SAS 上机实习（3）
2013-12-19

实习目的：

1、应用 SAS－Report 进行数据分析和报告
2、应用 SAS－Graph 进行作图
3、应用 SAS－ODS 输出

实习内容：

1 RPERT

1.1 Data _NULL_

Using data _null_ to generate the below output;

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4 5 6
1 2 3 4 5 6 7
1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9
```

1.2 PROC REPORT

Use the dataset of **EMPLOYEES**, generate the below report in SAS output, having a skip line in each **JOB_TITLE.**

[note: to read the employees dataset, please set the libname, and add the below option. Eg.

```
libname sasdata "xxxxx";
option fmtsearch=(sasdata);]
```

Dept	Section	Title	Name	Sex	Salary
Administration	Administration	Administration Manag	Jean-Claude Willmann	M	47,230
			Jean-Pierre Lemahieu	M	43,280
			Jurgen Jenkins	M	45,500
			Kareen Billington	F	46,230
		Clerk I	Rhiannedd Earshaw	M	26,205
		Office Assistant I	David Geoghegan	M	27,205
			David Liveing	M	26,090
			Dominique Claverie	M	25,070
			Sandra Van Dorst	F	26,400
		Office Assistant II	Eddy Alvaro	F	26,155
			John Hornsey	M	26,960
			Juan Alberto Duchemi	M	26,330
		Office Assistant III	Sherie Sheedy	F	30,475
		Office Assistant IV	Robin Donaldson	M	32,240
		Secretary I	Liz Povey	F	27,110
		Secretary III	Veronique Cambien	F	28,015
	Goods Entrance	Warehouse Assistant	Alain Rodrigues	M	28,415
			Blanche Molenaar	F	28,455
			Dennis Entwisle	M	28,615
			Gabriele Baker	F	26,495
