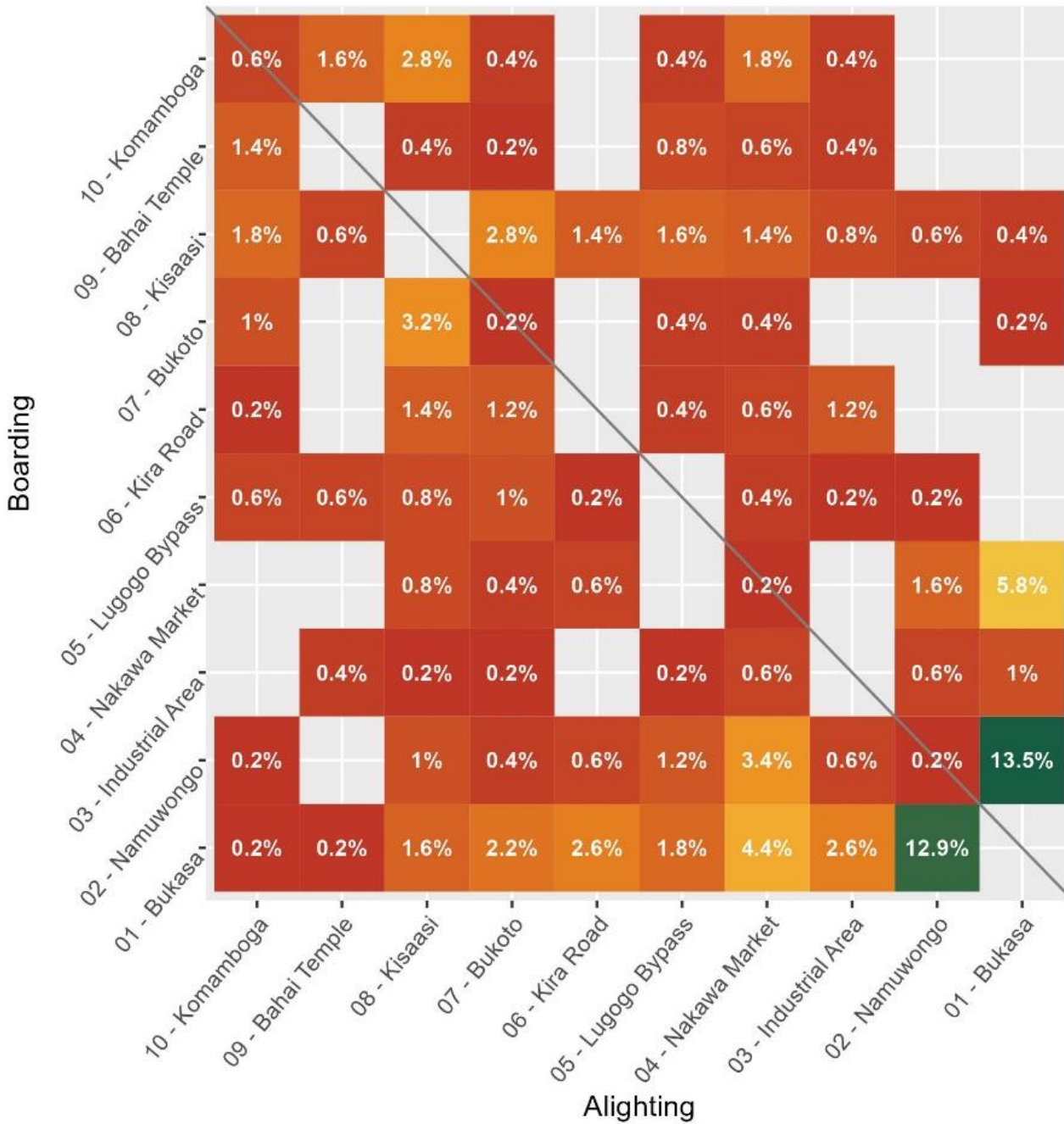
Findings

Did anybody need this thing?

GPS On-off locations



New Paratransit Route Passengers



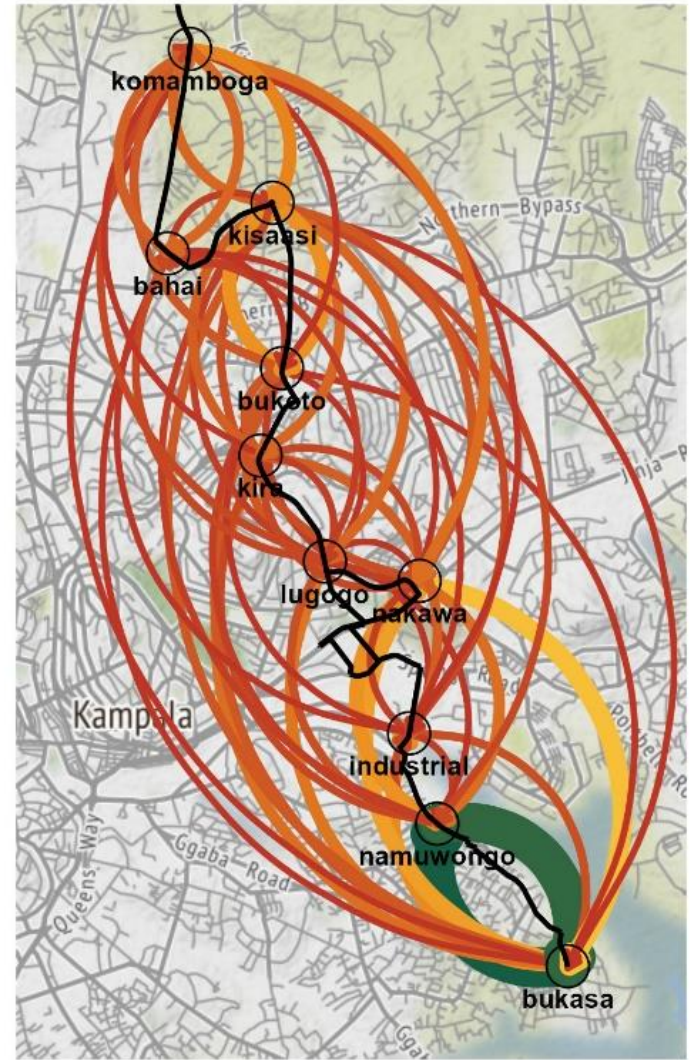
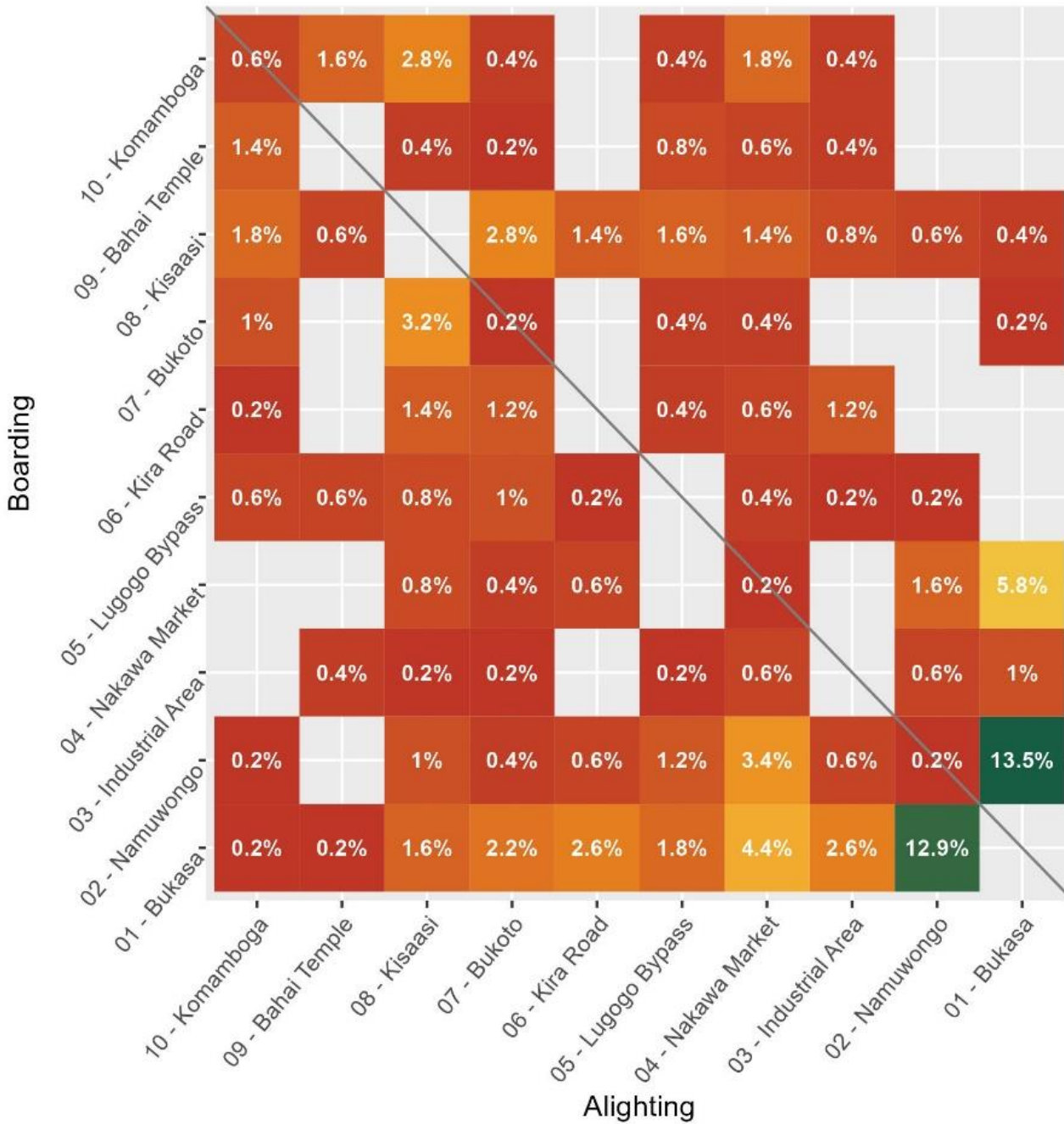
On-Board Survey
N=541

