

# Technical Report for 1.2 Exact Number of Tour Model

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## Model Description

The exact number of tour models will predict the exact number of tour for each of the tour purposes that has value 1 as predicted by day pattern model. There are four models in this section (work tour, education tour, shopping tour and other tour). Suppose the day pattern model predicts that the day pattern No. 12 (see `DayPatternChoiceSet51.txt`) is selected where `WorkT=0`, `EduT=0`, `ShopT=1` and `OtherT=1`, then we need to run models to determine the exact number of shopping tour and other tour.

## Choice Set

Different model has different choice set:

- Work tour: alternatives are 1 tour, 2 tours, 3 tours.
- Education tour: alternatives are 1 tour and 2 tours.
- Shopping tour: alternatives are 1 tour and 2 tours.
- Other tour: alternatives are 1 tour, 2 tours, 3 tours.

For education and shopping tour, we need only to choose between 1 and 2 tours.

## Model Structure

All 4 models are MNL model. (Although in specification for work tour and other tour, nests are created, but the nest parameters are fixed to one, which is equivalent to MNL)

For **exact number of work tour**:

*#systematic utility for V1 (1 tour, base alternative)*

V\_1=0

*#systematic utilities for V2-V3 (i=2,3)*

*#Notice: The utility function contains all the parameters*

*#no matter estimated or not.*

```
V_i = beta_cons_work_i +
      beta_parttime_work_i * parttime +
      beta_selfemployed_work_i * selfemployed +
      beta_universitystudent_work_i * universitystudent +
      beta_homemaker_work_i * homemaker +
      beta_retired_work_i * retired +
      beta_unemployed_work_i * unemployed +
      beta_nationalservice_work_i * nationalservice +
      beta_voluntary_work_i * voluntary +
      beta_domestic_work_i * domestic +
      beta_otherworker_work_i * otherworker +
      beta_student16_work_i * student16 +
      beta_student515_work_i * student515 +
      beta_child4_work_i * child4 +
      beta_age2025_work_i * age2025 +
      beta_age2635_work_i * age2635 +
      beta_age5165_work_i * age5165 +
      beta_maleage4_work_i * maleage4 +
      beta_maleage515_work_i * maleage515 +
      beta_femalenone_work_i * femalenone +
      beta_femaleage4_work_i * femaleage4 +
      beta_femaleage515_work_i * femaleage515 +
      beta_onlyadults_work_i * onlyadults +
      beta_onlyworkers_work_i * onlyworkers +
      beta_income_work_i * income +
      beta_workathome_work_i * workathome +
      beta_caravail_work_i * caravail +
      beta_motoravail_work_i * motoravail +
      beta_logsum_work_i * worklogsum
```

*#Estimated values for all betas*

*#Notice: the betas that not estimated are fixed to zero.*

beta\_parttime\_work\_2 = Beta('beta\_parttime\_work\_2',0,-100,100,1) = 0

beta\_parttime\_work\_3 = Beta('beta\_parttime\_work\_3',0,-100,100,1) = 0

beta\_selfemployed\_work\_2 = Beta('beta\_selfemployed\_work\_2',0,-100,100,1) = 0

