MNL10.1 – Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Lc - Var. binária de disponibilidade de Licença de condução (Lc)
- NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- Fm – Variável continua inicial sobre a frequência média horária de TC na hora de ponta da manhã (7h30-9h30)

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,NC0,NC1,NC2,NC3,LC,FM$
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Jan 13, 2012 at 02:06:05AM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            41329     |
| Iterations completed                  8     |
| Log likelihood function       -42325.91     |
| Number of parameters                 35     |
| Info. Criterion: AIC =          2.04994     |
|   Finite Sample: AIC =          2.04994     |
| Info. Criterion: BIC =          2.05724     |
| Info. Criterion:HQIC =          2.05225     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  -52160.0860  .18854  .18840 |
| Chi-squared[30]          =  19668.34516     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped**** bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
|         only. N(j)/N if fixed choice set.   |
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
|       R-sqrd = 1 - LogL(model)/logL(other)  |
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
|         nJ   = sum over i, choice set sizes |
+---------------------------------------------+
+--------+-------------+----------------+--------+--------+
|Variable| Coefficient  | Standard Error |b/St.Er.|P[|Z|>z]|
+--------+-------------+----------------+--------+--------+
 A_BP    |   -5.89501588      1.00292261    -5.878    .0000
```

BP_NC01	5.44652371	1.00268272	5.432	.0000
BP_NC11	3.36470834	1.00448128	3.350	.0008
BP_NC21	2.71818111	1.00415823	2.707	.0068
BP_NC31	1.70807676	1.03196224	1.655	.0979
BP_LC1	-1.97301808	.08055859	-24.492	.0000
BP_FM1	.02911753	.00460359	6.325	.0000
A_B	-2.21670248	.14482785	-15.306	.0000
B_NC02	3.76997491	.14525367	25.954	.0000
B_NC12	1.79195790	.14582595	12.288	.0000
B_NC22	1.35224459	.14458794	9.352	.0000
B_NC32	.63350270	.15661743	4.045	.0001
B_LC2	-1.84282606	.03126618	-58.940	.0000
B_FM2	.05178342	.00205583	25.189	.0000
A_BO	-2.96446871	.24854527	-11.927	.0000
BO_NC03	2.08133901	.24986347	8.330	.0000
BO_NC13	.96587799	.25111361	3.846	.0001
BO_NC23	.29805099	.24961590	1.194	.2325
BO_NC33	-.09291083	.28813507	-.322	.7471
BO_LC3	-1.39082965	.07909498	-17.584	.0000
BO_FM3	-.08547228	.00909912	-9.393	.0000
A_M	-3.57330491	.30869108	-11.576	.0000
M_NC04	3.41484923	.30826739	11.078	.0000
M_NC14	1.50667856	.31237771	4.823	.0000
M_NC24	1.08502152	.30991457	3.501	.0005
M_NC34	.86061072	.32990812	2.609	.0091
M_LC4	-1.35324000	.06438798	-21.017	.0000
M_FM4	-.06150968	.00654844	-9.393	.0000
A_P	-1.25878976	.09598518	-13.114	.0000
P_NC05	2.65689321	.09638100	27.567	.0000
P_NC15	.60416832	.09804909	6.162	.0000
P_NC25	.08643631	.09617764	.899	.3688
P_NC35	-.59451743	.11863444	-5.011	.0000
P_LC5	-1.66499747	.03355156	-49.625	.0000
P_FM5	.02981475	.00226417	13.168	.0000

MNL10.4 – Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Lc - Var. binária de disponibilidade de Licença de condução (Lc)
- NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- Ftl – Variável continua inicial sobre a frequência média horária de TC durante o dia (7h30-19h30)

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,NC0,NC1,NC2,NC3,LC,FTL$
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Jan 13, 2012 at 02:08:36AM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            41329     |
| Iterations completed                  8     |
| Log likelihood function       -42384.52     |
| Number of parameters                 35     |
| Info. Criterion: AIC =          2.05277     |
|   Finite Sample: AIC =          2.05277     |
| Info. Criterion: BIC =          2.06008     |
| Info. Criterion:HQIC =          2.05508     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  -52160.0860  .18741  .18728 |
| Chi-squared[30]          =  19551.14181     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped**** bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
|         only. N(j)/N if fixed choice set.   |
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
|       R-sqrd = 1 - LogL(model)/logL(other)  |
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
|         nJ   = sum over i, choice set sizes |
+---------------------------------------------+
+--------+-------------+----------------+--------+--------+
|Variable| Coefficient  | Standard Error |b/St.Er.|P[|Z|>z]|
+--------+-------------+----------------+--------+--------+
 A_BP    |   -5.89647603      1.00295808    -5.879   .0000
```

BP_NC01	5.45155813	1.00268263	5.437	.0000
BP_NC11	3.37039826	1.00448343	3.355	.0008
BP_NC21	2.72266072	1.00415773	2.711	.0067
BP_NC31	1.71229457	1.03196041	1.659	.0971
BP_LC1	-1.97316845	.08055442	-24.495	.0000
BP_FTL1	.02258959	.00370421	6.098	.0000
A_B	-2.20722735	.14476882	-15.247	.0000
B_NC02	3.78095680	.14514963	26.049	.0000
B_NC12	1.80310488	.14572256	12.374	.0000
B_NC22	1.36121076	.14448279	9.421	.0000
B_NC32	.64267007	.15648674	4.107	.0000
B_LC2	-1.83919137	.03121005	-58.929	.0000
B_FTL2	.03884419	.00165817	23.426	.0000
A_BO	-2.95912952	.24863854	-11.901	.0000
BO_NC03	2.07506896	.24984726	8.305	.0000
BO_NC13	.95546730	.25110175	3.805	.0001
BO_NC23	.28949038	.24961905	1.160	.2462
BO_NC33	-.09989971	.28812857	-.347	.7288
BO_LC3	-1.39164096	.07907268	-17.600	.0000
BO_FTL3	-.06630045	.00719694	-9.212	.0000
A_M	-3.56513012	.30873666	-11.547	.0000
M_NC04	3.40892239	.30826340	11.058	.0000
M_NC14	1.49751838	.31237633	4.794	.0000
M_NC24	1.07777827	.30991871	3.478	.0005
M_NC34	.85446848	.32990948	2.590	.0096
M_LC4	-1.35415100	.06437306	-21.036	.0000
M_FTL4	-.04849770	.00518776	-9.348	.0000
A_P	-1.25423080	.09603924	-13.060	.0000
P_NC05	2.66240789	.09635759	27.630	.0000
P_NC15	.60989888	.09802946	6.222	.0000
P_NC25	.09114699	.09615211	.948	.3432
P_NC35	-.58987264	.11860552	-4.973	.0000
P_LC5	-1.66415377	.03354173	-49.614	.0000
P_FTL5	.02231334	.00182090	12.254	.0000

