

VEHICLE TRIP GENERATION OF ADULT WORKERS IN GHANA

MARIAN ANKOMAH



Travel demand forecasting plays a significant role in the development of transportation plans and evaluation of transportation infrastructure. Travel needs/demands keep on changing as such it is imperative to make plans that account for possible future changes. In developing countries, there is a need for a transportation system which captures the growing needs of its population. In Ghana, the vehicle population grows more rapidly than the transportation network, thereby increasing pressure on the transportation infrastructure. Also, land use planning conflicts with transportation planning. For example, residential areas being used for commercial purposes. There is a critical need to understand the travel pattern of users to be able to make better prediction in meeting the transport needs of the country. Therefore, in understanding the travel behaviors of road users in Ghana, my interest is to develop a travel demand model based on the vehicle ownership of the households and the trip generation by mode of the individual household members.

As a first step to achieving my research goals, I examined the influence of household and individual characteristics together with other explanatory variables on trip generation of working adults using data from the 2012 Ghana Transport Indicator Database Survey which was conducted by the Ghana Statistical Service. Apart from the Ghana Statistical Services which developed a report based on this survey, the data has not been used for any research relating to transportation or trip generation. Therefore, results from this data will serve as a useful contribution to the Ghana Statistical Services and other governmental transportation agencies in developing national policies.

Of the national sample, 58.4% were adults (18 years or older) engaged in some sort of employment activity. A linear regression model was used to model the trip generation by car, bicycle, motorcycle, foot, taxi and bus for these working adults. The results from the study demonstrate that gender, age, education level and residential location all have a significant impact on the number of trips generated for the different

trip modes. From the results, the cultural background of a worker also significantly affects the number of bicycle trips a worker make. In terms of location, adult households that reside in the city center make fewer trips by car than similar adults that live outside the city center. Furthermore, Accra Metropolitan Area (AMA), Tamale Metro and Wa Municipal show a strong positive relation with motorcycle trip generation. However, over the past few years, there has been an increase in motorcycle trips in the AMA because of the vehicle population growing higher than the transportation network and the heavy vehicular traffic. The number of trips generated by an adult worker can also be used to explain the perception variables estimate.

The model results can be used to make trip generation prediction in developing transportation plans for Ghana. The next phase of my research will focus on the household vehicle ownership and understanding the travel behavior of non-working adults and children.

Marian Ankomah is a doctoral student in the Department of Civil and Coastal Engineering.