beta\_selfemployed\_work\_3 = Beta('beta\_selfemployed\_work\_3',0,-100,100,1) = 0

```

beta_universitystudent_work_2 = Beta('beta_universitystudent_work_2',0,-100,100,1) = 0
beta_universitystudent_work_3 = Beta('beta_universitystudent_work_3',0,-100,100,1) = 0

beta_homemaker_work_2 = Beta('beta_homemaker_work_2',0,-100,100,1) = 0
beta_homemaker_work_3 = Beta('beta_homemaker_work_3',0,-100,100,1) = 0

beta_retired_work_2 = Beta('beta_retired_work_2',0,-100,100,1) = 0
beta_retired_work_3 = Beta('beta_retired_work_3',0,-100,100,1) = 0

beta_unemployed_work_2 = Beta('beta_unemployed_work_2',0,-100,100,1) = 0
beta_unemployed_work_3 = Beta('beta_unemployed_work_3',0,-100,100,1) = 0

beta_nationalservice_work_2 = Beta('beta_nationalservice_work_2',0,-100,100,1) = 0
beta_nationalservice_work_3 = Beta('beta_nationalservice_work_3',0,-100,100,1) = 0

beta_voluntary_work_2 = Beta('beta_voluntary_work_2',0,-100,100,1) = 0
beta_voluntary_work_3 = Beta('beta_voluntary_work_3',0,-100,100,1) = 0

beta_domestic_work_2 = Beta('beta_domestic_work_2',0,-100,100,1) = 0
beta_domestic_work_3 = Beta('beta_domestic_work_3',0,-100,100,1) = 0

beta_otherworker_work_2 = Beta('beta_otherworker_work_2',0,-100,100,1) = 0
beta_otherworker_work_3 = Beta('beta_otherworker_work_3',0,-100,100,1) = 0

beta_student16_work_2 = Beta('beta_student16_work_2',0,-100,100,1) = 0
beta_student16_work_3 = Beta('beta_student16_work_3',0,-100,100,1) = 0

beta_student515_work_2 = Beta('beta_student515_work_2',0,-100,100,1) = 0
beta_student515_work_3 = Beta('beta_student515_work_3',0,-100,100,1) = 0

beta_child4_work_2 = Beta('beta_child4_work_2',0,-100,100,1) = 0
beta_child4_work_3 = Beta('beta_child4_work_3',0,-100,100,1) = 0

#Adult age group

beta_age2025_work_2 = Beta('beta_age2025_work_2',0,-100,100,1) = 0
beta_age2025_work_3 = Beta('beta_age2025_work_3',0,-100,100,1) = 0

beta_age2635_work_2 = Beta('beta_age2635_work_2',0,-100,100,1) = 0
beta_age2635_work_3 = Beta('beta_age2635_work_3',0,-100,100,1) = 0

beta_age5165_work_2 = Beta('beta_age5165_work_2',0,-100,100,1) = 0
beta_age5165_work_3 = Beta('beta_age5165_work_3',0,-100,100,1) = 0

```

```

#Adult gender/children

```

```

beta_maleage4_work_2 = Beta('beta_maleage4_work_2',0,-100,100,1) = 0
beta_maleage4_work_3 = Beta('beta_maleage4_work_3',0,-100,100,1) = 0

beta_maleage515_work_2 = Beta('beta_maleage515_work_2',0,-100,100,1) = 0
beta_maleage515_work_3 = Beta('beta_maleage515_work_3',0,-100,100,1) = 0

beta_femalenone_work_2 = Beta('beta_femalenone_work_2',0,-100,100,0) = -0.353
beta_femalenone_work_3 = Beta('beta_femalenone_work_3',0,-100,100,1) = 0

beta_femaleage4_work_2 = Beta('beta_femaleage4_work_2',0,-100,100,0) = -1.53
beta_femaleage4_work_3 = Beta('beta_femaleage4_work_3',0,-100,100,1) = 0

beta_femaleage515_work_2 = Beta('beta_femaleage515_work_2',0,-100,100,0) = 0.112
beta_femaleage515_work_3 = Beta('beta_femaleage515_work_3',0,-100,100,0) = -1.08

#Household composition
beta_onlyadults_work_2 = Beta('beta_onlyadults_work_2',0,-100,100,1) = 0
beta_onlyadults_work_3 = Beta('beta_onlyadults_work_3',0,-100,100,1) = 0

beta_onlyworkers_work_2 = Beta('beta_onlyworkers_work_2',0,-100,100,1) = 0
beta_onlyworkers_work_3 = Beta('beta_onlyworkers_work_3',0,-100,100,1) = 0

#Personal income
beta_income_work_2 = Beta('beta_income_work_2',0,-100,100,1) = 0
beta_income_work_3 = Beta('beta_income_work_3',0,-100,100,1) = 0

#Others
beta_workathome_work_2 = Beta('beta_workathome_work_2',0,-100,100,0) = 1.99
beta_workathome_work_3 = Beta('beta_workathome_work_3',0,-100,100,1) = 0

beta_caravail_work_2 = Beta('beta_caravail_work_2',0,-100,100,0) = 0.251
beta_caravail_work_3 = Beta('beta_caravail_work_3',0,-100,100,0) = 0.725

beta_motoravail_work_2 = Beta('beta_motoravail_work_2',0,-100,100,0) = 0.647
beta_motoravail_work_3 = Beta('beta_motoravail_work_3',0,-100,100,1) = 0

beta_logsum_work_2=Beta('beta_logsum_work_2',0,-100,100,0) = 0.355
beta_logsum_work_3=Beta('beta_logsum_work_3',0,-100,100,0) = 0.172

beta_cons_work_2=Beta('beta_cons_work_2',0,-100,100,0) = -9.61
beta_cons_work_3=Beta('beta_cons_work_3',0,-100,100,0) = -6.98