MNL10.7 – Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Lc - Var. binária de disponibilidade de Licença de condução (Lc)
- NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- TBA – Variável continua com a razão dos tempos médios de viagem em BUS e AUTO entre zona de Geração e Atracção

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,NC0,NC1,NC2,NC3,LC,TBA$
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Jan 13, 2012 at 02:11:42AM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            89305     |
| Iterations completed                  8     |
| Log likelihood function       -96387.00     |
| Number of parameters                 35     |
| Info. Criterion: AIC =          2.15939     |
|   Finite Sample: AIC =          2.15939     |
| Info. Criterion: BIC =          2.16307     |
| Info. Criterion:HQIC =          2.16051     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  ***********  .16669  .16663 |
| Chi-squared[30]          =  38562.23592     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped6121 bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
|         only. N(j)/N if fixed choice set.   |
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
|       R-sqrd = 1 - LogL(model)/logL(other)  |
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
|         nJ   = sum over i, choice set sizes |
+---------------------------------------------+
+--------+-------------+----------------+--------+--------+
|Variable| Coefficient  | Standard Error |b/St.Er.|P[|Z|>z]|
+--------+-------------+----------------+--------+--------+
 A_BP    |   -4.10719635       .58530824    -7.017    .0000
```

BP_NC01	4.47373617	.57980800	7.716	.0000
BP_NC11	2.82969573	.58064714	4.873	.0000
BP_NC21	2.32723937	.58040545	4.010	.0001
BP_NC31	1.27820694	.59837365	2.136	.0327
BP_LC1	-2.26347380	.05832004	-38.811	.0000
BP_TBA1	-.58564969	.05268407	-11.116	.0000
A_B	-.71191631	.11248354	-6.329	.0000
B_NC02	3.22845117	.10685076	30.215	.0000
B_NC12	1.60671576	.10704333	15.010	.0000
B_NC22	1.14197747	.10653932	10.719	.0000
B_NC32	.51758231	.11406570	4.538	.0000
B_LC2	-1.99130249	.02212893	-89.986	.0000
B_TBA2	-.67401451	.02363288	-28.520	.0000
A_BO	-2.93290065	.19006801	-15.431	.0000
BO_NC03	2.26791882	.18043479	12.569	.0000
BO_NC13	1.30851246	.18032318	7.256	.0000
BO_NC23	.45616124	.18075535	2.524	.0116
BO_NC33	.03054451	.19871485	.154	.8778
BO_LC3	-2.01022461	.04496119	-44.710	.0000
BO_TBA3	.06264158	.03766990	1.663	.0963
A_M	-3.33634237	.15274288	-21.843	.0000
M_NC04	3.04815067	.14434654	21.117	.0000
M_NC14	1.43442198	.14542866	9.863	.0000
M_NC24	.88388696	.14479400	6.104	.0000
M_NC34	.16372836	.16183951	1.012	.3117
M_LC4	-1.21991180	.03163811	-38.558	.0000
M_TBA4	.17116516	.02958793	5.785	.0000
A_P	-.48773900	.09424987	-5.175	.0000
P_NC05	2.37740263	.08456629	28.113	.0000
P_NC15	.53774956	.08574481	6.272	.0000
P_NC25	.10504468	.08480985	1.239	.2155
P_NC35	-.62720930	.10135347	-6.188	.0000
P_LC5	-1.81439007	.02598365	-69.828	.0000
P_TBA5	-.56163300	.02713001	-20.702	.0000

MNL10.22 – Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Lc - Var. binária de disponibilidade de Licença de condução (Lc)
- NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- TBA – Variável continua com a razão dos tempos médios de viagem em BUS e AUTO entre zona de Geração e Atracção

- Ft – Variável continua inicial sobre a frequência média horária de TC na hora de ponta da tarde (17h00-19h30)

- V2 – Variável continua para velocidade comercial equivalente de BUS em km/h

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,NC0,NC1,NC2,NC3,LC,FT,V2,TBA$
DISCRETECHOICE;Lhs=MTRP;Choices=Bp,B,Bo,M,P,A[1];Rh2=ONE,NC0,NC1,NC2,NC3,
...
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Jan 13, 2012 at 02:15:20AM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            40099     |
| Iterations completed                  9     |
| Log likelihood function       -31220.41     |
| Number of parameters                 45     |
| Info. Criterion: AIC =          1.55941     |
|   Finite Sample: AIC =          1.55941     |
| Info. Criterion: BIC =          1.56906     |
| Info. Criterion:HQIC =          1.56246     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  -50751.5442  .38484  .38470 |
| Chi-squared[40]          =  39062.27536     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped**** bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
|         only. N(j)/N if fixed choice set.   |
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
```

```
|       R-sqrd = 1 - LogL(model)/logL(other)  |
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
|         nJ   = sum over i, choice set sizes |
+---------------------------------------------+
+--------+--------------+----------------+--------+--------+
|Variable| Coefficient  | Standard Error |b/St.Er.|P[|Z|>z]|
+--------+--------------+----------------+--------+--------+
 A_BP     |   -3.73632448      1.01862021    -3.668   .0002
 BP_NC01  |    5.40694146      1.00289207     5.391   .0000
 BP_NC11  |    3.38559913      1.00469313     3.370   .0008
 BP_NC21  |    2.73309699      1.00441600     2.721   .0065
 BP_NC31  |    1.72052221      1.03221608     1.667   .0955
 BP_LC1   |   -1.99123558       .08151075   -24.429   .0000
 BP_FT1   |     .00301850       .00481400      .627   .5306
 BP_V21   |    -.02562534       .00653641    -3.920   .0001
 BP_TBA1  |   -1.08744309       .09607803   -11.318   .0000
 A_B      |    -.46238512       .16780328    -2.756   .0059
 B_NC02   |    3.73716478       .14583977    25.625   .0000
 B_NC12   |    1.81364129       .14644286    12.385   .0000
 B_NC22   |    1.37706774       .14512880     9.489   .0000
 B_NC32   |     .64052917       .15723197     4.074   .0000
 B_LC2    |   -1.84322304       .03206736   -57.480   .0000
 B_FT2    |     .02738907       .00219231    12.493   .0000
 B_V22    |    -.03491755       .00320839   -10.883   .0000
 B_TBA2   |    -.76125884       .04113609   -18.506   .0000
 A_BO     |   -4.00812642       .32867280   -12.195   .0000
 BO_NC03  |    2.04053777       .25748432     7.925   .0000
 BO_NC13  |     .96948776       .25832646     3.753   .0002
 BO_NC23  |     .24459696       .25730045      .951   .3418
 BO_NC33  |    -.08405404       .29417555     -.286   .7751
 BO_LC3   |   -1.42737277       .08124713   -17.568   .0000
 BO_FT3   |    -.07315657       .00927589    -7.887   .0000
 BO_V23   |     .02484065       .00740130     3.356   .0008
 BO_TBA3  |     .46881246       .08631921     5.431   .0000
 A_M      |   -3.73160334       .35261689   -10.583   .0000
 M_NC04   |    3.31180781       .30889723    10.721   .0000
 M_NC14   |    1.43537111       .31328470     4.582   .0000
 M_NC24   |     .93548124       .31106830     3.007   .0026
 M_NC34   |     .81150610       .33091621     2.452   .0142
 M_LC4    |   -1.33421751       .06747696   -19.773   .0000
 M_FT4    |    -.05640085       .00677477    -8.325   .0000
 M_V24    |    -.00264037       .00645163     -.409   .6824
 M_TBA4   |     .14462699       .07469267     1.936   .0528
 A_P      |    5.92945319       .16989982    34.900   .0000
 P_NC05   |    2.48337667       .13583313    18.283   .0000
 P_NC15   |     .81294674       .13929666     5.836   .0000
 P_NC25   |     .53007525       .13591178     3.900   .0001
 P_NC35   |    -.00130210       .16706629     -.008   .9938
 P_LC5    |   -1.75754686       .04990063   -35.221   .0000
 P_FT5    |    -.00106287       .00285537     -.372   .7097
 P_V25    |    -.92710254       .01220676   -75.950   .0000
 P_TBA5   |   -1.03649943       .05187183   -19.982   .0000
```