GPS count Boardings
N = 1,598

Conductors
N = 2,893

Origins and Destinations

New Paratransit Route Passengers



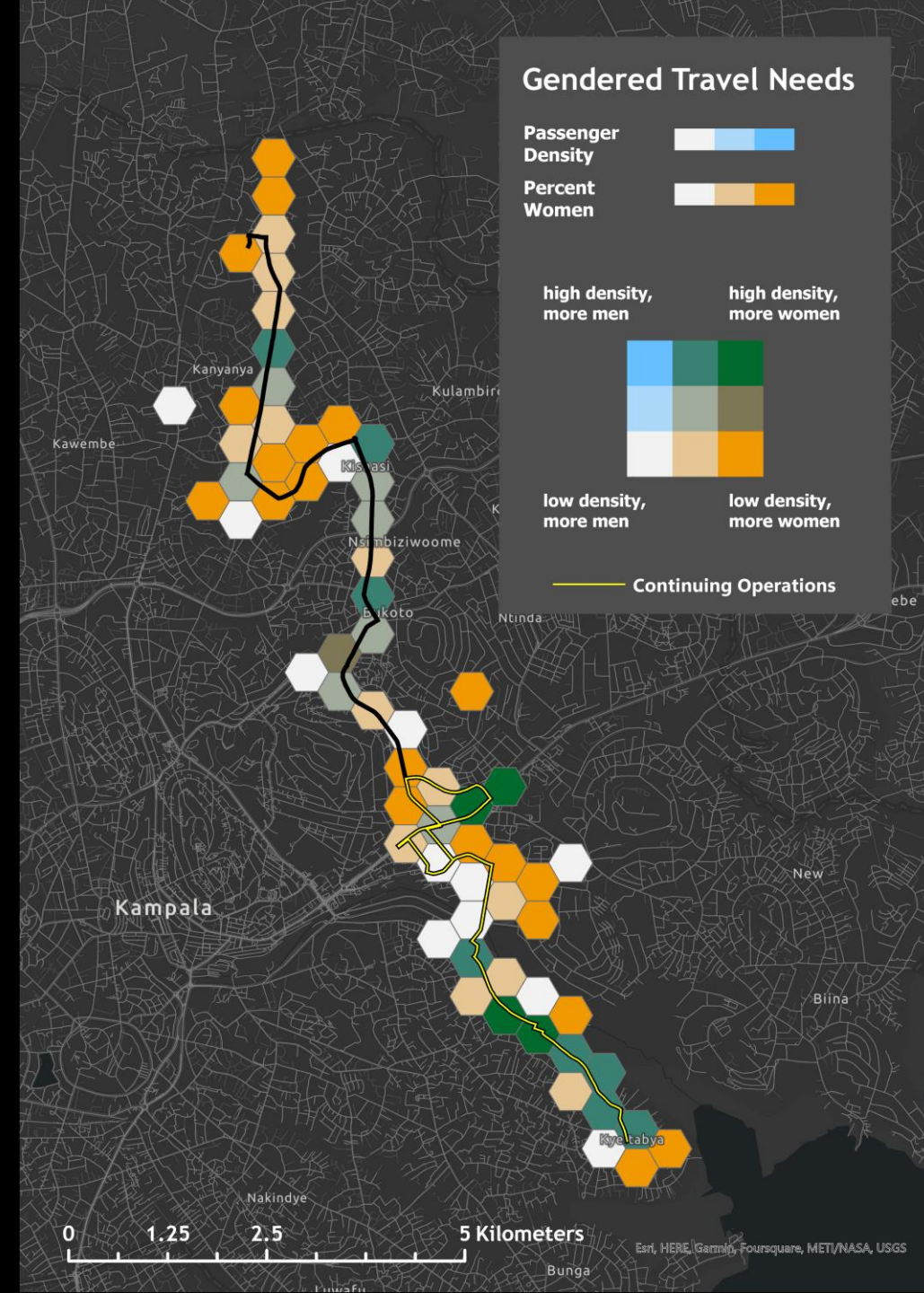
**~ 150-200
Per day**

**Stable over
time (?)**

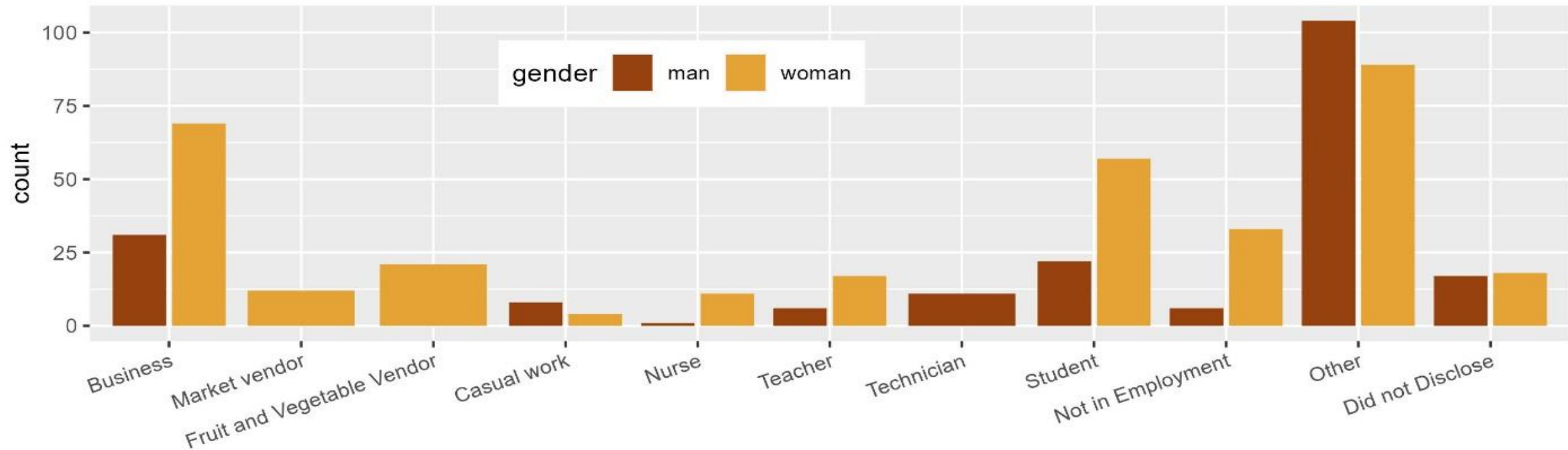
**Origins and
Destinations**

Gendered Mobility Gap

- Women - 60% of all adult passengers
- 13% of women traveling with children
- 3% of men
- **Spatial concentration of women's travel**



Passenger Occupation



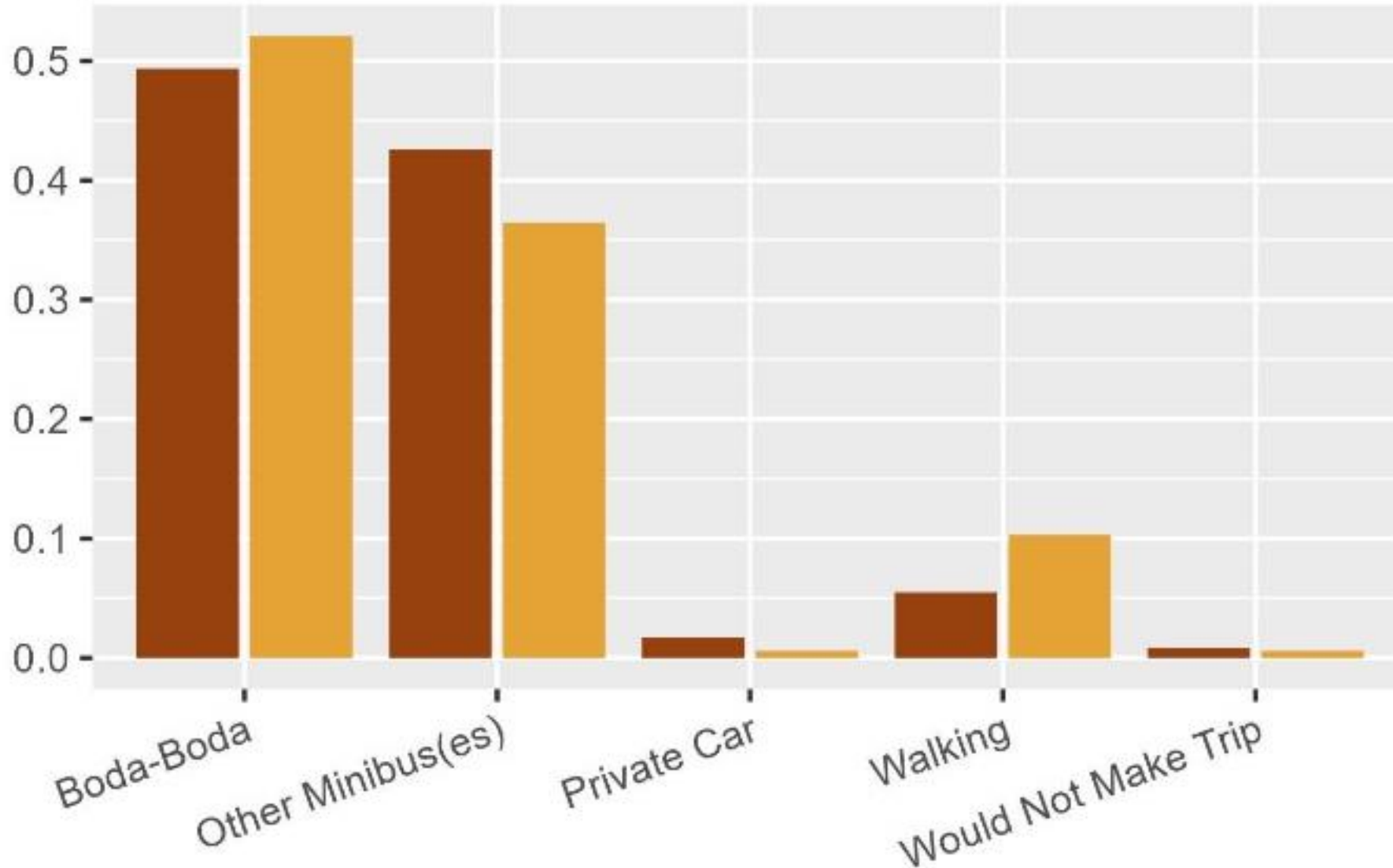
More women

Concentrated in fewer occupations:
informal trade and street vendors

Teachers, nurses, students, domestic work, stay-at-home

Previously, how would you make this trip?

