

# Proc Template

Creating Custom Graphics  
In SAS

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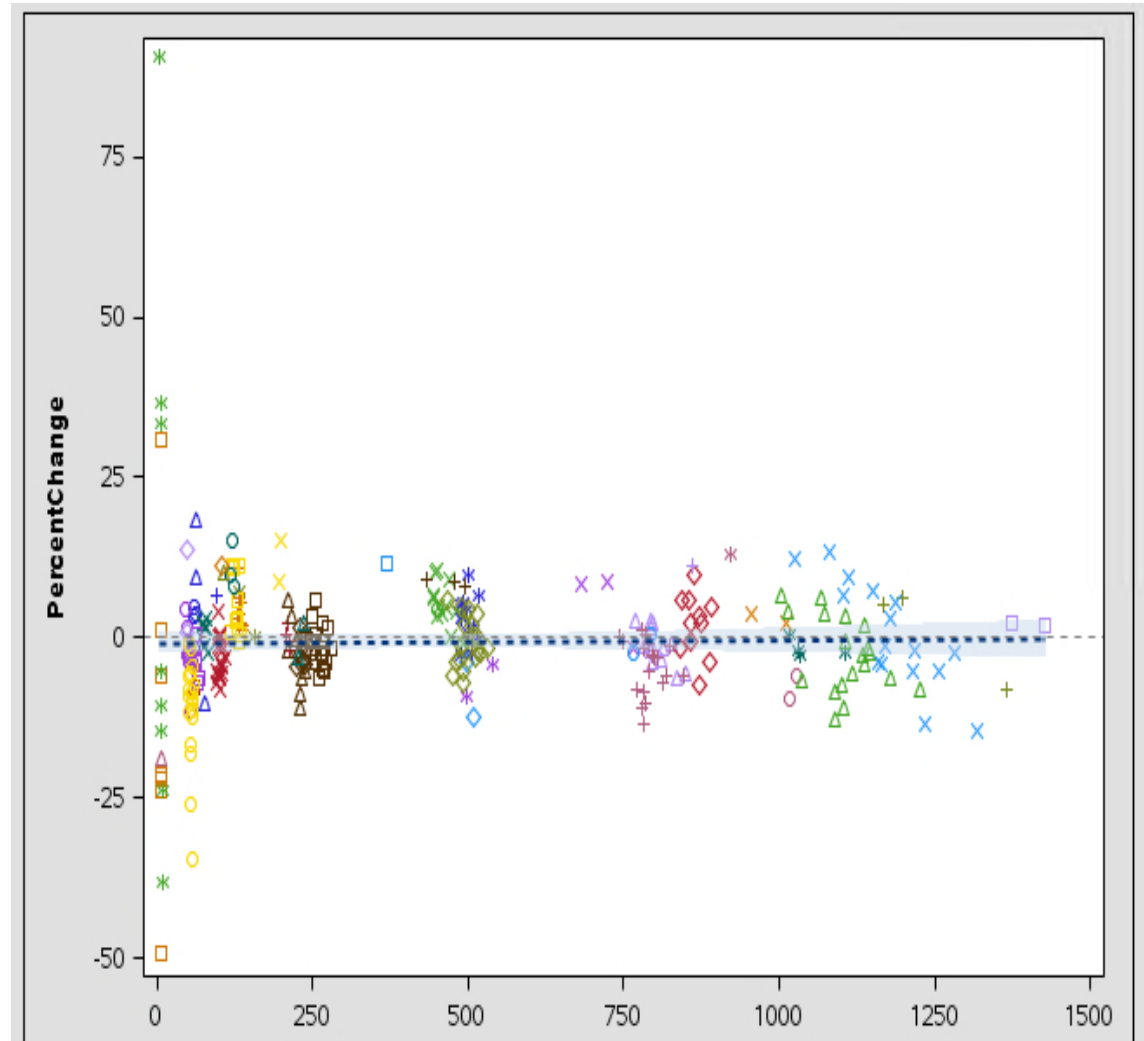
# Reason To Use Proc Template

Developing universal graphics to be used with a stored process from a large database with multiple products with varying responses meant having to create a flexible y-axis.

