Data Presentation 101: **An Analyst's Perspective**

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Overview

1. ODS TRACE
2. ODS TAGSETS.EXCELXP
3. PROC TRANSPOSE with ID
4. CALL SYMPUT
5. SGANNO
6. DICTIONARY.COLUMNS
7. PROC SQL SELECT INTO:

1. ODS TRACE

- The ODS TRACE command, used with any SAS® PROC, creates a list in the Log window of all data tables the procedure is able to generate.

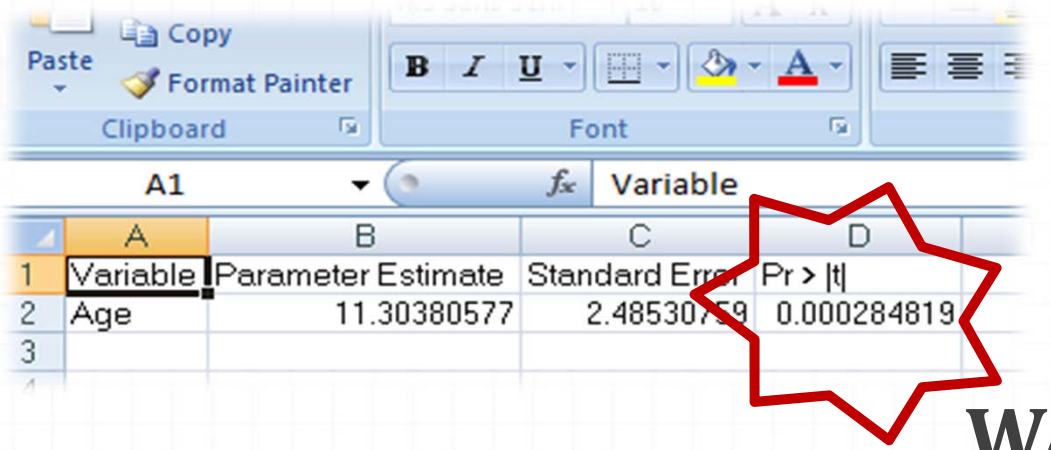
```
ODS TRACE ON;
PROC REG DATA = SASHELP.CLASS;
   MODEL WEIGHT = AGE;
RUN;
ODS TRACE OFF;
```

```
Output Added:
-------------
Name: ANOVA
Label: Analysis of Variance
Template: Stat.REG.ANOVA
Path: Reg.MODEL1.Fit.Weight.ANOVA

Output Added:
-------------
Name: ParameterEstimates
Label: Parameter Estimates
Template: Stat.REG.ParameterEstimates
Path:
Reg.MODEL1.Fit.Weight.ParameterEstimates
```

2. ODS TAGSETS.EXCELXP

- You want to present p-values for the coefficients from a simple linear regression as "***" or "NS" instead of their actual value.
- Using PROC FORMAT, you apply this format then create an Excel® file via PROC EXPORT

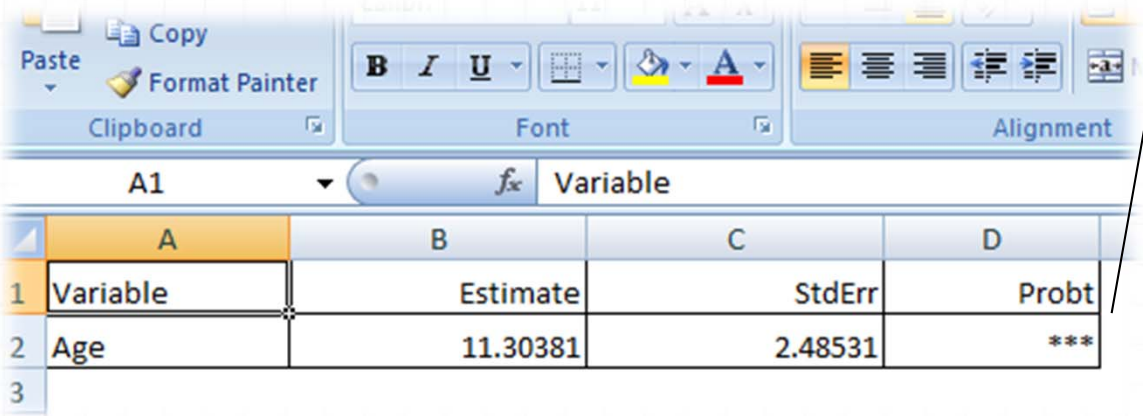


WAIT.

