```
/*파일 저장은 학교 sas이용함*/
/*샘플링한 파일 불러오기*/
FILENAME REFFILE '/folders/myfolders/final2.csv';
PROC IMPORT DATAFILE=REFFILE
DBMS=CSV
OUT=final;
GETNAMES=YES;
RUN;

/*sample weight*/

data final;
if CARAVAN=1 then smp_wgt=1;
else smp_wgt=16;
set final;
run;

/*독립성검정- 카이스퀘어*/
proc freq data=final;
weight smp_wgt;
table CARAVAN*(MOSTYPE MAANTHUI MGEMOMV MGEMLEEF
MOSHOOFD MGODRK MGODPR MGODOV MGODGE
        MRELGE MRELSA MRELOV MFALLEEN MFGEKIND
        MFWEKIND MOPLHOOG MOPLMIDD MOPLLAAG
        MBERHOOG MBERZELF MBERBOER MBERMIDD MBERARBG
        MBERARBO MSKA MSKB1 MSKB2
        MSKC MSKD MHHUUR MHKOOP MAUT1 MAUT2 MAUT0
MZFONDS MZPART MINKM30 MINK3045
        MINK4575 MINK7512 MINK123M MINKGEM MKOOPKLA
        PWAPART PWABEDR PWALAND PPERSAUT
        PBESAUT PMOTSCO PVRAAUT PAANHANG PTRACTOR
        PWERKT PBROM PLEVEN PPERSONG
        PGEZONG PWAOREG PBRAND PZEILPLPPLEZIER
PFIETS PINBOED PBYSTAND AWAPART AWABEDR
        AWALAND APERSAUT ABESAUT AMOTSCO AVRAAUT
        AAANHANG ATRACTOR AWERKT ABROM ALEVEN
        APERSONG AGEZONG AWAOREG ABRAND AZEILPL
        APLEZIER AFIETS AINBOED ABYSTAND)/
        CHISQ;
run;
```

```
/*독립성검정-피셔*/
proc freq data=final;
weight smp_wgt;
table CARAVAN*(PBESAUT) / FISHER ;
run;
proc freq data=final;
weight smp_wgt;
table CARAVAN*(PVRAAUT) / FISHER ;
run;
proc freq data=final;
weight smp_wgt;
table CARAVAN*( PWERKT) / FISHER ;
run;
proc freq data=final;
weight smp_wgt;
table CARAVAN*( PPERSONG) / FISHER ;
run;
proc freq data=final;
weight smp_wgt;
table CARAVAN*(AWABEDR) / FISHER ;
run;
proc freq data=final;
weight smp_wgt;
table CARAVAN*(ABESAUT) / FISHER ;
run;

proc freq data=final;
weight smp_wgt;
table CARAVAN*(AVRAAUT) / FISHER ;
run;
proc freq data=final;
weight smp_wgt;
table CARAVAN*(AWERKT) / FISHER ;
run;
proc freq data=final;
weight smp_wgt;
table CARAVAN*(APERSONG) / FISHER ;
run;

/*변수 선택후 분할표*/
proc freq data=final;
```

```
weight smp_wgt;
table CARAVAN*(MOSTYPE MAANTHUI MGEMOMV MGEMLEEF MOSHOOFD MGODRK MGODPR
 MGODOV MGODGE MRELGE MRELSA MRELOV MFALLEEN MFGEKIND MFWEKIND MOPLHOOG MOPLMIDD MOPLLAAG
 MBERHOOG MBERZELF MBERBOER MBERMIDD MBERARBG MBERARBO MSKA MSKB1 MSKB2 MSKC MSKD MHHUUR
 MHKOOP MAUT1 MAUT2 MAUT0 MZFONDS MZPART MINKM30 MINK3045 MINK4575 MINK7512 MINK123M
 MINKGEM MKOOPKLA PWAPART PWABEDR PWALAND PPERSAUT PMOTSCO PAANHANG PTRACTOR
 PWERKT PBROM PLEVEN PGEZONG PWAOREG PBRAND PZEILPL PPLEZIER PFIETS
 PINBOED PBYSTAND AWAPART AWALAND APERSAUT AMOTSCO AAANHANG ATRACTOR
 ABROM ALEVEN AGEZONG AWAOREG ABRAND AZEILPL APLEZIER AFIETS AINBOED ABYSTAND)
 /CHISQ;
 RUN;

 %macro step4(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =1 THEN &var.1=1; else &var.1=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var in (6,7) THEN &var.67=1; else &var.67=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step4(MRELGE);

%macro step5(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var in (1,2) THEN &var.12=1; else &var.12=0;
```

```
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var in (5,6) THEN &var.56=1; else &var.56=0;
run;
%mend;
%step5(MRELSA);

%macro step6(var);
data final;
 set final;
 if &var in (0,1) THEN &var.01=1; else &var.01=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var in (4,5) THEN &var.45=1; else &var.45=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend; %step6(MFALLEEN);

%macro step7(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =1 THEN &var.1=1; else &var.1=0;
 if &var in (2,3) THEN &var.23=1; else &var.23=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step7(MFWEKIND);

/**MOPLHOOG MOPLMIDD**/
%macro step8(var);
data final;
 set final;
```

```
 if &var in (0,1) THEN &var.01=1; else &var.01=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step8(MOPLHOOG);

%macro step9(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =1 THEN &var.1=1; else &var.1=0;
 if &var in (2,3,4) THEN &var.234=1; else &var.234=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step9(MOPLMIDD);

/***MBERHOOG MBERZELF MBERBOER MBERMIDD MBERARBG MBERARBO ***/

%macro step10(var);
data final;
 set final;
 if &var in (0,1) THEN &var.01=1; else &var.01=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
```

```
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step10(MBERHOOG);


%macro step11(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var in (1,2) THEN &var.12=1; else &var.12=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
run;
%mend;
%step11(MBERZELF);


%macro step12(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =1 THEN &var.1=1; else &var.1=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var in (6,8,9) THEN &var.689=1; else &var.689=0;
run;
%mend;
%step12(MBERBOER);

%macro step13(var);
data final;
 set final;
 if &var in (0,1) THEN &var.01=1; else &var.01=0;
 if &var in (2,3) THEN &var.23=1; else &var.23=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
```

```
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step13(MBERMIDD);

%macro step14(var);
data final;
 set final;
