

SCSUG 2014 Educational Forum
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ABSTRACT

This paper is about using SAS to retrieve financial data from submitted on-line Excel templates.

INTRODUCTION

The Texas Education Agency, TEA, began providing an on-line template for charter schools to submit their annual financial data to the TEA's Financial Accountability Division in the 2013-2014 school year when its use was voluntary. Using the template will be mandatory in the 2014-2015 school year. The charter school's financial data was previously submitted to the TEA's Financial Compliance Division and the data was stored in an MS Access database which is the audit division's preferred data storage and analysis tool. The Financial Accountability Division, the division I'm in, uses SAS extensively and some examples are: fulfilling data requests, web reporting, federal reporting, and data analysis. A SAS solution was needed to retrieve the data from the submitted on-line Excel templates for storage in a MS Access database, and this paper is about the SAS program that was developed to meet that need. The SAS program uses: macros to reduce the amount of code and make the program easier to manage, the "DICTIONARY.COLUMNS" table, proc datasets, the "vtable" function, and proc append. Also, knowledge of BASE SAS and SAS macros will make it is easier to understand and apply the concepts presented in this paper.

SAS CODE

We're going to go through the SAS code a step at a time, and the complete SAS code is at the end of this paper. The SAS code in Table A is the first part of a macro that is called "import_data" and it has the macro variables "tab" (the seven spreadsheet tab names) and "ds" (the seven temporary SAS datasets names), and it is inside another macro that is called "file_info" and it has the macro variable "file_name" (the spreadsheet filename). The proc import is called seven times per spreadsheet and imports the seven tabs of a template into seven temporary SAS datasets.

Table A

```
PROC IMPORT OUT= work.&ds.  
DATAFILE= "S:\fiscal\AFR\Submitted 2013 Charter template AFRs\&file_name."  
DBMS=EXCEL REPLACE; RANGE="&tab"; GETNAMES=YES; MIXED=NO; SCANTEXT=YES;  
USEDATE=YES; SCANTIME=YES; RUN;
```

Table B is the proc contents of one of temporary SAS datasets after being imported and please note variable 2.

Table B

#	Variable	Label
1	F1	F1
2	_15_820__SAN_ANTONIO_SCHOOL_FOR	015-820 SAN ANTONIO SCHOOL FOR INQUIRY & CREATIVITY
3	F3	F3
4	F4	F4
5	F5	F5
6	F6	F6
7	F7	F7
8	F8	F8
9	F9	F9
10	F10	F10
11	F11	F11

The SAS code in Table C renames the variables into a consistent pattern so the County District Number, CDN, can be retrieved from the 2nd variable's label as shown in Table B dynamically. The proc sql gets the max column number and makes a list of the variable names from the SAS dataset's dictionary.columns table. The proc datasets renames the variable names into a consistent pattern, F_1-F_max column number, so the vlabel function can get the CDN from the 2nd variable's label as shown in the last lines of code in Table C.

Table C

```
title1;
proc sql;
select max(varnum) into :num_vars
FROM DICTIONARY.COLUMNS
WHERE UPCASE(LIBNAME)="WORK" AND UPCASE(memname)="&ds.";
select distinct(name) into :var1-:var%TRIM(%LEFT(&num_vars))
from dictionary.columns
WHERE UPCASE(LIBNAME)="WORK" AND UPCASE(memname)="&ds."
order by varnum;
quit;
proc datasets library=WORK;
modify &ds.;
rename
%do i=1 %to &num_vars;
&&var&i=F_&i.
%end;
;
quit; run;

%if &ds. NE COVER %then %do; data &ds.; length CDNum $6; set &ds.;
CDNum=compress(substr(vlabel(F_2),1,7),"-"); run; %end;
```

Table D is the proc contents after the SAS code in Table C, and please note variable 3 has been renamed from “_15_820__SAN_ANTONIO_SCHOOL_FOR” to “F_2” & variable 1 now contains the CDN “015820”.

