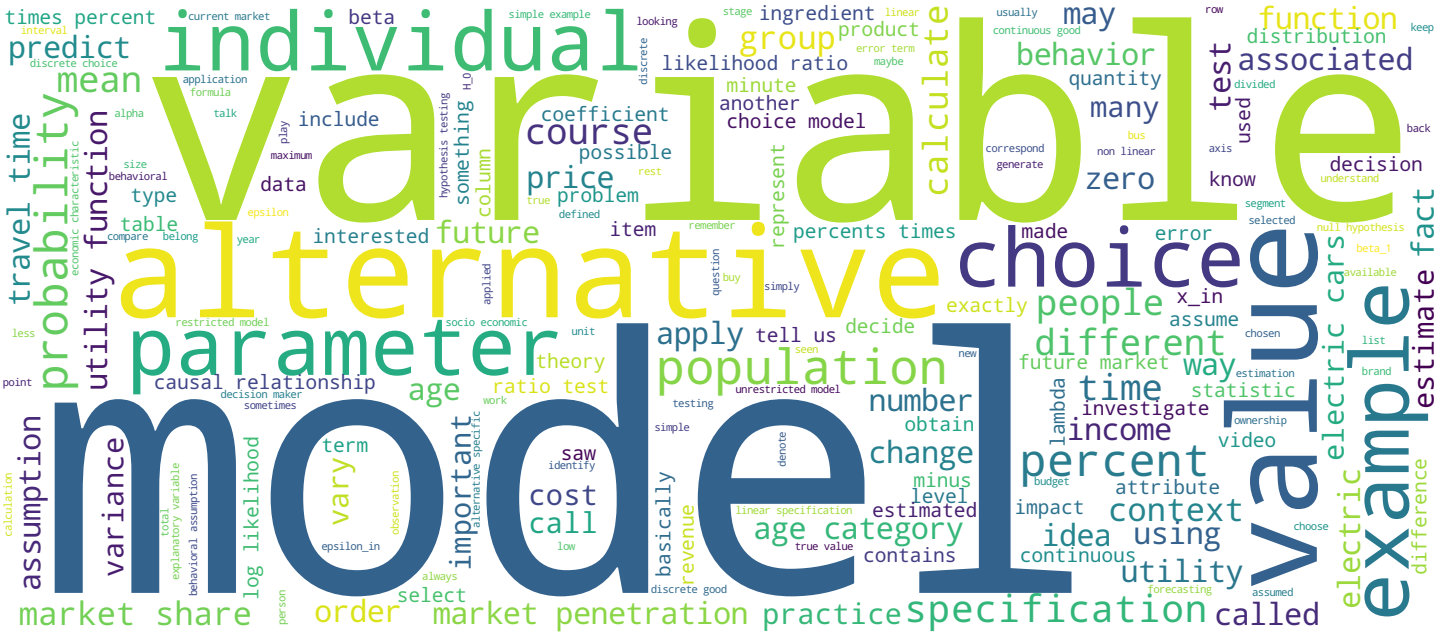
Introduction to behavior modeling

Simple example

Michel Bierlaire

Introduction to choice models

ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE



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EPFL

Simple example: forecasting

Hello, at this stage we have a model. We have collected data. We have made some behavioral assumptions. We have specified a model, estimated it's parameters. We have tested the model. And now we are ready to use the model. We will use it to forecast the future market shares of electric cars.

Notes

Summary

0m 04s

Future scenario

Age structure will change in the future

Age group	20–39	40–64	65+
Current share	36 %	44%	20%
Future share	25 %	50%	25%
Market penetration	7.2%	5%	1%

Future total market penetration $= 25\%\ 7.2\% + 50\%\ 5\% + 25\%\ 1\% = 4.55\%$

Let's first look at the present situation. So our model is able to predict for each age category the market penetration of electric cars in the population. So as of today, there are 36 percents of the population who is in the first age category and they represent a market penetration of 7.2 percents. And we have the same values for the other age categories. As we saw before, we can easily calculate the current market penetration over the entire population. In this case, it's equal to 5 percent. Now if you want to look into the future, well we need to look at a future scenario. For example, we can talk to experts in demography will tell us how the age structure of the population will change in the future. For example they will tell us that in five years from now, 25 percents of the population will be between 20 and 39, 50 percents will be between 40 and 64, and 25 percents will be 65 and above. So from this number, knowing the market penetration per age category which is given by the model, we can actually predict the future share of electric cars in the population by doing the exact same calculation as for the current scenario. We have 25 percents times 7.2 percents.

Notes

Summary

0m 24s

Future scenario

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Future total market penetration $= 25\%\ 7.2\% + 50\%\ 5\% + 25\%\ 1\% = 4.55\%$

50 percents times 5 percents and 25 percents times 1 percent. And altogether, we get a future market share for electric car which is 4.55 percents. Of course you can play with as many scenarios as you want. You can calculate the market shares for different types of scenarios, and investigate how the market shares will change in the future.

Notes

Summary

1m 54s

Forecasting

- Causal relationship does not vary over time.
- Characterized by the model specification, including the values of its parameters.
- Values of the explanatory variables evolve over time.

When we do forecasting, we assume that something does not change. In this context, we assumed that the causal relationship between the variables, age and ownership of an electric car, does not vary over time. This causal relationship is captured by the model specification, including the value of its parameters. This does not vary over time. But of course the values of the explanatory variables like age in this case, vary over time. And because we have this causal relationship which is stable, we can predict the future values of the explained valuable, of the dependent variable, using the model as we did in this example.

Notes

Summary

2m 18s

This example is of course very simplistic. It cannot really be applied for concrete applications. But it contains all the ingredients that are necessary for modeling choices in practice. Now in the rest of the course, we will apply the same ideas, we will investigate the same ingredients but on realistic data, real data actually, and realistic models.

Notes

Summary

3m 03s