 if &var in (0,1) THEN &var.01=1; else &var.01=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var in (4,5) THEN &var.45=1; else &var.45=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step14(MBERARBG);


%macro step15(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =1 THEN &var.1=1; else &var.1=0;
 if &var in (2,3) THEN &var.23=1; else &var.23=0;
 if &var in (4,5) THEN &var.45=1; else &var.45=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var in (7,8) THEN &var.78=1; else &var.78=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step15(MBERARBO);

/**MSKA MSKB1 MSKB2 MSKC 사회계급*/

%macro step15(var);
data final;
```

```
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var in (1,2) THEN &var.12=1; else &var.12=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step15(MSKA);

%macro step16(var);
data final;
 set final;
 if &var in (0,1) THEN &var.01=1; else &var.01=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step16(MSKB1);

%macro step17(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var in (1,2) THEN &var.12=1; else &var.12=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var in (7,8) THEN &var.78=1; else &var.78=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
```

```
run;
%mend;
%step17(MSKB2);

%macro step18(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =1 THEN &var.1=1; else &var.1=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var in (4,5) THEN &var.45=1; else &var.45=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step18(MSKC);

/**MAUT1 MAUT2 MAUT0  자동차**/
%macro step19(var);
data final;
 set final;
 if &var in (0,1) THEN &var.01=1; else &var.01=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var in (3,4) THEN &var.34=1; else &var.34=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step19(MAUT1);


%macro step20(var);
data final;
 set final;
 if &var in (0,1) THEN &var.01=1; else &var.01=0;
```

```
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
run;
%mend;
%step20(MAUT2);

%macro step21(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =1 THEN &var.1=1; else &var.1=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
  if &var =6 THEN &var.6=1; else &var.6=0;
 if &var in (7,8,9) THEN &var.789=1; else &var.789=0;
run;
%mend;
%step21(MAUT0);

/** MINKM30 MINK4575 MINK7512   수익에 에대한 **/
%macro step22(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var in (1,2) THEN &var.12=1; else &var.12=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step22(MINKM30);
```

```
%macro step23(var);
data final;
 set final;
 if &var in (0,1) THEN &var.01=1; else &var.01=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step23(MINK4575);


%macro step24(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =1 THEN &var.1=1; else &var.1=0;
 if &var in (2,3) THEN &var.23=1; else &var.23=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =5 THEN &var.5=1; else &var.5=0;
 if &var in (6,8) THEN &var.68=1; else &var.68=0;
 if &var =9 THEN &var.9=1; else &var.9=0;
run;
%mend;
%step24(MINK7512);

/** MKOOPKLA**/
%macro step25(var);
data final;
 set final;
 if &var in (1,2) THEN &var.12=1; else &var.12=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var in (4,5) THEN &var.45=1; else &var.45=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
 if &var =7 THEN &var.7=1; else &var.7=0;
 if &var =8 THEN &var.8=1; else &var.8=0;
```

```
run;
%mend;
%step25(MKOOPKLA);

/**PWABEDR PTRACTOR PZEILPL PPLEZIER ALEVEN  **/
%macro step26(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var in (4,5) THEN &var.45=1; else &var.45=0;
run;
%mend;
%step26(PWABEDR);

%macro step27(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =3 THEN &var.3=1; else &var.3=0;
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var in (5,6) THEN &var.56=1; else &var.56=0;
 run;
%mend;
%step27(PTRACTOR);

%macro step28(var);
data final;
 set final;
 if &var in (0,1) THEN &var.01=1; else &var.01=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
run;
%mend;
%step28(PZEILPL);

%macro step29(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var in (1,2,3) THEN &var.123=1; else &var.123=0;
```

```
 if &var =4 THEN &var.4=1; else &var.4=0;
 if &var =6 THEN &var.6=1; else &var.6=0;
run;
%mend;
%step29(PPLEZIER);

%macro step30(var);
data final;
 set final;
 if &var =0 THEN &var.0=1; else &var.0=0;
 if &var =1 THEN &var.1=1; else &var.1=0;
 if &var =2 THEN &var.2=1; else &var.2=0;
 if &var in (3,4) THEN &var.34=1; else &var.34=0;
run;
%mend;
%step30(ALEVEN);

/*후보변수 선택한 파일 불러오기*/
FILENAME REFFILE '/folders/myfolders/final_colpt_final3.csv';
PROC IMPORT DATAFILE=REFFILE
DBMS=CSV
OUT=final_colpt_final3;
GETNAMES=YES;
RUN;

/*Train set, Test set 분할*/
data final4;
set final4;
if ranuni(0049)<0.7 then splitwgt = smp_wgt;
else splitwgt = .;
records = 1;
run;

/*backward*/
proc logistic data=final4 descending;
weight splitwgt;
model
CARAVAN=MOSTYPE    MAANTHUI      MGEMOMV      MOSHOOFD     M R E L O V
        MFGEKIND      MOPLLAAG      MSKD   MHHUUR
MHKOOP        MZFONDS       MZPART        MINK3045       MINK123M
MINKGEM       PWAPART       PWALAND       PPERSAUT       PMOTSCO
```

