A Macro to Manage Table Templates
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ABSTRACT
The scenario: Data must be placed in a table or chart design provided by the company or entity requesting the data. There must be no errors transposing the data to the required table. The solution sometimes can be as simple as creating a template in SAS® that replicates the table the data must go into. That way the data is going directly to the source that can be added to the report and concerns go away with having to transfer any data from one place to another. Both the macro statement and the TEMPLATE procedure are great tools in SAS. Using them together, however, can be very useful and provide a lot of the versatility needed when creating report tables.

INTRODUCTION
Community Care Behavioral Health Organization (Community Care) is a member of the Insurance Services Division of the University Of Pittsburgh Medical Center (UPMC). Community Care is the only Pennsylvania-based, not-for profit, licensed behavioral health managed care organization (BH-MCO) created to serve HealthChoices programs (Medicaid) throughout Pennsylvania. Community Care manages behavioral healthcare for nearly 600,000 Medicaid managed care enrollees. Community Care was designed primarily to serve the needs of public sector consumers, their families, and their communities.

Because Community Care serves the Medicaid population in Pennsylvania, state reports are required to monitor quality performance. For some of these reports the state provides a template for data and rates to be entered along with the required narrative reporting.

To help eliminate any error by transposing the quality rates/data from SAS output to the state report the possibility of replicating the reports/data charts by using SAS was investigated. This will allow our Quality Managers to simply add the report/data charts created by SAS to the narrative sections of the report. Thus, the SAS produced data chart would fulfill the need to have the rates presented exactly how they are requested (and eliminate transposition).

THE TASK
The task at hand for this project is to create exact replicas of the 4 report charts that are required (one following the other). The table contains fields that are referred to as the numerator, denominator, and rate or results (percentages based upon the numerator and denominator).

The reports are run on a quarterly basis – each quarter has a new rate (Quarterly), as well as a year to date (YTD) field. Each report chart contains 2 header rows and a report table header. The report table header contains a different chart definition specifying the rates being reported in the table (i.e., the numerator, the denominator and the percentage rates).

The goal, of course, is to capture the data that is run each quarter and place it in the appropriate fields of the indicated report chart.

The other goal is to automate this process to the point where the program that runs the data, and creates the rates each quarter, includes a simple macro that accomplishes the desired output. Thus, the possibility of reporting error is eliminated.

THE SOLUTION
1. Use PROC TEMPLATE to construct the report chart based upon the report template that was assigned.

2. By building PROC TEMPLATE within a macro statement (as will be shown below in the SAS program code), the macro parameters can be used to provide versatility to the report tables that are created. This versatility includes, the report headers, the data that goes in each cell of the table, and the different number of tables you want to create with the PROC TEMPLATE design.

3. A simple macro and the use of the file print ods statement can then be included in the program actually generates the data. This macro will call on the specific table that is needed to display data as you want it.
The following code is what I developed as the solution to my issue. Four simple steps are used within the macro that creates exactly what is required from the template I based the charts on. Each individual chart uses macro variables to insert the correct data in to each chart:

```sas
%macro num (tbl, no, txt);
libname temp "R:\work_cbb\Mark Mihalyo\template
ods path temp.imh1(update)
sasuser.template(update) sashelp.tmplmst(read);
proc template;
define header frmtheader;
  style={cellheight=5% font_face=arial font_weight=bold background=white};
end;
define header frmtheader1;
  style={font_face=arial just=center font_weight=bold background=white};
end;
define column colheader1;
  style={cellheight=5% font_face=arial just=center background=white};
end;
define table temp.imh&tbl;
  column timefrm numerator&no index ytd_index rate&no ytd&no;
  define header topheader;
    text &txt;
    style={cellheight=9% just:left vjust=center font_face=arial font_weight=bold background=white};
    split="*";
  end;
  define timefrm;
  define header period;
    text "Time Period Measurement Covers";
    style={font_face=arial cellwidth=27% vjust=top just=center background=white};
  end;
  header=period;
  style={font_face=arial cellheight=4%};
end;
define numerator&no;
define header num_a;
  text "Quarterly";
  parent=frmtheader1;
end;
header=num_a;
parent=colheader1;
end;
define ytd_num&no;
define header num_b;
  text "YTD";
  parent=frmtheader1;
end;
header=num_b;
parent=colheader1;
end;
```

Macro Developed whose parameters will identify the 4 different tables, what rates should be in each chart, and individualize the 4 different table headers

**Step 1: Create a Template (IMH1) with formatting that I can later refer to when I create the individual tables that will contain the report data and each table created by the macro can be saved there.**

**Step 2: Develop 4 Separate Tables using the macro – Each table will establish its own data columns, headers, and overall headers (“Top header”) for the individual charts**

Use Macro variables to insert the correct data for the column data, numerator and YTD Rates in the appropriate chart (see highlighted areas)

Specify style features for the header “Top header” and use a Macro variable to pull in the appropriate content for this header.

**Numerator Data**

Data pulled from SAS program that produces the numerator, denominator and YTD rates for the quarterly reports. Macro variables are used to pull specific numerator and YTD rates that have to be specific to one of the 4 charts that are created.
End Step 2

End Step 3

Step 3: Create a second set of headers for each table (report chart). Again, the header is defined and the formats created from the template (IMH1) are used for the particular settings.

The macro variables (highlighted) pull the start and end position for each header.
End Step 4

Inside the Program that Calls on the 4 Table Saved to Template IMH1 (after the data is produce this is the final portion of the program that produces the results below):

%macro PIPs_report(prefix, plan);

options orientation=portrait nodate pageno=1 center=0;
ODS PATH temp.imh1(update)
sasuser.template(update) sashelptmplmst(read);

data _null_;
call symput("RD", left(put("&sysdate"d, yymmd6.))); run;

ods pdf file="R:\Work_CCBH\Quality\QIAs\PIP_docs\PIP_Charts\Q32009\&RD._IMHflw_PIPs_&ey..pdf" startpage=never;
%do i=1 %to 4;

data _null_; set &plan._measures_qtr_pips; (data sets created for the final output)
file print ods=(template="temp.imh&i"); (area that calls the specific table IMH1 template)
put _ods_; run;
%end;
ods pdf close;
quit;

%mend PIPs_report;
CONCLUSION

Finding a combination of versatility and consistency can sometimes be the solution to difficult problems. With the SAS code I have presented the macro statements provide the powerful versatility, and building the report table with PROC TEMPLATE provides the consistency each time this template is referred to for output.

Since discovering how useful using the macro statement is within PROC TEMPLATE I have been able to use this code and report table for many other projects requiring a similar type of data presentation. Simple changes to the macro variables make for easy adjustments (the versatility) and I am always confident my data is being accurately presented in the report table (the consistency).
REFERENCES
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SAS 9: PROC TEMPLATE Table Tip Sheet, SAS Institute, Cary, NC, USA
Smith, Kevin D. Paper 221-2007, PROC TEMPLATE Tables from Scratch, SAS Institute, Cary, NC, USA

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