

Assignment 5: Introduction to activity base model (ABM)

Logistics

- Prepare a 3-to-4-page (Font size: 10 to 12 point, single spacing) report in Microsoft Word.
- Please note that the weightage of this assignment will be double from that of the previous assignments.
- Please note that you can work in a group of 2 members for the assignment.
- You can divide the work among yourselves. *But the assignment should clearly identify which portion has been written and analyzed by whom. Without a clear statement about the member contribution the assignment will not be graded.*

Reference Material

For this assignment you will need to read the attached report first titled “A system of activity-based models for Portland, Oregon.” The report is a bit dated but the first of its kind and most importantly the model system discussed in the report uses only multinomial logit kernel as the building block. Hence it will be easier for you to digest.

Also, note that this is a large report, but you should be able to answer the assignment questions if you read up to page 22. But I highly recommend you read the full report during your leisure to harness your knowledge about ABMs in general.

Please do not copy any sentence from the report. Sever penalty will result if any sentence is directly copied from the report.

Submission

1. Day activity pattern model

- a. Write down the alternatives for the day activity pattern model.
- b. How many utility equations do you need to code if you want to estimate a multinomial logit model for the full day activity pattern?
- c. Identify the variables that the report has used for the day activity pattern model.
- d. Do you think the identified variable set in question c is logical to be included in the utility of the day activity pattern model? Explain why or why not.

Hint: You can refer to section **3.4 of the executive summary** of the report and **Table 1 of appendix C** specially for identifying the pertinent variables.

2. Tour time of day model

- a. How many alternatives are used for the tour time of day model? What are the alternatives? Explain the process of deriving the alternatives for the tour time of day model.
- b. Identify the variables that the report has used for the tour time of day model.
- c. Do you think the identified variable set in question b is logical to be included in the utility of the tour time of day model? Explain why or why not.

Hint: You can refer to section **3.5 of the executive summary of the report** and **Table 2 and Table 3 of appendix C** specially for identifying the pertinent variables.

3. Home-based tour primary destination and mode choice model

- a. How many alternatives are used for this model? Explain the process of deriving the combined alternatives for the joint destination and mode choice model.
- b. How are the destination zones stratified from a full set of 1244 zones. *Please explain the process in your own words and don't copy from the paper.*
- c. Identify the variables that the report has used for the home-based tour primary destination and mode choice model.
- d. Do you think the identified variable set in question c is logical to be included in the utility of the primary destination and mode choice model? Explain why or why not.

Hint: You can refer to section **3.6 of the executive summary of the report** and **Table 5 of appendix C** specially for identifying the pertinent variables.