Exercise 7. Mode choice model

Introduction

At this stage, traveller has to make a decision which transport mode to choose for a trip between i^{th} (yours) and j^{th} (your friend's) traffic zone. Traveller considers two options: public transport (*PuT*) and private transport (*PrT*). This decision is made based on subjective (perceived) travel costs.

Each decision-maker perceives trip costs differently. Perception depends on individual preferences, habits, etc. In this case, a discrete choice model is used which is a logit-based model. That model describes the probability of selecting a given option from the set of analyzed alternatives. In our case, the private transport (PrT) choice probability is calculated using the following logit formula:

$$p_{PrT}^{ij} = \frac{e^{\mu\left(C_{ij}^{PrT}\right)}}{e^{\mu\left(C_{ij}^{PuT}+5\right)} + e^{\mu\left(C_{ij}^{PrT}\right)}}$$

$$p_{PrT}^{ij} + p_{PuT}^{ij} = 1$$

Exercise

For generalized travel costs of the trip between i^{th} and j^{th} TAZs which you calculated in **exercise 6**, please now estimate mode choice probability (*PrT* and *PuT*) in <u>afternoon peak hour</u>. Use a logit model with an assumed sensitivity parameter µ= – 0,1.

Additionally, please calculate mode choice probability for two selected scenarios and briefly describe results in the 'Comments' column:

1. ticket price is doubled,
2. ride time by PuT decreases by 20%,
3. ride time by PrT increases by 50%,
4. sensitivity parameter changes to µ= – 0,5.

Results

Transport mode	Share [%]	Scenario nr …		Scenario nr …	
		Share [%]	Comments	Share [%]	Comments
PuT					
PrT					