```

For exact number of education tour:

*#systematic utility for V1 (1 tour, base alternative)*

V\_1=0

*#systematic utilities for V2 (i=2)*

*#Notice: The utility function contains all the parameters*

*#no matter estimated or not.*

```
V_i = beta_cons_edu_i +
      beta_parttime_edu_i * parttime +
      beta_selfemployed_edu_i * selfemployed +
      beta_universitystudent_edu_i * universitystudent +
      beta_homemaker_edu_i * homemaker +
      beta_retired_edu_i * retired +
      beta_unemployed_edu_i * unemployed +
      beta_nationalservice_edu_i * nationalservice +
      beta_voluntary_edu_i * voluntary +
      beta_domestic_edu_i * domestic +
      beta_otherworker_edu_i * otherworker +
      beta_student16_edu_i * student16 +
      beta_student515_edu_i * student515 +
      beta_child4_edu_i * child4 +
      beta_age2025_edu_i * age2025 +
      beta_age2635_edu_i * age2635 +
      beta_age5165_edu_i * age5165 +
      beta_maleage4_edu_i * maleage4 +
      beta_maleage515_edu_i * maleage515 +
      beta_femalenone_edu_i * femalenone +
      beta_femaleage4_edu_i * femaleage4 +
      beta_femaleage515_edu_i * femaleage515 +
      beta_onlyadults_edu_i * onlyadults +
      beta_onlyworkers_edu_i * onlyworkers +
      beta_income_edu_i * income +
      beta_workathome_edu_i * workathome +
      beta_caravail_edu_i * caravail +
      beta_motoravail_edu_i * motoravail +
      beta_logsum_edu_i*edulogsum
```

*#Estimated values for all betas*

*#Notice: the betas that not estimated are fixed to zero.*

```
beta_parttime_edu_2 = Beta('beta_parttime_edu_2',0,-100,100,1) = 0
```

```
beta_selfemployed_edu_2 = Beta('beta_selfemployed_edu_2',0,-100,100,1) = 0
```

```
beta_universitystudent_edu_2 = Beta('beta_universitystudent_edu_2',0,-100,100,1) = 0
```

```

beta_homemaker_edu_2 = Beta('beta_homemaker_edu_2',0,-100,100,1) = 0
beta_retired_edu_2 = Beta('beta_retired_edu_2',0,-100,100,1) = 0
beta_unemployed_edu_2 = Beta('beta_unemployed_edu_2',0,-100,100,1) = 0
beta_nationalservice_edu_2 = Beta('beta_nationalservice_edu_2',0,-100,100,1) = 0
beta_voluntary_edu_2 = Beta('beta_voluntary_edu_2',0,-100,100,1) = 0
beta_domestic_edu_2 = Beta('beta_domestic_edu_2',0,-100,100,1) = 0
beta_otherworker_edu_2 = Beta('beta_otherworker_edu_2',0,-100,100,1) = 0
beta_student16_edu_2 = Beta('beta_student16_edu_2',0,-100,100,0) = 0.605
beta_student515_edu_2 = Beta('beta_student515_edu_2',0,-100,100,0) = 2.49
beta_child4_edu_2 = Beta('beta_child4_edu_2',0,-100,100,1) = 0

#Adult age group
beta_age2025_edu_2 = Beta('beta_age2025_edu_2',0,-100,100,1) = 0
beta_age2635_edu_2 = Beta('beta_age2635_edu_2',0,-100,100,1) = 0

beta_age5165_edu_2 = Beta('beta_age5165_edu_2',0,-100,100,1) = 0

#Adult gender/children
beta_maleage4_edu_2 = Beta('beta_maleage4_edu_2',0,-100,100,1) = 0
beta_maleage515_edu_2 = Beta('beta_maleage515_edu_2',0,-100,100,1) = 0
beta_femaleneone_edu_2 = Beta('beta_femaleneone_edu_2',0,-100,100,1) = 0
beta_femaleage4_edu_2 = Beta('beta_femaleage4_edu_2',0,-100,100,1) = 0
beta_femaleage515_edu_2 = Beta('beta_femaleage515_edu_2',0,-100,100,1) = 0

#Household composition
beta_onlyadults_edu_2 = Beta('beta_onlyadults_edu_2',0,-100,100,1) = 0
beta_onlyworkers_edu_2 = Beta('beta_onlyworkers_edu_2',0,-100,100,1) = 0