			Gladys Gromek	F	27,660
			Laurent Le Neve - Ri	M	26,540
			Marie-H閑鋸e Verboom	F	29,370
			Robert Bissett	M	25,765
		Warehouse Manager	Anne Poisson	F	43,950
			Donnie Raabe	M	43,560
	Security	Security Guard I	Ellis Glattback	F	26,550
			Fay Hurley	F	26,335
			Joel Geers	M	25,045
			Kas Jagannathan	M	30,980
			Valerie Robain	F	27,330
		Security Guard II	Patrick Charlier	M	26,220
			Riu Horsey	F	26,870
			Sue Furihata	F	26,780
			Ubaldo Spillane	M	26,895

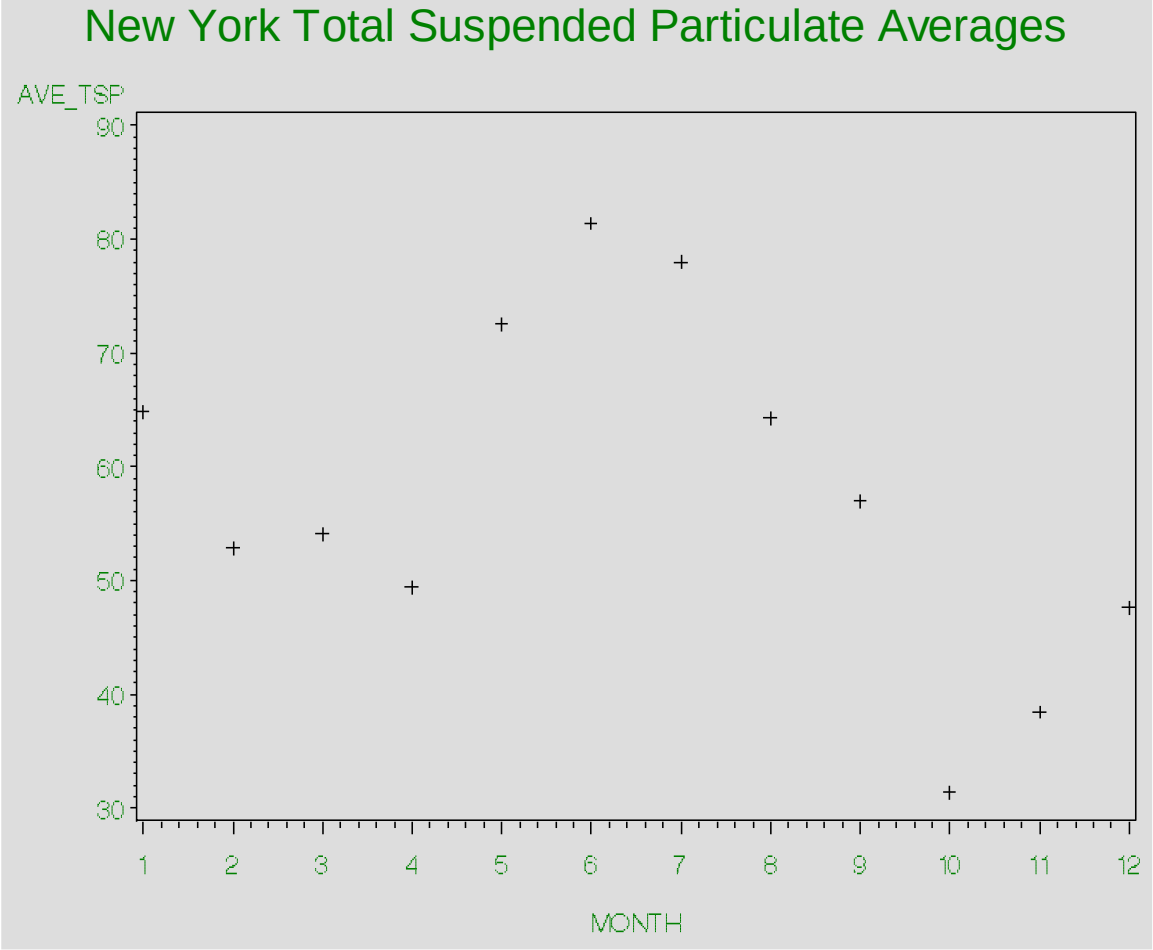
2 作图

2.1 Using the GOPTIONS Statement to Control the Appearance of Graphs

Modify the below program

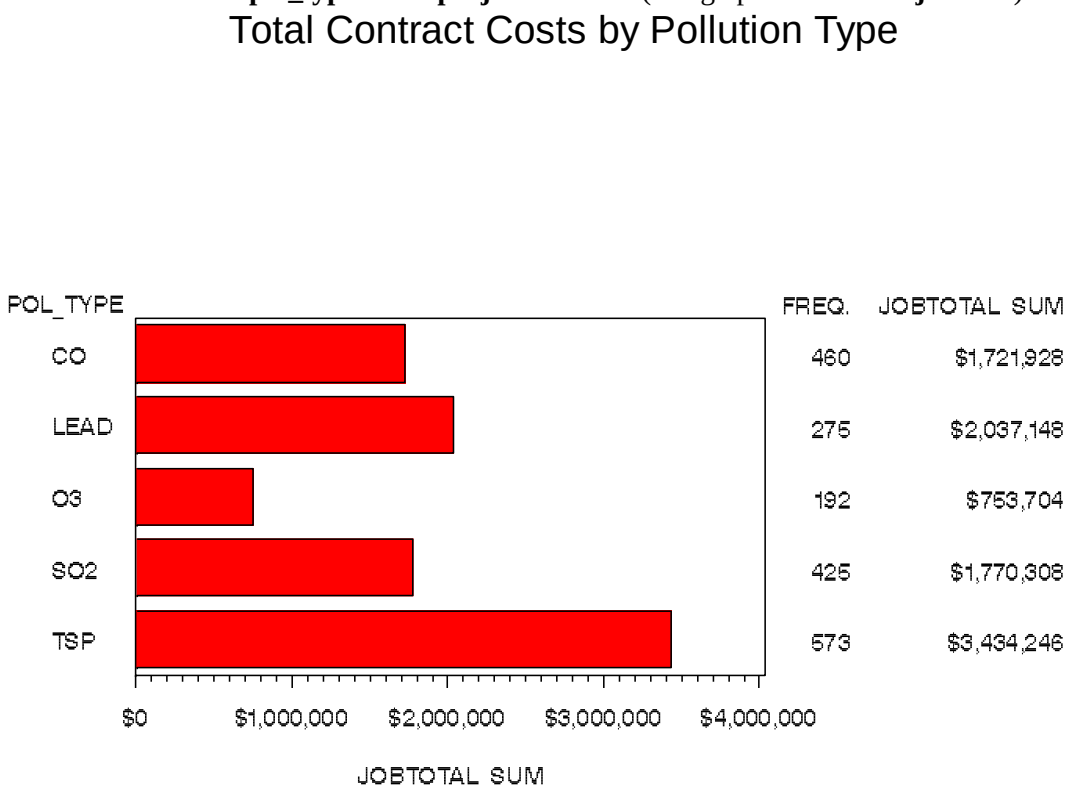
```
goptions reset=all;
proc gplot data=sasdata.airqual;
