

**Exercise 5: Modal split – share of walking trips****Introduction**

OD matrix calculated in **exercise 4** indicates the total number of trips between particular traffic zones. These trips can be made by various modes, principally: walk, public transport or car (as a passenger or a driver). As shares of other modes of transport (TAXI, motorbike, motorcycle) in Krakow are relatively low, they are usually not analyzed at modal split stage.

Mode choice (modal split) stage determines for each OD pair:

- percentage share of trips made by each mode,
- choice probability of each particular mode.

We utilise a two-step mode choice model. In the first step, we estimate the share of non-motorized trips – i.e. walking trips – whose share is strongly related to trip distance.

**Exercise**

Please use below formula to calculate share of walking trips between traffic zones  $i$  (i.e. given zone) and  $j$ .

$$u_p = \begin{cases} 1 & \text{if } l_{ij} \leq 0.3 \\ e^{-(l_{ij}/1.8)^2} & \text{if } 0.3 < l_{ij} \leq 3.4 \\ 0 & \text{if } l_{ij} > 3.4 \end{cases}$$

where:

$u_p$  – share of walking trips [-],

$l_{ij}$  – distance between traffic zones  $i$  and  $j$  (between zone centroids), measured over the network graph [km],

$j^{\text{th}}$ zone	Distance to $j^{\text{th}}$ zone [km]	Share of walking trips [%]	Comments
Selected neighbouring traffic zone			
The nearest high school			
The nearest shopping mall			

Questions:

1. Please estimate share of walking trips in case the distance to high school would be doubled.
  2. Please estimate share of walking trips in case the distance to shopping mall would be reduced by half.
- Please write down answers in the „Comments” column.