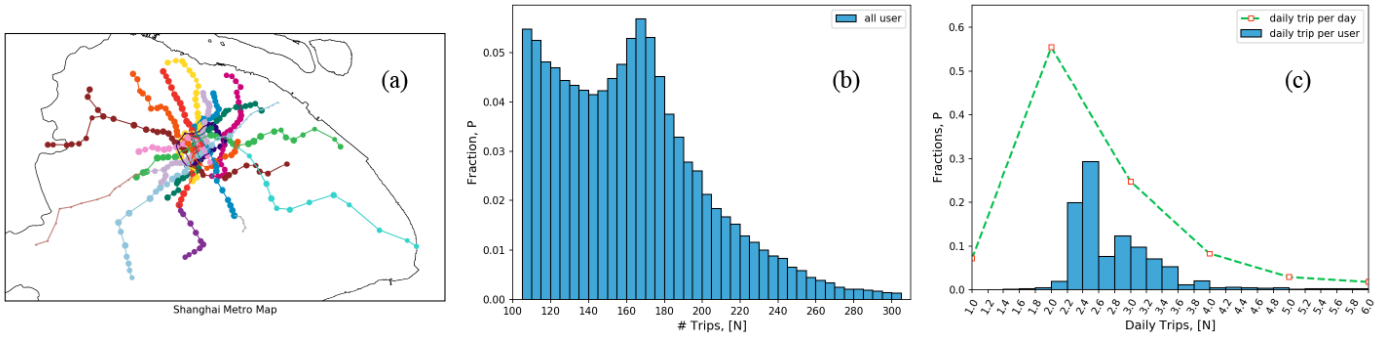

Fig.1

Algorithm 1 Determine user attributes

Input: Every user's trip data, $S_u^d(o,d,t)$; Every user's ID list, U; Every user's trip day list, D;

Output: Every user's attribute, A_u; Every user's home station, H_u; Every user's work station, W_u;

for all $u \in U$ **do**
  for each $d \in D$ **do**
    if $t < 10:00:00$ **then**
      home station list, H append o
      work station list, W append d
    end if
    if $t > 17:00:00$ **then**
      home station list, H append d
      work station list, W append o
    end if
  end for
  for $h \in H$ **do**
    P(h) = Count(h)/len(H)
    if $max(P(h_0)) > 0.4$ **then**
      $H_u = h_0$
    end if
  end for
  for $w \in W$ **do**
    P(w) = Count(h)/len(W)
    if $max(P(w_0)) > 0.4$ **then**
      $W_u = w_0$
    end if
  end for
  if $H_u \neq \emptyset$ **then**
    if $W_u \neq \emptyset$ **then**
      $A_u =' commuter'$
    else
      $A_u =' non-commuter'$
    end if
  else
    $A_u =' non-home'$
  end if
end for
return A_u; H_u; W_u;

