

```
*****;
* Project          : ZRHM-REXA-07-JP
*
* Program name     : F1501020602.sas
*
* Author           : L. Yan
*
* Date created     : 05/20/2015
*
* Purpose          : F1501020602
*
* Revision History :
*
* Date            Author      Ref      Revision (Date in YYYYMMDD format)
*
*****;
```

```
%let prgname=F1501020602_ZRHM_REXA_07_JP_V1;
```

```
options mprint;
```

```
options sasautos=("W:\pmp07\macros" sasautos) notes;
%init(delivery=9);
```

```
%titlecsv(prgname=&prgname., version=5);
```

```
%put &title1;
%put &title2;
%put &APPENDIX;
%put &endpoint;
%put &outname.;
```

```
options missing="";
```

```
%macro mainloop(paramn=, outn=, sizn=, ypos=, flg=, where=);
```

```
data adpc;
set adam.adqspa;
method=2;
if trta in ("mCC" "THSm2.2") and aval>. and paramn in (&paramn.) and (anl01fl="Y"
and ((FASFL="Y" and 100<=avisitn<=105 and anl01fl="Y") or (FASFL="Y" and 100=avisitn and anl01fl="Y")
or (FASFL="Y" and 130=avisitn and anl01fl="Y") or (FASFL="Y" and 160=avisitn and anl01fl="Y")
or (FASFL="Y" and 190=avisitn and anl01fl="Y")));
run;
```

```
data adpc;
set adpc;
if aval>0 then logaval=log(aval);
run;
```

```
proc sort data=adpc out=param(keep=param) nodupkey;
by param;
run;
```

```
%global param_&paramn.;
```

```
data param;
set param;
call symput("param_&paramn.", strip(param));
run;
```

```
data adpc;
set adpc;
if aval>0 then logaval=log(aval);
run;
```

```
data adpc;
set adpc;
if TRTA="THSm2.2" then trtcd=1;
else if TRTA="mCC" then trtcd=2;
else if TRTA="SA" then trtcd=3;
run;
```

```
proc sort data=adpc;
by trtcd avisitn;
run;
```

```
proc means data = adpc noprint;
by trtcd avisitn paramn;
var aval;
output out=xlab1 n=n mean=mean lclm=lclm uclm=uclm std=std;
run;
```

```

data xlab1 ;
set xlab1;
  Estimate1 =mean; /* Ratio of geometric mean */
  LowerCL   =lclm; /* 95% CI lower bound */
  UpperCL   =uclm; /* 95% CI upper bound */
run;

/* Reshape the data to contain three Y values for */
/* each X for use with the HILOC interpolation. */
data reshape_&paramn._&outn(keep=xvar yvar mean trtcd avisitn Estimate1 LowerCL UpperCL paramn);
  set xlab1;
  mean=Estimate1;
  if avisitn<=105 then xvar=avisitn-100;
  else if avisitn=130 then xvar=10;
  else if avisitn=160 then xvar=15;
  else if avisitn=190 then xvar=20;

  yvar=Estimate1;
  output;

  yvar=LowerCL;
  output;

  yvar=UpperCL;
  output;
run;

proc format;
value visitf
-1=" "
0=" "
6=" "
7=" "
8=" "
11=" "
12=" "
13=" "
14=" "
16=" "
17=" "
18=" "
19=" "
10="30"
15="60"
20="90"
9=" ";
run;

%let annopos=6;
%let xpos=60;
%let yypos=9.5;

data anno3;
length function color $ 8;
retain xsys hsys '3';
ysys="3"; size=0.3;
color="blue"; function='move'; x=30; y=&annopos.; line=1; output;
color="blue"; function='draw'; x=35; y=&annopos.; line=1; output;
color="red"; function='move'; x=50; y=&annopos.; line=3; output;
color="red"; function='draw'; x=55; y=&annopos.; line=3; output;

color="black"; function='move'; x=28; y=&annopos.-2.5; line=1; output;
color="black"; function='draw'; x=77; y=&annopos.-2.5; line=1; output;
color="black"; function='draw'; x=77; y=&annopos.+2; line=1; output;
color="black"; function='draw'; x=28; y=&annopos.+2; line=1; output;
color="black"; function='draw'; x=28; y=&annopos.-2.5; line=1; output;
run;

data anno8;
length function color $ 8;
retain xsys '2';
ysys="3"; hsys="3"; size=0.3;
color="black"; function='move'; x=0; y=28.3+1.2-&yypos.; line=1; output;
color="black"; function='draw'; x=0; y=29+1.05-&yypos.; line=1; output;
color="black"; function='move'; x=1; y=28.3+1.2-&yypos.; line=1; output;
color="black"; function='draw'; x=1; y=29+1.05-&yypos.; line=1; output;
color="black"; function='move'; x=2; y=28.3+1.2-&yypos.; line=1; output;
color="black"; function='draw'; x=2; y=29+1.05-&yypos.; line=1; output;
color="black"; function='move'; x=3; y=28.3+1.2-&yypos.; line=1; output;
color="black"; function='draw'; x=3; y=29+1.05-&yypos.; line=1; output;
color="black"; function='move'; x=4; y=28.3+1.2-&yypos.; line=1; output;
color="black"; function='draw'; x=4; y=29+1.05-&yypos.; line=1; output;
color="black"; function='move'; x=5; y=28.3+1.2-&yypos.; line=1; output;

