

1 **Calibrating MFD Models from Mobile Phone Data**

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1 **ABSTRACT**

2 This work focuses on the estimation of Macroscopic Fundamental Diagram (MFD) and trip lengths
3 for the city scale network using mobile phone data for the city of Dallas. The data used in the
4 present work has different sampling intervals and in order to have an accurate estimation of trav-
5 elled distance, a trip enhancement method is proposed based on map-matching scheme. Data from
6 peak hour OD matrix and loop-detectors are fused together to obtain a typical full day OD matrix
7 of Dallas city. Using the enhanced trip set and OD matrix data, penetration rates that depend on
8 OD pair and time are estimated. The macroscopic variables computed from the data are expanded
9 using the penetration rates. Finally, MFDs and trip lengths are estimated for the partitioned net-
10 work. An analysis on the trip lengths is presented to demonstrate the differences in trip length
11 distributions that depend on the OD pair and macro-path.

12 *Keywords:* Macroscopic Fundamental Diagram, Mobile Phone Data, OD Matrix, Map Matching,
13 Trip Lengths, Penetration Rates, Macro-paths