Algorithm.1

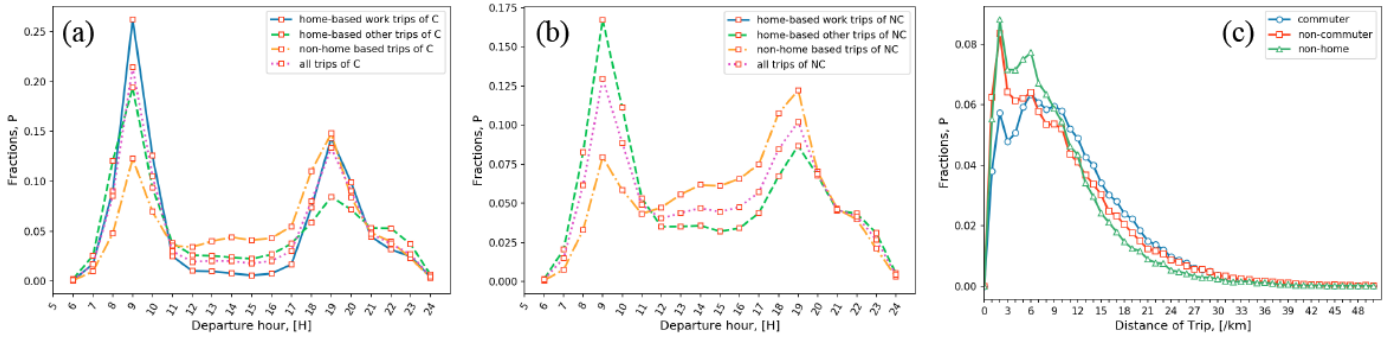

Fig.2

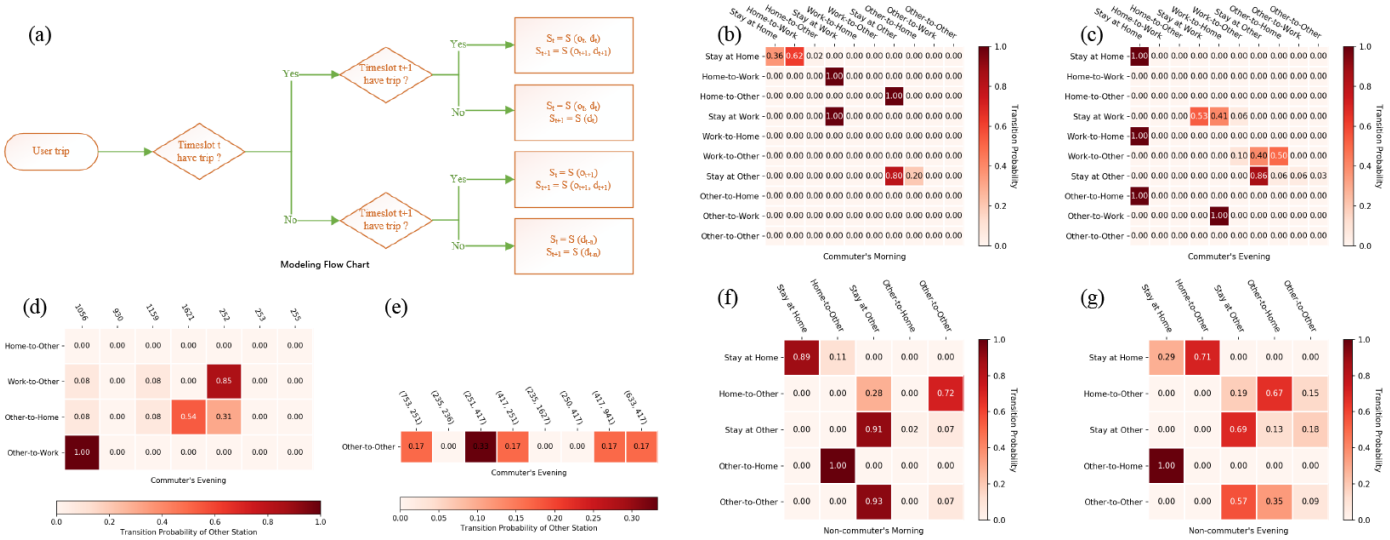
(a)
User trip
Timeslot t have trip ?
Timeslot t+1 have trip ?
Timeslot t+1 have trip ?
Yes
No
Modeling Flow Chart
(b)
Commuter's Morning
(c)
Commuter's Evening
(d)
Commuter's Evening
Transition Probability of Other Station
(e)
Commuter's Evening
Transition Probability of Other Station
(f)
Non-commuter's Morning
(g)
Non-commuter's Evening
Transition Probability

Fig.3

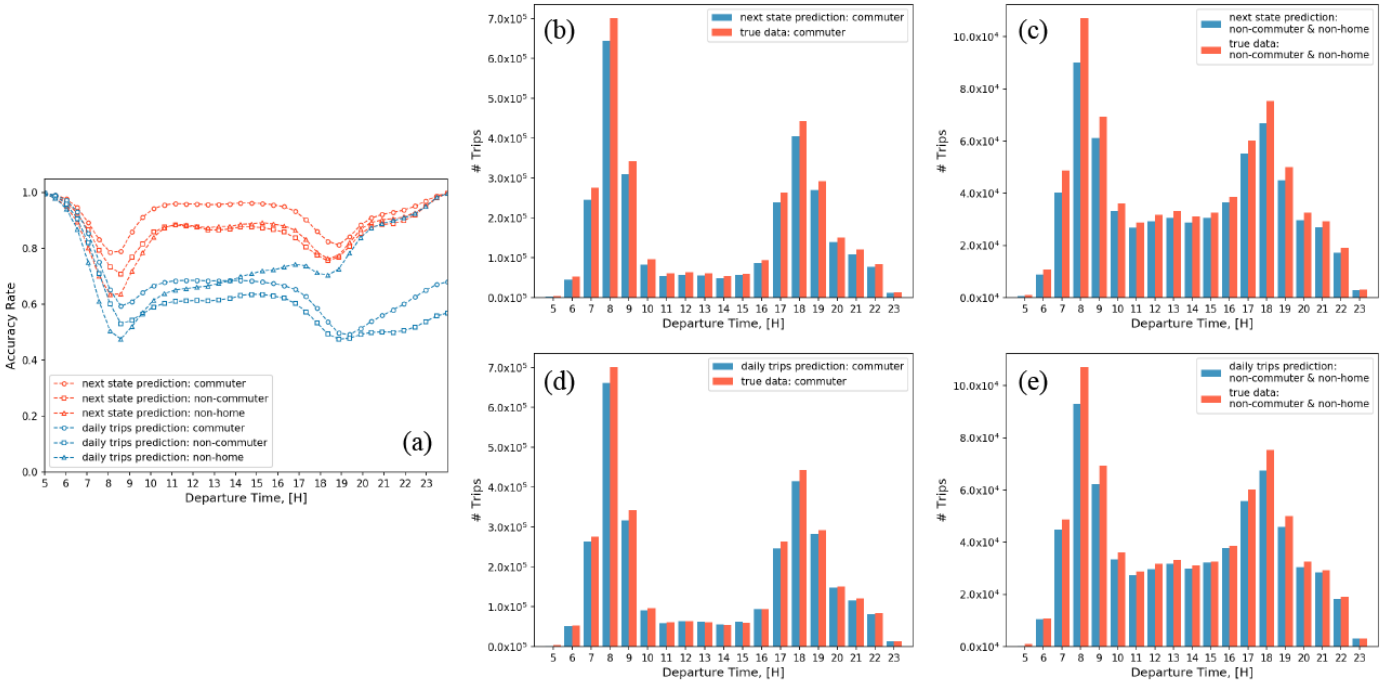
(a)
Accuracy Rate
Departure Time, [H]
next state prediction: commuter
next state prediction: non-commuter
next state prediction: non-home
daily trips prediction: commuter
daily trips prediction: non-commuter
daily trips prediction: non-home
(b)
Trips
Departure Time, [H]
next state prediction: commuter
true data: commuter
(c)
next state prediction: non-commuter & non-home
true data: non-commuter & non-home
(d)
daily trips prediction: commuter
true data: commuter
(e)
daily trips prediction: non-commuter & non-home
true data: non-commuter & non-home