2. ODS TAGSETS.EXCELXP

```
ODS TAGSETS.EXCELXP
    FILE = "C:\Users\Deanna\Desktop\MY_FORMATTED_FILE.XLS"
    STYLE = MINIMAL;
PROC PRINT DATA = estimates NOOBS;
    VAR Variable Estimate StdErr Probt;
    FORMAT Probt SIGF.;
RUN;
ODS TAGSETS.EXCELXP CLOSE;
```

Thanks, ODS!



	A	B	C	D
1	Variable	Estimate	StdErr	Probt
2	Age	11.30381	2.48531	***
3				

3. PROC TRANSPOSE with ID

- You need to rearrange your dataset using PROC TRANSPOSE, but the basic syntax does not necessarily produce the most readable output.

VIEWTABLE: Sashelp.Class (Student Data)

	Name	Sex	Age	Hei
1	Alfred	M	14	
2	Alice	F	13	
3	Barbara	F	13	
4	Carol	F	14	
5	Henry	M	14	
6	James	M	12	
7	Jane	F	12	
8	Janet	F	15	
9	Jeffrey	M	13	
10	John	M	12	
11	Joyce	F	11	
12	Judy	F	14	
13	Louise	F	12	
14	Mary	F	15	
15	Philip	M	16	
16	Robert	M	12	
17	Ronald	M	15	
18	Thomas	M	11	
19	William	M	15	

```
PROC TRANSPOSE
  DATA = sashelp.class out = class_w;
  VAR Age;
RUN;
```

VIEWTABLE: Work.Class_w

	NAME OF FORMER VARIABLE	COL1	COL2	COL3	COL4	COL5
1	Age	14	13	13	14	

3. PROC TRANSPOSE with ID

- Adding the **ID statement** to the procedure yields a more presentable table.

VIEWTABLE: Sashelp.Class (Student Data)

	Name	Sex	Age	Hei
1	Alfred	M	14	
2	Alice	F	13	
3	Barbara	F	13	
4	Carol	F	14	
5	Henry	M	14	
6	James	M	12	
7	Jane	F	12	
8	Janet	F	15	
9	Jeffrey	M	13	
10	John	M	12	
11	Joyce	F	11	
12	Judy	F	14	
13	Louise	F	12	
14	Mary	F	15	
15	Philip	M	16	
16	Robert	M	12	
17	Ronald	M	15	
18	Thomas	M	11	
19	William	M	15	

```
PROC TRANSPOSE
  DATA = sashelp.class out = class_w;
  VAR Age;
  ID Name;
RUN;
```

VIEWTABLE: Work.Class_w

	NAME OF FORMER VARIABLE	Alfred	Alice	Barbara	Carol
1	Age	14	13	13	14

4. CALL SYMPUT

- CALL SYMPUT provides the ability to save values – numbers or character strings – into macro variables that later can be recalled

4. CALL SYMPUT

VIEWTABLE: Work.My_means (SUMMARY STATISTICS)

	Sex	_TYPE_	_FREQ_	_STAT_	Age
1	F	1	9	N	9
2	F	1	9	MIN	11
3	F	1	9	MAX	15
4	F	1	9	MEAN	13.222222222
5	F	1	9	STD	1.3944333776
6	M	1	10	N	10
7	M	1	10	MIN	11
8	M	1	10	MAX	16
9	M	1	10	MEAN	13.4
10	M	1	10	STD	1.6465452047

```
PROC MEANS DATA = SASHELP.CLASS;
VAR AGE;
CLASS SEX;
OUTPUT OUT = MY_MEANS;
RUN;
DATA _NULL_;
 SET MY_MEANS(WHERE = (_STAT_ = "N"));
 IF SEX=“F” THEN DO; CALL SYMPUT (“N_F",INPUT(AGE, 2.0));END;
 IF SEX=“M” THEN DO; CALL SYMPUT (“N_M",INPUT(AGE, 2.0));END;
RUN;
```

```
%PUT &N_F.;      9
%PUT &N_M.;      10
```

Thank you, SAS. So… what now?