only passengers making trips in new locations

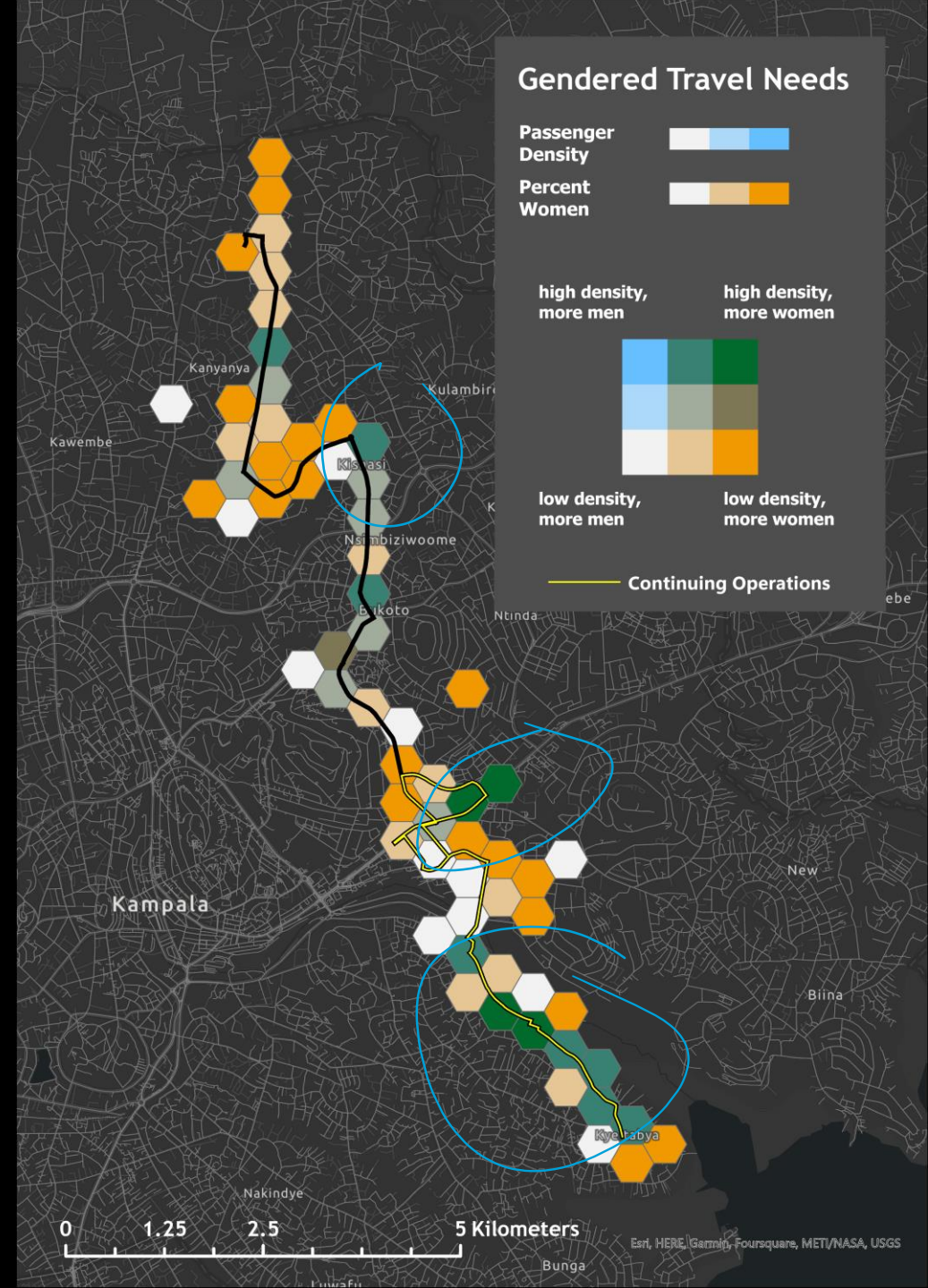


Women:

**Twice as likely
to replace a
walking trip**

Gendered Mobility Gap

Market Vendors







Before, the experience was really bad...[bodas] ask 5,000-7,000/=, yet you also don't have the money and the business you have can't pay rent, transport, school fees, food. In the end you feel bad about it. Even if you plead to them to take you at a reduced cost, they arrogantly respond to you. It hurts me so much.

...sometimes sunshine is too much, then other times there is rain, yet you're seated on a boda. You reach home with mud splash, dirty and disgusted, yet you first have to sell your merchandise before you go home. But a customer would feel disgusted to look at you. During rainy days, we would be so dirty.

Market Vendor, Bukasa Area

When we got taxi, we travelled happily. If there was someone to record us during that moment, you would have heard how women were happy!!!

Market Vendor, Bukasa Area

Gendered Mobility Gap

- Up to 80% cost savings for vendors
- Merchandise and safety v. Bodas
- Robbery and harassment walking
- **Service area continuing independently**



For Operating Stage:

