# Passenger Transportation Model

Application to Low Carbon Society toward 2050 Project

Tomoki Ehara (MHIR)

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## 1. Background

- Passenger transportation is one of the key factor in terms of the energy consumption
- Passenger transportation is dependent on the population (density) and structure of the city.
- The impact of population distribution on future passenger transportation need to be simulated.

### 2. General Description

- Closely related to Population Dynamic Model
- •Calculation Program :MS-Access(tentative)  $\rightarrow$  GAMS(future)
- •Input from: Population Dynamic Model (Population by landuse) CGE Economic Model (Employment rate)
- Output: Passenger Transportation by mode (person-km)
- •Some Coefficients need to be assumed outside the model
- •Two components: Intra-regional/Inter regional transportation

# 3. Definition of the terms

•Intra-regional Transport :Trip within the daily living area

[Purposes]

- ·Commute (to work)
- Commute (to School)
- ·Return (to home)
- Commercial
- Private (ex. shopping)
- ·Sightseeing & Leisure

#### [Mode]

- ·Passenger cars
- ·Railways
- ·Buses
- ·Walk and bike

Inter-regional Transport
:Trip over the daily living area

#### [Purpose]

- •Commercial (Business trip)
- Sightseeing (Leisure)
- ·Private (Homecoming)

\*Note:Commuting is excluded

#### [Mode]

- Aviation (Airplane)
- ·Railways (Train)
- Maritime (Ship)
- ·Buses
- Passenger cars



### 4. Data Sources

Data	Source
a) License rate	Past record: National Police Agency
	Future estimation: MLIT
b) Employment rate	Past record: Statistics Bureau
c) Inter*/Intra** regional	*MLIT PT survey data:90, 95, 00
Transportation Coef.	(Arterious Transportation Survey)
>Trip Generation >Model Share	**MLIT PT survey data:87, 92, 99
>Avr. Trip distance	(National Urban PT Survey)
d)Net-Total Conversion ratio	Estimated from Total demand (e) and PT data summation
e)Total Demand	Domestic Transportation Statistics Handbook (MLIT)

MLIT: Ministry of Land Infrastructure and Transport

## 4. Output(1)

(Intra-area transportation demand by purpose: mil.person-km)



# 4. Output(2)

(Intra-area transportation demand by landuse: mil.person-km)



\*TMUC: Three Major Urban Commuting Area, which include Tokyo, Osaka and Nagoya metropolitan \*LCU: Local Central Metropolitan \*LCC: Local Core City

## 4. Output(3)

(Inter-area transportation demand by mode: mil.person-km)



### 4. Output(4)

(Total transportation demand by mode: mil.person-km)