5. SGANNO

- One common way to display summary statistics is through charts and graphs.
- But, if there are no automatic options in the graphics procedure, how can we get the mean value we saved in CALL SYMPUT onto a nice-looking box plot?
- We get it there via the SGANNO= option.
  - ***Note:*** If you prefer not to use the SGs, the equivalent ANNO= option is available for PROC GPLOTs, GMAPs, BOXPLOTs, etc.
- Although we use SGANNO with a CALL SYMPUT in our example, the option can be used many ways.

5. SGANNO

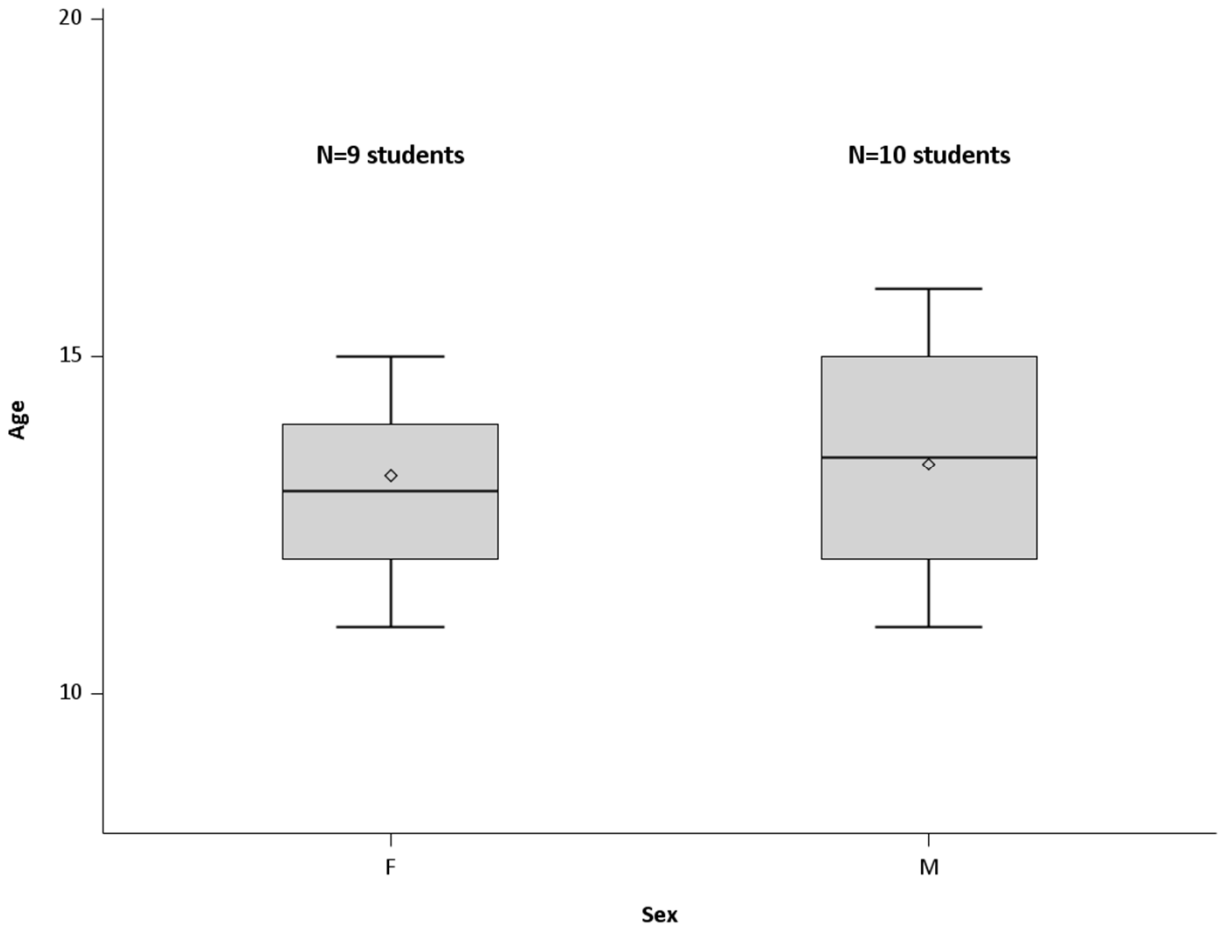
- First, create a set of instructions, in the form of a SAS data set, that tells the SAS procedure where and how the data will be displayed.

```
DATA SGANNO_DSET;
   LENGTH LABEL 30;
   RETAIN WHEN "A" X1SPACE "DATAVALUE" Y1SPACE "DATAVALUE" TEXTFONT
          "CALIBRI" WIDTH 40 JUSTIFY "CENTER“ FUNCTION "TEXT" TEXTCOLOR
          "BLACK" TEXTWEIGHT "BOLD" TEXTSIZE 14 Y1 18;
   X1=0;LABEL=CAT("N="||TRIM(LEFT(&N_F.))||" students");OUTPUT;
   X1=1;LABEL=CAT("N="||trim(left(&N_M.))||" students");OUTPUT;
RUN;
```

