

SAS® Survey Report Macro for Creating User-Friendly Descriptive Summaries

Tammiee Dickenson, University of South Carolina; Jessalyn Smith, Data Recognition Corporation; Grant Morgan, Baylor University; William Zachary Smith, RTI International

ABSTRACT

The use of online platforms such as Survey Monkey and Qualtrics allow for ease of survey administration. Survey items are entered into the system and the data are collected directly from respondents electronically. While these online platforms provide summaries of results, the reports are often not in a user-friendly format that is ready to share with stakeholders. The purpose of our survey report macro is to prepare descriptive summaries of item-level results from surveys collected from online systems in a user-friendly format. Features of the macro code include data steps using arrays and do loops to organize the data for analysis, PROC TABULATE to produce accessible tables of results, and use of the Output Delivery System (ODS) to create reports in Word or Excel format.

The survey report macro produces survey results for Likert-type items from a single survey administration. In our work as program evaluators, our projects typically include multiple schools that are implementing a common program. We often wish to summarize survey results for all schools within the project to inform the program overall and for individual schools to share with school personnel for use in program planning at the school-level. The survey report macro allows flexibility to run analyses for different subsets of participants for whom the user wishes to report results. There are also user-specified choices for reporting options built into the macro code.

INTRODUCTION

We developed the code described in this paper in order to summarize descriptive survey results for various subsets of the survey data. For a project that include multiple schools, we often need to prepare summaries at various levels. For example, the project director is interested in overall results across all project schools. Summarizing in this manner will provide information on general supports that the project director can provide to help all school to improve their survey results. Another stakeholder group is school principals. The principals are most concerned about the results at their individual schools and helping their school teams to make changes that may improve future survey results. Therefore, we typically run reports for the project overall and for each participating school.

This paper describes how to prepare data for running the code provided in the appendix to produce user-friendly reports. Our code includes various options, such as collapsing across two or more categories and adding item means to the output. In addition, the code offers different sorting options, such as the order that items were presented in the original survey or sorting in order of frequency of a collapsed category. The code may be applied to items that use either a four-point or five-point Likert-type scale. We illustrate the process through an example from a four-year project that included implementation of project based learning. This project was implemented in 17 schools in four school districts across PK-12 schools. Sources for ideas for our code include Delwiche and Slaughter, 2012; Haworth Lake & McKnight, 2015; and Gravely, 1998.

DATA PREPARATION

To apply the SURVEYREPORT macro, the data need to be set up with survey items in columns and participant responses in rows, which is typically how online survey systems provide data. In addition, format statements need to be provided for response scales and survey items. In order to apply the macro, the variable names need to be labeled x1 to xn where n is the last item on the survey. A codebook should be created to connect the x variable names to the descriptive variable names (i.e., the survey items). The base macro, called SURVEYREPORT, is called with specified arguments that identify the columns of data to be read for a certain subscale or section of the survey. Another macro, called LONGREPORT, is used to call the SURVEYREPORT macro multiple times for various subscales on the survey.

Steps for preparing survey reports with the SURVEYREPORT and LONGREPORT macros:

1. Prepare the data by downloading from Survey Monkey as an Excel or CSV file. The data will be in a wide format with survey items in columns and survey responses in rows. Add x1 to xn variable labels to the top row, copy rows with variable labels and survey questions and paste in a separate worksheet in Excel using transpose to create the codebook. In the worksheet to be used in the macro, remove the rows with survey questions and keep only the x variables as row headers/variable names. Delete any open-ended questions from the survey and move to a separate file for qualitative analysis elsewhere. See Figure 1 for an excerpt of how the data will look when prepared for the SURVEYREPORT macro and Figure 2 for an example of the data codebook.
2. Read the macro-ready data into SAS (x variables and responses).
3. Set up formats to be created in SAS using appropriate labels for all response scales on the survey (e.g., agreement, frequency and survey items). These can be copied and pasted from the codebook in Excel. The survey items can be separated into subscales or all listed together.
4. Select and run the SURVEYREPORT macro to store it in the SAS session. The following steps happen inside the macro:
 - a. Set up formatting preferences
 - b. Apply array statements and do loops to arrange item responses for analysis
 - c. Run PROC TABULATE to produce tables of results according to specified options
5. The LONGREPORT macro is set up to call the SURVEYREPORT macro multiple times and to produce output results as RTF/Word or CSV/Excel file using the ODS.