MNL10.23 – Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Lc - Var. binária de disponibilidade de Licença de condução (Lc)
- NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- TBA – Variável continua com a razão dos tempos médios de viagem em BUS e AUTO entre zona de Geração e Atracção

- Fm – Variável continua inicial sobre a frequência média horária de TC na hora de ponta da manhã (7h30-9h30)

- V2 – Variável continua para velocidade comercial equivalente de BUS em km/h

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,NC0,NC1,NC2,NC3,LC,FM,V2,TBA$
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Jan 13, 2012 at 02:18:31AM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            40099     |
| Iterations completed                  9     |
| Log likelihood function       -31171.01     |
| Number of parameters                 45     |
| Info. Criterion: AIC =          1.55695     |
|   Finite Sample: AIC =          1.55695     |
| Info. Criterion: BIC =          1.56660     |
| Info. Criterion:HQIC =          1.56000     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  -50751.5442  .38581  .38567 |
| Chi-squared[40]          =  39161.06883     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped**** bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
|         only. N(j)/N if fixed choice set.   |
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
|       R-sqrd = 1 - LogL(model)/logL(other)  |
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
```

| nJ = sum over i, choice set sizes |

Variable	Coefficient	Standard Error	b/St.Er.	P[|Z|>z]
A_BP	-3.76879417	1.01866380	-3.700	.0002
BP_NC01	5.40709284	1.00289211	5.392	.0000
BP_NC11	3.38624950	1.00469341	3.370	.0008
BP_NC21	2.73308675	1.00441464	2.721	.0065
BP_NC31	1.72036393	1.03221326	1.667	.0956
BP_LC1	-1.99196609	.08152533	-24.434	.0000
BP_FM1	.00522899	.00498596	1.049	.2943
BP_V21	-.02509426	.00655182	-3.830	.0001
BP_TBA1	-1.07814249	.09602663	-11.228	.0000
A_B	-.53070475	.16792670	-3.160	.0016
B_NC02	3.73827907	.14590485	25.621	.0000
B_NC12	1.81557236	.14650700	12.392	.0000
B_NC22	1.38022343	.14518760	9.506	.0000
B_NC32	.64451078	.15729144	4.098	.0000
B_LC2	-1.84742025	.03211459	-57.526	.0000
B_FM2	.03197630	.00227152	14.077	.0000
B_V22	-.03342007	.00321621	-10.391	.0000
B_TBA2	-.74257963	.04110556	-18.065	.0000
A_BO	-3.92752890	.32847555	-11.957	.0000
BO_NC03	2.04190962	.25751238	7.929	.0000
BO_NC13	.97132916	.25836459	3.760	.0002
BO_NC23	.24592212	.25732563	.956	.3392
BO_NC33	-.08468870	.29421607	-.288	.7735
BO_LC3	-1.42422113	.08126999	-17.525	.0000
BO_FM3	-.08947941	.01012006	-8.842	.0000
BO_V23	.02320513	.00741267	3.130	.0017
BO_TBA3	.45358982	.08617015	5.264	.0000
A_M	-3.70595218	.35251256	-10.513	.0000
M_NC04	3.31277468	.30890879	10.724	.0000
M_NC14	1.43688674	.31329832	4.586	.0000
M_NC24	.93515694	.31107616	3.006	.0026
M_NC34	.81026066	.33092899	2.448	.0143
M_LC4	-1.33207714	.06749094	-19.737	.0000
M_FM4	-.06341423	.00719719	-8.811	.0000
M_V24	-.00361572	.00645424	-.560	.5753
M_TBA4	.14316866	.07452460	1.921	.0547
A_P	5.89723588	.16984092	34.722	.0000
P_NC05	2.48256131	.13581702	18.279	.0000
P_NC15	.81287611	.13928304	5.836	.0000
P_NC25	.52799142	.13588956	3.885	.0001
P_NC35	-.00268504	.16704693	-.016	.9872
P_LC5	-1.75859083	.04990707	-35.237	.0000
P_FM5	.00134875	.00288787	.467	.6405
P_V25	-.92684444	.01220300	-75.952	.0000
P_TBA5	-1.02603665	.05189235	-19.772	.0000

MNL10.30 – Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Idi - Var. binária escalão etário (expto Id1)
- Ini - Var. binária nível de instrução (expto In4)
- Sexo - Var. binária Sexo
- Ri - Var. binária escalões do rend. Liquí. mensal do agreg (expto R5)
- Lc - Var. binária de disponibilidade de Licença de condução (Lc)
- NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- TBA – Variável continua com a razão dos tempos médios de viagem em BUS e AUTO entre zona de Geração e Atracção

- Fm – Variável continua inicial sobre a frequência média horária de TC na hora de ponta da manhã (7h30-9h30)

- V2 – Variável continua para velocidade comercial equivalente de BUS em km/h

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,NC0,NC1,NC2,NC3,R1,R2,R3,R4,SX,ID2,ID3,ID4,ID5,IN1,IN2,IN3,LC,FM
,V2,TBA$
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Jan 13, 2012 at 02:24:47AM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            40099     |
| Iterations completed                  9     |
| Log likelihood function       -29723.94     |
| Number of parameters                105     |
| Info. Criterion: AIC =          1.48777     |
|   Finite Sample: AIC =          1.48778     |
| Info. Criterion: BIC =          1.51028     |
| Info. Criterion:HQIC =          1.49489     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  -50751.5442  .41432  .41402 |
| Chi-squared[**]          =  42055.19953     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped**** bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
```

```
|         only. N(j)/N if fixed choice set.   |
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
|       R-sqrd = 1 - LogL(model)/logL(other)  |
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
|         nJ   = sum over i, choice set sizes |
+---------------------------------------------+
```