Table D

#	Variable	Label
1	CDNum	
2	F_1	F1
3	F_2	015-820 SAN ANTONIO SCHOOL FOR INQUIRY & CREATIVITY
4	F_3	F3
5	F_4	F4
6	F_5	F5
7	F_6	F6
8	F_7	F7
9	F_8	F8
10	F_9	F9
11	F_10	F10
12	F_11	F11

The SAS code in Table E makes the temporary SAS datasets that contain the variables that will be loaded into the MS Access database. The SAS code is a macro that is called “data” and it has the macro variables “var” (variable name), “acct” (the label of the line item in the template, “ds” (temporary SAS dataset), and “col” (the column that contains the value of the variable in the template). The %data line in the code is an example of one of the macro calls, and it extracts “Local Revenue” from the template.

Table E

```
%macro data(var,acct,ds,col);
data work.&var.(keep=CDNum &var.); set work.&ds.(where=(F_2 = &acct.)); &var.=input(&col.,dollar32.);
if &var.=. then &var.=0; run;
%mend data;

%data(LR,"Local revenue",Budget_comparison,F_8);
```

The SAS code in Table F merges the data for each template together, and the proc append concatenates the data into a SAS dataset that contains the data from all of the templates.

Table F

```
data work.charter_AFR_&file_number.;
merge CDNum CA COH COHPR CHCOH OA TA CL OL TL UNA TRNA PRNA TNA INV REC PREPD
AP NPC NPL DE CUNA URI CHFR CHFE LND PE ADEP LR SR FR TR F11 F12 F13 F21 F23 F31 F32
F33 F34 F35 F36 F41 F51 F52
F53 F61 F71 F81 TE OtherGainsLosses PriorPeriodAdjustments CNA O6100 O6200 O6300 O6400 O6500
O7900 O8900 TOE;
by CDNum;
run;

proc append base=work.charter_AFR data=work.charter_AFR_&file_number.;
run;
```

The SAS code in Table G exports the data to Excel so the data can be imported into MS Access. Please note the data could have also been exported directly from SAS into MS Access but the Financial Compliance Division still owns the MS Access database so letting them load the spreadsheet into the database should work well.

Table G

```
%macro export(data);
PROC EXPORT DATA= WORK.&data
OUTFILE= "S:\fiscal\AFR\Charter AFR data\&data. &filedate..xlsx"
DBMS=EXCEL REPLACE;
SHEET="&data.";
RUN;
%mend export;
%export(charter_AFR);
```

CONCLUSION

This paper covered using SAS to retrieve financial data from submitted on-line Excel templates so it can be imported into a MS Access database.