Fig.4

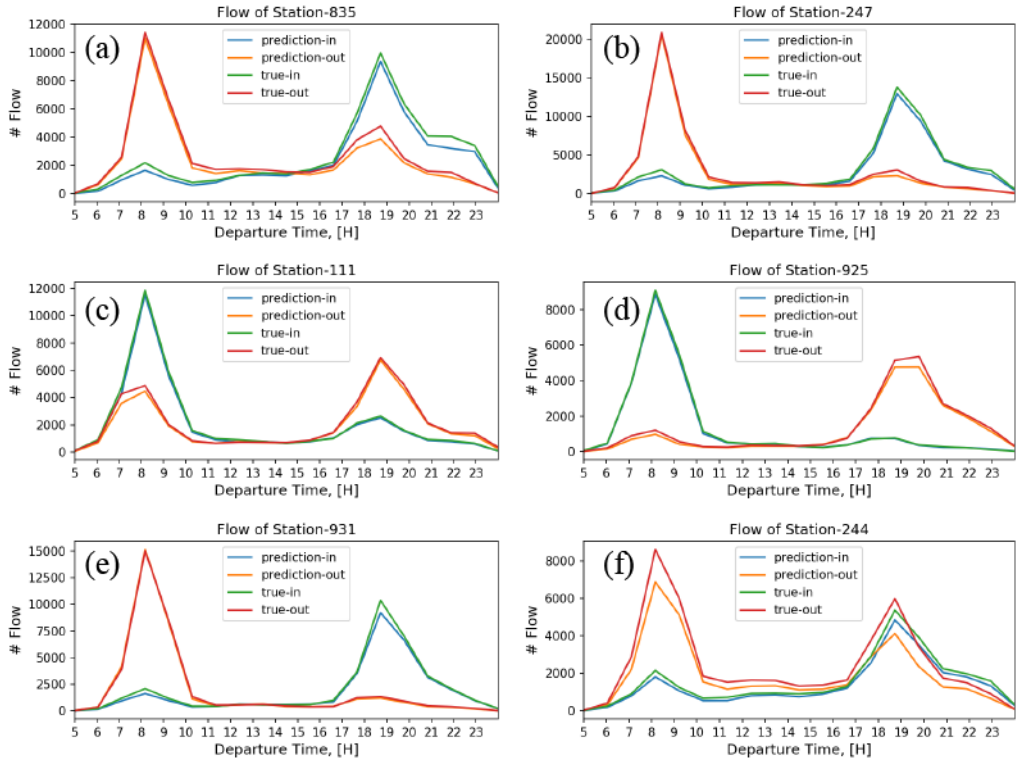
Flow of Station-835
(a)
Flow of Station-247
(b)
Flow of Station-111
(c)
Flow of Station-925
(d)
Flow of Station-931
(e)
Flow of Station-244
(f)
prediction-in
prediction-out
true-in
true-out
Flow
Departure Time, [H]

Fig.5