

# The effects of the introduction of a bus rapid transit system on commuter choices in Ghana



## In brief

- Ghana's Aayalolo Bus Service (ABS) was introduced in Ghana's capital city Accra, on the Amasaman to Accra Central Business District (CBD) transport corridor in 2016. This study examines how the ABS affected mobility in Accra and the challenges faced by users of the ABS.
- By using the Adenta to Accra CBD transport corridor as comparison, the researchers surveyed randomly sampled households along both highways before the introduction of the ABS and 18 months after its introduction.
- The researchers found most people continued to travel to work by trotro (minibuses) and on foot; only about 10% of the respondents ever used the ABS, and individuals with higher levels of education and males were more likely to use it; on the Amasaman corridor, there was a seven-minute reduction in the time it takes people to travel to work; and more people expressed satisfaction in the mode of transport they use to travel to work.
- The researchers conclude that since the ABS failed to attract a sizeable number of commuters, it was not successful commercially.
- The researchers recommend additional public education by its operators on removing the perception that the ABS is meant for richer individuals, how to obtain and use the electronic bus cards required for access and how to purchase tickets.

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## Research motivation

Like most major cities in developing countries, prevalence of traffic congestion poses a serious problem for mobility in Accra, the capital city of Ghana. Accra is experiencing increasing urban sprawl: A growing number of residents live in the expanding outskirts of the city and commute to the central business district (CBD). However, the city lacks modern mass transport systems and transport infrastructure is inadequate. This problem is compounded by inefficient use of the available road space, mainly due to low adherence to traffic regulations or bad driving habits, hawking, and jaywalking.

Public transportation in Accra, especially to the central business district (CBD), is largely supplied by the traditional semi-formal transport system, known as the trotro system. The trotro system is made up of individually owned, generally unregulated, minibuses that have capacity for only about ten to 18 passengers.

The minibuses are usually not kept in the best of conditions and keep to very low driving, safety, comfort and service standards. They usually run an unscheduled service, rendering them unreliable and disorganised at times. The combined effect of these factors is that there are always too many cars on the main highways leading to and from the CBD, resulting in frequent traffic jams, which affects the health and productivity of the inhabitants of the city.

To help address these challenges, the Greater Accra Passenger Transport Executive (GAPTE) launched a basic bus rapid transport (BRT) -Lite service in November 2016 as an improved high capacity transport alternative to the traditional semi-formal system of public transportation. The partial BRT service, known as the Aayalolo Bus Service (ABS), was piloted on only one of the four main transport corridors that lead to the CBD in Accra (i.e. the Amasaman – CBD Corridor).

The system was described as a partial/basic BRT-Lite system mainly because it operated on a limited distance of dedicated lanes, which when combined was only about 5% of the 21.2 km journey, instead of having dedicated lanes that cover the whole distance of the journey. However, the available dedicated lanes were strategically positioned at a number of different locations on the journey to help reduce the journey time and make the service more rapid. Queue jumpers were also installed at traffic lights to give preference to the ABS buses when they arrive at the traffic lights.

[Our study](#) sought to understand how the ABS affected mobility in Accra. We also examined the challenges faced by users of the ABS.

We focused on two main questions:

- 1) **Did the introduction of the ABS result in any meaningful change in how people travel to work in Accra?**
- 2) **Did the operations of the ABS lead to any meaningful change in traffic congestion and satisfaction with the mode of commuting?**

## Research methodology

Because the ABS was implemented on the Amasaman to the CBD corridor, we used the Adenta - CBD corridor as the comparison corridor. We surveyed about 1000 randomly selected households along each of the two corridors before the introduction of the ABS, in September 2016. Then we followed up with a survey of the same households 18 months after the ABS was introduced and operating, in May 2018.

In both surveys, we collected detailed information on household membership and characteristics, demographic and socio-economic information of household members, and mode of commuting within the community. At the post-implementation survey, we also collected detailed information on use of the ABS, reasons for using the service, challenges with the use of the service, and suggestions for improving the service.

Overall, we collected information from 5,796 individuals at baseline (2,905 from the Amasaman corridor and 2,891 from the Adenta corridor) and 1,825 households at the endline survey (902 on the Amasaman corridor and 923 on the Adenta corridor).

## The findings

### Knowledge of the ABS

Table 1 presents information on knowledge and use of the ABS. Awareness of the ABS was high among the respondents: *77% of the respondents indicated that they had knowledge of the ABS prior to the survey.* As expected, knowledge of the service was higher among respondents on the intervention corridor (Amasaman), at 82.7%. Even on the comparison corridor, awareness of the service was quite high, at 71%.

### Use of the ABS

Given the expected advantages of the ABS (convenient, comfortable, and safer buses, charging comparable fares to the trotros), we found the patronage of the ABS to be quite low. *Only 9% of respondents reported that they have ever used the ABS.* As expected, this was significantly higher on the Amasaman corridor compared with the Adenta corridor (13% versus 5%). Gender and level of education were the most significant predictors of the use of the ABS. Females were 2.7 percentage points less likely to have tried the ABS. Patronage of the ABS also increased with the level of education.

**Table 1: Knowledge and use of Aayalolo Bus Service**

	Total (%)	Amasaman (%)	Adenta (%)
Knew about Aayalolo before the survey	77.0	82.74	71.37
Have used Aayalolo before	9.08	13.09	5.24

### Why did people not use the ABS?

We sought to find out from non-users of the ABS their reasons for not using

the service:

- For 60% of the respondents (46% on the Amasaman corridor and 72% on the Adenta), the main reason is that *the service is not available in their area of residence*.
- For respondents who had the service in their area, *access to the electronic card used to board the bus* was the main problem inhibiting use of the service: Just under a quarter of non-users on the intervention corridor cited the card as the main problem.
- About 14% also indicated that they *did not need the service*.
- Consistent with our earlier findings, *only 5.7% of the non-users had not heard about the service*.