CONTACT INFORMATION

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

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COMPLETE SAS PROGRAM

```
options mlogic symbolgen macrogen pageno=1;
```

```
%let filedate = %left(%qsysfunc(date(),mmddyy8.));  
%macro file_info(file_name,file_number);  
%macro import_data(tab,ds);  
PROC IMPORT OUT= work.&ds. DATAFILE= "S:\fiscal\AFR\Submitted 2013 Charter template  
AFRs\&file_name."  
DBMS=EXCEL REPLACE; RANGE="&tab"; GETNAMES=YES; MIXED=NO; SCANTEXT=YES;  
USEDATE=YES; SCANTIME=YES;  
RUN;
```

```
/* renaming variables F_1 - F_? so help get CDNum from cell B1 */  
title1;  
proc sql;  
select max(varnum) into :num_vars  
FROM DICTIONARY.COLUMNS  
WHERE UPCASE(LIBNAME)="WORK" AND UPCASE(memname)="&ds.";  
select distinct(name) into :var1-:var%TRIM(%LEFT(&num_vars))  
from dictionary.columns  
WHERE UPCASE(LIBNAME)="WORK" AND UPCASE(memname)="&ds."  
order by varnum;  
quit;  
proc datasets library=WORK;  
modify &ds.;  
rename  
%do i=1 %to &num_vars;  
&&var&i=F_&i.  
%end;  
;  
quit; run;
```

```
/* getting CDNum from cell B1 */  
%if &ds. NE COVER %then %do; data &ds.; length CDNum $6; set &ds.;  
CDNum=compress(substr(vlabel(F_2),1,7),"-"); run; %end;  
%mend import_data;
```

```
%import_data(Cover$,COVER);
```

```

%import_data(Charter Holder$,CHARTER HOLDER);
%import_data(SofFP$,SOFFP);
%import_data(SofA$,SOFA);
%import_data(SofExp$,SOFEXP);
%import_data(SofCF$,SOFCF);
%import_data(Budget Comparison$,BUDGET_COMPARISON);

/* getting data elements to load into the MS Access DB */
data work.CDNum(keep=CDNum); length CDNum $6; set work.Cover(where=(F_1 contains "Charter"));
CDNum=compress(substr(F_3,1,7),""); run;

title1 "CDN";
proc sql /*noprint*/;
select ""||CDNum||"" into: CDN
from work.CDNum;
quit;
title1;

data work.COH(keep=CDNum COH1 COH2); set work.SofFP;
if F_2 = "Cash and Cash Equivalents" then COH1=input(F_3,dollar32.); else if F_2 = "Restricted Cash & Cash
Equivalents" then COH2=input(F_3,dollar32.); else delete; run;
proc summary nway data=work.COH; class CDNum; var COH1 COH2; output out=work.COH(drop=_type_
_freq_) sum=; run;
data work.COH(keep=CDNum COH); set work.COH; COH=sum(COH1,COH2); run;

%macro data(var,acct,ds,col);
data work.&var.(keep=CDNum &var.); set work.&ds.(where=(F_2 = &acct.)); &var.=input(&col.,dollar32.); if
&var.=. then &var.=0; run;
%mend data;

%data(LR,"Local revenue",Budget_comparison,F_8);
%data(SR,"State revenue",Budget_comparison,F_8);
%data(FR,"Federal revenue",Budget_comparison,F_8);
%data(TR,"Total Revenue",Budget_comparison,F_8);
%data(F11,"11 Instruction",Budget_comparison,F_8);
%data(F12,"12 Instructional Resources & Media Services",Budget_comparison,F_8);
%data(F13,"13 Curriculum & Instructional Staff Development",Budget_comparison,F_8);
%data(F21,"21 Instructional Leadership",Budget_comparison,F_8);
%data(F23,"23 School Leadership",Budget_comparison,F_8);
%data(F31,"31 Guidance, Counseling & Evaluation Services",Budget_comparison,F_8);

%data(F32,"Function 32 Expenses",Budget_comparison,F_8);

%data(F33,"33 Health Services",Budget_comparison,F_8);
%data(F34,"34 Transportation",Budget_comparison,F_8);
%data(F35,"35 Food Service",Budget_comparison,F_8);
%data(F36,"36 Extracurricular",Budget_comparison,F_8);
%data(F41,"41 General Administration",Budget_comparison,F_8);
%data(F51,"51 Plant Maintenance",Budget_comparison,F_8);
%data(F52,"52 Security & Monitoring Services",Budget_comparison,F_8);
%data(F53,"53 Data Processing Services",Budget_comparison,F_8);
%data(F61,"61 Community Services",Budget_comparison,F_8);
%data(F71,"71 Debt Service",Budget_comparison,F_8);
%data(F81,"81 Fundraising",Budget_comparison,F_8);