- Then, feed those instructions into the procedure.

```
PROC SGPLOT DATA=SASHELP.CLASS SGANNO=SGANNO_DSET;
   VBOX AGE/CATEGORY=SEX ;
   YAXIS MIN=8 MAX=20 INTEGER;
RUN;QUIT;
```

5. SGANNO



6. DICTIONARY.COLUMNS

- During a SAS session, **DICTIONARY** tables can be used to retrieve information related to currently defined
  - libnames,
  - table names,
  - column names and attributes,
  - formats and…
  - much more.

DICTIONARY Tables and Associated SASHELP Views

DICTIONARY Table
CATALOGS
CHECK_CONSTRAINTS
COLUMNS
CONSTRAINT_COLUMN_USAGE
CONSTRAINT_TABLE_USAGE
DATAITEMS
DESTINATIONS
DICTIONARIES
ENGINES
EXTFILES
FILTERS
FORMATS
FUNCTIONS
GOPTIONS
INDEXES
INFOMAPS
LIBNAMES

6. DICTIONARY.COLUMNS

- DICTIONARY.COLUMNS table is useful when you want to find **specific columns** to include in your analysis
- Similar to PROC CONTENTS

Column vs. variable

VIEWTABLE: Work.Dict

	Member Name	Column Name	Column Type	Column Length	Column Position
1	CLASS	Name	char	8	24
2	CLASS	Sex	char	1	32
3	CLASS	Age	num	8	0
4	CLASS	Height	num	8	8
5	CLASS	Weight	num	8	16

mlsug.sas *

```
50 PROC SQL;
51     CREATE TABLE DICT AS
52     SELECT *
53     FROM DICTIONARY.COLUMNS
54     WHERE UPCASE(LIBNAME) = "SASHELP" &
55           UPCASE(MEMNAME) = "CLASS";
56 QUIT;
57
58 PROC CONTENTS DATA = SASHELP.CLASS OUT = D
```

VIEWTABLE: Work.Dict_2

	Library Member Name	Variable Name	Variabl Type	Variable Length	Variable Number
1	CLASS	Age	1	8	3
2	CLASS	Height	1	8	4
3	CLASS	Name	2	8	1
4	CLASS	Sex	2	1	2
5	CLASS	Weight	1	8	5

7. PROC SQL SELECT INTO:

- How do we use DICTIONARY.COLUMNS?
- Let's look at an example…
  - What we **have**: 19 students' sex, age, height and weight over 3 years (modified *SASHELP.CLASS*)
  - What we **want**: Multiple years of data in a wide data set
  - What to **do**: Merge and rename

VIEWTABLE: Work.Class_year1

	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69	112.5
2	Alice	F	13	56.5	84
3	Barbara	F	13	65.3	98
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5
6	James				
7	Jane				
8	Janet				
9	Jeffre				
10	John				
11	Joyce				
12	Judy				
13	Louis				
14	Mary				

VIEWTABLE: Work.Class_year2

	Name	Sex	Age	Height	Weigh
1	Alfred	M	15	69	118
2	Alice	F	14	60	85
3	Barbara	F	14	69	101
4	Carol	F	15	64	106
5	Henry	M	15	64	103
6	James	M	13	60	92

VIEWTABLE: Work.Class_year3

	Name	Sex	Age	Height	Weight
1	Alfred	M	16	76	121
2	Alice	F	15	64	87
3	Barbara	F	15	73	105
4	Carol	F	16	71	103
5	Henry	M	16	67	107
6	James	M	14	59	85
7	Jane	F	14	62	89

7. PROC SQL SELECT INTO:

SAS, put together:

each value of the variable "NAME" *[from DICTIONARY.COLUMNS]***...**

...followed by an equals sign...