**Table 2a: Reasons for not using the Aayalolo Bus Service: Non Users**

	Total (%)	Amasaman (%)	Adenta (%)
Aayalolo does not serve his/her route	59.93	46.56	71.62
Has his/her own car	2.95	2.61	3.25
Has no need to use it	9.34	14.03	5.23
Has not heard about it	5.71	1.58	9.32
Has not been able to buy the bus card	13.54	23.87	4.51
Does not like it	1.41	2.41	0.54
Other (Specify)	7.12	8.94	5.53

We also asked the users of the ABS why they felt others were not using the service:

- Consistent with what we found among the users, the primary difficulty related to obtaining the card for the service: *Over 51% cited problems with getting the card as the main reason for not using the ABS*.
- Respondents mentioned that the service *does not run frequently (13.5%)*.
- They also stated that it *doesn't give them the convenience of stopping anywhere as it only stops at designated bus stops (12%)*.
- Interestingly, about *8% of respondents indicated that it might be that people feel the service is for richer people*. This is consistent with the findings from our regression analysis, which shows that better educated individuals and those from relatively richer households are more likely to use the service.
- It is also worthy to note that *6% of users indicated that the service was slower than the available alternatives*.

Table 2b: Reasons others are not using the Aayalolo Bus Service (Users)

	Total (%)
The use of the electronic bus card	44.23
Limited places to buy and top-up the card	7.21
It is slower	5.77
It is seen as for rich or high class people	7.69
It is not as frequent	13.46
It does not stop anywhere except designated spots	12.02
Other	9.62

### What did users like about the ABS?

Overall satisfaction with the service among the users was very high, with about *two-thirds of all users indicating that they were very satisfied or satisfied with the service*. Less than 4% of users expressed dissatisfaction with the service. In terms of the features of the ABS that users were most satisfied with, comfort (47%) and air conditioning (20%) on the buses were mentioned as the most desirable features. Other notable features were neatness (10%) and the sense that the service was prestigious (9%). Even among the users of the service, very few people (6%) said that the service was quicker compared to the available alternatives.

Table 3a: Satisfaction with the use of the Aayalolo Bus Service (%)

	Total (%)
Completely Satisfied	40.38
Satisfied	26.29
Neither satisfied or dissatisfied	2.35
Dissatisfied	1.88
Very dissatisfied	1.41
Don't know	27.7

**Table 3b: Attractive features of the Aayalolo for users (%)**

	Total (%)
It is neat	10.1
It has air conditioning	19.71
It is comfortable	46.63
It is quicker	5.77
It is more prestigious	9.13
It is more available when you need it	0.96
The use of the electronic bus card	1.92
It is quiet on board	0.96
It does not make too many stops everywhere	2.4
Other (specify)	2.4

### **Has the Aayalolo Bus Service changed the mode of commuting?**

Table 4 presents information on the mode of travel within the city, both before and after the rollout of the ABS. Prior to the introduction of the ABS, walking was the most common means of commuting, accounting for 42.67% on the comparison corridor and 51.13% on the Aayalolo corridor. Among those who use vehicles as a means of commuting, trotros are the most popular means of commuting, accounting for 36% on the Adenta and 32.1% on the Amasaman corridors.

At baseline, the means of commuting was significantly different on the two corridors. After the introduction of the ABS, the use of trotros as a means of commuting increased, while the percentage of respondents who walked reduced on both corridors. However, the use of “other public transportation”, which includes taxis, other commercial buses, and the ABS increased significantly on both corridors. Taken together, Table 4, combined with our difference-in-difference regression, shows that the ABS did not change how people travel to work.

**Table 4: Mode of commuting in the Accra**

	Baseline		Endline	
	Adenta	Amasaman	Adenta	Amasaman
On foot	42.67	51.13	32.65	33.7
Trotro	36.07	32.11	38.48	38.11
Other public transportation	6.52	6.9	12.24	10.6
Private/Official car	11.75	7.61	10.79	12.7
Other means	2.98	2.26	5.83	4.89
Chi-square	0.000		0.474	

### Has the Aayalolo Bus Service reduced travel time and changed the perception of traffic?

- The introduction of the ABS reduced self-reported travel times.
- At baseline, travel times were 2 minutes higher on the Amasaman corridor compared to the Adenta corridor.
- Travel time increased on the Adenta corridor as expected, however, it reduced on the Amasaman corridor.
- The introduction of the ABS reduced the perception that traffic congestion is high.
- Before the ABS, the perception of high traffic congestion was similar between the corridors (61% of respondents felt that traffic congestion was high). After the introduction of the ABS, the perception of high traffic increased on both corridors, but much less on the treatment corridor (71% versus 66%).

**Table 5: Effect of Aayalolo Bus Service on commuting times & perception of traffic**

	Before the ABS		After the ABS	
	Adenta	Amasaman	Adenta	Amasaman
Travel time to work (minutes)	35.19	37.27	37.43	33.40
Perception that traffic is high (%)	61.02%	61.37%	70.71%	66.41%

## Recommendations

- The public is highly aware of the existence of the ABS, however, there is a need for additional public education by its operators to remove the perception that it is meant for relatively richer individuals.
- The operators also need to inform the public about the how to obtain and use the electronic bus cards required to access the ABS.
- The operators need to provide additional options for purchasing tickets for use on the ABS.
- Further investment may also be required to increase the extent of the dedicated right-of-way of the service.