

# Control of Traffic Congestion in Agona Swedru Municipality

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**Abstract:** For many authorities in Ghana's metropolitan areas, public transport provision is increasingly becoming problematic as daily trips of city dwellers tend to cover numerous suburbs, thereby increasing travel cost in terms of time, money and comfort. Rather than reducing travel times, enhancing economic activities and productivity of commuters.

In order to control the traffic congestion, improve upon the movement of both vehicular and pedestrian, the existing traffic management in the municipality is studied.

This study identifies demerit of existing traffic management and suggest a way of reducing the cause and effects of traffic congestion.

It was realized that 80% of respondents was in agreement that traffic congestion within the municipality are cause by: sellers on the street, absence of road shudders, increasing number of vehicles, careless driving and road closure during funerals / other functions.

It is recommended that: road shudders should be factored in the road designs, sellers on the pavement should be stopped and parking facilities as well as by-passes should be constructed within the municipality.

**Keywords:** Congestion; Management; Capacity; Pavement; Shudders

## Introduction

The demand for vehicular transport keeps on increasing from all areas of human settlement due to the rapid growth of population. Motor car is an invention which within a short time has simplifies man's way of life; it has offered a wide choice of employment and has increased scope of recreational activities to remarkable extend. According to Lowe (2002) traffic congestion is a condition on any network as use increases and is characterized by slower speeds, long trip times, and increased queuing.

The most common example is the physical use of the small road by vehicles National Road Safety Commission (2008).

When traffic demand is great enough, the interaction between vehicles slows down the speed, and then traffic stream congestion occurred. When demand approaches the capacity of the road or of the intersections along the road it is known as traffic jam (Abane, 2012, Wikipedia, n.d.).

The rapid growth of vehicle ownership together with population and attraction of activities into urban areas which demands for physical space in other to improve free traffic flow within the municipality (Eshun, personal communication, May 5, 2009).

Many roads that some years back were meant for high speed are now experiencing traffic congestion due to rapid growth of vehicle.

The purpose of the study is to suggest a means of controlling the motion of vehicles as results of aggressive driving, rapid acceleration and braking and also the conflict between pedestrians and vehicles.

Traffic control system exist to provide for the safe and orderly movement of traffic to resolve conflict between vehicles, vessels or aircraft and to some extent to minimize the cost of transportation (Banks, 1998)

As traffic volume increases on highway passive devices such as signs marking and traffic signals supplement the rules of the road (Rodrigue and Notteboom, 2013, Lowe 2002).

## Materials and Methods

### Study Area

#### General Description of Agona Swedru Municipality.

The Agona District can be found in the eastern portion of the Central Region with total land area of 540 sq.km. and a population of about 164,000.

The District is divided into eleven zones. It lies within latitude 5 30' and 5 50N and longitudes 0 35' and 0 55W (Municipal News letter, 2006).

The area is bounded to the east and west by Awutu-Efutu-Senya and Asikuma –Odoben –Brakwa districts respectively. The District shares a border to the northeast with West Akim District, to the northwest with Birim-South District and to the south with Gomoa District.

The District has an undulating topography, which slopes from north to south. This includes isolated hillocks of granite rocks which mostly allow for two main seasons. The dry season lasts from December to March with the highest mean monthly temperature of 33.8°C being recorded between March/April. The lowest mean monthly temperature of 29.4°C is however recorded in August (Municipal News letter, 2006).

Agona Swedru is the municipal capital and has a population of about 59,000.

Agona Swedru lies to the north of Winneba and is about 15km off the main Accra-Takoradi high way. The location of township makes it the commercial center of the region and a nodal point from which roads radiate to the rich cocoa growing countryside of the region (Municipal News letter, 2006)