```

```

%data(TE,"Total Expenses",Budget_comparison,F_8);
%data(CNA,"CHANGE IN NET ASSETS",Budget_comparison,F_8);

%data(CHCOH,"Charter Holder Cash on Hand",Charter_holder,F_3);
%data(CHFR,"Charter Holder Federal Revenue",Charter_holder,F_3);
%data(CHFE,"Charter Holder Federal Expenditures",Charter_holder,F_3);

%data(URI,"Total Revenue and Other Revenue",SofA,F_4);
%data(CUNA,"INCREASE (DECREASES) IN NET ASSETS",SofA,F_4);

%data(DE,"Depreciation",SofCF,F_4);

%data(O6100,"6100 Payroll Costs",SofExp,F_3);
%data(O6200,"6200 Professional & Contracted Services",SofExp,F_3);
%data(O6300,"6300 Supplies & Materials",SofExp,F_3);
%data(O6400,"6400 Other Operating Costs",SofExp,F_3);
%data(O6500,"6500 Debt Service",SofExp,F_3);
%data(TOE,"Total Expenses",SofExp,F_3);

%data(COHPR,"Restricted Cash & Cash Equivalents",SofFP,F_3);
%data(REC,"Accounts Receivable",SofFP,F_3);
%data(INV,"Investments",SofFP,F_3);
%data(PREPD,"Prepaid Expenses",SofFP,F_3);
%data(CA,"Total Current Assets",SofFP,F_3);
%data(LND,"Land",SofFP,F_3);
%data(ADEP,"Accumulated Depreciation",SofFP,F_3);
%data(PE,"Total Property and Equipment (Net)",SofFP,F_3);
%data(OA,"Total Other Assets",SofFP,F_3);
%data(TA,"Total Assets",SofFP,F_3);
%data(AP,"Accounts Payable",SofFP,F_3);
%data(NPC,"Notes Payable - Current Maturities",SofFP,F_3);
%data(OL,"Other Current Liabilities",SofFP,F_3);
%data(CL,"Total Current Liabilities",SofFP,F_3);
%data(NPL,"Notes Payable - Long-term",SofFP,F_3);
%data(TL,"Total Liabilities",SofFP,F_3);
%data(UNA,"Unrestricted",SofFP,F_3);
%data(TRNA,"Temporarily Restricted",SofFP,F_3);
%data(PRNA,"Permanently Restricted",SofFP,F_3);
%data(TNA,"Total Net Assets",SofFP,F_3);

%macro missing_data(var,CDNum_missing_data);
%if &CDN. = &CDNum_missing_data. %then %do;
data work.&var.(keep=CDNum &var.); CDNum=&CDNum_missing_data.; &var.=0; run;
%end;
%mend missing_data;

%missing_data(F32,"015820");
%missing_data(OtherGainsLosses,"015820");
%missing_data(PriorPeriodAdjustments,"015820");
%missing_data(O7900,"015820");
%missing_data(O8900,"015820");

%missing_data(F32,"003801");
%missing_data(OtherGainsLosses,"003801");
%missing_data(PriorPeriodAdjustments,"003801");
%missing_data(O7900,"003801");

```

```

%missing_data(O8900,"003801");

data work.charter_AFR_&file_number.;
merge CDNum CA COH COHPR CHCOH OA TA CL OL TL UNA TRNA PRNA TNA INV REC PREPD AP
NPC NPL DE CUNA URI CHFR CHFE LND PE ADEP LR SR FR TR F11 F12 F13 F21 F23 F31 F32 F33 F34
F35 F36 F41 F51 F52
F53 F61 F71 F81 TE OtherGainsLosses PriorPeriodAdjustments CNA O6100 O6200 O6300 O6400 O6500 O7900
O8900 TOE;
by CDNum;
run;

proc append base=work.charter_AFR data=work.charter_AFR_&file_number.;
run;

%mend file_info;
%file_info(SASIC Charter AFR Template FYend 2013 v1 1(1).xlsx,_1);
%file_info(Charter AFR Template FYend 2013 v1 2.xlsx,_2);

%macro export(data);
PROC EXPORT DATA= WORK.&data
OUTFILE= "S:\fiscal\AFR\Charter AFR data\&data. &filedate..xlsx"
DBMS=EXCEL REPLACE;
SHEET="&data.";
RUN;
%mend export;
%export(charter_AFR);

```