The SURVEYREPORT macro will run analysis on a set of items within a survey scale or subscale. As many of our surveys have multiple item sets/subscales, we commonly need to run the SURVEYREPORT macro multiple times. In order to create our survey reports, we use another short macro to call the various runs of the SURVEYREPORT macro and output the results using the ODS. The LONGREPORT macro arguments include the name of the file, the path to which the file will be saved, and the type of file desired (e.g., rtf for a Word document or csv for an Excel file).

x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13	x14	x15	x16
1	1	1	1	1	2	2	1	1	1	1	1	1	2
1	2	1	1	4	4	4	2	3	3	3	3	1	3
1	2	1	1	1	4	3	3	4	1	2	2	1	4
1	1	1	1	1	4	1	1	1	1	1	4	1	1
1	2	2	2		4	3	2	4	3	4	3	4	2

Figure 1. Excerpt of Data in Wide Variable Format for Five Respondents

x3	Considering the current school year, indicate how often your students do each of the following.	Compare information from various sources before completing a task.
x4		Draw their own conclusions based on analysis of numbers, facts, or relevant information.
x5		Analyze competing arguments, perspectives, or solutions to a problem.
x6		Develop a persuasive argument based on supporting evidence or reasoning.
x7		Assess the accuracy of digital resources.
x8		Work in small groups to complete an assignment together.
x9		Work with other students to set goals for their team.
x10		Work with other students to create a plan for their team.
x11		Complete collaborative assignments using contributions from each team member.
x12		Provide targeted feedback to peers on their academic work.
x13		Use idea-creation techniques such as brainstorming or concept mapping.
x14		Modify an approach to a problem by testing different ideas.
x15		Invent a solution to a complex, open-ended question or problem.
x16		Create an original product, presentation, or performance to express their ideas.

Figure 2. Excerpt of Data Codebook with Response Options from Online Survey System

The macro arguments that must be provided by the user are described below.

dataset = Name assigned to the dataset read in by the user

scale = Specify the number of scale points and the number of categories over which to collapse. The macro provided specifies options for 42, 52, and 53. The first number specifies the number of scale points (e.g., 4 for a 4-point scale) and the second number specifies the number of upper level categories in the scale over which to collapse (e.g., 2 for the upper two categories).

mean = If user wants the item mean to appear in the table, indicate this by entering '1'. Otherwise, this argument should be set to '0'.

combine = If the use wants the combined upper categories to appear in the table, indicate this by entering '1'. Otherwise, this argument should be set to '0'.

first = Number of the first column in the dataset that holds survey responses that should be included in the table

last = Number of the last column in the dataset that holds survey responses that should be included in the table.

Rformat = Name of the user-assigned format (or "value") in proc format for the desired RESPONSE SCALE.

Iformat = Name of the user-assigned format (or "value") in proc format for the desired ITEM.

category = Name of the user-specified string value to define the collapsed upper categories.

statement = Item directions or general item statement prefix. This will appear as a header above the items in the table.

order = The desired order by which the items should appear. If the user specifies *internal*, then the items will appear as presented on the survey. If the user specifies *data*, then the items will appear in descending order of frequency by the values of the collapsed upper category.

SURVEYREPORT AND LONGREPORT MACROS

The reader may refer to the appendix to follow along with the following description of the macro code. In the SURVEYREPORT macro, the data are first transformed from the format as produced from the survey software to a long format for analysis. An array is created from a set of items within a survey section. Next, a do loop is used to create responses in a long format. Two identical variables of item responses, named RESPONSE and RESPONSE2, are created for use in the PROC TABULATE analysis. In addition, an UPPER variable is created that represents the highest categories of interest in an analysis. For example, we are often interested in the agreement side of a four-point scale that includes strongly disagree, disagree, agree, and strongly agree. We add the percentages in the agree and strongly agree categories to obtain an overall agreement rate. The UPPER variable is defined as 100 or 0, depending on if the observation is in the upper end of the scale. The mean of the UPPER variable is calculated and represents the sum of the percentages in the upper categories (idea from pp. 183-185 of Gravely, 1998). PROC SUMMARY is used to obtain the mean of the UPPER variable, which is then used as a sorting variable named SORTV (idea from pp. 199-201 of Gravely, 1998). Sorting by this variable is useful for creating output from PROC TABULATE that is ordered by frequency. The long version of the data set called LONGTABLE contains five variables: ITEM, RESPONSE, RESPONSE2, UPPER, and SORTV. Data from each respondent is presented in rows associated with each survey item. For each item, there are n (the number of respondents) rows. The total number of rows in the LONGTABLE data set is $n*m$, where m is the number of items in the survey section. See Figure 3 for an excerpt of how the data will look when transposed into this long format.