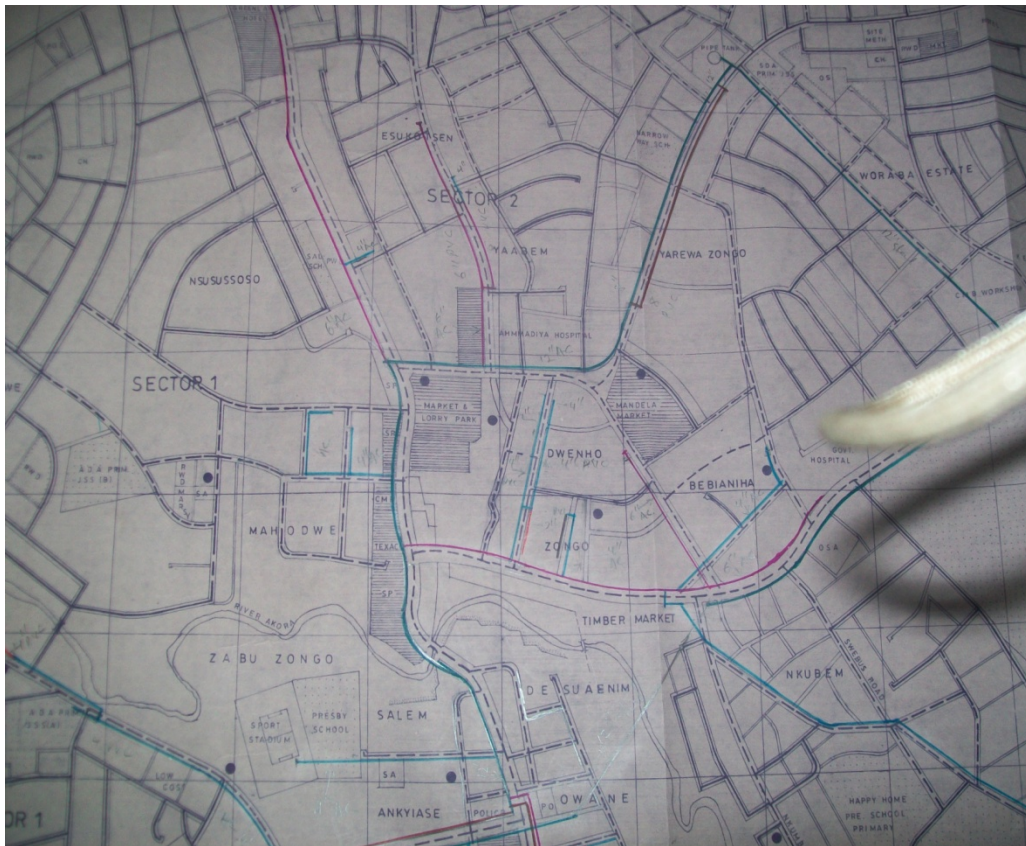


Figure 1: Municipal Town and Country Planning, 2006

## Affected Areas

Most areas experience traffic congestion in the municipality during rush hours.

The traffic jam in peak hours in the Municipality causes a lot of problems, some being delay of workers, business, students, traders and others within and around municipality at the long round affects social and economy in entire country.

The traffic congestion over crowded the following places in Agona Swedru municipality; Chapel square, Texaco, Oda Kweano, Mandela and ‘99’ area

## Results

Presents a summary of responses that were gathered from the field of Human Factors on Traffic Congestion

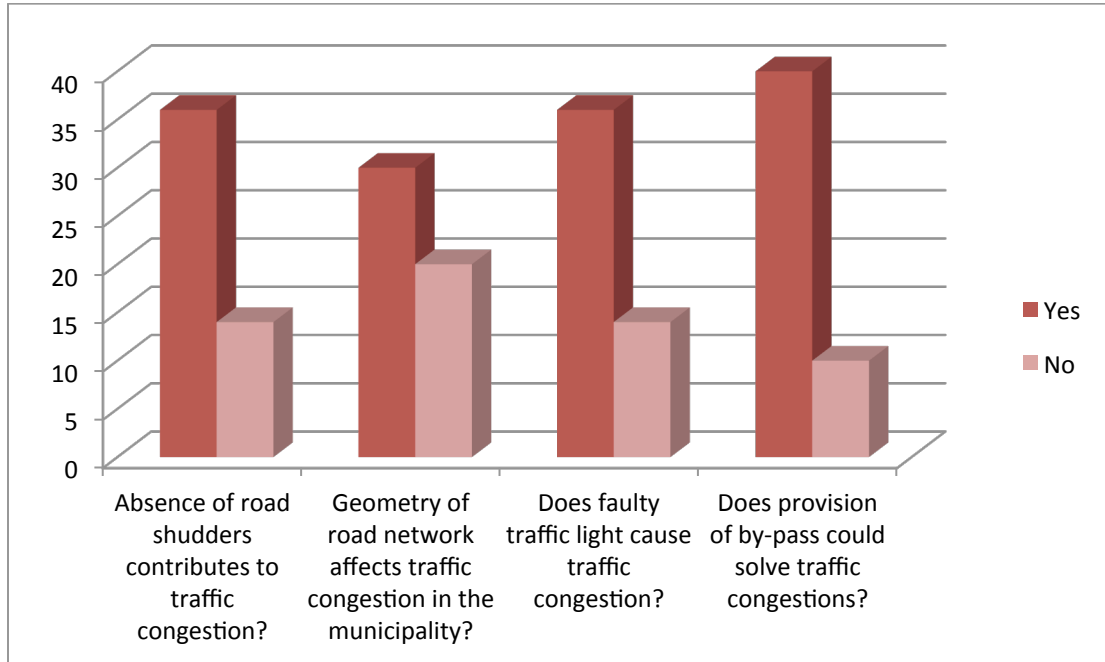
**Table 1:** Human Factor on Traffic Congestion

