2015 APMCM PROBLEMS

Problem B

Dynamic evaluation model of urban public transport service level

The service evaluation of urban public transit is an important part of the construction of urban public transit system and public transport operation efficiency improvement. For transit enterprises, the management and planning department, the data for the planning of traditional bus stops, lines and Transfer Hubs are simply based on the statistics collected by competent authorities and manual inventory.

Increasingly developed in Auto-collecting Technology today, if we could automatically analyze the Resident Travel Demand using the Bus GPS data, Bus Card consuming data, metro card consuming data and taxi GPS data, and evaluate dynamically about the existing transit planning facilities service(including regular bus stops and metro stations),then we may improve the work efficiency and quality of traditional transit planning ,design and management dramatically.

The data of urban bus, bus card consuming, metro card consuming and taxi GPS are included in the attachment. Please analyze these data carefully and answer the following questions.

1. Use at least three methods to perform preprocessing of the data, and compare the processing effect of data.

2. Analyze the OD matrix of residents travel data based on GPS and bus card consuming.

3. Please build mathematical model to make dynamic evaluation on the service of bus stops, metro stations, and reprioritize the most unreasonable three bus stops.

DATA

Link：http://pan.baidu.com/s/1c0YQsy0

Password：s9kf