

Day-to-day People Movement Analysis of Dhaka Using CDRs Data

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Abstract: Recently, the importance of understanding the dynamic every moment change of people flow is continuing to increase. Especially in a city like Dhaka (the capital city of Bangladesh), where traffic troubles such as heavy traffic congestion are serious problem against the city development, strategic traffic network management based on updated information is needed. However, data of people location provided from traditional methods such as questionnaires and road surveys is likely to be not fully updated and has shortcomings in both spatial and temporal scale.

Based on this concern, the main aim of this research is to utilize the flow information of mobile phones in a cell-phone network, which can be correlated to traffic flow, to provide more accurate people's transportation information. The mobile phone data used in this research is the CDRs (Call Detail Records) data of Dhaka people (10000 users/ 1 month). First, for each user, data points are analyzed to extract points that are estimated to be a part of *stay*, and clustered as stay point with information of location, start time and end time. Then, we figured the connection between stay points as *trip*, which means that each stay points are recognized as Origin or Destination of trips. From this, Origin-Destination matrices, one of most important information for understanding traffic demand, are provided. Additionally, the routes taken for each trips are estimated as well, selecting the most reasonable route compared with CDRs data points.

The result shows the accuracy of Origin-Destination matrices of Dhaka estimated through this method, in comparison with the Person Trip Survey held in 2009. The result also offers people flow estimation with more variety in the routes taken, since the estimation is based on observed mobile phone location data.

Keyword: people flow, CDRs, Origin-Destination, Dhaka, Person Trip Survey,