PAANHANG
PBROM PLEVEN PGEZONG PWAOREG PBRAND PFIETS
PINBOED PBYSTAND AWAPART AWALAND APERSAUT
AMOTSCO AAANHANG ATRACTOR ABROM AGEZONG
AWAOREG ABRAND AZEILPL APLEZIER AFIETS
AINBOED ABYSTAND MGEMLEEF1 MGEMLEEF2
MGEMLEEF34 MGEMLEEF5 MGEMLEEF6 MGODRK0 MGODRK1
MGODRK2 MGODRK34 MGODRK5 MGODRK6 M G O D R K 7
MGODRK9 MGODPR01 MGODPR2 MGODPR34
MGODPR5 MGODPR6 MGODPR7 MGODPR8 M G O D P R 9
MGODOV0 MGODOV1 MGODOV23 MGODOV4 M G O D O V 5
MGODGE0
MGODGE1 MGODGE2 MGODGE3 MGODGE45 M G O D G E 6
MGODGE7 MGODGE8 MRELGE0 MRELGE1 M R E L G E 2
MRELGE3
MRELGE4 MRELGE5 MRELGE67 MRELGE8 M R E L G E 9
MRELSA0 MRELSA12 MRELSA3 MRELSA4 MRELSA56
MFALLEEN01 MFALLEEN2 MFALLEEN3 MFALLEEN45 MFALLEEN6
MFALLEEN7 MFALLEEN8 MFALLEEN9
MFWEKIND0 MFWEKIND1 MFWEKIND23 MFWEKIND4 MFWEKIND5
MFWEKIND6 MFWEKIND7 MFWEKIND8
MFWEKIND9 MOPLHOOG01 MOPLHOOG2 MOPLHOOG3 MOPLHOOG4
MOPLHOOG5 MOPLHOOG6 MOPLHOOG7
MOPLHOOG8 MOPLHOOG9 MOPLMIDD0 MOPLMIDD1
MOPLMIDD234 MOPLMIDD5 MOPLMIDD6 MOPLMIDD7
MOPLMIDD8 MOPLMIDD9 MBERHOOG01 MBERHOOG2 MBERHOOG3
MBERHOOG4 MBERHOOG5 MBERHOOG6
MBERHOOG7 MBERHOOG8 MBERHOOG9 MBERZELF0 MBERZELF12
MBERZELF3 MBERZELF4 MBERZELF5
MBERBOER0 MBERBOER1 MBERBOER2 MBERBOER3 MBERBOER4
MBERBOER5 MBERBOER689 MBERMIDD01
MBERMIDD23 MBERMIDD4 MBERMIDD5 MBERMIDD6 MBERMIDD7
MBERMIDD8 MBERMIDD9 MBERARBG01
MBERARBG2 MBERARBG3 MBERARBG45 MBERARBG6 MBERARBG7
MBERARBG8 MBERARBG9 MBERARBO0
MBERARBO1 MBERARBO23 MBERARBO45 MBERARBO6 MBERARBO78
MBERARBO9 MSKA0 MSKA12 MSKA3
MSKA4 MSKA5 MSKA6 MSKA7 MSKA8 MSKA9 MSKB101 MSKB12 MSKB13
MSKB14 MSKB15 MSKB16
MSKB17 MSKB18 MSKB19 MSKB20 MSKB212 MSKB23 MSKB24 MSKB25
MSKB26 MSKB278 MSKB29 MSKC0