No	Items	Yes		No		Total	
		Freq	%	Freq	%	Freq	%
1	Careless driving affects traffic congestion?	40	80	10	20	50	100
2	Does loading and unloading affects traffic congestion?	22	44	28	56	50	100
3	Does road closure during funerals/functions cause traffic congestion?	42	84	8	16	50	100
4	When the Police direct traffic, does it ease traffic congestion?	32	64	18	36	50	100
5	Police random check on vehicles cause traffic congestion?	23	46	27	54	50	100
6	Listening of radio programme cause traffic congestion?	10	20	40	80	50	100

In the light of the study, the following observations were made; drivers make calls when driving, also 80% of the respondents reported that careless driving (make calls while driving) cause traffic congestion.

It was also realized that majority of respondents 84% respond positive that road closure during funerals/functions cause traffic congestion meanwhile 16% respondents were not in support that, road closure during funerals/functions cause traffic congestion.

## Road Geometry on Traffic Congestion



**Figure 2:** Effect of Geometry on traffic congestion

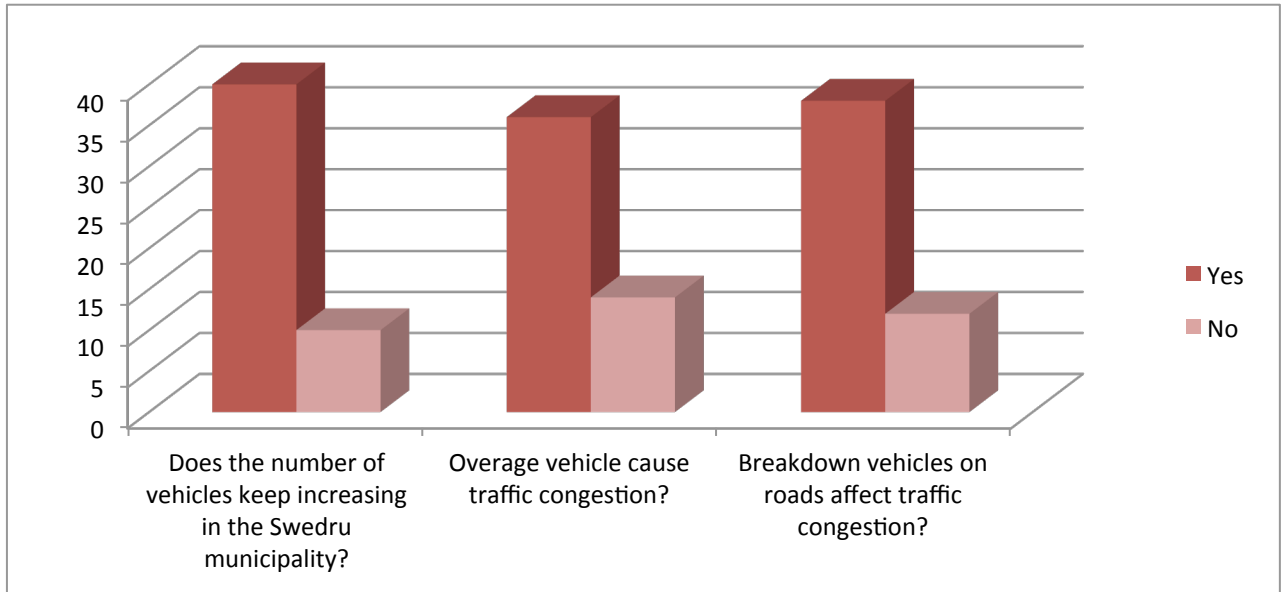
Inadequate parking facilities within the municipality cause traffic congestion, also majority of respondents 80% are of the view that, lack of by-passes in the municipality affect traffic congestion while 20% respondents were against the assertion.

It was realized that 60% respondents accepted that geometry of road network affects traffic congestion in the municipality whereas 40% against the statement. Most of the respondents 72% were in support that faulty traffic light cause traffic congestions, however, 28% of respondents were against.

## Climate Change on Traffic Congestion

Majority 76% were against assertion that weather condition causes traffic congestion in the municipality while 24% were in support of the statement.