- 5 - 10% new passengers after 2 months

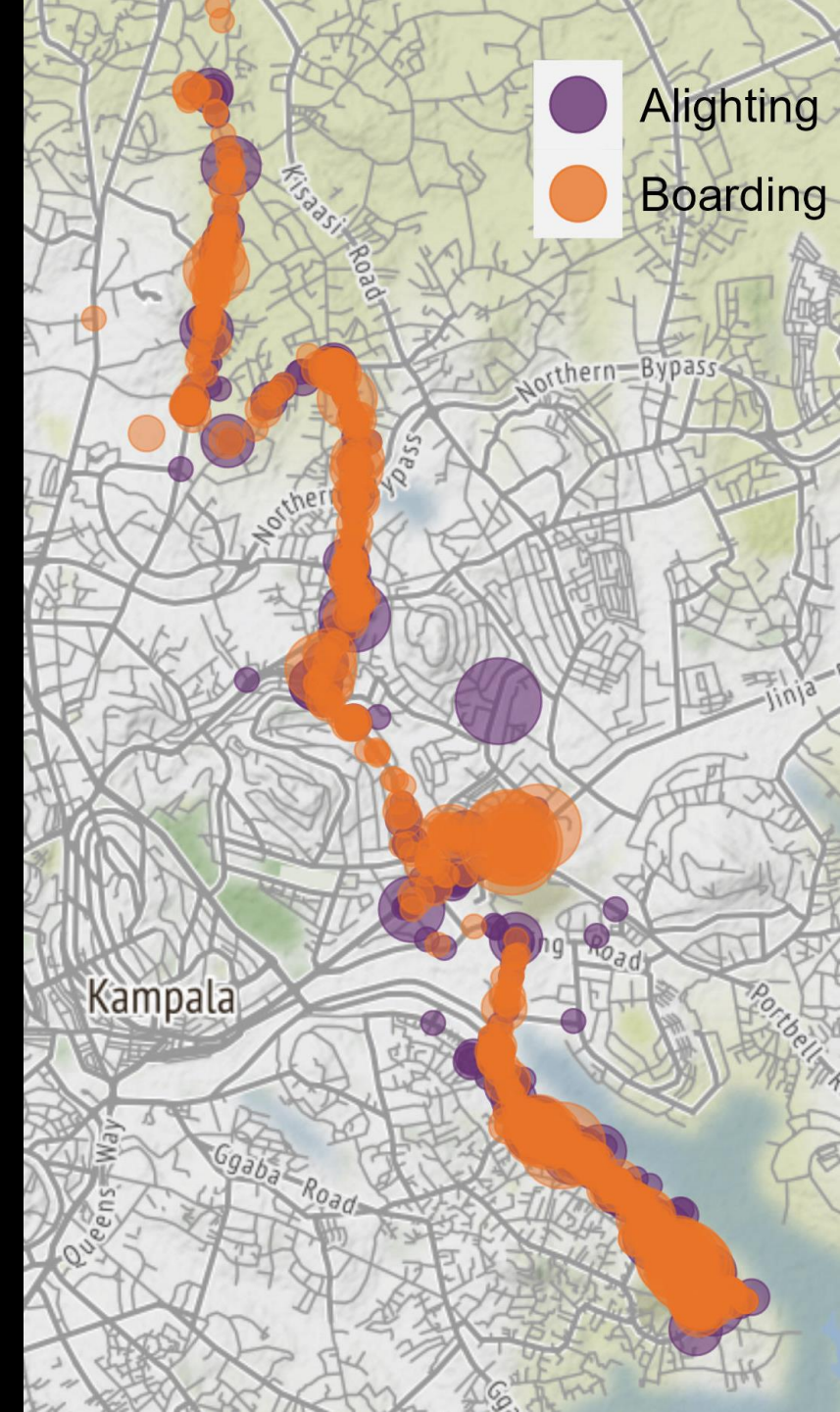


Findings

Mobility, Demand and Gender

Iteration, Extraction and Control

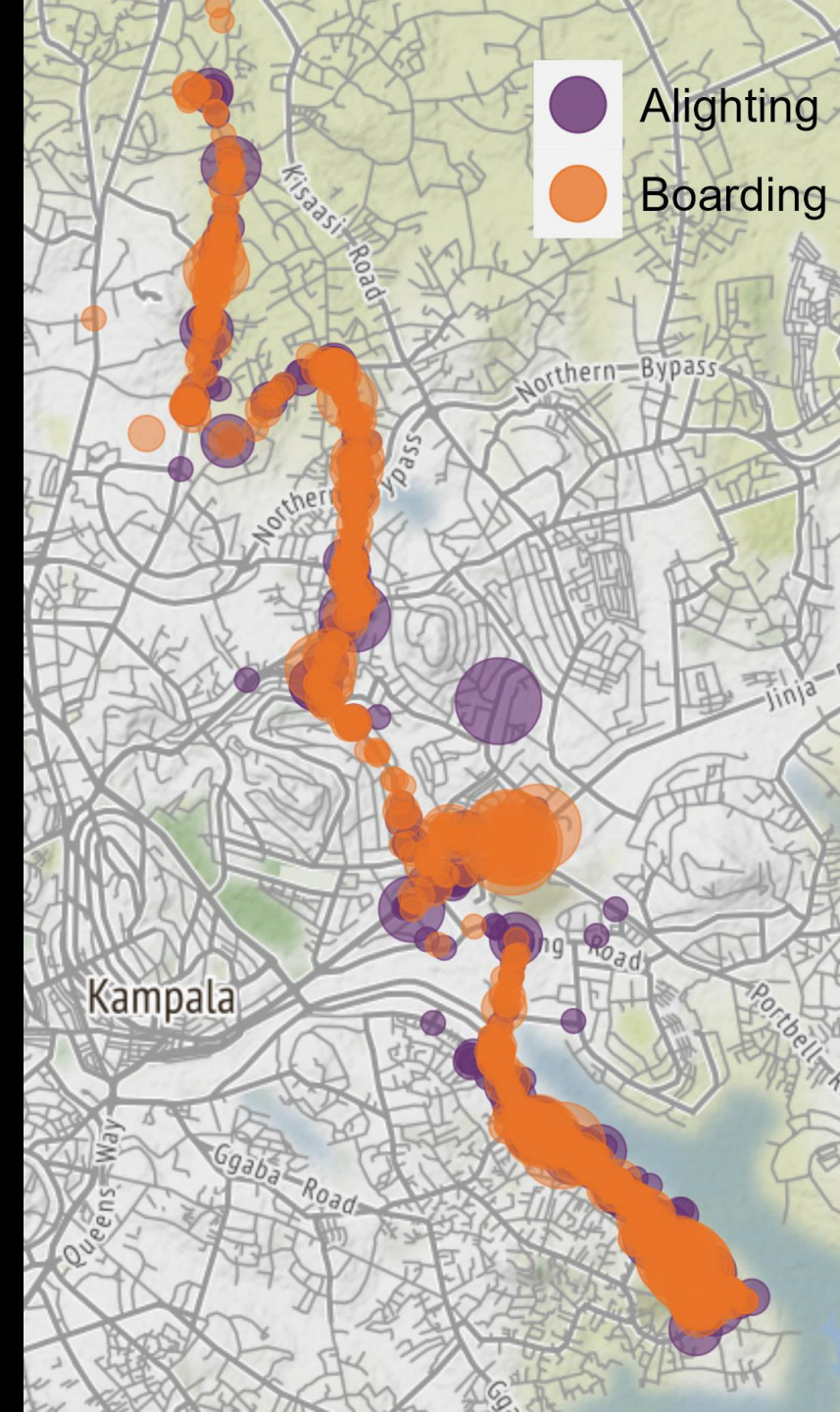
GPS On-off locations



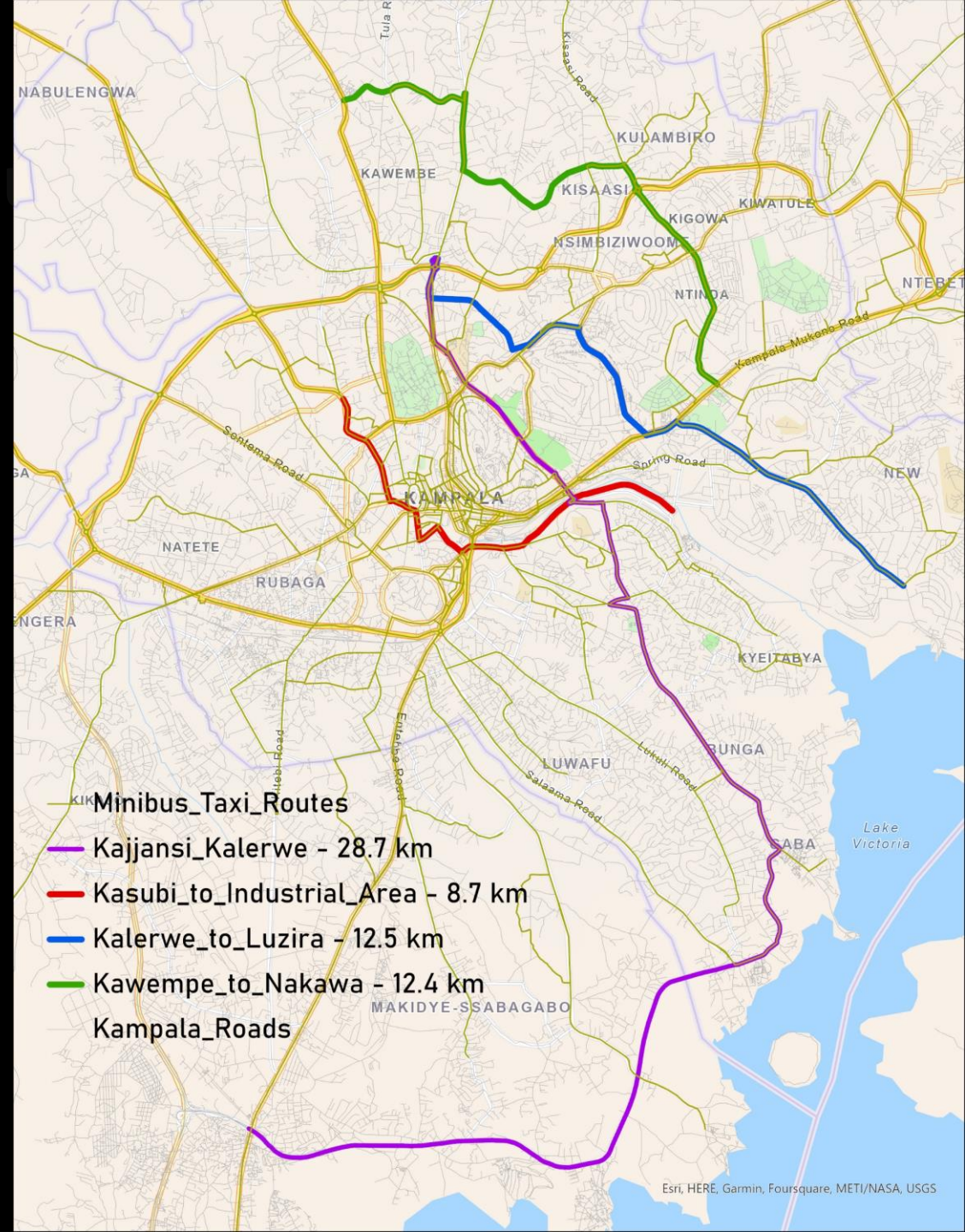
Findings

Why wasn't this there before?