```

*#Personal income*

beta\_income\_edu\_2 = Beta('beta\_income\_edu\_2',0,-100,100,1) = 0

*#Others*

beta\_workathome\_edu\_2 = Beta('beta\_workathome\_edu\_2',0,-100,100,1) = 0

beta\_caravail\_edu\_2 = Beta('beta\_caravail\_edu\_2',0,-100,100,1) = 0

beta\_motoravail\_edu\_2 = Beta('beta\_motoravail\_edu\_2',0,-100,100,1) = 0

beta\_logsum\_edu\_2=Beta('beta\_logsum\_edu\_2',0,-100,100,0) = 0.246

beta\_cons\_edu\_2=Beta('beta\_cons\_edu\_2',0,-100,100,0) = -6.33

**For exact number of shopping tour:**

*#systematic utility for V1 (1 tour, base alternative)*

V\_1=0

*#systematic utilities for V2 (i=2)*

*#Notice: The utility function contains all the parameters*

*#no matter estimated or not.*

V\_i = beta\_cons\_shopping\_i +  
beta\_parttime\_shopping\_i \* parttime +  
beta\_selfemployed\_shopping\_i \* selfemployed +  
beta\_universitystudent\_shopping\_i \* universitystudent +  
beta\_homemaker\_shopping\_i \* homemaker +  
beta\_retired\_shopping\_i \* retired +  
beta\_unemployed\_shopping\_i \* unemployed +  
beta\_nationalservice\_shopping\_i \* nationalservice +  
beta\_voluntary\_shopping\_i \* voluntary +  
beta\_domestic\_shopping\_i \* domestic +  
beta\_otherworker\_shopping\_i \* otherworker +  
beta\_student16\_shopping\_i \* student16 +  
beta\_student515\_shopping\_i \* student515 +  
beta\_child4\_shopping\_i \* child4 +  
beta\_age2025\_shopping\_i \* age2025 +  
beta\_age2635\_shopping\_i \* age2635 +  
beta\_age5165\_shopping\_i \* age5165 +  
beta\_maleage4\_shopping\_i \* maleage4 +  
beta\_maleage515\_shopping\_i \* maleage515 +  
beta\_femalenone\_shopping\_i \* femalenone +  
beta\_femaleage4\_shopping\_i \* femaleage4 +

```
beta_femaleage515_shopping_i * femaleage515 +
beta_onlyadults_shopping_i * onlyadults +
beta_onlyworkers_shopping_i * onlyworkers +
beta_income_shopping_i * income +
beta_workathome_shopping_i * workathome +
beta_caravail_shopping_i * caravail +
beta_motoravail_shopping_i * motoravail +
beta_logsum_shopping_i*shoplogsum
```