Our sample code includes both four- and five-point scales. For the four-point scales, we specify that the upper two categories are added if the user chooses the COMBINE=1 option to produce collapsed results. For the five-point scales, we provide choices to either collapse the upper two or three categories when collapsed results are desired.

PROC TABULATE (described in Delwiche & Slaughter, 2012 and Haworth Lake & McKnight, 2015) is used to compute and display summary statistics. The variable RESPONSE is specified as a class variable for computing frequencies and RESPONSE2 is specified as an analysis variable for computing means and/or sample sizes. We use separate order statements for ITEM and RESPONSE variables. The order of the items is an argument that can be specified by the user. ORDER=INTERNAL will produce a table in the same order as the original data. ORDER=DATA will produce a table in the order of the percentage in the UPPER categories, which have been sorted as described above. The RESPONSE variable uses internal order to present the categories of the response scale in the order from the survey. In addition, PRELOADFMT is used to ensure that all response categories are represented, even if there were no respondents who selected one or more of the categories.

The SURVEYREPORT macro includes options for whether the user wishes to include collapsed categories as well as whether the user wishes to include item means. IF THEN statements based on user specified arguments are used with do loops to the appropriate PROC TABULATE set up to produce the desired output. We find that collapsed categories give a better overview of the survey findings and typically include these in our survey reports.

The LONGREPORT can be set up to make multiple calls to the SURVEYREPORT macro and produce a file of results through the Output Delivery System (ODS; described in Delwiche & Slaughter, 2012). Options for ODS output are included for both a word processing document using a .RTF extension or a spreadsheet format using a .CSV extension. The SURVEYREPORT macro may be called within the LONGREPORT macro for various sections of a survey. Using all items on a survey will produce a complete report. The results produce reports that are organized in a format that may be shared with lay audiences. Table 1 provides an example of results with the top three categories from a five-point scale

collapsed and no item means requested. Table 2 provides an example of results with the top two categories from a four-point scale collapsed with item means included.

The advantage of creating macro code is that the program may be run multiple times for various ways that we wish to examine results. The SURVEYREPORT and LONGREPORT macros can be used in combination to produce output for various subsets of the data that we would like to examine. For example, consider a project that has 17 schools in four school districts with elementary, middle, and high schools. Using various subsets of the data, we can produce results at the project level for the management team, at the district level for district administrators, and at the school level for school principals. The key demographics must be defined by one or more variables in a data set and then a subsetting IF statement can be used to isolate to the subgroup of interest.

ITEM	sortv	RESPONSE	upper	response2
8	88.06723	2	0	2
8	88.06723	4	100	4
8	88.06723	4	100	4
8	88.06723	4	100	4
8	88.06723	4	100	4
4	81.98653	1	0	1
4	81.98653	2	0	2
4	81.98653	2	0	2
4	81.98653	1	0	1
4	81.98653	2	0	2
13	76.30252	1	0	1
13	76.30252	3	100	3
13	76.30252	2	0	2
13	76.30252	1	0	1
13	76.30252	4	100	4
5	75.42088	1	0	1
5	75.42088	1	0	1
5	75.42088	1	0	1
5	75.42088	1	0	1
5	75.42088	2	0	2
.				
.				
.				
7	57.31092	1	0	1
7	57.31092	4	100	4
7	57.31092	1	0	1
7	57.31092	1	0	1
7	57.31092		0	