GPS On-off locations



Iteration, Experimentation, Communication





Kampala
City Centre

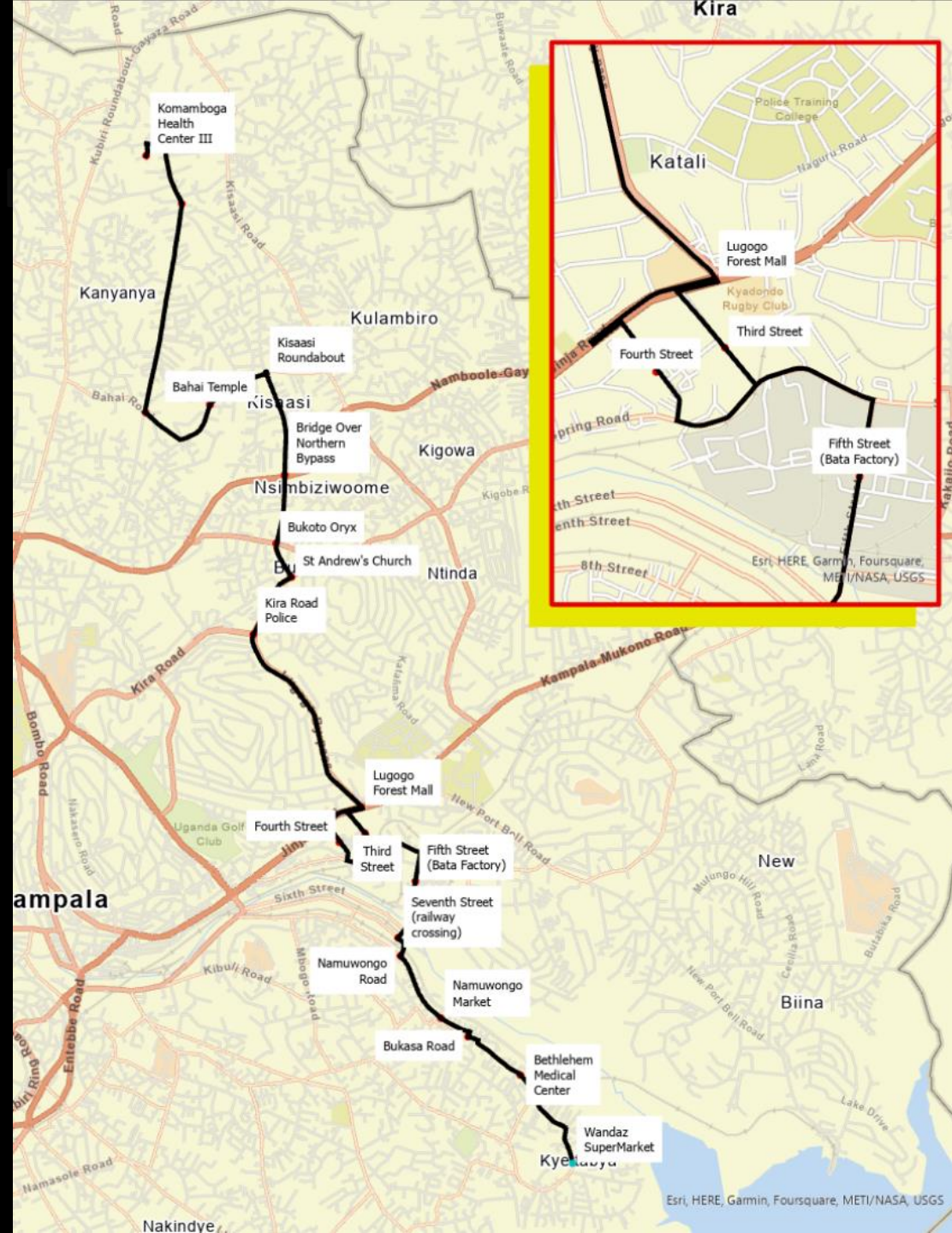
Route 1

Route 2

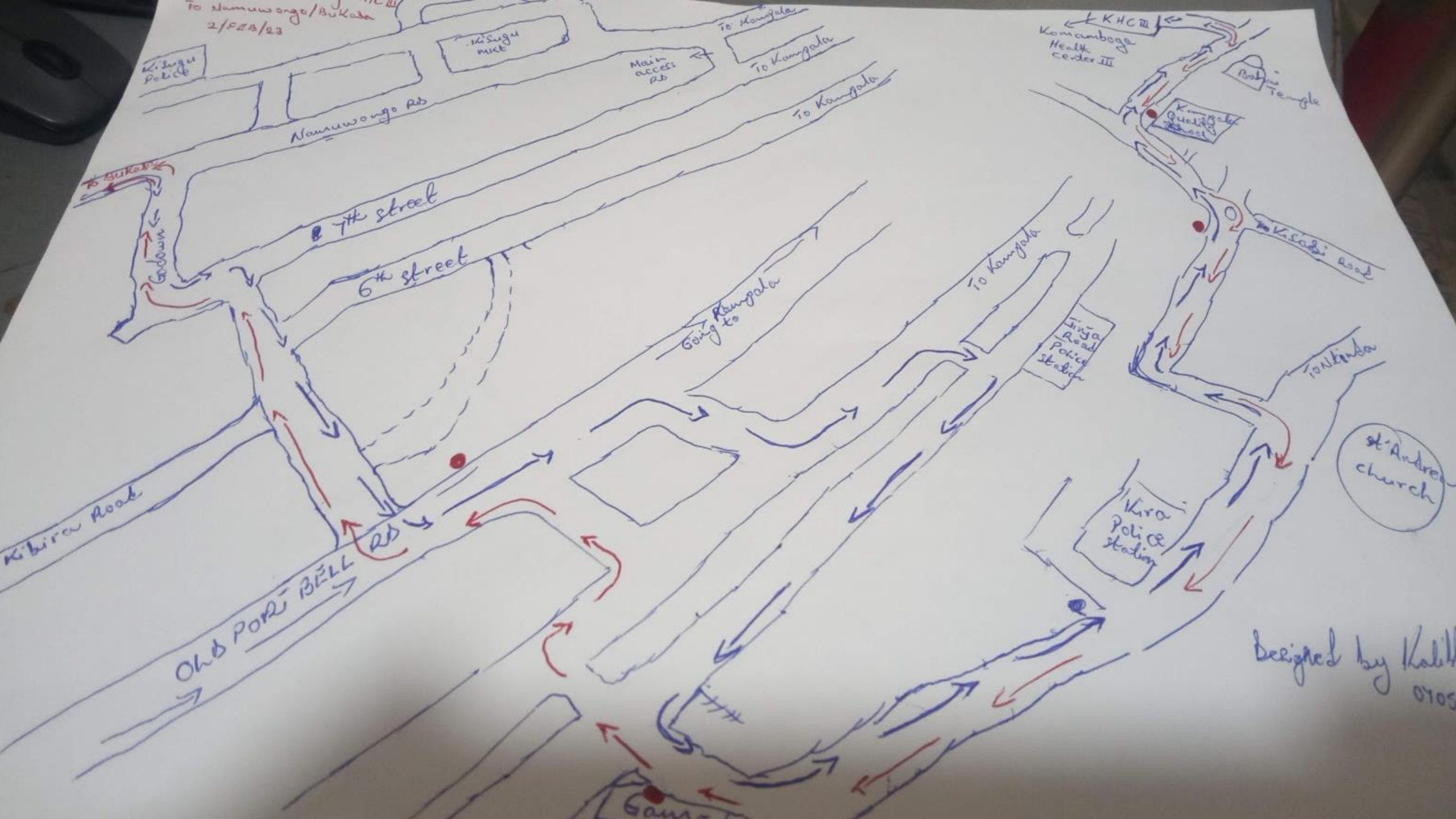


	1	22	3
10	2000 x 14	2000 x 11	2000 x 7