   where state='NY';
   plot ave_tsp*month;
   title 'New York Total Suspended Particulate Averages';
run;
quit;
```

to do the following:
a. Change the background color to light gray (GRAYDD).
b. Change the default font for all text to SWISS.
c. Change the default color for all text to GREEN.



2.2 Producing Bar Charts

Produce a horizontal bar chart that represents the sum of the variable jobtotal for each value of the character variable **pol_type** in the **projects** dataset. (using option **sumvar=jobtotal**)



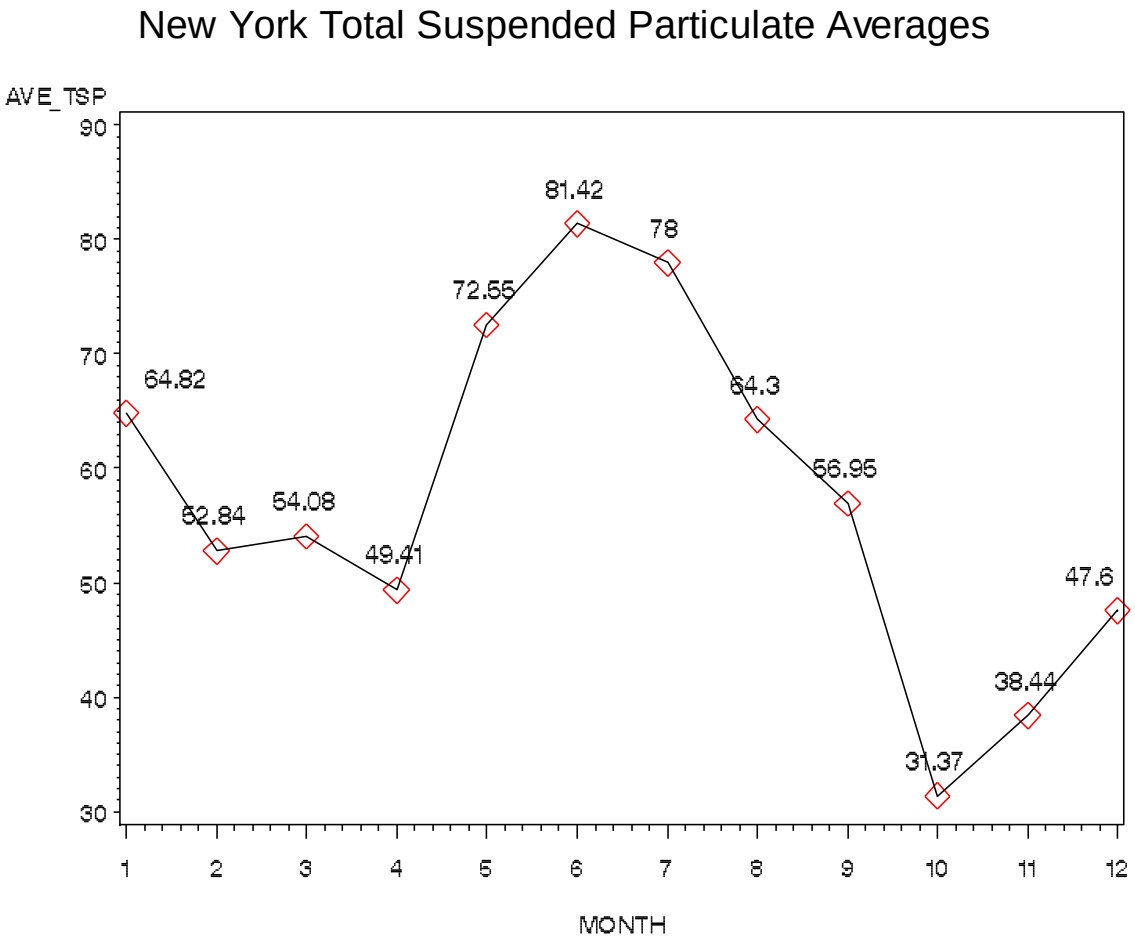
2.3 Producing line plot

Modify the plot from exercise 2.1,

a. Use red diamonds with a height of 2 to display individual points.