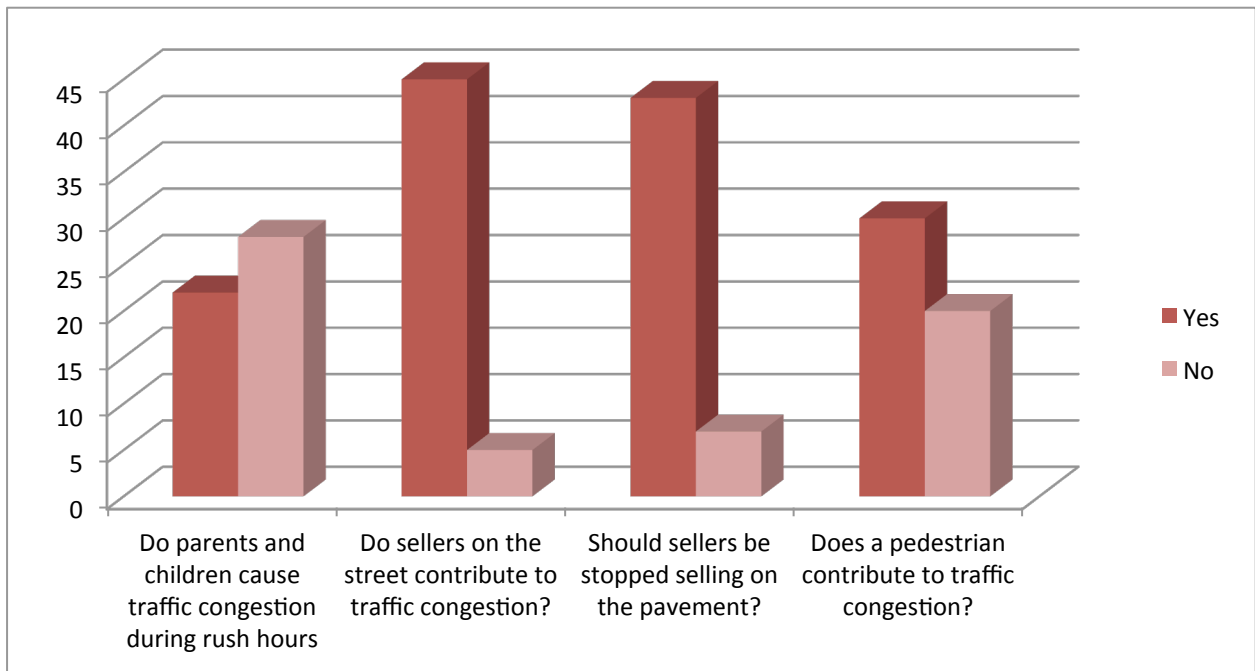
### Vehicular Factor on traffic Congestion



**Figure 3:** Effect of Vehicular Factor on traffic congestion

It was shown that 76% respondents accepted assertion that disable vehicles on road contribute to traffic congestion meanwhile 24% were against the assertion.

### Effects of Pedestrians on Traffic Congestion



**Figure 4:** Effect of pedestrians on traffic congestion

It was noticed that 44% of the population was in support that parents and children cause traffic congestion during rush hours but majority were against the assertion. Also 90% of the respondents were in agreement that sellers on the street contribute to traffic congestion while a minority of 10% disagree with the statement. 60% of other road users contribute to traffic congestion, but 40% of the respondent was not in support of the view.

## Discussion

It was observed that careless driving and indiscipline attitude on roads during driving affects traffic congestion. This affirms by Wight (1976) that negative attitude such as drink to drive affects congestion.

It was noticed in the finding that faulty traffic lights and inadequate space for people with disability affects traffic congestion. This is in support by Nartey (1997) that faulty operation of traffic signals (green/red) lights and where the time allocation for a vehicle does not match the volume on that road result in traffic jam. According to Amegashie (2006), traffic congestion may occur when a volume of traffic or modal split generates demand for space greater than the available road capacity, which is in accord with the statement that increase number of vehicles in the municipality contributes to traffic congestion.

The study shows that geometry of road network contributes to traffic congestion in municipality.

Flahy (1977) affirms the contention that geometric design elements contribute to traffic congestion.

It was realized that wrong parking causes traffic congestion in the municipality. This affirms Wikipedia (n.d.) that crashed vehicles, stalled vehicles, debris cause about ¼ of congestion problems.

It was noticed that unexpected road closure contributes to traffic congestion. This was in agreement with the findings that closure of roads for social activities like funerals, parties and weddings cause traffic congestion (Wikipedia, n.d.).

It was observed that, the width of the pavement which is very small and mostly occupied by sellers attribute to traffic jam. This affirms Jedwab and Moradi (2011) and

Banks (1998) that the size of the pavement must be large enough to accommodate other road uses. It research also indicated that the climate change also has effect on the traffic congestion.

## Conclusion

With critical analysis of data and result, the study pointed out that the traffic congestion in the Agona Swedru municipality delay so many activities.

It is concluded that provision of parking facilities, provision of spacious road shoulders, preventing sale on pavement, provision of by-passes, and one-way traffic should be put in place. Also preventing unexpected closure of roads for social activities will help reduce traffic congestion within the municipality. It is also concluded that the efficient flow of both vehicular traffic and other road users will improve productivity within the municipality.

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