Iteration, Experi

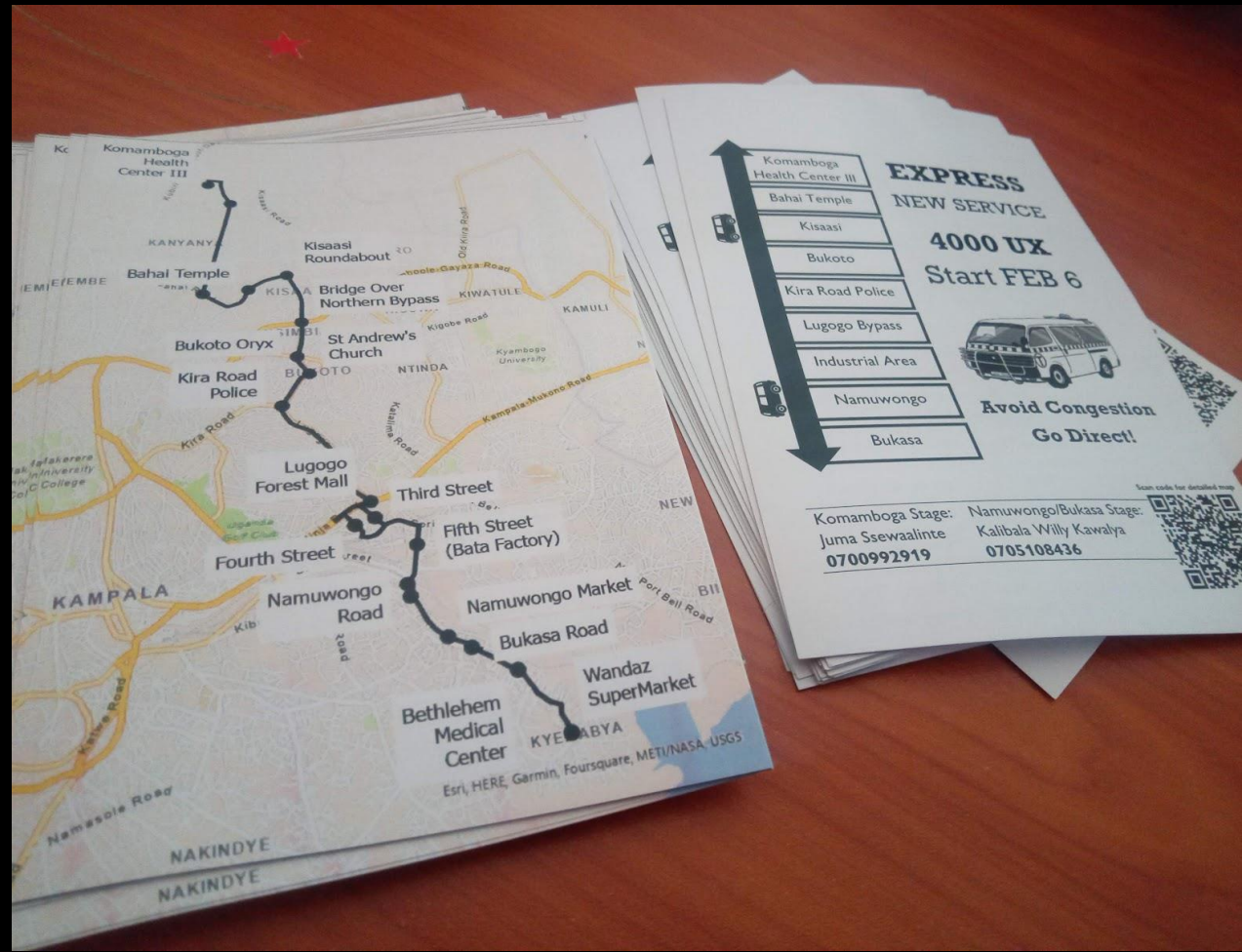


To Namuwongo/Bukala
2/FEB/23



Designed by Kalil
0105

Iteration, Experimentation, Communication



Nakawa Market Stage:

Invisible (at first)(to us)