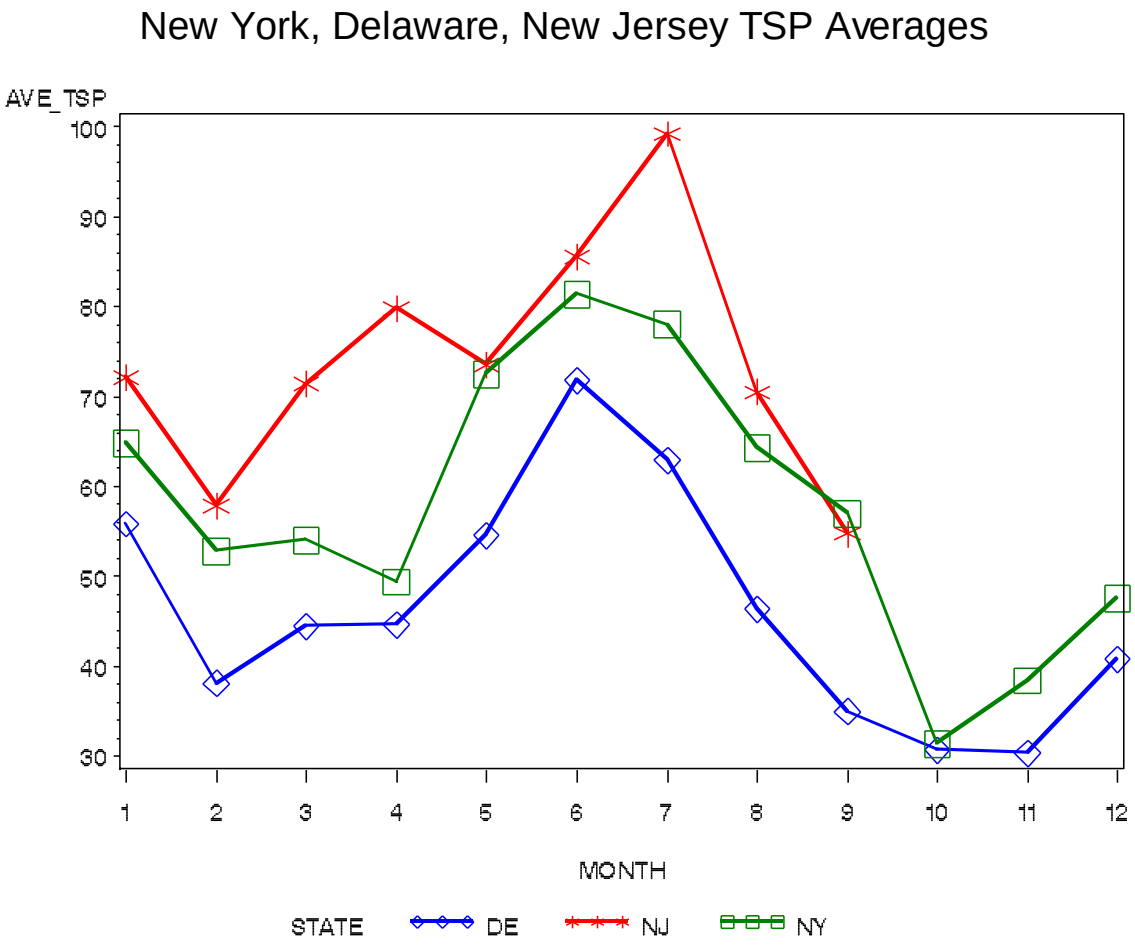
b. Join the points with black line segments.

c. Label the plot points with the value of the Y-axis variable (using option pointlabel in symbol statement)



2.4 Producing multiple lines plot

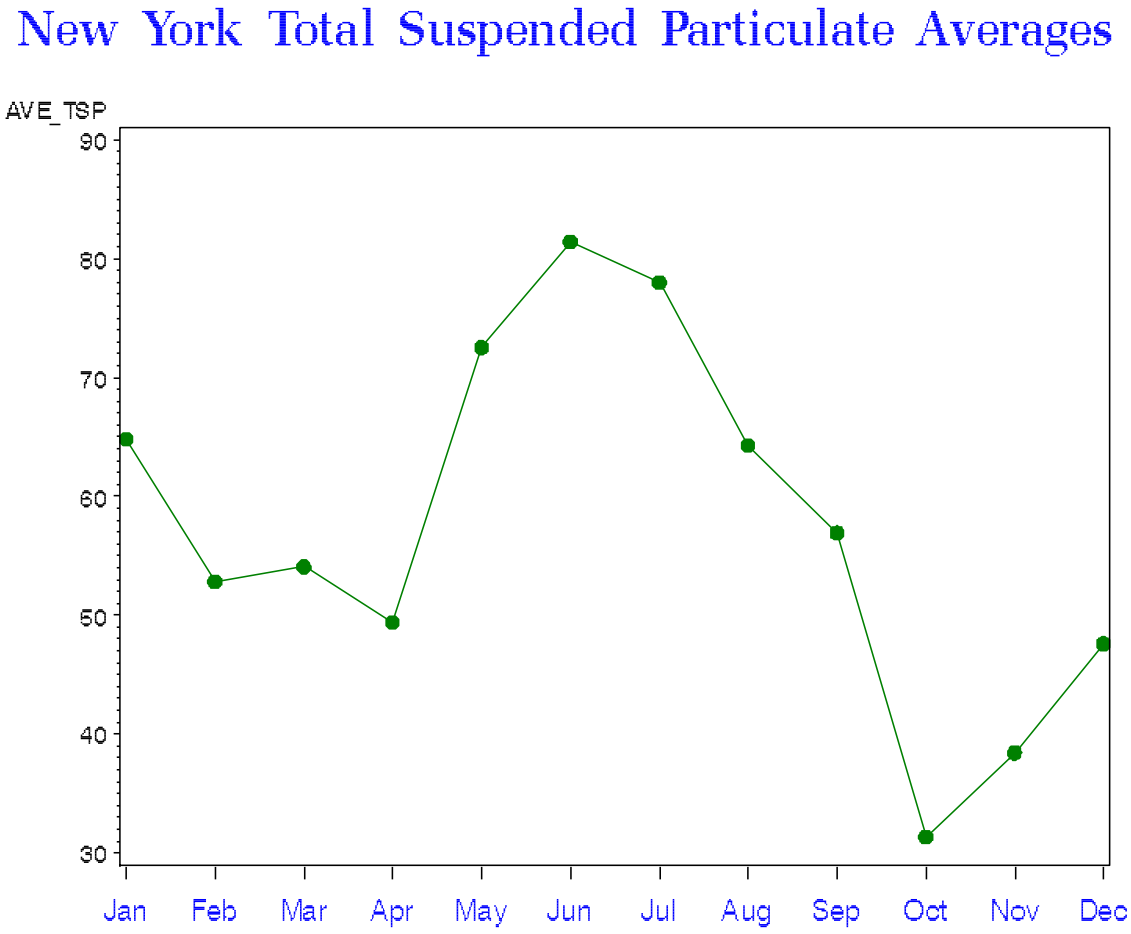
Generate plots for New York, Delaware, and New Jersey [where state in ('NY' 'DE' 'NJ')] TSP averages on the same graph.



2.5 Manage Axis

Produce a plot of **ave_tsp** by **month** for New York [where state in ('NY')] TSP data for all months.

a. Display month numbers as month-name abbreviations
b. Display tick mark labels in blue, using the SWISS font with a height of 3 percent.
c. Remove minor tick marks.