Figure 3. Excerpt of Data in Long Format for Five Respondents

Considering the current school year indicate how often your students do each of the following.	Never	A few times a semester	1-2 times per month	1-3 times per week	Daily	Monthly + Weekly + Daily	n
	%	%	%	%	%	%	
Work in small groups to complete the assignment together	2.4	9.7	19.6	41.5	26.9	87.9	588
Draw their own conclusions based on analysis of numbers, facts, or relevant information	4.4	13.7	16.4	39.7	25.8	81.9	592
Use idea-creation techniques such as brainstorming or concept mapping	8.1	15.6	25.8	36.6	13.9	76.3	590
Analyze competing arguments, perspectives, or solutions to a problem	7.5	17.3	27.1	32.9	15.3	75.3	590
Complete collaborative assignments using contributions from each team member	7.6	19.2	27.8	34.4	11.0	73.2	590
Compare information from various sources before completing a task	7.7	23.2	22.7	36.4	9.9	69.0	594
Work with other students to set goals for their team	12.2	20.4	28.0	28.0	11.4	67.4	589
Develop a persuasive argument based on supporting evidence or reasoning	9.7	23.2	30.3	27.9	8.9	67.1	587
Work with other students to create a plan for their team	13.3	19.8	31.0	26.7	9.2	67.0	587
Provide targeted feedback to peers on their academic work	11.7	21.4	27.5	29.2	10.2	66.9	589
Modify an approach to a problem by testing different ideas	12.8	22.3	27.9	27.0	10.0	65.0	588
Invent a solution to a complex, open-ended question or problem	12.9	23.8	25.2	27.8	10.3	63.3	583
Create an original product, presentation, or performance to express their ideas	8.7	29.5	31.3	21.6	8.9	61.8	587
Assess the accuracy of digital resources	18.9	24.0	22.1	22.8	12.1	57.1	587

Table 1. Example from Output as an RTF File with Data using a Five-Point Scale

Thinking about this school year to what extent do you agree with the following statements? I intentionally...	Strongly Disagree	Disagree	Agree	Strongly Agree	Agree + Strongly Agree	Mean	n
	%	%	%	%	%		
include strategies to advance students' critical thinking skills in my lesson plans.	1.2	2.4	56.7	39.8	96.4	3.4	591
assess students' critical thinking skills.	1.2	3.4	57.3	38.2	95.4	3.3	592
include strategies to advance students' collaborative skills in my lesson plans.	1.2	5.9	58.5	34.3	92.9	3.3	591
include strategies to advance students' life skills in my lesson plans.	1.9	6.9	52.7	38.5	91.2	3.3	590
include strategies to advance students' creativity in my lesson plans.	1.2	9.1	54.7	35.0	89.7	3.2	592
assess students' collaborative skills.	1.5	9.0	59.8	29.7	89.5	3.2	590
assess students' creativity.	2.0	13.7	50.2	34.1	84.2	3.2	590

Table 2. Example from Output as an RTF File with Data using a Four-Point Scale

CONCLUSION

This paper demonstrates a process for producing descriptive survey results using a variety of tools available in SAS®. Data steps that include the use of arrays and do loops are used to transpose data from a wide to a long format in preparation for analysis. PROC SUMMARY is used to create a sorting variable to give the user the option to produce results in order of frequency within an item set. The use of PROC TABULATE creates appealing tables of results that may include percentages across scale categories and may also include item means. The Output Delivery System is used to produce reports in either RTF (for word processing software such as Word) or CSV (for spreadsheet software such as Excel) formats. The code can be updated to add additional statistics, such as standard deviations, and scales with more than five categories.

A limitation of this process is that the survey items need to be entered into the program for each new survey. This can be streamlined by copying and pasting from spreadsheets where the codebooks are stored. While the initial set up of items may seem tedious, the payoff is the ability to run analyses for a variety of data subsets. This is particularly useful in our work as program evaluators where projects often include multiple schools. We can easily prepare results for all schools as well as for each school using some basic subsetting data steps.

REFERENCES

- Delwiche, L.D. and Slaughter, S.J. 2012. *The Little SAS® Book: A Primer*. 5th ed. Cary, NC: SAS Institute, Inc.
- Gravely, A.R. 1998. *Your Guide to Survey Research Using the SAS® System*. Cary, NC: SAS Institute, Inc.
- Haworth Lake, L. and McKnight, J. 2015. *PROC TABULATE by Example*. 2nd ed. Cary, NC: SAS Institute, Inc.

CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

Tammiee Dickenson
Research, Evaluation, and Measurement Center at the University of South Carolina
803-777-3402
tsdicken@mailbox.sc.edu

APPENDIX

```
/******  
/*  
/*          ++++++  
/*          ++      SURVEYREPORT MACRO      ++  
/*          ++++++  
/*  
  
/* This is a macro that uses proc tabulate to generate summary tables for  
reports.  
/* The code used in this macro is a compilation of the work of Drs.  
Tammiee Dickenson, Jessalyn Smith, and Grant Morgan.  
/* The code in the accompanying LONGREPORT macro was developed by William  
Zachary Smith.  
/*  
  
/* SURVEYREPORT requires that the user provide each of the following:  
  
/* dataset = Name assigned to the dataset read in by the user.  
/* scale = Specify the number of scale points and the number of categories  
over which to collapse.  
/* The macro provided specifies options for 42, 52, and 53. The first  
number specifies the number of scale points (e.g., 4 for a 4-point scale)  
and the second number specifies the number of upper level categories  
in the scale over which to collapse (e.g., 2 for the upper two categories).  
/* mean = If user wants the item mean to appear in the table, indicate this  
by entering '1'. Otherwise, this argument should be set to '0'.  
/* combine = If the use wants the combined upper categories to appear in  
the table, indicate this by entering '1'. Otherwise, this argument should be  
set to '0'.  
/* first = Number of the first column in the dataset that holds survey  
responses that should be included in the table.  
/* last = Number of the last column in the dataset that holds survey  
responses that should be included in the table.  
/* Rformat = Name of the user-assigned format (or "value") in proc format  
for the desired RESPONSE SCALE.  
/* Iformat = Name of the user-assigned format (or "value") in proc format  
for the desired ITEM.  
/* category = Name of the user-specified string value to define the  
collapsed upper categories.  
/* statement = Item directions or general item statement prefix. This will  
appear as a header above the items in the table.  
/* order = The desired order by which the items should appear. If the user  
specifies internal, then the items will appear as presented on the survey.  
If the user specifies data, then the items will appear in descending order  
of frequency by the values of the collapsed upper category.  
  
/******  
/* STEP 1: READ IN THE SURVEY RESPONSES INTO A SAS DATASET  
*****  
*/  
  
option nodate nonumber;  
  
*Change the datafile and dbms type if needed (i.e., XLS, CSV) to reflect the  
location of the data on your computer. The header rows should contain x1 to  
xn as the variable names and remaining rows should contain survey
```

```

responses.;
proc import out=work.beta
    datafile = "PATH ON COMPUTER\DATAFILE NAME.xls"
    dbms = xls replace;
    sheet="MacroFinal";
    getnames = YES;
run;

*Example to subset the data to run results for a particular school - the x2
variable defines various schools;
data school1;
    set beta;
    if x2=1;
run;

/* *****
/* STEP 2: PROVIDE FORMATS FOR RESPONSE SCALES AND ITEMS AND SUBMIT
/* NOTE - SAS requires that the names of format values begin and end with
letters.
/* *****
*/

*You will need to make changes here based on your survey - note that all
value names and categories can be changed.
Include all response scales and items on the survey. In this example, the
survey items are organized by sections that use common scales. For example,
questiontwo items use the agreement scale and questionthree items use the
howoften scale.
;
proc format;
    value agreement
        4="Strongly Agree"
        3="Agree"
        2="Disagree"
        1="Strongly Disagree";
    value howoften
        5="Daily"
        4="1-3 times per week"
        3="1-2 times per month"
        2="A few times a semester"
        1="Never";

    value school
        1="School 1"
        2="School 2"
        3="School 3"
        [MORE SCHOOL NUMBERS OMITTED FROM THIS CODE]

    value questiontwo
        3="Compare information from various sources before completing a
task"
        4="Draw their own conclusions based on analysis of numbers,
facts, or relevant information"
        5="Analyze competing arguments, perspectives, or solutions to a
problem"