```

```

color="black"; function='draw'; x=5; y=29+1.05-&yypos.; line=1; output;
color="black"; function='move'; x=10; y=28.3+1.2-&yypos.; line=1; output;
color="black"; function='draw'; x=10; y=29+1.05-&yypos.; line=1; output;
color="black"; function='move'; x=15; y=28.3+1.2-&yypos.; line=1; output;
color="black"; function='draw'; x=15; y=29+1.05-&yypos.; line=1; output;
color="black"; function='move'; x=20; y=28.3+1.2-&yypos.; line=1; output;
color="black"; function='draw'; x=20; y=29+1.05-&yypos.; line=1; output;

run;

data anno4;
length function color $8 text style $80;
retain xsys hsys '3';
ysys="3"; position="6";

color="black"; function='label'; x=3.1; y=27.9-&yypos.+0.3; text="Baseline"; output;
function='label'; x=36; y=&annopos+0.5; color="black"; text="THSm2.2"; output;
function='label'; x=56; y=&annopos+0.5; color="black"; text="mCC"; output;
size=2.0; color="blue"; function='SYMBOL'; x=32.5; y=&annopos.; style="marker"; text='Z'; output;
size=2.5; color="red"; function='SYMBOL'; x=52.5; y=&annopos.; style="marker"; text='U'; output;

run;

data anno5;
set xlab1;
length function color $8 text style $80 size 8;
retain xsys '2';
ysys="2"; hsys="3"; position="6";
y=Estimate1;
if avisitn<=105 then x=avisitn-100;
else if avisitn=130 then x=10;
else if avisitn=160 then x=15;
else if avisitn=190 then x=20;
size=2.0;
if trtcd=1 then do; color="blue"; function='SYMBOL'; style="marker"; text='Z'; output; end;
size=2.5;
if trtcd=2 then do; color="red"; function='SYMBOL'; style="marker"; text='U'; output; end;
size=2.0;
if trtcd=3 then do; color="green"; function='SYMBOL'; style="marker"; text='C'; output; end;

run;

data anno_&paramn._&outn;
set anno3 anno4 anno5 anno8;
run;

%mend;

%mainloop(paramn=18, outn=1, size=0.042, ypos=95, flg=PPROT, where=1);
%mainloop(paramn=19, outn=1, size=0.056, ypos=95, flg=PPROT, where=1);
%mainloop(paramn=20, outn=1, size=0.056, ypos=95, flg=PPROT, where=1);
%mainloop(paramn=21, outn=1, size=0.056, ypos=95, flg=PPROT, where=1);
%mainloop(paramn=22, outn=1, size=0.07, ypos=95, flg=PPROT, where=1);

data ototal;
run;

ods tagsets.ExcelXP path="&csvdata." file="&outname..xml" style=Printer;

%macro excelloop(paramn=, pagen=);

ods tagsets.ExcelXP options(sheet_name="Page &pagen.");

proc print data=Reshape_&paramn._1;
var trtcd avisitn paramn estimate1 lowercl uppercl xvar yvar;
run;
quit;

data ototal;
set ototal Reshape_&paramn._1;
run;

%mend;

%excelloop(paramn= 18, pagen=1);
%excelloop(paramn= 19, pagen=2);
%excelloop(paramn= 20, pagen=3);
%excelloop(paramn= 21, pagen=4);
%excelloop(paramn= 22, pagen=5);

ods tagsets.ExcelXP close;

data odata.&prgname;
set ototal;

```

```

if paramn>.;
run;

proc format;
value yfmt
0.1=" "
1=" "
10=" "
100=" "
1000=" "
10000=" "
100000=" ";
run;

%macro call1(paramn=, outputn=, hsize=, vsize=, innum=, innum1=, outn=, xlabel=, xmin=, xmax=, ymin=, ymax=, by=);

options /*leftmargin=0.2cm topmargin=0.1cm rightmargin=0.2cm bottommargin=1cm*/
nodate nonumber nobyline;
ods results off;

%let startobs = 1;
%let eof = 0;
%let imageCnt = 1;

/*****

* handle graph size -> transform to cm when inches are specified

*****/;

%let vunit=%upcase(%scan(&vsize,-1,' 0123456789. '));
%let hunit=%upcase(%scan(&hsize,-1,' 0123456789. '));
%if &vunit=IN or &vunit=INCH %then %let vsize=%sysevalf(%scan(&vsize,1,%str( icIC))*2.58);
%if &hunit=IN or &hunit=INCH %then %let hsize=%sysevalf(%scan(&hsize,1,%str( icIC))*2.58);
%if &vunit=CM %then %let vsize=%sysevalf(%scan(&vsize,1,%str( icIC))*1);
%if &hunit=CM %then %let hsize=%sysevalf(%scan(&hsize,1,%str( icIC))*1);

ods listing gpath=&opath";
ods graphics on / imageName = "lineplot"
imagefmt = png
border = off
scale = no
reset = index
width = 6 cm
height = 4 cm;
ods escapechar="é";

filename graphout "&opath\&outname._&outputn..png";
goptions reset=all device=png gsfname=graphout ftext="Arial/bold" htext=2.5 hsize=6.25 in vsize=4.9 in;

axis1 offset=(2 pct,2 pct) label=("Visit Day")
width=1 minor=none major=none origin=(, 1.0in) order=0 to &xmax. by 1
;
axis2 /*length=4.8 in */ label=(angle=90 "&param_&paramn")
width=1 minor=none order=&ymin. to &ymax. by &by.
