31

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/llx = 0 lly = 51
ulx = 0 uly = 100
urx = 19 ury = 100
lrx = 19 lry = 51
2/llx = 20 lly = 51
ulx = 20 uly = 100
urx = 39 ury = 100
lrx = 39 lry = 51
3/llx = 40 lly = 51
ulx = 40 uly = 100
urx = 59 ury = 100
lrx = 59 lry = 51
4/llx = 60 lly = 51
ulx = 60 uly = 100
urx = 79 ury = 100
lrx = 79 lry = 51
5/llx = 80 lly = 51
ulx = 80 uly = 100
urx = 100 ury = 100
lrx = 100 lry = 51
6/llx = 0 lly = 0
ulx = 0 uly = 50
urx = 19 ury = 50
lrx = 19 lry = 0
7/llx = 20 lly = 0
ulx = 20 uly = 50
urx = 39 ury = 50
lrx = 39 lry = 0
8/llx = 40 lly = 0
ulx = 40 uly = 50
urx = 59 ury = 50
lrx = 59 lry = 0
9/llx = 60 lly = 0
```

```
ulx = 60 uly = 50
urx = 79 ury = 50
lrx = 79 lry = 0
10/llx = 80 lly = 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;
```