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        MSKC1 MSKC2 MSKC3 MSKC45MSKC6 MSKC7 MSKC8 MSKC9 M A U T 1 0 1
        MAUT12      MAUT134     MAUT15
        MAUT16      MAUT17      MAUT18      MAUT19      M A U T 2 0 1
        MAUT22      MAUT23      MAUT24      MAUT25      M A U T 2 6
        MAUT00      MAUT01
        MAUT02      MAUT03      MAUT04      MAUT05      M A U T 0 6
        MAUT0789    MINKM300    MINKM3012   MINKM303
        MINKM304    MINKM305    MINKM306    MINKM307    M I N K M 3 0 8
        MINKM309    MINK457501  MINK45752
        MINK45753   MINK45754
        MINK45755   MINK45756   MINK45757   MINK45758   M I N K 4 5 7 5 9
        MINK75120   MINK75121   MINK751223
        MINK75124   MINK75125   MINK751268  MINK75129
MKOOPKLA12  MKOOPKLA3   MKOOPKLA45  MKOOPKLA6
        MKOOPKLA7   MKOOPKLA8   PWABEDR0    PWABEDR2    P W A B E D R 3
        PWABEDR45   PTRACTOR0   PTRACTOR3
        PTRACTOR4   PTRACTOR56  PZEILPL01   PZEILPL2    P P L E Z I E R 0
        PPLEZIER123 PPLEZIER4   PPLEZIER6
        MINKM301    MINKM302    MINKM3034   ALEVEN0     A L E V E N 1
        ALEVEN2     ALEVEN34
/selection=backward sls=0.0001;
run;