*#Estimated values for all betas*

*#Notice: the betas that not estimated are fixed to zero.*

```
beta_parttime_shopping_2 = Beta('beta_parttime_shopping_2',0,-100,100,1) = 0
```

```
beta_selfemployed_shopping_2 = Beta('beta_selfemployed_shopping_2',0,-100,100,1) = 0
```

```
beta_universitystudent_shopping_2 = Beta('beta_universitystudent_shopping_2',0,-100,100,1) = 0
```

```
beta_homemaker_shopping_2 = Beta('beta_homemaker_shopping_2',0,-100,100,1) = 0
```

```
beta_retired_shopping_2 = Beta('beta_retired_shopping_2',0,-100,100,1) = 0
```

```
beta_unemployed_shopping_2 = Beta('beta_unemployed_shopping_2',0,-100,100,1) = 0
```

```
beta_nationalservice_shopping_2 = Beta('beta_nationalservice_shopping_2',0,-100,100,1) = 0
```

```
beta_voluntary_shopping_2 = Beta('beta_voluntary_shopping_2',0,-100,100,1) = 0
```

```
beta_domestic_shopping_2 = Beta('beta_domestic_shopping_2',0,-100,100,1) = 0
```

```
beta_otherworker_shopping_2 = Beta('beta_otherworker_shopping_2',0,-100,100,1) = 0
```

```
beta_student16_shopping_2 = Beta('beta_student16_shopping_2',0,-100,100,1) = 0
```

```
beta_student515_shopping_2 = Beta('beta_student515_shopping_2',0,-100,100,1) = 0
```

```
beta_child4_shopping_2 = Beta('beta_child4_shopping_2',0,-100,100,1) = 0
```

*#Adult age group*

```
beta_age2025_shopping_2 = Beta('beta_age2025_shopping_2',0,-100,100,1) = 0
```

```
beta_age2635_shopping_2 = Beta('beta_age2635_shopping_2',0,-100,100,1) = 0
```

```
beta_age5165_shopping_2 = Beta('beta_age5165_shopping_2',0,-100,100,1) = 0
```



*#Adult gender/children*

beta\_maleage4\_shopping\_2 = Beta('beta\_maleage4\_shopping\_2',0,-100,100,1) = 0

beta\_maleage515\_shopping\_2 = Beta('beta\_maleage515\_shopping\_2',0,-100,100,1) = 0

beta\_femaleneone\_shopping\_2 = Beta('beta\_femaleneone\_shopping\_2',0,-100,100,1) = 0

beta\_femaleage4\_shopping\_2 = Beta('beta\_femaleage4\_shopping\_2',0,-100,100,1) = 0

beta\_femaleage515\_shopping\_2 = Beta('beta\_femaleage515\_shopping\_2',0,-100,100,1) = 0

*#Household composition*

beta\_onlyadults\_shopping\_2 = Beta('beta\_onlyadults\_shopping\_2',0,-100,100,1) = 0

beta\_onlyworkers\_shopping\_2 = Beta('beta\_onlyworkers\_shopping\_2',0,-100,100,1) = 0

*#Personal income*

beta\_income\_shopping\_2 = Beta('beta\_income\_shopping\_2',0,-100,100,1) = 0

*#Others*

beta\_workathome\_shopping\_2 = Beta('beta\_workathome\_shopping\_2',0,-100,100,1) = 0

beta\_caravail\_shopping\_2 = Beta('beta\_caravail\_shopping\_2',0,-100,100,0) = 0.993

beta\_motoravail\_shopping\_2 = Beta('beta\_motoravail\_shopping\_2',0,-100,100,0) = 0.164

beta\_logsum\_shopping\_2=Beta('beta\_logsum\_shopping\_2',0,-100,100,0) = 0.427

beta\_cons\_shopping\_2=Beta('beta\_cons\_shopping\_2',0,-100,100,0) = -8.70

For exact number of other tour:

