Seminar 10:

Multi-Criteria Decision Aiding

Problem 1:

The OECD Better Life Index allows to compare well-being across countries, based on 11 topics the OECD has identified as essential

(http://www.oecdbetterlifeindex.org/). The indicators include (among others):

  a) household income (USD)

  b) housing expediture (%)

  c) employment rate (%)

  d) life expectancy (years)

  e) homicide rate (per 100 000 inhabitants)

The values of indicators for 5 alternatives (Czech Republic, Austria, Germany, Poland, Slovak Republic) are given in the table:

alternatives	criteria				
	income	hous. exp.	employm.	life exp.	homicide
Czech Republic	21103	24	72	78,7	0,8
Austria	32544	21	72	81,3	0,4
Germany	33652	20	75	80,7	0,4
Poland	18906	23	65	76,7	0,8
Slovak Republic	20256	24	65	77,6	1,3

- Find non-dominated alternatives.

- Determine the weights using Fuller's triangle.

- Determine the weights using Saaty's method. Compare the results.

- Rank the alternatives using WSA and TOPSIS method.

Problem 2: Download add-in SANNA from

https://webhosting.vse.cz/jablon/

and open it in MS Excel. Repeat the tasks of Problem 1 using SANNA. Compare obtained results with results of methods ELECTRE I (use preference and dispreference tresholds $c^* = 0,5$, $d^* = 0,5$) and PROMETHEE (use linear generalized criterion and tresholds $p_1^* = 10000$, $p_2^* = 2$, $p_3^* = 2$, $p_4^* = 1$, $p_5^* = 0,2$).