...followed by the new value for "NAME," which has the suffix *_Y2*.

```
PROC SQL;
   SELECT CATT(NAME,"=", CATT(NAME, "_Y2"))
   INTO : VARS_Y2 SEPARATED BY " "
   FROM DICTIONARY.COLUMNS
   WHERE LIBNAME = "WORK" & MEMNAME = "CLASS_YEAR2";
QUIT;
```

(repeat for Y3)

7. PROC SQL SELECT INTO:

- The data step below renames the variables in the data set to their corresponding labels:

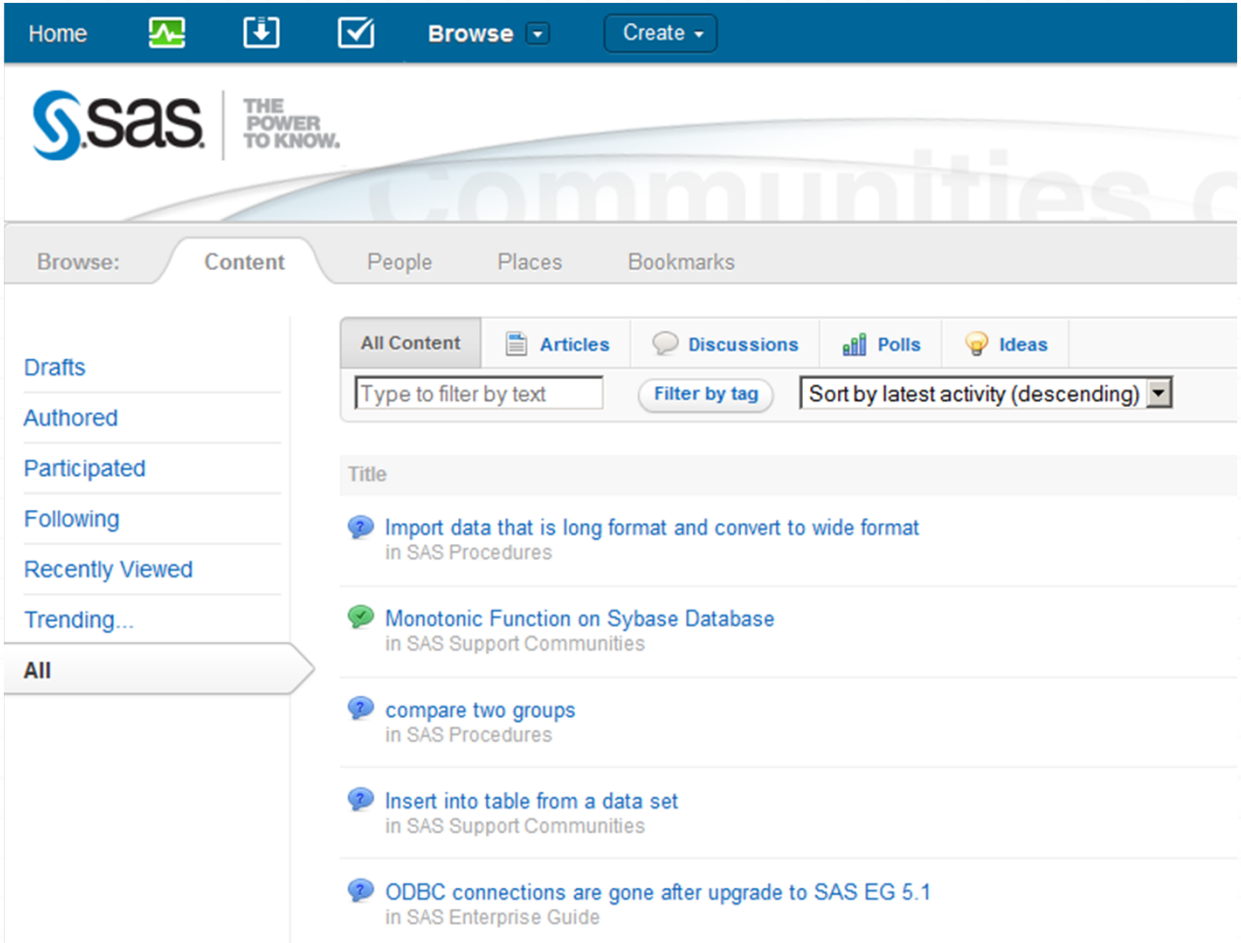
```
DATA STEP;
   MERGE CLASS_YEAR1
         CLASS_YEAR2(RENAME = (&VARS_Y2.))
          CLASS_YEAR3(RENAME = (&VARS_Y3.));
BY NAME;
RUN;
```