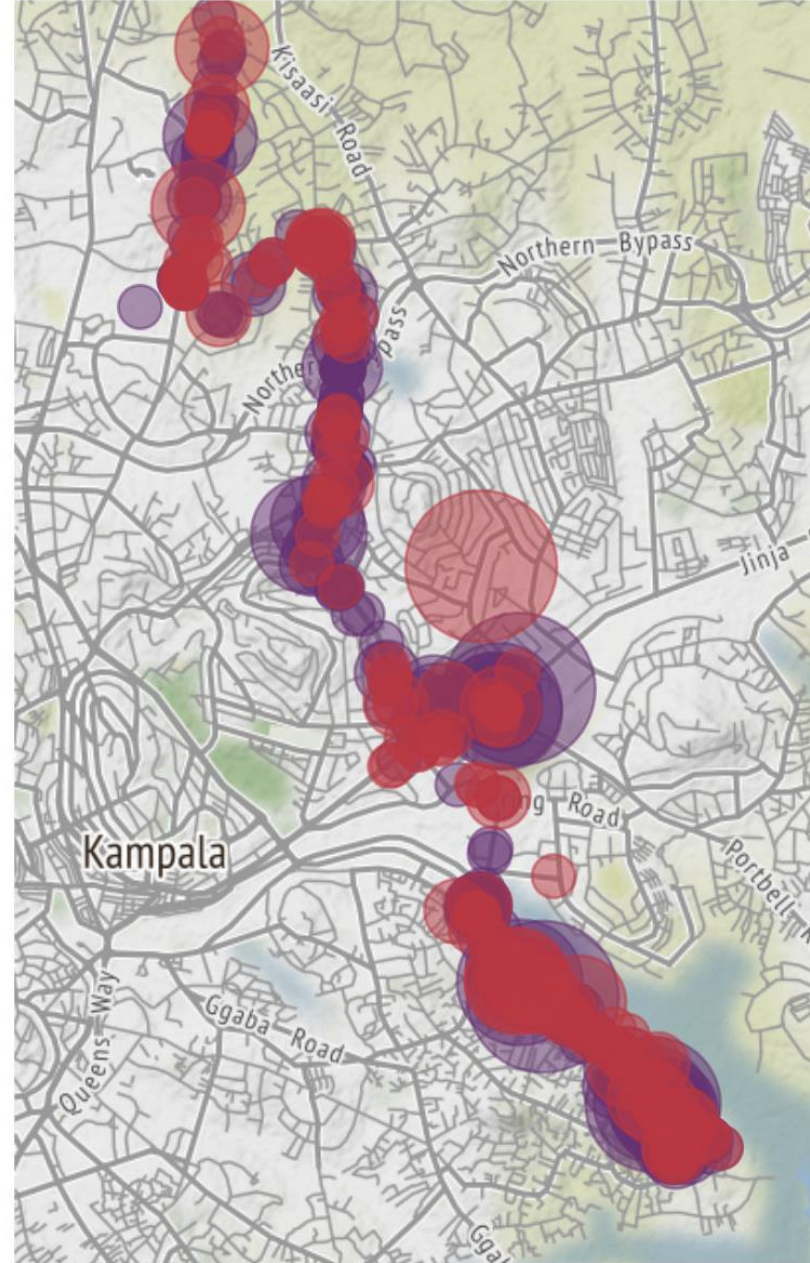
1 day:
Requested Informally

1 week:
Regular stop

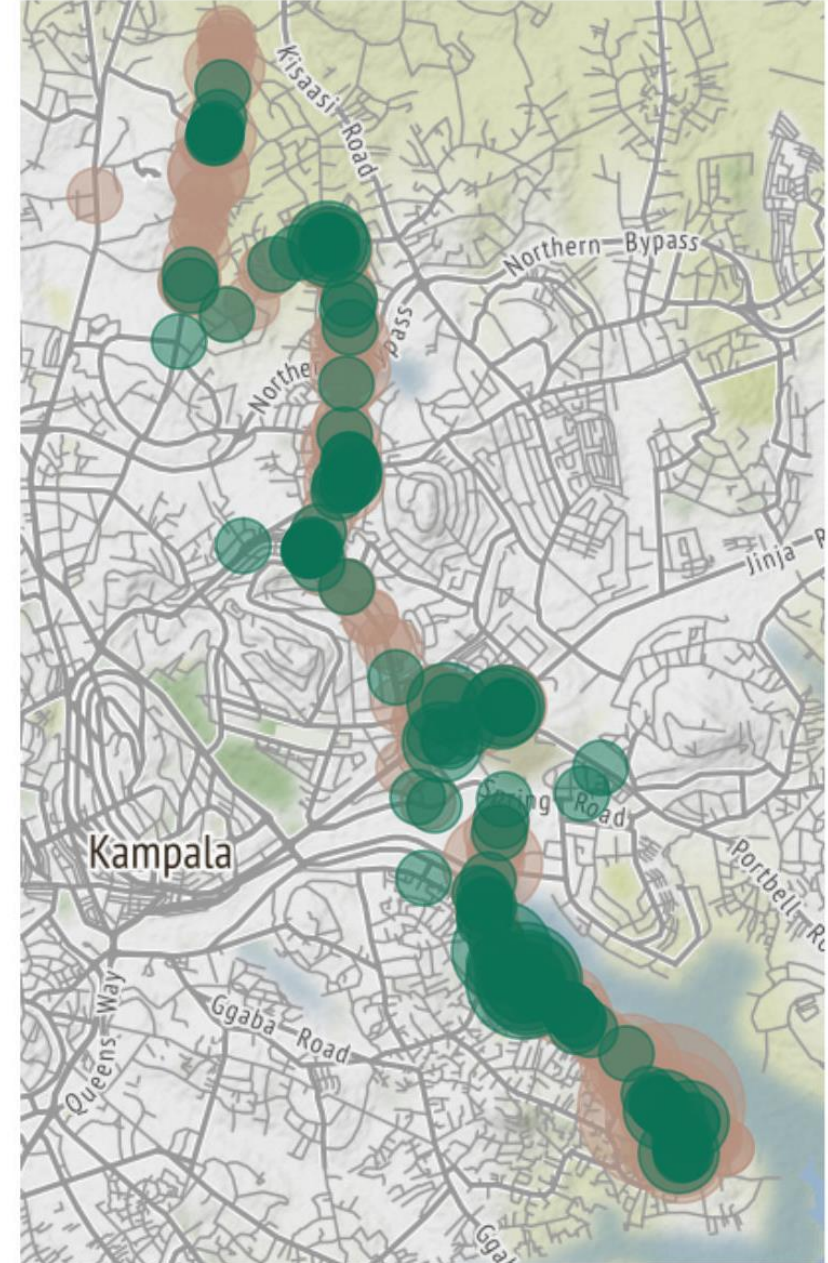
2 weeks:
Established Stage

3 weeks:
operating rights
formally(-ish) purchased

Women Boarding



Men Boarding



Subsidy

Iteration, Experimentation

Daily operating payment:

57 USD on day 1

40 USD day 22

(Further declines requested)

Advertisement (~500 USD)


Defacto – management and enforcement

Initial subsidy:	Shillings	USD
Vehicle Lease	80,000	21.6
Fuel (per two return trips)	70,000	18.9
Overnight Parking	5,000	1.4
Meals (Driver and Conductor)	16,000	4.3
Take-home Driver	25,000	6.8
Take-home Conductor	15,000	4.1
Total	211,000	57.0

Extraction

Iteration, Experimentation, Communication




We literally picked no now until Namuwongo and we picked 3. Sad thing even the money Andrew made on his way to Komamboga, some traffic police man took it from us

