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Visualization of Marketing Models: Data Mining to Uncover Innards of a Model

Appendix 31.A Star Graphs for Each Demographic Variable about the Deciles

```
title1 'table';
```

```
data table;
```

```
input decile age income educ gender;
```

```
cards;
```

```
1 63 155 18 0.05
```

```
2 51 120 16 0.10
```

```
3 49 110 14 0.20
```

```
4 46 111 13 0.25
```

```
5 42 105 13 0.40
```

```
6 41 095 12 0.55
```

```
7 39 088 12 0.70
```

```
8 37 091 12 0.80
```

```
9 25 070 12 1.00
```

```
10 25 055 12 1.00
```

```
;
```

```
run;
```

```
PROC PRINT;
```

```
run;
```

```
PROC STANDARD data = table out = tablez mean = 4 std = 1;
var age income educ gender;
run;
```

```
title1 'table stdz';
PROC PRINT data = tablez;
run;
```

```
PROC FORMAT; value dec_fmt
1. = 'top' 2 = ' 2 ' 3 = ' 3 ' 4 = ' 4 ' 5 = ' 5 '
6. = ' 6 ' 7 = ' 7 ' 8 = ' 8 ' 9 = ' 9 ' 10 = 'bot';
run;
```

```
PROC GREPLAY nofs igout = work.gseg;
delete all;
run;
quit;
```

```
goptions reset = all htext = 1.05 device = win
targetdevice = winprtg ftext = swissb lfactor = 3
hsize = 2 vsize = 8;
```

```
PROC GREPLAY nofs igout = work.gseg;
delete all;
run;
```

```
goptions reset = all device = win
targetdevice = winprtg ftext = swissb lfactor = 3;
title1 'AGE by Decile';
PROC GCHART data = tablez;
format decile dec_fmt. ;
star decile/fill = empty discrete sumvar = age
slice = outside value = none noheading;
run;
quit;
```

```
title1 'EDUCATON by Decile';
PROC GCHART data = tablez;
```

```

format decile dec_fmt. ;
star decile/fill = empty discrete sumvar = educ
slice = outside value = none noheading;
run;
quit;

title1 'INCOME by Decile';
PROC GCHART data = tablez;
format decile dec_fmt. ;
star decile/fill = empty discrete sumvar = income
slice = outside value = none noheading;
run;
quit;

title1 'GENDER by Decile';
PROC GCHART data = tablez;
format decile dec_fmt.;
star decile/fill = empty discrete sumvar = gender
slice = outside value = none noheading;
run;
quit;

PROC GREPLAY nofs igout = work.gseg tc = sashelp.templt template = l2r2s;
treplay 1:1 2:2 3:3 4:4;
run;
quit;

```

Appendix 31.B Star Graphs for Each Decile about the Demographic Variables

```

data table;
input decile age income educ gender;
cards;
1 63 155 18 0.05