*#systematic utility for V1 (1 tour, base alternative)*

V\_1=0

*#systematic utilities for V2-V3 (i=2,3)*

*#Notice: The utility function contains all the parameters*

*#no matter estimated or not.*

V\_i = beta\_cons\_other\_i +  
beta\_parttime\_other\_i \* parttime +  
beta\_selfemployed\_other\_i \* selfemployed +  
beta\_universitystudent\_other\_i \* universitystudent +

```

beta_homemaker_other_i * homemaker +
beta_retired_other_i * retired +
beta_unemployed_other_i * unemployed +
beta_nationalservice_other_i * nationalservice +
beta_voluntary_other_i * voluntary +
beta_domestic_other_i * domestic +
beta_otherworker_other_i * otherworker +
beta_student16_other_i * student16 +
beta_student515_other_i * student515 +
beta_child4_other_i * child4 +
beta_age2025_other_i * age2025 +
beta_age2635_other_i * age2635 +
beta_age5165_other_i * age5165 +
beta_maleage4_other_i * maleage4 +
beta_maleage515_other_i * maleage515 +
beta_femalenone_other_i * femalenone +
beta_femaleage4_other_i * femaleage4 +
beta_femaleage515_other_i * femaleage515 +
beta_onlyadults_other_i * onlyadults +
beta_onlyworkers_other_i * onlyworkers +
beta_income_other_i * income +
beta_workathome_other_i * workathome +
beta_caravail_other_i * caravail +
beta_motoravail_other_i * motoravail +
beta_logsum_other_i * otherlogsum

```

*#Estimated values for all betas*

*#Notice: the betas that not estimated are fixed to zero.*

beta\_parttime\_other\_2 = Beta('beta\_parttime\_other\_2',0,-100,100,0) = 0.126

beta\_parttime\_other\_3 = Beta('beta\_parttime\_other\_3',0,-100,100,0) = 2.56

beta\_selfemployed\_other\_2 = Beta('beta\_selfemployed\_other\_2',0,-100,100,0) = 0.575

beta\_selfemployed\_other\_3 = Beta('beta\_selfemployed\_other\_3',0,-100,100,0) = 1.55

beta\_universitystudent\_other\_2 = Beta('beta\_universitystudent\_other\_2',0,-100,100,0) = -0.78

beta\_universitystudent\_other\_3 = Beta('beta\_universitystudent\_other\_3',0,-100,100,1) = 0

beta\_homemaker\_other\_2 = Beta('beta\_homemaker\_other\_2',0,-100,100,0) = 0.630

beta\_homemaker\_other\_3 = Beta('beta\_homemaker\_other\_3',0,-100,100,0) = 2.05