Variable	Coefficient	Standard Error	b/St.Er.	P[|Z|>z]
A_BP	-6.79339885	1.06485483	-6.380	.0000
BP_NC01	5.21444372	1.00456954	5.191	.0000
BP_NC11	3.19857397	1.00620552	3.179	.0015
BP_NC21	2.65349733	1.00539032	2.639	.0083
BP_NC31	1.78789003	1.03331441	1.730	.0836
BP_R11	.39639196	.17873310	2.218	.0266
BP_R21	.53982754	.15245407	3.541	.0004
BP_R31	.61966119	.15557175	3.983	.0001
BP_R41	.47212075	.18056828	2.615	.0089
BP_SX1	.54259923	.07484447	7.250	.0000
BP_ID21	2.13126684	.24013716	8.875	.0000
BP_ID31	1.88344235	.24409290	7.716	.0000
BP_ID41	1.90495589	.23614518	8.067	.0000
BP_ID51	2.04367170	.24842566	8.226	.0000
BP_IN11	.25151806	.29944469	.840	.4009
BP_IN21	.73329874	.22460264	3.265	.0011
BP_IN31	.85050872	.23291144	3.652	.0003
BP_LC1	-2.04264520	.09437268	-21.644	.0000
BP_FM1	.00934380	.00502686	1.859	.0631
BP_V21	-.02967625	.00664174	-4.468	.0000
BP_TBA1	-1.11765031	.09736727	-11.479	.0000
A_B	-2.83782857	.19871798	-14.281	.0000
B_NC02	3.68314612	.14890963	24.734	.0000
B_NC12	1.85216376	.14920078	12.414	.0000
B_NC22	1.47038783	.14711980	9.994	.0000
B_NC32	.81119462	.15946987	5.087	.0000
B_R12	.43874340	.07633956	5.747	.0000
B_R22	.32095624	.05290054	6.067	.0000
B_R32	.32947610	.05397173	6.105	.0000
B_R42	.26339475	.06190819	4.255	.0000
B_SX2	.44004389	.03367527	13.067	.0000
B_ID22	1.95892988	.09415692	20.805	.0000
B_ID32	1.79771373	.09558659	18.807	.0000
B_ID42	1.77064672	.09205149	19.235	.0000
B_ID52	2.04380964	.10215462	20.007	.0000
B_IN12	-.21114906	.11487649	-1.838	.0661
B_IN22	.09037476	.06599330	1.369	.1709
B_IN32	.40618224	.06855068	5.925	.0000
B_LC2	-2.00187718	.04147676	-48.265	.0000
B_FM2	.03532789	.00235244	15.018	.0000
B_V22	-.03505553	.00334415	-10.483	.0000
B_TBA2	-.74681315	.04241491	-17.607	.0000
A_BO	-4.82971851	.44879285	-10.762	.0000
BO_NC03	1.65166644	.26530052	6.226	.0000
BO_NC13	.42654545	.26513890	1.609	.1077
BO_NC23	-.15392623	.26171462	-.588	.5564

BO_NC33	-.41031285	.29833976	-1.375	.1690
BO_R13	.30608768	.17525947	1.746	.0807
BO_R23	.04074582	.12978025	.314	.7536
BO_R33	.11774132	.13392383	.879	.3793
BO_R43	.23047518	.15521534	1.485	.1376
BO_SX3	-.50478527	.08164934	-6.182	.0000
BO_ID23	.87584023	.17074926	5.129	.0000
BO_ID33	.20922216	.19004761	1.101	.2709
BO_ID43	.16164198	.17853218	.905	.3653
BO_ID53	-1.30929540	.32407102	-4.040	.0001
BO_IN13	1.05462766	.35300503	2.988	.0028
BO_IN23	1.45714788	.29097253	5.008	.0000
BO_IN33	.40974773	.31746498	1.291	.1968
BO_LC3	-1.18849748	.10784094	-11.021	.0000
BO_FM3	-.08172124	.01016378	-8.040	.0000
BO_V23	.01755592	.00763158	2.300	.0214
BO_TBA3	.37546003	.08743283	4.294	.0000
A_M	-7.94533295	.59601804	-13.331	.0000
M_NC04	2.71214272	.31473826	8.617	.0000
M_NC14	1.01843051	.31777802	3.205	.0014
M_NC24	.65027289	.31421162	2.070	.0385
M_NC34	.69465155	.33428155	2.078	.0377
M_R14	-.08218289	.15763266	-.521	.6021
M_R24	.19709686	.11953121	1.649	.0992
M_R34	-.01009288	.12749543	-.079	.9369
M_R44	.14994745	.14880588	1.008	.3136
M_SX4	-1.22230184	.07586797	-16.111	.0000
M_ID24	3.28231461	.38679868	8.486	.0000
M_ID34	4.35573831	.38414685	11.339	.0000
M_ID44	3.82852601	.38180525	10.027	.0000
M_ID54	2.90074191	.40077610	7.238	.0000
M_IN14	2.19356862	.36834593	5.955	.0000
M_IN24	2.05134865	.31035174	6.610	.0000
M_IN34	1.37199851	.32197787	4.261	.0000
M_LC4	-2.05831439	.08178823	-25.166	.0000
M_FM4	-.05906810	.00743440	-7.945	.0000
M_V24	-.01174493	.00672728	-1.746	.0808
M_TBA4	.06941872	.07681629	.904	.3662
A_P	4.11185576	.22048012	18.650	.0000
P_NC05	2.28848188	.14084225	16.249	.0000
P_NC15	.78199432	.14470580	5.404	.0000
P_NC25	.52341341	.14008719	3.736	.0002
P_NC35	.11975891	.17260381	.694	.4878
P_R15	.53697165	.10621658	5.055	.0000
P_R25	.46663385	.08072987	5.780	.0000
P_R35	.15247104	.08284745	1.840	.0657
P_R45	.31117857	.09357527	3.325	.0009
P_SX5	.32084217	.04945457	6.488	.0000
P_ID25	1.50669372	.12885868	11.693	.0000
P_ID35	1.00041019	.13249324	7.551	.0000
P_ID45	1.23364773	.12631073	9.767	.0000
P_ID55	1.47403721	.13803062	10.679	.0000
P_IN15	.17668370	.16102733	1.097	.2725
P_IN25	.30291381	.09151253	3.310	.0009
P_IN35	.28221133	.09559079	2.952	.0032
P_LC5	-1.71475561	.06300555	-27.216	.0000
P_FM5	.00592298	.00295900	2.002	.0453