/*forward*/
proc logistic data=final4 descending;
weight splitwgt;
model
CARAVAN=MOSTYPE  MAANTHUI   MGEMOMV   MOSHOOFD   M R E L O V
        MFGEKIND    MOPLLAAG    MSKD  MHHUUR
MHKOOP      MZFONDS     MZPART      MINK3045    MINK123M
MINKGEM     PWAPART     PWALAND     PPERSAUT    PMOTSCO
PAANHANG
        PBROM PLEVENPGEZONG     PWAOREG     PBRAND      PFIETS
PINBOED     PBYSTAND    AWAPART     AWALAND     APERSAUT
        AMOTSCO     AAANHANG    ATRACTOR    ABROM AGEZONG
AWAOREG     ABRAND      AZEILPL     APLEZIER    AFIETS
        AINBOED     ABYSTAND    MGEMLEEF1   MGEMLEEF2
MGEMLEEF34  MGEMLEEF5   MGEMLEEF6   MGODRK0     MGODRK1
        MGODRK2     MGODRK34    MGODRK5     MGODRK6     M G O D R K 7
        MGODRK9     MGODPR01    MGODPR2     MGODPR34
        MGODPR5     MGODPR6     MGODPR7     MGODPR8     M G O D P R 9
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MGODOV0 MGODOV1 MGODOV23 MGODOV4 MGODOV5
MGODGE0
MGODGE1 MGODGE2 MGODGE3 MGODGE45 MGODGE6
MGODGE7 MGODGE8 MRELGE0 MRELGE1 MRELGE2
MRELGE3
MRELGE4 MRELGE5 MRELGE67 MRELGE8 MRELGE9
MRELSA0 MRELSA12 MRELSA3 MRELSA4 MRELSA56
MFALLEEN01 MFALLEEN2 MFALLEEN3 MFALLEEN45 MFALLEEN6
MFALLEEN7 MFALLEEN8 MFALLEEN9
MFWEKIND0 MFWEKIND1 MFWEKIND23 MFWEKIND4 MFWEKIND5
MFWEKIND6 MFWEKIND7 MFWEKIND8
MFWEKIND9 MOPLHOOG01 MOPLHOOG2 MOPLHOOG3 MOPLHOOG4
MOPLHOOG5 MOPLHOOG6 MOPLHOOG7
MOPLHOOG8 MOPLHOOG9 MOPLMIDD0 MOPLMIDD1
MOPLMIDD234 MOPLMIDD5 MOPLMIDD6 MOPLMIDD7
MOPLMIDD8 MOPLMIDD9 MBERHOOG01 MBERHOOG2 MBERHOOG3
MBERHOOG4 MBERHOOG5 MBERHOOG6
MBERHOOG7 MBERHOOG8 MBERHOOG9 MBERZELF0 MBERZELF12
MBERZELF3 MBERZELF4 MBERZELF5
MBERBOER0 MBERBOER1 MBERBOER2 MBERBOER3 MBERBOER4
MBERBOER5 MBERBOER689 MBERMIDD01
MBERMIDD23 MBERMIDD4 MBERMIDD5 MBERMIDD6 MBERMIDD7
MBERMIDD8 MBERMIDD9 MBERARBG01
MBERARBG2 MBERARBG3 MBERARBG45 MBERARBG6 MBERARBG7
MBERARBG8 MBERARBG9 MBERARBO0
MBERARBO1 MBERARBO23 MBERARBO45 MBERARBO6 MBERARBO78
MBERARBO9 MSKA0 MSKA12 MSKA3
MSKA4 MSKA5 MSKA6 MSKA7 MSKA8 MSKA9 MSKB101 MSKB12 MSKB13
MSKB14 MSKB15 MSKB16
MSKB17 MSKB18 MSKB19 MSKB20 MSKB212 MSKB23 MSKB24 MSKB25
MSKB26 MSKB278 MSKB29 MSKC0
MSKC1 MSKC2 MSKC3 MSKC45 MSKC6 MSKC7 MSKC8 MSKC9 MAUT101
MAUT12 MAUT134 MAUT15
MAUT16 MAUT17 MAUT18 MAUT19 MAUT201
MAUT22 MAUT23 MAUT24 MAUT25 MAUT26
MAUT00 MAUT01
MAUT02 MAUT03 MAUT04 MAUT05 MAUT06
MAUT0789 MINKM300 MINKM3012 MINKM303
MINKM304 MINKM305 MINKM306 MINKM307 MINKM308
MINKM309 MINK457501 MINK45752
MINK45753 MINK45754