d. Remove the axis label.



2.6 Manage Legend

Use the **sasdata.airqual** data set to generate a plot of **ave_tsp** by **month**, with a separate plot line for each value of **state**.

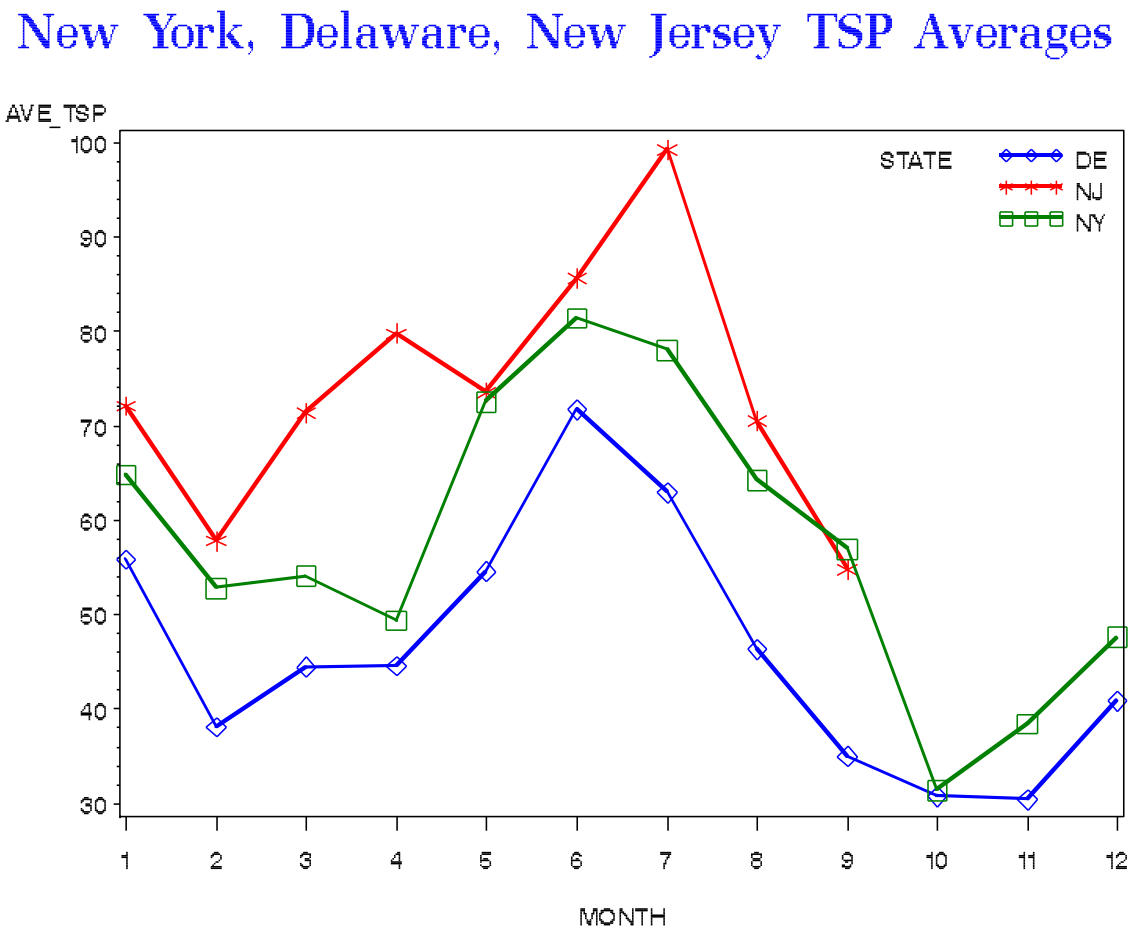
a. Use a WHERE statement to restrict the plot to New York, Delaware, and New Jersey.

b. Specify that the LEGEND1 definition be used for the legend.

c. Use a LEGEND statement to do the following:

Arrange the legend entries in a single column with three rows.

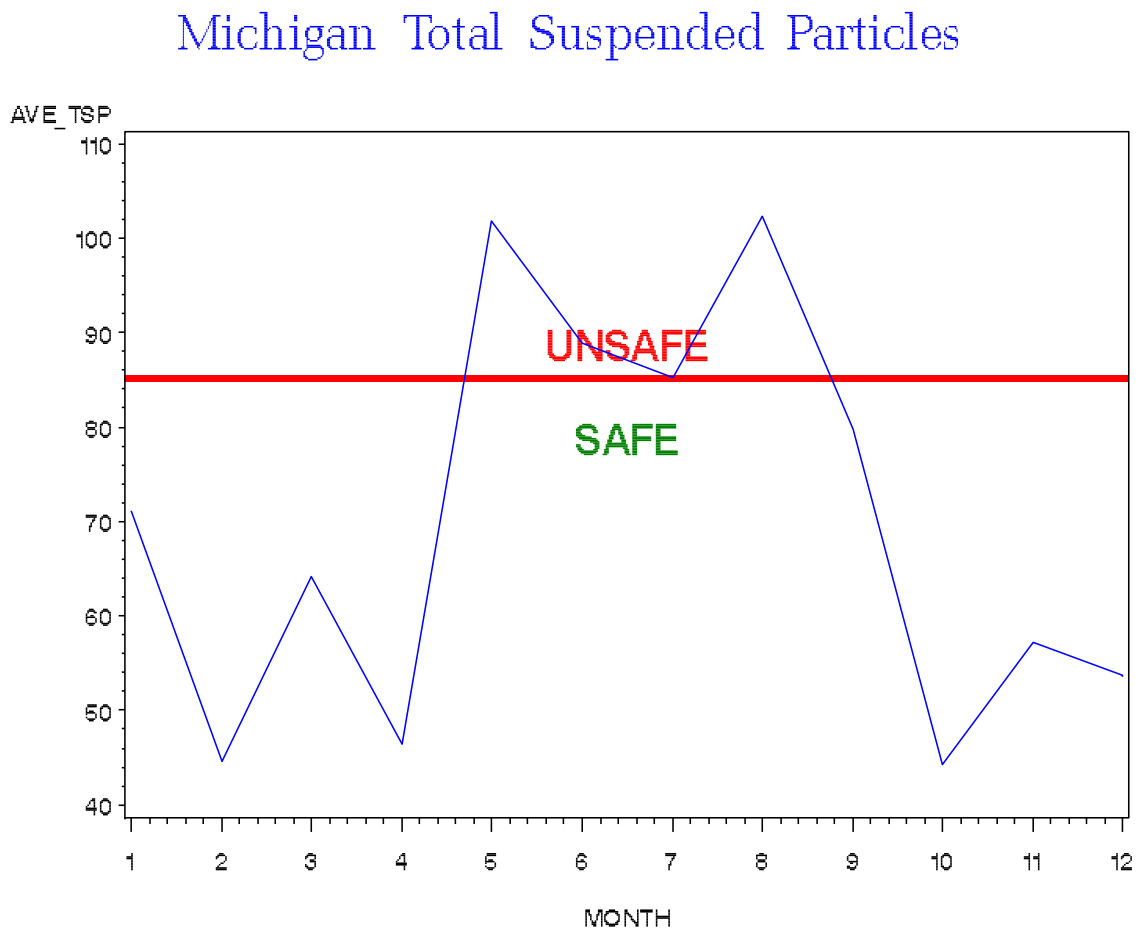
Position the legend inside the plot area, at the top right.



2.7 Annotation features

Run the below program to understand how the annotation works