```

```
2 51 120 16 0.10
3 49 110 14 0.20
4 46 111 13 0.25
5 42 105 13 0.40
6 41 095 12 0.55
7 39 088 12 0.70
8 37 091 12 0.80
9 25 070 12 1.00
10 25 055 12 1.00
```

```
;
```

```
run;
```

```
PROC STANDARD data = table out = tablez mean = 4 std = 1;
```

```
var age income educ gender;
```

```
title2 'table stdz';
```

```
PROC PRINT data = tablez;
```

```
run;
```

```
PROC TRANSPOSE data = tablez out = tablezt prefix = dec_;
```

```
var age income educ gender;
```

```
run;
```

```
PROC PRINT data = tablezt;
```

```
run;
```

```
PROC STANDARD data = tablezt out = tableztz mean = 4 std = 1;
```

```
var dec_1 - dec_10;
```

```
title2 'tablezt stdz';
```

```
PROC PRINT data = tableztz;
```

```
run;
```

```
PROC TRANSPOSE data = tablez out = tablezt prefix = dec_;
```

```
var age income educ gender;
```

```
run;
```

```
PROC PRINT data = tablezt;
```

```
run;
```

```
PROC GREPLAY nofs igout = work.gseg;
delete all;
run;
quit;
```

```
goptions reset = all htext = 1.05 device = win
target = winprtg ftext = swissb lfactor = 3
hsize = 4 vsize = 8;
title1 'top decile';
PROC GCHART data = tableztz;
star name/fill = empty sumvar = dec_1
slice = outside value = none noheading;
run;
quit;
```

```
title1 '2nd decile';
PROC GCHART data = tableztz;
star name/fill = empty sumvar = dec_2
slice = outside value = none noheading;
run;
quit;
```

```
title1 '3rd decile';
PROC GCHART data = tableztz;
star name/fill = empty sumvar = dec_3
slice = outside value = none noheading;
run;
quit;
```

```
title1 '4th decile';
PROC GCHART data = tableztz;
star name/fill = empty sumvar = dec_4
slice = outside value = none noheading;
run;
quit;
```

```
title1 '5th decile';
proc gchart data = tableztz;
```

```
star name/fill = empty sumvar = dec_5  
slice = outside value = none noheading;  
run;  
quit;
```

```
title1 '6th decile';  
PROC GCHART data = tableztz;  
star name/fill = empty sumvar = dec_6  
slice = outside value = none noheading;  
run;  
quit;
```

```
title1 '7th decile';  
PROC GCHART data = tableztz;  
star name/fill = empty sumvar = dec_7  
slice = outside value = none noheading;  
run;  
quit;
```

```
title1 '8th decile';  
PROC GCHART data = tableztz;  
star name/fill = empty sumvar = dec_8  
slice = outside value = none noheading;  
run;  
quit;
```

```
title1 '9th decile';  
PROC GCHART data = tableztz;  
star name/fill = empty sumvar = dec_9  
slice = outside value = none noheading;  
run;  
quit;
```

```
title1 'bottom decile';  
PROC GCHART data = tableztz;  
star name/fill = empty sumvar = dec_10  
slice = outside value = none noheading;  
run; quit;
```

```
goptions hsize = 0 vsize = 0;
PROC GREPLAY Nofs TC = Sasuser.Templt;
Tdef L2R5 Des = 'Ten graphs: five across, two down'
1/lx = 0 lly = 51
ulx = 0 uly = 100
urx = 19 ury = 100
lrx = 19 lry = 51
2/lx = 20 lly = 51
ulx = 20 uly = 100
urx = 39 ury = 100
lrx = 39 lry = 51
3/lx = 40 lly = 51
ulx = 40 uly = 100
urx = 59 ury = 100
lrx = 59 lry = 51
4/lx = 60 lly = 51
ulx = 60 uly = 100
urx = 79 ury = 100
lrx = 79 lry = 51
5/lx = 80 lly = 51
ulx = 80 uly = 100
urx = 100 ury = 100
lrx = 100 lry = 51
6/lx = 0 lly = 0
ulx = 0 uly = 50
urx = 19 ury = 50
lrx = 19 lry = 0
7/lx = 20 lly = 0
ulx = 20 uly = 50
urx = 39 ury = 50
lrx = 39 lry = 0
8/lx = 40 lly = 0
ulx = 40 uly = 50
urx = 59 ury = 50
lrx = 59 lry = 0
9/lx = 60 lly = 0
```

```
ulx = 60 uly = 50
urx = 79 ury = 50
lrx = 79 lry = 0
10/l1x = 80 l1y = 0
ulx = 80 uly = 50
urx = 100 ury = 50
lrx = 100 lry = 0;
run;
quit;
```

```
PROC GREPLAY Nofs Igout = Work.Gseg
TC = Sasuser.Templt Template = L2R5;
Treplay 1:1 2:2 3:3 4:4 5:5 6:6 7:7 8:8 9:9 10:10;
run;
quit;
```

Appendix 31.C Profile Curves: All Deciles

```
title1'table';
data table;
input decile age income educ gender;
cards;
1 63 155 18 0.05
2 51 120 16 0.10
3 49 110 14 0.20
4 46 111 13 0.25
5 42 105 13 0.40
6 41 095 12 0.55
7 39 088 12 0.70
8 37 091 12 0.80
9 25 070 12 1.00
10 25 055 12 1.00
;
run;
```



```
data table;  
set table;  
x1 = age; x2 = income; x3 = educ; x4 = gender;
```

```
PROC PRINT;  
run;
```

```
data table10;  
sqrt2 = sqrt(2);  
array f {10};  
do t = -3.14 to 3.14 by .05;  
do i = 1 to 10;  
set table point = i;  
f(i) = x1/sqrt2 + x4*sin(t) + x3*cos(t) + x2*sin(2*t);  
end;  
output;  
label f1 = '00'x;  
end;  
stop;  
run;
```

```
goptions reset = all device = win target = winprtg ftext = swissb lfactor = 3;  
title1 'Figure 31.6 Profile Curves: All Deciles';  
PROC GPLOT data = table10; plot  
f1*t = 'T'  
f2*t = '2'  
f3*t = '3'  
f4*t = '4'  
f5*t = '5'  
f6*t = '6'  
f7*t = '7'  
f8*t = '8'  
f9*t = '9'  
f10*t = 'B'  
/overlay haxis = -3 -2 -1 0 1 2 3  
nolegend vaxis = -150 to 250 by 50;  
run; quit;
```