1. INTRODUCTION

- Pedestrians at roundabout
  - One of the most important factors significantly affecting entry capacity.
  - Roundabouts in Japan
    - Physical splitter island is not always available due to limited space.
    - Not all drivers follow the traffic rule and give priority to far-side pedestrians when physical splitter island is uninstalled.

- In the existing method, pedestrian impact on entry capacity is considered as an adjustment $f_{ped}$ (Brilon, et al, 1993) which is developed for standard roundabouts, e.g. with physical splitter island.

- An estimation method is needed for considering Japanese characteristics.

- Several influencing factors will be considered in new estimation method.
  - Physical splitter island,
  - Far-side pedestrian directional ratio $r_{far}$
  - Far-side pedestrian recognition rate FPRR
    (FPRR=1 recognized far-side pedestrians)
  - Queue of circulating vehicles due to pedestrians across downstream exits.

Objectives

- To appropriately estimate entry capacity under pedestrian impact in Japanese situation considering various influencing factors by microscopic simulation and theoretical model.

2. METHODOLOGY AND RESULTS

2.1 Simulation study (VISSIM 5.40)

- Basic information
  - Input conditions of traffic flow
    - $Q_{ped}$ = 100 veh/h
    - $Q_{cir}$ = 100 veh/h
    - $N_{cir}$ = 100 veh/h
    - $t_{ped}$ = 0.3 s
    - $t_{cir}$ = 0.1 s

- Simulation design regarding influencing factors to be examined.
  - Physical splitter island: with/without
    - $r_{far}$: 0, 0.5, 1
    - FPRR: 0, 0.5, 1

- Calibration
  - Parameters are calibrated based on empirical data which is observed in Japan.

- Results and discussions: pedestrian flow=200ped/h for example

2.2 Theoretical model

- Concept of the model

2.3 Comparison of the simulation and theoretical methods

- With physical splitter island
  - Pedestrian: 50ped/h
  - Without physical splitter island
    - Pedestrian: 100ped/h
    - Pedestrian: 200ped/h

Simulation is the reference of entry capacity. The comparison results showed that the proposed model can provide reliable reason either under the condition with splitter island or without physical splitter island.

The limitations of two proposed methods are considered as follows.

1. The discharge time of queue in circulating roadway is necessary to be considered
2. Several influencing factors, i.e. priority of roads, turning ratio, queuing exit vehicles at the lag which have impact on headway distribution of circulating vehicles should be considered.

3. CONCLUSION AND FUTURE WORK

- Two methods were proposed considering characteristics of roundabouts in Japan, e.g. without physical splitter island and several influencing factors, e.g. $f_{ped}$ and FPRR.
- In view of the limitations of the current models, improvement will be conducted in future.