P_V25	-.93118902	.01230559	-75.672	.0000
P_TBA5	-1.04575949	.05304994	-19.713	.0000

MNL10.31– Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Idi - Var. binária escalão etário (expto Id1)
- Ini - Var. binária nível de instrução (expto In4)
- Sexo - Var. binária Sexo
- Ri - Var. binária escalões do rend. Liquí. mensal do agreg (expto R5)
- Lc - Var. binária de disponibilidade de Licença de condução (Lc)
- NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- TBA – Variável continua com a razão dos tempos médios de viagem em BUS e AUTO entre zona de Geração e Atracção

- Ftl – Variável continua inicial sobre a frequência média horária de TC no horário laboral (7h30-19h30)

- V2 – Variável continua para velocidade comercial equivalente de BUS em km/h

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,NC0,NC1,NC2,NC3,R1,R2,R3,R4,SX,ID2,ID3,ID4,ID5,IN1,IN2,IN3,LC,FTL,V2,TBA$
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Jan 13, 2012 at 02:31:33AM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            40099     |
| Iterations completed                  9     |
| Log likelihood function       -29748.36     |
| Number of parameters                105     |
| Info. Criterion: AIC =          1.48898     |
|   Finite Sample: AIC =          1.48900     |
| Info. Criterion: BIC =          1.51150     |
| Info. Criterion:HQIC =          1.49611     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  -50751.5442  .41384  .41354 |
| Chi-squared[**]          =  42006.36225     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped**** bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
|         only. N(j)/N if fixed choice set.   |
```

