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## LAB SESSION 5

The topic of this exercise session is the *Multinomial Logit* model. You will estimate different model specifications for the *Airline Itinerary Choice* (Boeing) case study.

First, download the file `MNL_Airline.zip` (under *Case study 5*). It contains:

1. the `MNL_airline_generic.py` file with an example model specification,
  - which is a MNL model among three flight itineraries, and
  - this is your base model. You will use it as a template to perform more modeling exercises.
2. the description and interpretation of the base model, as well as some extensions of it that we propose (`MNL_Airline_2018.pdf`).

Now, you can use the `MNL_airline_generic.py` file as a template to perform the following tasks.

### Practise

Follow the description in the `MNL_Airline.pdf` file and for each model described there:

1. Try to understand the proposed specification.
2. Try to code the proposed specification. You should create the following files:
  - (a) `MNL_airline_specific.py`
  - (b) `MNL_airline_socioecon.py`
  - (c) `MNL_airline_socioecon_mi.py`
3. Estimate the model specifications. You should obtain the following files:
  - (a) `MNL_airline_specific.html`
  - (b) `MNL_airline_socioecon.html`
  - (c) `MNL_airline_socioecon_mi.html`
4. In order to verify that your code is correct, compare the results that you obtain with the ones that we provide in the description.

### Create and analyze

Chose one of the above models as a base and develop new model specifications using your own hypotheses. We suggest the following:

1. Include characteristics of the decision makers.

2. Include interactions of attributes of the alternatives with the characteristics of the individuals.

Then,

1. Explain what each of your proposed specifications captures: what are the underlying hypotheses that you want to test through each specification?
2. Estimate the models you developed and interpret the obtained results: comment on the signs of the parameters. Are the results according to your expectations?

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