03:30

Extraction efforts by:

- Police
- “Touts” in intermediate stops
- Other (non functioning!) operators
- OWN operators
- Higher-ups in the transport industry
- Layers of urban bureaucracy



Once
New Stage Established:
Operators putting in
money, time, labor,
management

- Stage rights, 250 USD
- Advertising radio and signs
- Circulating vehicles from established routes
- Managing and overseeing compliance

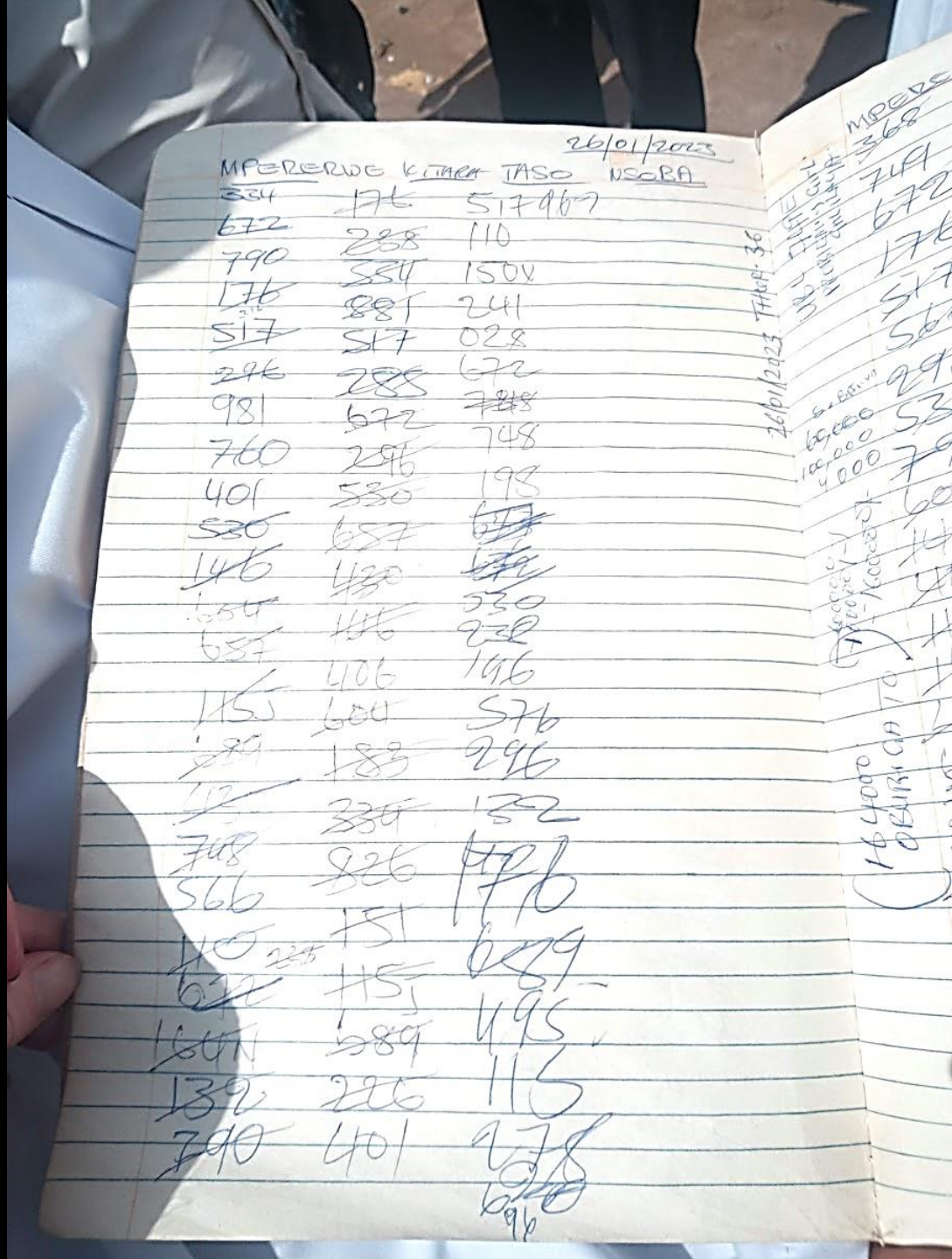
Further question/expansion:

Is this widespread or a random spot? Other cities?

Are there benefits for drivers?

What is the general equilibrium effect on the transport network?

Full scale RCT



**Yes, there is a need! We are many.
What took you so long?**



Thank you!

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