```
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
|       R-sqrd = 1 - LogL(model)/logL(other)  |
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
|         nJ   = sum over i, choice set sizes |
+---------------------------------------------+
```

Variable	Coefficient	Standard Error	b/St.Er.	P[|Z|>z]
A_BP	-6.80493857	1.06515349	-6.389	.0000
BP_NC01	5.21505730	1.00456844	5.191	.0000
BP_NC11	3.19930379	1.00619927	3.180	.0015
BP_NC21	2.65322349	1.00538530	2.639	.0083
BP_NC31	1.78814091	1.03331046	1.730	.0835
BP_R11	.39831707	.17883165	2.227	.0259
BP_R21	.54210686	.15249409	3.555	.0004
BP_R31	.62049764	.15559592	3.988	.0001
BP_R41	.47424111	.18056315	2.626	.0086
BP_SX1	.54308516	.07485073	7.256	.0000
BP_ID21	2.13436916	.24023264	8.885	.0000
BP_ID31	1.88540921	.24416161	7.722	.0000
BP_ID41	1.90610962	.23621653	8.069	.0000
BP_ID51	2.04046359	.24850182	8.211	.0000
BP_IN11	.25567897	.29950366	.854	.3933
BP_IN21	.73527682	.22463450	3.273	.0011
BP_IN31	.84986211	.23292534	3.649	.0003
BP_LC1	-2.04265001	.09437655	-21.644	.0000
BP_FTL1	.00797962	.00409984	1.946	.0516
BP_V21	-.02971060	.00667135	-4.453	.0000
BP_TBA1	-1.11584567	.09713626	-11.487	.0000
A_B	-2.79346474	.19887067	-14.047	.0000
B_NC02	3.68955171	.14877695	24.799	.0000
B_NC12	1.85751408	.14906283	12.461	.0000
B_NC22	1.47494497	.14697962	10.035	.0000
B_NC32	.81613388	.15931481	5.123	.0000
B_R12	.44052536	.07633889	5.771	.0000
B_R22	.32298221	.05287061	6.109	.0000
B_R32	.33394314	.05393116	6.192	.0000
B_R42	.26776462	.06185531	4.329	.0000
B_SX2	.43953715	.03365013	13.062	.0000
B_ID22	1.96037088	.09408331	20.837	.0000
B_ID32	1.79621216	.09550142	18.808	.0000
B_ID42	1.77021407	.09196209	19.249	.0000
B_ID52	2.04025077	.10205056	19.993	.0000
B_IN12	-.20613271	.11485405	-1.795	.0727
B_IN22	.09721755	.06598622	1.473	.1407
B_IN32	.40903311	.06851316	5.970	.0000
B_LC2	-1.99851982	.04143677	-48.231	.0000
B_FTL2	.02646474	.00191302	13.834	.0000
B_V22	-.03533802	.00334731	-10.557	.0000
B_TBA2	-.77243528	.04230292	-18.260	.0000
A_BO	-4.82957410	.44887873	-10.759	.0000
BO_NC03	1.64466613	.26526832	6.200	.0000
BO_NC13	.42002136	.26510501	1.584	.1131
BO_NC23	-.15974921	.26170734	-.610	.5416
BO_NC33	-.41494834	.29834200	-1.391	.1643

BO_R13	.30071790	.17523639	1.716	.0861
BO_R23	.03522196	.12974261	.271	.7860
BO_R33	.11170967	.13383045	.835	.4039
BO_R43	.22198891	.15514605	1.431	.1525
BO_SX3	-.50602087	.08166078	-6.197	.0000
BO_ID23	.87381199	.17082636	5.115	.0000
BO_ID33	.21378853	.19009073	1.125	.2607
BO_ID43	.16890851	.17858477	.946	.3442
BO_ID53	-1.30056385	.32409921	-4.013	.0001
BO_IN13	1.04669241	.35305813	2.965	.0030
BO_IN23	1.44795203	.29097100	4.976	.0000
BO_IN33	.40266142	.31748162	1.268	.2047
BO_LC3	-1.19479924	.10787301	-11.076	.0000
BO_FTL3	-.06354661	.00814562	-7.801	.0000
BO_V23	.01854147	.00761185	2.436	.0149
BO_TBA3	.37820543	.08695885	4.349	.0000
A_M	-7.94641119	.59619081	-13.329	.0000
M_NC04	2.70871590	.31472952	8.606	.0000
M_NC14	1.01490165	.31776562	3.194	.0014
M_NC24	.64644591	.31420139	2.057	.0396
M_NC34	.69455716	.33425638	2.078	.0377
M_R14	-.08495419	.15768857	-.539	.5901
M_R24	.19223782	.11956000	1.608	.1079
M_R34	-.01406379	.12748396	-.110	.9122
M_R44	.14275798	.14880676	.959	.3374
M_SX4	-1.22463533	.07587366	-16.140	.0000
M_ID24	3.28121274	.38684756	8.482	.0000
M_ID34	4.36222072	.38419869	11.354	.0000
M_ID44	3.83683952	.38185265	10.048	.0000
M_ID54	2.90834595	.40077821	7.257	.0000
M_IN14	2.19283498	.36828217	5.954	.0000
M_IN24	2.04563768	.31035762	6.591	.0000
M_IN34	1.36945451	.32199275	4.253	.0000
M_LC4	-2.06408332	.08177741	-25.240	.0000
M_FTL4	-.04597180	.00592893	-7.754	.0000
M_V24	-.01106006	.00673150	-1.643	.1004
M_TBA4	.06998361	.07657545	.914	.3608
A_P	4.17111756	.22064248	18.904	.0000
P_NC05	2.29608102	.14089200	16.297	.0000
P_NC15	.78518341	.14475094	5.424	.0000
P_NC25	.52839599	.14014313	3.770	.0002
P_NC35	.12322244	.17264771	.714	.4754
P_R15	.53146304	.10625591	5.002	.0000
P_R25	.46445598	.08077171	5.750	.0000
P_R35	.15381036	.08287686	1.856	.0635
P_R45	.31209622	.09361415	3.334	.0009
P_SX5	.32055104	.04946326	6.481	.0000
P_ID25	1.50592308	.12898696	11.675	.0000
P_ID35	.99854068	.13263374	7.529	.0000
P_ID45	1.23449264	.12644190	9.763	.0000
P_ID55	1.47695129	.13813471	10.692	.0000
P_IN15	.17320010	.16110701	1.075	.2823
P_IN25	.29997378	.09155888	3.276	.0011
P_IN35	.28166375	.09562400	2.946	.0032
P_LC5	-1.71463590	.06302698	-27.205	.0000
P_FTL5	.00178661	.00236788	.755	.4505
P_V25	-.93141442	.01230836	-75.673	.0000

P_TBA5	-1.06722857	.05305887	-20.114	.0000

MNL10.32– Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Lc - Var. binária de disponibilidade de Licença de condução (Lc)
- NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- TB1 - Variável binária razão dos tempos médios de viagem em BUS/AUTO entre zona de Geração e Atracção <=1
- TB2 - Variável binária razão dos tempos médios de viagem em BUS/AUTO entre zona de Geração e Atracção >1 & <=1.5
- TB3 - Variável binária razão dos tempos médios de viagem em BUS/AUTO entre zona de Geração e Atracção >1.5 & <=2
- *TB4 - Variável binária razão dos tempos médios de viagem em BUS/AUTO entre zona de Geração e Atracção >2 (excluída)*

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,NC0,NC1,NC2,NC3,LC,TB1,TB2,TB3$
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Feb 06, 2012 at 00:34:54PM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            89305     |
| Iterations completed                  8     |
| Log likelihood function       -96286.30     |
| Number of parameters                 45     |
| Info. Criterion: AIC =          2.15736     |
|   Finite Sample: AIC =          2.15736     |
| Info. Criterion: BIC =          2.16209     |
| Info. Criterion:HQIC =          2.15880     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  ***********  .16756  .16748 |
| Chi-squared[40]          =  38763.63971     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped6121 bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
|         only. N(j)/N if fixed choice set.   |
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
|       R-sqrd = 1 - LogL(model)/logL(other)  |
```

```
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
|         nJ   = sum over i, choice set sizes |
+---------------------------------------------+
+--------+--------------+----------------+--------+--------+
|Variable| Coefficient  | Standard Error |b/St.Er.|P[|Z|>z]|
+--------+--------------+----------------+--------+--------+
 A_BP     |   -5.40453531       .58212895    -9.284   .0000
 BP_NC01  |    4.46999182       .57980810     7.709   .0000
 BP_NC11  |    2.82810187       .58064797     4.871   .0000
 BP_NC21  |    2.32378673       .58041074     4.004   .0001
 BP_NC31  |    1.28568703       .59837796     2.149   .0317
 BP_LC1   |   -2.26189204       .05831742   -38.786   .0000
 BP_TB11  |     .90339919       .11641300     7.760   .0000
 BP_TB21  |     .54511352       .06827805     7.984   .0000
 BP_TB31  |     .23998027       .07028271     3.414   .0006
 A_B      |   -2.46047735       .10944916   -22.481   .0000
 B_NC02   |    3.23430590       .10678475    30.288   .0000
 B_NC12   |    1.60438450       .10697773    14.997   .0000
 B_NC22   |    1.13573685       .10647599    10.667   .0000
 B_NC32   |     .52286016       .11399597     4.587   .0000
 B_LC2    |   -1.98317186       .02210191   -89.729   .0000
 B_TB12   |    1.03603137       .05975069    17.339   .0000
 B_TB22   |     .82685871       .03266343    25.315   .0000
 B_TB32   |     .69914586       .03280725    21.311   .0000
 A_BO     |   -2.75967374       .18287686   -15.090   .0000
 BO_NC03  |    2.26942055       .18046651    12.575   .0000
 BO_NC13  |    1.30193505       .18035479     7.219   .0000
 BO_NC23  |     .44865069       .18078370     2.482   .0131
 BO_NC33  |     .02279911       .19873968      .115   .9087
 BO_LC3   |   -2.00668053       .04497768   -44.615   .0000
 BO_TB13  |    -.63916875       .14726789    -4.340   .0000
 BO_TB23  |    -.11252459       .05190775    -2.168   .0302
 BO_TB33  |    -.02121927       .05071465     -.418   .6757
 A_M      |   -2.94876360       .14704384   -20.054   .0000
 M_NC04   |    3.04676558       .14434313    21.108   .0000
 M_NC14   |    1.43614183       .14542874     9.875   .0000
 M_NC24   |     .88826411       .14479083     6.135   .0000
 M_NC34   |     .16266000       .16184057     1.005   .3149
 M_LC4    |   -1.22454218       .03163846   -38.704   .0000
 M_TB14   |     .06292187       .08682322      .725   .4686
 M_TB24   |    -.15844155       .04178198    -3.792   .0001
 M_TB34   |    -.10131329       .04129937    -2.453   .0142
 A_P      |   -1.63139285       .08828872   -18.478   .0000
 P_NC05   |    2.37121682       .08481099    27.959   .0000
 P_NC15   |     .54701926       .08598423     6.362   .0000
 P_NC25   |     .11647378       .08504923     1.369   .1708
 P_NC35   |    -.60529421       .10157934    -5.959   .0000
 P_LC5    |   -1.81751798       .02604455   -69.785   .0000
 P_TB15   |    1.19475109       .05895622    20.265   .0000
 P_TB25   |     .40631862       .03450529    11.776   .0000
 P_TB35   |     .01131026       .03571682      .317   .7515
```