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        MINK45755       MINK45756       MINK45757       MINK45758       MINK45759
        MINK75120       MINK75121       MINK751223
        MINK75124       MINK75125       MINK751268      MINK75129
MKOOPKLA12    MKOOPKLA3     MKOOPKLA45    MKOOPKLA6
        MKOOPKLA7       MKOOPKLA8       PWABEDR0        PWABEDR2        PWABEDR3
        PWABEDR45       PTRACTOR0       PTRACTOR3
        PTRACTOR4       PTRACTOR56      PZEILPL01       PZEILPL2        PPLEZIER0
        PPLEZIER123     PPLEZIER4       PPLEZIER6
        MINKM301        MINKM302        MINKM3034       ALEVEN0         ALEVEN1
        ALEVEN2         ALEVEN34
/selection=forward sle=0.0001;
run;

/*score*/
proc logistic data=final4 descending;
weight splitwgt;
model CARAVAN= MOPLHOOG8
PPERSAUT PPLEZIER4 MOPLHOOG2
AWAOREG AZEILPL MSKB17
MFWEKIND8 MSKB19 PBRAND
MSKB13 MINKM302 PFIETS MOPLLAAG MHKOOP
AFIETS MSKC1 MINKM308
/selection=score best=2 ;
run;

/*최종모형적합*/
proc logistic data=final4 descending;
weight splitwgt;
model CARAVAN=MOPLHOOG8
PPERSAUT PPLEZIER4 MOPLHOOG2  AWAOREG AZEILPL MSKB17  MFWEKIND8
MSKB19 PBRAND
MSKB13  MINKM302  MOPLLAAG  MHKOOP  AFIETS MSKC1 MINKM308
;
output out=m_out pred=pred;
run;

proc sort data=m_out;
by descending pred;
run;

proc univariate data=m_out(where=(splitwgt^=.)) noprint;
```

```
weight splitwgt;
var pred CARAVAN;
output out=preddata sumwgt=sumwgt;
run;

/*Train data를10그룹으로 나눔*/
data mod_dec;
set m_out(where=(splitwgt^=.));
if (_n_=1) then set preddata;
retain sumwgt;
n+splitwgt ; /*웨이트 누적 n값은 웨이트 더해나가면서 누적으로 만들어짐*/
if n<0.1*sumwgt then mod_dec=0; else
if n<0.2*sumwgt then mod_dec=1; else
if n<0.3*sumwgt then mod_dec=2; else
if n<0.4*sumwgt then mod_dec=3; else
if n<0.5*sumwgt then mod_dec=4; else
if n<0.6*sumwgt then mod_dec=5; else
if n<0.7*sumwgt then mod_dec=6; else
if n<0.8*sumwgt then mod_dec=7; else
if n<0.9*sumwgt then mod_dec=8; else
mod_dec=9;
run;

/*십분위분석*/
title "Decile Analysis"; /*어느 선에서 끊어서 마케팅 할건지*/
proc tabulate data=mod_dec;
weight splitwgt;
class mod_dec;
var records CARAVAN pred;/*갯수*/
table mod_dec='decil' all='Total',
records='Number of obs'*(sum=' '*f=c0mma10.)
pred='Predicted probalilty'*(mean=' '*f=11.5)
CARAVAN='Actual'*(mean=' '*f=11.5)/rts=9 row=float;
run;

/*test에 적용*/
proc univariate data=m_out(where=(splitwgt=.)) noprint;
weight smp_wgt;
var pred CARAVAN;
output out=preddata sumwgt=sumwgt;
run;
```

```
data mod_dec;
set m_out(where=(splitwgt=.));
if (_n_=1) then set preddata;
retain sumwgt;
n+smp_wgt ;
if n<0.1*sumwgt then mod_dec=0; else
if n<0.2*sumwgt then mod_dec=1; else
if n<0.3*sumwgt then mod_dec=2; else
if n<0.4*sumwgt then mod_dec=3; else
if n<0.5*sumwgt then mod_dec=4; else
if n<0.6*sumwgt then mod_dec=5; else
if n<0.7*sumwgt then mod_dec=6; else
if n<0.8*sumwgt then mod_dec=7; else
if n<0.9*sumwgt then mod_dec=8; else
mod_dec=9;
run;

title "Decile Analysis";
proc tabulate data=mod_dec;
weight smp_wgt;
class mod_dec;
var records CARAVAN pred;
table mod_dec='decil' all='Total',
records='Number of obs'*(sum=' '*f=c0mma10.)
pred='Predicted probalilty'*(mean=' '*f=11.5)
CARAVAN='Actual'*(mean=' '*f=11.5)/rts=9 row=float;
run;
```