Real-time Dhaka:
Estimation of Real-time People Flow of Dhaka Using CDRs Data with Data Assimilation

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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, having access to more on-time people flow situation information will be a big help to seek for solutions. However, real-time data of people location that can be obtained is likely to be only a partial data, since there are security problems and limited data processing method. Based on this concern, the main aim of this research is to estimate the people flow of a target day by combining the people's location data of the day (real-time data) and analyzed dataset of the people's location data of several days before the target day(previous-flow dataset) using data assimilation method. CDRs (Call Detail Records) data of 4 million Dhaka people of the target day is used for the real-time data, and CDRs data and Person Trip survey data is used for the previous-flow dataset. From the previous-flow dataset, the people flow estimation for the target day is constructed. Then, taking the data assimilation procedure, real-time data is combined so that the estimation will be evaluated and reconstructed. The result shows the difference in accuracy of the estimation of the target day people flow, depending on the difference in the data type that constitutes the previous-flow dataset: only CDRs data, only Person Trip Survey data, or the combination of the two. The result also varies due to the mesh size of area division and the length of time interval set when collecting data.

Keyword: people flow, CDRs, Person Trip Survey, data assimilation, real-time