MNL10.33– Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Lc - Var. binária de disponibilidade de Licença de condução (Lc)
- NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- V2 – Variável continua para velocidade comercial equivalente de BUS em km/h

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,NC0,NC1,NC2,NC3,LC,V2$
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Feb 06, 2012 at 03:47:18PM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            89305     |
| Iterations completed                  9     |
| Log likelihood function       -79036.54     |
| Number of parameters                 35     |
| Info. Criterion: AIC =          1.77082     |
|   Finite Sample: AIC =          1.77082     |
| Info. Criterion: BIC =          1.77450     |
| Info. Criterion:HQIC =          1.77194     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  **********  .31670  .31664 |
| Chi-squared[30]          =  73263.15598     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped6121 bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
|         only. N(j)/N if fixed choice set.   |
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
|       R-sqrd = 1 - LogL(model)/logL(other)  |
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
|         nJ   = sum over i, choice set sizes |
+---------------------------------------------+
+--------+-------------+----------------+--------+--------+
|Variable| Coefficient  | Standard Error |b/St.Er.|P[|Z|>z]|
+--------+-------------+----------------+--------+--------+
 A_BP    |   -5.03186733       .58138024    -8.655   .0000
 BP_NC01 |    4.46562947       .57983416     7.702   .0000
```

BP_NC11	2.82115794	.58066335	4.859	.0000
BP_NC21	2.30725729	.58041574	3.975	.0001
BP_NC31	1.28065656	.59836560	2.140	.0323
BP_LC1	-2.23288425	.05830310	-38.298	.0000
BP_V21	-.00151015	.00384717	-.393	.6947
A_B	-1.41027404	.10819170	-13.035	.0000
B_NC02	3.23519029	.10676373	30.302	.0000
B_NC12	1.62133514	.10695384	15.159	.0000
B_NC22	1.13447312	.10644440	10.658	.0000
B_NC32	.54253227	.11393211	4.762	.0000
B_LC2	-1.96231718	.02211028	-88.751	.0000
B_V22	-.03289229	.00187105	-17.580	.0000
A_BO	-3.19418640	.18344915	-17.412	.0000
BO_NC03	2.24181640	.18061371	12.412	.0000
BO_NC13	1.28564341	.18047460	7.124	.0000
BO_NC23	.43967663	.18088991	2.431	.0151
BO_NC33	-.00187778	.19887498	-.009	.9925
BO_LC3	-2.00651413	.04501255	-44.577	.0000
BO_V23	.02930566	.00298794	9.808	.0000
A_M	-3.20808817	.14749753	-21.750	.0000
M_NC04	3.03689164	.14437596	21.035	.0000
M_NC14	1.42975749	.14545374	9.830	.0000
M_NC24	.88212854	.14480970	6.092	.0000
M_NC34	.14747145	.16186544	.911	.3623
M_LC4	-1.21887979	.03171021	-38.438	.0000
M_V24	.01295730	.00251760	5.147	.0000
A_P	4.02996616	.11730812	34.354	.0000
P_NC05	2.34687609	.11184117	20.984	.0000
P_NC15	.74930262	.11376132	6.587	.0000
P_NC25	.30373583	.11173767	2.718	.0066
P_NC35	-.18645866	.13248914	-1.407	.1593
P_LC5	-1.85619817	.03729090	-49.776	.0000
P_V25	-.87775925	.00862682	-101.748	.0000

MNL10.34– Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Lc - Var. binária de disponibilidade de Licença de condução (Lc) - NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- V22 - Variável binária Velocidade comercial equivalente Bus V2>10 & <=20km/ - V23 - Variável binária Velocidade comercial equivalente Bus V2>20km/h

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,NC0,NC1,NC2,NC3,LC,V22,V23$
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Feb 06, 2012 at 03:56:56PM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            89305     |
| Iterations completed                  9     |
| Log likelihood function       -89056.20     |
| Number of parameters                 40     |
| Info. Criterion: AIC =          1.99532     |
|   Finite Sample: AIC =          1.99532     |
| Info. Criterion: BIC =          1.99953     |
| Info. Criterion:HQIC =          1.99661     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  ***********  .23007  .23000 |
| Chi-squared[35]          =  53223.84970     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped6121 bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
|         only. N(j)/N if fixed choice set.   |
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
|       R-sqrd = 1 - LogL(model)/logL(other)  |
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
|         nJ   = sum over i, choice set sizes |
+---------------------------------------------+
+--------+-------------+----------------+--------+--------+
|Variable| Coefficient  | Standard Error |b/St.Er.|P[|Z|>z]|
+--------+-------------+----------------+--------+--------+
 A_BP    |   -4.87855642       .57995857    -8.412   .0000
```

BP_NC01	4.47589195	.57980352	7.720	.0000
BP_NC11	2.82949633	.58064741	4.873	.0000
BP_NC21	2.32045269	.58039698	3.998	.0001
BP_NC31	1.30272606	.59835231	2.177	.0295
BP_LC1	-2.24145083	.05828923	-38.454	.0000
BP_V221	-.40761630	.04856205	-8.394	.0000
BP_V231	.06694004	.06846337	.978	.3282
A_B	-1.66012083	.10661157	-15.572	.0000
B_NC02	3.24283660	.10669597	30.393	.0000
B_NC12	1.61810115	.10688881	15.138	.0000
B_NC22	1.13846274	.10638166	10.702	.0000
B_NC32	.54387266	.11386869	4.776	.0000
B_LC2	-1.96219126	.02201572	-89.127	.0000
B_V222	-.20084592	.02185655	-9.189	.0000
B_V232	-.50775584	.03749380	-13.542	.0000
A_BO	-2.98445690	.18098572	-16.490	.0000
BO_NC03	2.25894774	.18050585	12.515	.0000
BO_NC13	1.29480185	.18039295	7.178	.0000
BO_NC23	.44886106	.18081148	2.482	.0130
BO_NC33	.01373248	.19878476	.069	.9449
BO_LC3	-2.01130463	.04496441	-44.731	.0000
BO_V223	.23806399	.04194885	5.675	.0000
BO_V233	.31377975	.06166151	5.089	.0000
A_M	-3.14254346	.14542727	-21.609	.0000
M_NC04	3.04325353	.14435308	21.082	.0000
M_NC14	1.42897079	.14544243	9.825	.0000
M_NC24	.88355972	.14479647	6.102	.0000
M_NC34	.15097003	.16185320	.933	.3509
M_LC4	-1.22429717	.03164675	-38.686	.0000
M_V224	.15468449	.03330023	4.645	.0000
M_V234	.16191192	.05084403	3.184	.0015
A_P	-.50371140	.08732391	-5.768	.0000
P_NC05	2.42749680	.08820689	27.520	.0000
P_NC15	.67443617	.08935972	7.547	.0000
P_NC25	.18060033	.08812874	2.049	.0404
P_NC35	-.48358690	.10524625	-4.595	.0000
P_LC5	-1.80386126	.02816130	-64.055	.0000
P_V225	-4.24159406	.07040613	-60.245	.0000
P_V235	-5.29265215	.24396147	-21.695	.0000

MNL10.22a – Combinação de Variáveis socioeconómicas e sobre TC

- ASC

- Lc - Var. binária de disponibilidade de Licença de condução (Lc)
- NCia - Var. binária nº auto disponíveis diariamente no agregado per capita (expto NC4a).

