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Exercises session 12

The topics of this and the following lab session are validation and forecasting. This week we will focus on validation.

After you specify your best model for the Optima dataset, following the same tasks as for the previous lab sessions, proceed with the following.

### Validation

1. Compare predicted vs. observed shares for different market segments.
2. Perform an outlier analysis (use Biosim for generating the probabilities and Excel for the analysis). Try to find possible causes for low probabilities and, if possible, modify the model specification in order to improve the model.

### Short tutorial to perform forecasting analysis using Biosim and Excel

1. Estimate the base model  
Use one of the models you developed. Choose a model you are confident with, a model that is complex enough to mimic the behavior of travelers in Switzerland.
2. Produce the choice probabilities using Biosim  
The estimation you performed with Biogeme at step 1 generates a file *yourModel.res*. Rename it *yourModel.res.mod*. Open it and try to understand what it represents.  
Run Biosim on that file using the following command: `biosim myModel_res myData.dat`. It creates a file called *myModel\_res.enu*. This file contains the probabilities. Open it and try to understand what it represents.  
Open the file *myModel\_res.enu* and paste its content on the right of the database *myData.dat*. Now, you have an Excel sheet with the original data and the choice probabilities for each alternatives from your model.
3. Use Excel to compute market shares  
From the Excel sheet, you can compute market shares for each mode by summing the probabilities of each respondent.  
You can also compute market share using a segmentation, e.g., based on income groups.