```

```

6="Develop a persuasive argument based on supporting evidence or reasoning"
7="Assess the accuracy of digital resources"
8="Work in small groups to complete the assignment together"
9="Work with other students to set goals for their team"
10="Work with other students to create a plan for their team"
11="Complete collaborative assignments using contributions from each team member"
12="Provide targeted feedback to peers on their academic work"
13="Use idea-creation techniques such as brainstorming or concept mapping"
14="Modify an approach to a problem by testing different ideas"
15="Invent a solution to a complex, open-ended question or problem"
16="Create an original product, presentation, or performance to express their ideas";
value questionthree
17="include strategies to advance students' critical thinking skills in my lesson plans."
18="assess students' critical thinking skills."
19="include strategies to advance students' collaborative skills in my lesson plans."
20="assess students' collaborative skills."
21="include strategies to advance students' creativity in my lesson plans."
22="assess students' creativity."
23="include strategies to advance students' life skills in my lesson plans.";
[ MORE QUESTIONS/ITEMS WERE OMITTED FROM THIS CODE ]
run;

/*****
/* STEP 3: READ IN THE SURVEYREPORT MACRO CODE
*****/

*Start surveyreport macro;
%macro
surveyreport(dataset,scale,mean,combine,first,last,Rformat,Iformat,category,statement,order);

proc template;
    define style Styles.OPE;
        parent = Styles.journal;
    style Header from HeadersAndFooters /
        font=('Arial, Arial, Arial',11pt)
        borderbottomwidth=2.5
        bordertopwidth=2.5
        font_weight=bold
        ;
    style RowHeader from HeadersAndFooters /
        font=('Arial, Arial, Arial',11pt)
        ;
    style table /
        borderbottomwidth=2.5;
end;run;

```

```

data class;
  do response=1,2,3,4;
  output;
  end;
  run;

%let total = %eval((&last-&first)+1);

data analyze;
  set &dataset;
  keep x&first-x&last;
run;

*Code for combining top 2 of 4 categories;
%if &scale=42 %then %do;
  data table;
    set analyze;
  run;

data longtable1;
  set table;
  array new{&first:&last} x&first-x&last;
  DO I=&first TO &last;
  ITEM=I;
    RESPONSE=new{I};

    if new{I} in (3,4) then upper=100;
    else if new{I} in (1,2) then upper=0;

    response2=response;
    output;
    end;
  keep item response response2 upper;
  run;

proc summary data=longtable1 nway noprint;
  class item;
  var upper;
  output out=dummy(keep=item sortv) mean=sortv;
  run;

proc sort data=dummy; by item; run;
proc sort data=longtable1; by item; run;

data longtable;
  merge dummy longtable1 (in=a);
  by item;
  if a;
run;

proc sort data=longtable; by descending sortv;
run;

%end;

*Code for combining top 2 of 5 categories;
%if &scale=52 %then %do;

```

```

        data table;
            set analyze;
        run;
data longtable1;
    set table;
    array new{&first:&last} x&first-x&last;
    DO I=&first TO &last;
        ITEM=I;
        RESPONSE=new{I};

        if new{I} in (4,5) then upper=100;
            else if new{I} in (1,2,3) then upper=0;

        response2=response;
        output;
        end;
    keep item response response2 upper;
run;

proc summary data=longtable1 nway noprint;
    class item;
    var upper;
    output out=dummy(keep=item sortv) mean=sortv;
run;

proc sort data=dummy; by item; run;
proc sort data=longtable1; by item; run;

data longtable;
    merge dummy longtable1 (in=a);
    by item;
    if a;
run;

proc sort data=longtable; by descending sortv;
run;

%end;

*Code for combining top 3 of 5 categories;
%if &scale=53 %then %do;
    ddata table;
        set analyze;
    run;
data longtable1;
    set table;
    array new{&first:&last} x&first-x&last;
    DO I=&first TO &last;
        ITEM=I;
        RESPONSE=new{I};

        if new{I} in (3,4,5) then upper=100;
            else if new{I} in (1,2) then upper=0;

        response2=response;
        output;
        end;