```
data annoplot;
length color function style $8;
retain xsys '1' ysys '2' hsys '1';
function='move'; x=0; y=85; output;
function='draw'; x=100; color='red';size=1; output;
function='label'; x=50; y=90; size=6;text='UNSAFE'; color='red'; style='swissb';output;
x=50; y=80; text='SAFE'; color='green';output;
run;

goptions reset=all ftext=swissb htext=2.5 pct;
proc gplot data=sasdata.airqual;
where state='MI';
plot ave_tsp*month / anno=annoplot;
symbol i=join c=blue;
title c=blue h=5pct f=zapf 'Michigan Total Suspended Particles';
run;
quit;
```



3 ODS

3.1 Accessing Table Templates

Run below program:

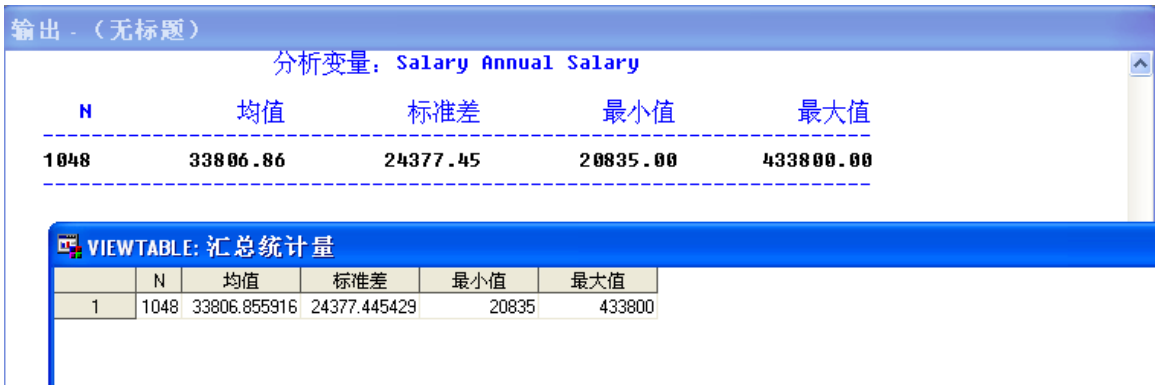
```
title;
footnote;
options nodate nonumber ls=75;
ods noproctitle;
ods listing;