;
axis3 /*length=4.8 in */
width=1 minor=none /*order=&ymin. to &ymax. by &by.*/ major=none
;

/* Define the symbol characteristics */
symbol1 interpol=hiloctj color=blue line=1 w=1 ;
symbol2 interpol=hiloctj color=red line=3 w=1 ;
symbol3 interpol=hiloctj color=green line=33 w=1.5 ;

/* symbol4 interpol=none color=blue w=4 font=marker value=W;
symbol5 interpol=none color=red w=4 font=marker value=P;
symbol6 interpol=none color=green w=4 font=marker value=D;
*/

/* Plot the error bars using the HILOCTJ interpolation */
/* and overlay symbols at the means. */

proc gplot data=reshape_&paramn._&outn;
plot
vvar*xvar=trtcd
/haxis=axis1 vaxis=axis2 anno=anno_&paramn._&outn nolegend;
format xvar visitf.;
/* plot
Estimate1*xvar=trtcd
/haxis=axis1 vaxis=axis2 nolegend;
format xvar visitf.;

```

```

*/
run;
quit;

proc greplay igout=work.gseg nofs;
delete _all_;
run;
quit;

ods listing close;
ods graphics off;
%mend;

%cal1(paramn=18, outputn=1, hsize=4 in, vsize=6 in, innum=1, innum1=5, outn=1, xmin=0, xmax=20, ymin=1.0, ymax=2.5, by
=0.5);
%cal1(paramn=19, outputn=2, hsize=4 in, vsize=6 in, innum=3, innum1=7, outn=1, xmin=0, xmax=20, ymin=3.0, ymax=5.0, by
=0.5);
%cal1(paramn=20, outputn=3, hsize=4 in, vsize=6 in, innum=1, innum1=5, outn=1, xmin=0, xmax=20, ymin=2.5, ymax=4.5, by
=0.5);
%cal1(paramn=21, outputn=4, hsize=4 in, vsize=6 in, innum=3, innum1=7, outn=1, xmin=0, xmax=20, ymin=2.0, ymax=4, by
=0.5);
%cal1(paramn=22, outputn=5, hsize=4 in, vsize=6 in, innum=1, innum1=5, outn=1, xmin=0, xmax=20, ymin=2.5, ymax=5, by
=0.5);

%macro rtfoutput;
option nobyline nodate nonumber orientation=landscape;

ods listing close;
%trtrtfg_fig(pgmname=&outname., pgmid=1, new=0, style=, bookmark=%lowercase(&outname.));
ods escapechar="é";

title;

%let n_plots=5;
%let orient=landscape;

data _rmtext;
format text $12.;
text = 'éR"\par\ "';
%do i = 1 %to &n_plots;
output;
%end;
run;

data _rmtext;
set _rmtext;
pagen=_n_;
run;

%local tblwidth;
%let tblwidth = 6.25;

%do i = 1 %to &n_plots;

proc report data = _rmtext nowd;
column pagen text;
where pagen = &i;
define pagen /order order=internal noprint;
define text / display style(column)=[cellwidth=&tblwidth.in] ' ';
compute text;
*line_count + 1;
* if line_count = &i then do;
call define(_row_, 'STYLE', %str('%')STYLE=[just=center postimage="&opath\&&outname._&i..png"]%str('%'));
* end;
endcomp;

compute before _page_ /style=[fontweight=bold fontsize=3.75];
line @1 "&title1 &title2";
endcomp;

compute after pagen /style=[fontsize=1.75];
line @1 "Note: mCC = Conventional menthol cigarettes; SA = Smoking abstinence; THSm2.2 = Tobacco Heating System 2.2 Ment
hol.";
line @1 "Note: Baseline is the last assessment prior to first product use in CC/THS 2.2 arms on Day 1 or last assessment
prior to 06:29 AM in SA arm on Day 1.";
line @1 "Note: Scores of MCEQ subscales are reported on a 7-point scale. Higher scores indicate greater intensity on tha
t scale.";
line @1 " ";
line @1 "&APPENDIX.";
line @1 "Study ID: ZRHM-REXA-07-JP";
line @1 "Program: &fprgname..sas Status: &repversion./&fdate. Page &i. of 5";
endcomp;

```

```
run;

%end;

/*
proc datasets nolist;
    delete _rmttext;
quit;
*/
ods rtf close;
ods listing;

%mend;
%rtfoutput;
```