```
***-------------------------------------------------------------------***
*
*       WINSOR macro ;
*
***-------------------------------------------------------------------***;


/* --------+---------+---------+---------+---------+---------+---------+---------+


Required Parameters:

    dsetin  = dataset to winsorize/trim
    dsetout = dataset to output with winsorized/trimmed values;
    vars    = variables to winsorize/trim


Optional Parameters:

    byvar   = subset of variables to trim/winsor on.  e.g. byvar= year
                - default is none
    type    = delete/winsor (delete will trim, winsor will winsorize)
                - default is winsor
    pctl    = percents to trim/winsor
                - default is 1% and 99%

*--------+---------+---------+---------+---------+---------+---------+---------+ */


%macro winsor(dsetin=, dsetout=, byvar=none, vars=, type=winsor, pctl=1 99);

%if &dsetout = %then %let dsetout = &dsetin;

%let varL=;
%let varH=;
%let xn=1;

%do %until ( %scan(&vars,&xn)= );
    %let token = %scan(&vars,&xn);
    %let varL = &varL &token.L;
    %let varH = &varH &token.H;
    %let xn=%EVAL(&xn + 1);
%end;

%let xn=%eval(&xn-1);

data xtemp;
    set &dsetin;
    run;

%if &byvar = none %then %do;

    data xtemp;
        set xtemp;
        xbyvar = 1;
        run;

    %let byvar = xbyvar;

%end;

proc sort data = xtemp;
    by &byvar;
    run;

proc univariate data = xtemp noprint;
    by &byvar;
    var &vars;
    output out = xtemp_pctl PCTLPTS = &pctl PCTLPRE = &vars PCTLNAME = L H;
    run;

data &dsetout;
    merge xtemp xtemp_pctl;
    by &byvar;
    array trimvars{&xn} &vars;
    array trimvarl{&xn} &varL;
    array trimvarh{&xn} &varH;

    do xi = 1 to dim(trimvars);

        %if &type = winsor %then %do;
            if not missing(trimvars{xi}) then do;
              if (trimvars{xi} < trimvarl{xi}) then trimvars{xi} = trimvarl{xi};
              if (trimvars{xi} > trimvarh{xi}) then trimvars{xi} = trimvarh{xi};
            end;
        %end;

        %else %do;
            if not missing(trimvars{xi}) then do;
              if (trimvars{xi} < trimvarl{xi}) then delete;
              if (trimvars{xi} > trimvarh{xi}) then delete;
            end;
```

```
        %end;

    end;
    drop &varL &varH xbyvar xi;
    run;

%mend winsor;

********************************  WINSOR END  *************************************;
```