- V2: Velocidade comercial equivalente por Bus em km/h (d2/T2*60)

- TBA: Variável continua Razão tempos médios de viagem em Bus/AUTO entre as zonas de Geração e Atracção

- Ftl : Frequencia média horária de TC potencialmente à disposição entre a zona de geração e de atracção entre as 7:30 e as 19:30 (nfreq7301930/12)

```
DISCRETECHOICE
;Lhs=MTRP
;Choices=Bp,B,Bo,M,P,A[1]
;Rh2=ONE,FTL,NC0,NC1,NC2,NC3,LC,V2,TBA$
+---------------------------------------------+
| Discrete choice and multinomial logit models|
+---------------------------------------------+
Normal exit from iterations. Exit status=0.
+---------------------------------------------+
| Discrete choice (multinomial logit) model   |
| Maximum Likelihood Estimates                |
| Model estimated: Feb 16, 2012 at 07:45:21PM.|
| Dependent variable               Choice     |
| Weighting variable                 None     |
| Number of observations            40099     |
| Iterations completed                  9     |
| Log likelihood function       -31194.18     |
| Number of parameters                 45     |
| Info. Criterion: AIC =          1.55810     |
|   Finite Sample: AIC =          1.55811     |
| Info. Criterion: BIC =          1.56775     |
| Info. Criterion:HQIC =          1.56116     |
| R2=1-LogL/LogL*  Log-L fncn  R-sqrd  RsqAdj |
| Constants only  -50751.5442  .38535  .38522 |
| Chi-squared[40]          =  39114.72051     |
| Prob [ chi squared > value ] =   .00000     |
| Response data are given as ind. choice.     |
| Number of obs.= 95426, skipped**** bad obs. |
+---------------------------------------------+

+---------------------------------------------+
| Notes No coefficients=> P(i,j)=1/J(i).      |
|       Constants only => P(i,j) uses ASCs    |
|         only. N(j)/N if fixed choice set.   |
|         N(j) = total sample frequency for j |
|         N    = total sample frequency.      |
|       These 2 models are simple MNL models. |
|       R-sqrd = 1 - LogL(model)/logL(other)  |
```

```
|       RsqAdj=1-[nJ/(nJ-nparm)]*(1-R-sqrd)   |
|         nJ   = sum over i, choice set sizes |
+---------------------------------------------+
+--------+--------------+----------------+--------+--------+
|Variable| Coefficient  | Standard Error |b/St.Er.|P[|Z|>z]|
+--------+--------------+----------------+--------+--------+
 A_BP     |   -3.76674873      1.01881364    -3.697    .0002
 BP_FTL1  |     .00416789       .00405629     1.028    .3042
 BP_NC01  |    5.40778780      1.00288995     5.392    .0000
 BP_NC11  |    3.38665933      1.00469342     3.371    .0007
 BP_NC21  |    2.73324172      1.00441233     2.721    .0065
 BP_NC31  |    1.72058623      1.03221065     1.667    .0955
 BP_LC1   |   -1.99300887       .08152660   -24.446    .0000
 BP_V21   |    -.02529420       .00658272    -3.843    .0001
 BP_TBA1  |   -1.07811229       .09580945   -11.253    .0000
 A_B      |    -.47532151       .16796250    -2.830    .0047
 B_FTL2   |     .02342585       .00184434    12.702    .0000
 B_NC02   |    3.74657163       .14581854    25.693    .0000
 B_NC12   |    1.82339205       .14642094    12.453    .0000
 B_NC22   |    1.38703704       .14509696     9.559    .0000
 B_NC32   |     .65132436       .15718680     4.144    .0000
 B_LC2    |   -1.84590900       .03208209   -57.537    .0000
 B_V22    |    -.03381301       .00322106   -10.497    .0000
 B_TBA2   |    -.76896979       .04101483   -18.749    .0000
 A_BO     |   -3.91597280       .32820717   -11.931    .0000
 BO_FTL3  |    -.07070939       .00809601    -8.734    .0000
 BO_NC03  |    2.03170198       .25750249     7.890    .0000
 BO_NC13  |     .95983220       .25835378     3.715    .0002
 BO_NC23  |     .23641842       .25733092      .919    .3582
 BO_NC33  |    -.09313872       .29421554     -.317    .7516
 BO_LC3   |   -1.42492986       .08124916   -17.538    .0000
 BO_V23   |     .02378114       .00738723     3.219    .0013
 BO_TBA3  |     .45053413       .08568499     5.258    .0000
 A_M      |   -3.69722798       .35251791   -10.488    .0000
 M_FTL4   |    -.04969990       .00571680    -8.694    .0000
 M_NC04   |    3.30409062       .30890362    10.696    .0000
 M_NC14   |    1.42631446       .31329489     4.553    .0000
 M_NC24   |     .92672636       .31107870     2.979    .0029
 M_NC34   |     .80236087       .33093021     2.425    .0153
 M_LC4    |   -1.33297838       .06747502   -19.755    .0000
 M_V24    |    -.00331760       .00646050     -.514    .6076
 M_TBA4   |     .14127336       .07420500     1.904    .0569
 A_P      |    5.95762469       .16991477    35.062    .0000
 P_FTL5   |    -.00215479       .00230926     -.933    .3508
 P_NC05   |    2.48937158       .13589398    18.318    .0000
 P_NC15   |     .81659493       .13935550     5.860    .0000
 P_NC25   |     .53379722       .13597306     3.926    .0001
 P_NC35   |     .00271847       .16713515      .016    .9870
 P_LC5    |   -1.75742195       .04992193   -35.203    .0000
 P_V25    |    -.92708262       .01220569   -75.955    .0000
 P_TBA5   |   -1.04887569       .05191177   -20.205    .0000
```