beta\_retired\_other\_2 = Beta('beta\_retired\_other\_2',0,-100,100,0) = 0.322

beta\_retired\_other\_3 = Beta('beta\_retired\_other\_3',0,-100,100,0) = 2.27

beta\_unemployed\_other\_2 = Beta('beta\_unemployed\_other\_2',0,-100,100,0) = -0.335

```

beta_unemployed_other_3 = Beta('beta_unemployed_other_3',0,-100,100,1) = 0

beta_nationalservice_other_2 = Beta('beta_nationalservice_other_2',0,-100,100,1) = 0
beta_nationalservice_other_3 = Beta('beta_nationalservice_other_3',0,-100,100,1) = 0

beta_voluntary_other_2 = Beta('beta_voluntary_other_2',0,-100,100,1) = 0
beta_voluntary_other_3 = Beta('beta_voluntary_other_3',0,-100,100,1) = 0

beta_domestic_other_2 = Beta('beta_domestic_other_2',0,-100,100,1) = 0
beta_domestic_other_3 = Beta('beta_domestic_other_3',0,-100,100,1) = 0

beta_otherworker_other_2 = Beta('beta_otherworker_other_2',0,-100,100,1) = 0
beta_otherworker_other_3 = Beta('beta_otherworker_other_3',0,-100,100,1) = 0

beta_student16_other_2 = Beta('beta_student16_other_2',0,-100,100,0) = -0.979
beta_student16_other_3 = Beta('beta_student16_other_3',0,-100,100,1) = 0

beta_student515_other_2 = Beta('beta_student515_other_2',0,-100,100,0) = -1.36
beta_student515_other_3 = Beta('beta_student515_other_3',0,-100,100,1) = 0

beta_child4_other_2 = Beta('beta_child4_other_2',0,-100,100,1) = 0
beta_child4_other_3 = Beta('beta_child4_other_3',0,-100,100,1) = 0

#Adult age group

beta_age2025_other_2 = Beta('beta_age2025_other_2',0,-100,100,1) = 0
beta_age2025_other_3 = Beta('beta_age2025_other_3',0,-100,100,1) = 0

beta_age2635_other_2 = Beta('beta_age2635_other_2',0,-100,100,1) = 0
beta_age2635_other_3 = Beta('beta_age2635_other_3',0,-100,100,1) = 0

beta_age5165_other_2 = Beta('beta_age5165_other_2',0,-100,100,1) = 0
beta_age5165_other_3 = Beta('beta_age5165_other_3',0,-100,100,1) = 0

#Adult gender/children

beta_maleage4_other_2 = Beta('beta_maleage4_other_2',0,-100,100,0) = 1.21
beta_maleage4_other_3 = Beta('beta_maleage4_other_3',0,-100,100,0) = 2.61

beta_maleage515_other_2 = Beta('beta_maleage515_other_2',0,-100,100,0) = 0.901
beta_maleage515_other_3 = Beta('beta_maleage515_other_3',0,-100,100,0) = 3.02

beta_femaleneone_other_2 = Beta('beta_femaleneone_other_2',0,-100,100,0) = -0.492
beta_femaleneone_other_3 = Beta('beta_femaleneone_other_3',0,-100,100,0) = -0.584

```

```

beta_femaleage4_other_2 = Beta('beta_femaleage4_other_2',0,-100,100,0) = 1.21
beta_femaleage4_other_3 = Beta('beta_femaleage4_other_3',0,-100,100,0) = 2.68

beta_femaleage515_other_2 = Beta('beta_femaleage515_other_2',0,-100,100,0) = 1.16
beta_femaleage515_other_3 = Beta('beta_femaleage515_other_3',0,-100,100,0) = 2.64

#Household composition
beta_onlyadults_other_2 = Beta('beta_onlyadults_other_2',0,-100,100,0) = 0.434
beta_onlyadults_other_3 = Beta('beta_onlyadults_other_3',0,-100,100,0) = 2.53

beta_onlyworkers_other_2 = Beta('beta_onlyworkers_other_2',0,-100,100,0) = -0.0983
beta_onlyworkers_other_3 = Beta('beta_onlyworkers_other_3',0,-100,100,0) = -1.47

#Personal income
beta_income_other_2 = Beta('beta_income_other_2',0,-100,100,1) = 0
beta_income_other_3 = Beta('beta_income_other_3',0,-100,100,1) = 0

#Others
beta_workathome_other_2 = Beta('beta_workathome_other_2',0,-100,100,1) = 0
beta_workathome_other_3 = Beta('beta_workathome_other_3',0,-100,100,1) = 0

beta_caravail_other_2 = Beta('beta_caravail_other_2',0,-100,100,0) = 0.134
beta_caravail_other_3 = Beta('beta_caravail_other_3',0,-100,100,0) = 0.457

beta_motoravail_other_2 = Beta('beta_motoravail_other_2',0,-100,100,0) = 0.405
beta_motoravail_other_3 = Beta('beta_motoravail_other_3',0,-100,100,1) = 0

beta_logsum_other_2=Beta('beta_logsum_other_2',0,-100,100,0) = 0.417
beta_logsum_other_3=Beta('beta_logsum_other_3',0,-100,100,0) = 1.08

beta_cons_other_2=Beta('beta_cons_other_2',0,-100,100,0) = -5.48
beta_cons_other_3=Beta('beta_cons_other_3',0,-100,100,0) = -14.5

```

## Variables

Variables used in this model are same with variables in day pattern model. The logsums are the same logsum values used in day pattern model.

## Availability of Alternatives

No Constrains.