ods trace on;
proc univariate data=sasdata.weekdata;
  var freight;
run;
ods trace off;

proc template;
source Base.Univariate.Measures;
run;
```

a. Review the syntax, which includes the UNIVARIATE procedure plus ODS TRACE statements.
b. Submit the program and review the results in the Output window.
c. Review the trace results in the Log window.
d. Answer the following questions:
How many output objects are created from this PROC UNIVARIATE step? _____
What is the name of the table template for the output object called BasicMeasures?
_____
e. View the source code for the BasicMeasures table template by using the SAS windowing environment or the TEMPLATE procedure.
f. Answer the following questions:
In the source code for the BasicMeasures table template, what statement comes **after** the DEFINE TABLE statement?
_____
In the source code for the BasicMeasures table template, how many words are listed on the HEADER statement after the keyword HEADER? _____

3.2 Create SAS dataset using ODS

对数据库进行描述分析，将 output 结果输出到数据库

```
proc means data=sasdata.employees;
  var salary;
run;
```



3.3 Create RTF file using ODS

a. Run below program to understand how ODS works

```
options nodate number center missing=' ';
title; footnote;

*  使用sashelp.class表;
data class;
  set sashelp.class;
run;

ods rtf file='ods_text1.rtf';

proc print data=class;
run;

proc means data=class;
run;

proc means data=class;
  class sex;
run;

ods rtf close;
```

b. Check the RTF (MS word) file.

c. Change the output to a PDF file.