```

```

        keep item response response2 upper;
        run;

proc summary data=longtable1 nway noprint;
    class item;
    var upper;
    output out=dummy(keep=item sortv) mean=sortv;
    run;

proc sort data=dummy; by item; run;
proc sort data=longtable1; by item; run;

data longtable;
    merge dummy longtable1 (in=a);
    by item;
    if a;
run;

proc sort data=longtable; by descending sortv;
run;
%end;

%if &combine=1 %then %do;
%if &mean=1 %then %do;
options orientation=landscape;

proc tabulate data=longtable out=temptable;
    format item &Iformat.. response &Rformat.. response2 &Rformat..;
    class response / preloadfmt order=internal;
    class item / order=&order;
    classlev item / S=[just=l cellwidth=105 vjust=T];
    var response2 upper;
    classlev response/ style=<parent>;
    table item=' '[style=<parent>[just=c]], response=' '(pctn
<response> = '%'*f=5.1)
    upper=&category*(mean='%'*f=4.1) response2=' '(mean='Mean'*f=4.1
n='n'*f=4.)/
    RTS=50 printmiss isstext='0.0' BOX={LABEL="&statement" Style={JUST=l
VJUST=t cellwidth=550}};
    title ' ';
run;
%end;

%if &mean=0 %then %do;
options orientation=landscape;

proc tabulate data=longtable out=temptable;
    format item &Iformat.. response &Rformat.. response2 &Rformat..;
    class response / preloadfmt order=internal;
    class item / order=&order;
    classlev item / S=[just=l cellwidth=105 vjust=T];
    var response2 upper;
    classlev response/ style=<parent>;
    table item=' '[style=<parent>[just=c]], response=' '(pctn
<response> = '%'*f=5.1)
    upper=&category*(mean='%'*f=4.1) response2=' '(n='n'*f=4.)/

```

```

        RTS=50 printmiss misstext='0.0' BOX={LABEL="&statement" Style={JUST=L
VJUST=t cellwidth=550}};
        title ' ';
run;
%end;
%end;

%if &combine=0 %then %do;
%if &mean=1 %then %do;
options orientation=landscape;

proc tabulate data=longtable out=temptable;
    format item &Iformat.. response &Rformat.. response2 &Rformat..;
    class response / preloadfmt order=internal;
    class item / order=&order;
    classlev item / S=[just=l cellwidth=105 vjust=T];
    var response2;
    classlev response/ style=<parent>;
    table item=' '[style=<parent>[just=c]], response=' '(pctn
<response> =' '*f=5.1)
    response2=' '(mean='Mean'*f=4.1 n='n'*f=4.) /
    RTS=50 printmiss misstext='0.0' BOX={LABEL="&statement" Style={JUST=L
VJUST=t cellwidth=550}};
    title ' ';
run;
%end;

%if &mean=0 %then %do;
options orientation=landscape;

proc tabulate data=longtable order=&order out=temptable;
    format item &Iformat.. response &Rformat.. response2 &Rformat..;
    class response / preloadfmt order=internal;
    class item / order=&order;
    classlev item / S=[just=l cellwidth=105 vjust=T];
    var response2;
    classlev response/ style=<parent>;
    table item=' '[style=<parent>[just=c]], response=' '(pctn
<response> =' '*f=5.1)
    response2=' '*n='n'*f=4./
    RTS=50 printmiss misstext='0.0' BOX={LABEL="&statement" Style={JUST=L
VJUST=t cellwidth=550}};
    title ' ';
run;
%end;
%end;

%mend surveyreport;
*End of surveyreport macro;

*To call surveyreport macro -
%surveyreport(dataset, scale, mean, combine, first, last, Rformat, Iformat, category
, statement, order);

```

```

/*****
/*  STEP 4:  UPDATE AND RUN THE LONGREPORT MACRO CODE FOR DESIRED TABLES
*****/
*/'

*Start of longreport macro;
%macro longreport(filename,path,fileformat);
option nodate nonumber;
ods &fileformat file="&path.&filename..&fileformat" style=OPE;

*Add calls to surveyreport macro for as many subscale as are on your survey;
%surveyreport(beta,53,0,1,3,16,howoften,questiontwo,"Monthly + Weekly +
Daily",Considering the current school year indicate how often your students
do each of the following.,data)
%surveyreport(beta,42,1,1,17,23,agreement,questionthree,"Agree + Strongly
Agree",Thinking about this school year to what extent do you agree with the
following statements? I intentionally...,data)

ods &fileformat close;
%mend longreport;
*End of longreport macro;

*To call longreport macro -
%longreport(FILENAME, PATH TO SAVE FILE, csv); *Produces a spreadsheet;
%longreport(FILENAME, PATH TO SAVE FILE, rtf); *Produces a word processing
document;

```