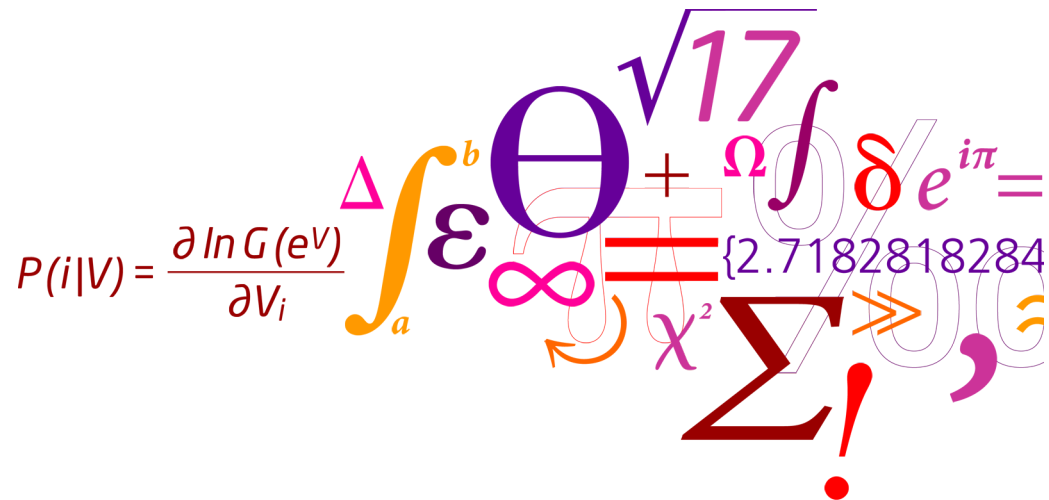


42178 – Transport System Analysis

Comments on PF III

November 26th, 2021



A collage of mathematical symbols including \int , ϵ , Δ , Θ , $\sqrt{17}$, Ω , $\delta e^{i\pi}$, ∞ , χ^2 , Σ , $!$, and the number $\{2.7182818284\}$.

$$P(i|V) = \frac{\partial \ln G(e^V)}{\partial V_i}$$

Comments on PF III – exercise 1

- 1.1)
 - Comment on signs and significance of cost and time
 - Both models have reasonable signs. The models cannot be compared using LR so use AIC, BIC or LL directly. The latter is possible because of the models having the same number of parameters. I decided for the model with $\ln(\text{cost})$.
- 1.2)
 - Here the observed shares and the predicted shares should be the same, i.e. 0.194, 0.223, 0.547, 0.036.
- 1.3)
 - The units are DKK and minutes. For the log cost model it gives mode specific values of 0.064, 0.129, 0.512, 0.844. These could be aggregated into a probability weighted overall average.

Comments on PF III – exercise 1

- 1.4)
 - Here you can calculate either elasticities or probability weighted elasticities. They have the same signs but are different in magnitude. Remember to comment on these based on the intuition behind elasticities, i.e. the percentage change in demand/probs given a percentage change in a variable.
- 1.5)
 - Here you should both calculate a 2 by 4 matrix with observed market shares by gender. Then predict shares by the new model. These will match the overall shares from 1.2. If you also predict by gender, you will see that they match gender shares for PT, which the previous model did not.

Comments on PF III – exercise 1

- 1.6)
 - Here you should find a drop in the car market share from 0.55 to 0.51.
- 1.7)
 - Explain how you add the new alternative. The new alternative get a share around 0.30 if you reuse the car parameters for the new alternative. It is seen that the new car steals market shares from all modes and probably too much from non-car modes. This could be solved by a nested logit model where car and new car where nested.

Comments on PF II – exercise 2

- 2.1
 - Comment on sign and significance of time and cost
 - Comment on μ 's
 - Compare sensible models using LL, AIC or BIC
 - Based on this, I decided for model 4

- 2.2
 - Describe calculations and present market shares
 - 0.19, 0.22, 0.55, 0.04

 - Describe calculations and present VoTs
 - 0.07, 0.14, 0.56, 0.92

Comments on PF II – exercise 2

- 2.3
 - Remember that we have not looked at analytic elasticities for nested logit so you have to use simulation.
 - Based on simulation with a 10% cost increase, I get the following elasticities 0.20, 0.15, -0.15, 0.19.

- 2.4
 - Remember that in a calibration, you do not have to fix one of the ASC to zero.
 - The calibration should converge after a few iterations where you should get approx. The given market shares
 - In the scenario where time and cost improve for the new car, the market share for the new car increase to 0.146 while the other market shares decrease.