- Voila. Done. Renamed. Need more evidence? Enter a %PUT statement to see the actual values (printed to the Log window) stored in your macro variable:

```
%PUT &VARS_Y2.;
```

```
Macro variable VARS_Y2 resolves to
Age=Age_Y2 Height=Height_Y2
Weight=Weight_Y2
```

COMMUNITIES.SAS.COM



COMMUNITIES.SAS.COM

question about an input statement

This question has been **Answered.**

"data voter;
input Age Party : $1. (Ques1-Ques4) ($1. +1);
datalines;
23 D 1 1 2 2
45 R 5 5 4 1
67 D 2 4 3 3
39 R 4 4 4 4
19 D 2 1 2 1
75 D 3 3 2 3
57 R 4 3 4 4
;"

Above is a part of code I quoted. What I cannot understand is the "+1" following "$1." in second line. What is its function? If without it, what will be wrong?

Correct Answer
by Ksharp on Sep 29, 2011 8:11 AM

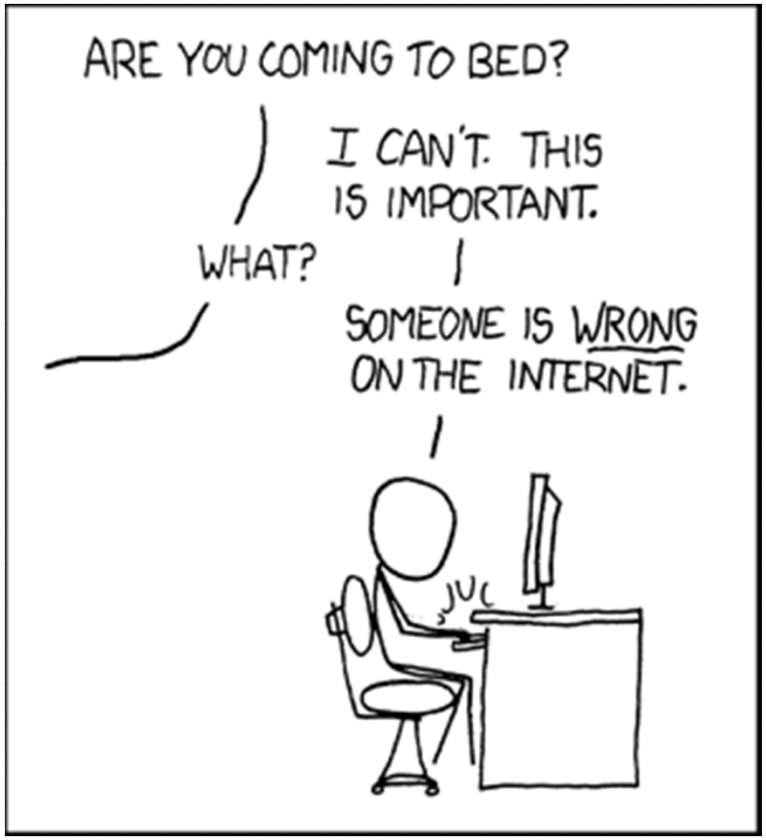
Party : $1.
Means to eat a character, colon means to stop read when encounter a delimiter blank ,
Because it is list input method, so point will move a unit forward.

(Ques1-Ques4) ($1. +1);

is equal to Ques1 $1. +1 Ques2 $1. +1 Ques3 $1. +1 Ques4 $1. +1

Ksharp

Thanks for your time and attention



Source: www.xkcd.com