## Proc Sgplot Challenges

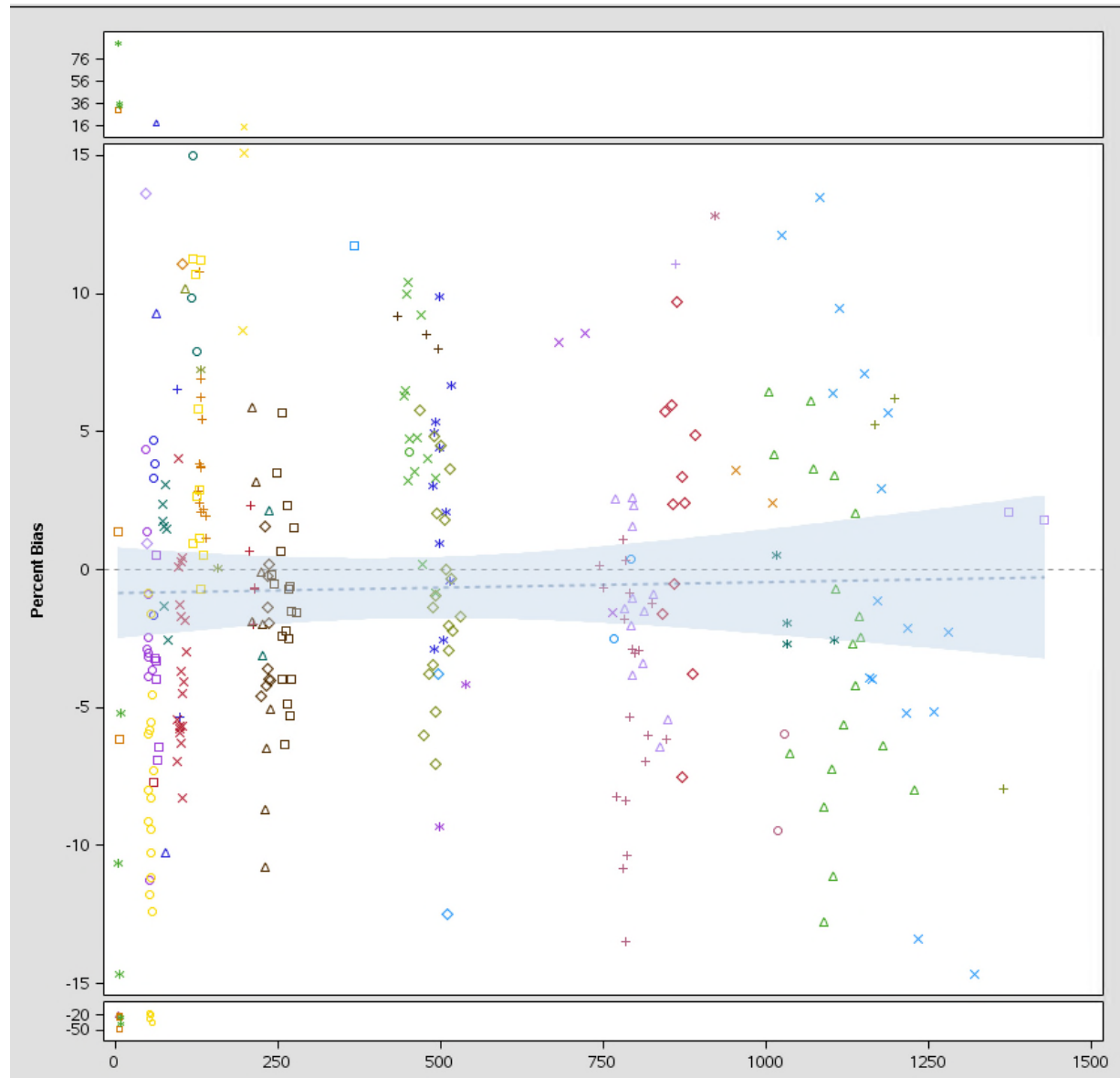
### Scaling

- For the analysis being performed typical percent change should be concentrated  $\pm 15\%$
- Extreme outliers make it difficult to see the regression and corresponding confidence interval



## Proc Template

Used the lattice  
feature to create a  
variable y-axis



## SAS Code For Variable Axis Scaling

```

Data data2; Set data;
  if response >15 then response2=response;
  if response <-15 then response3=response;
run;

```

```

options reset=all;
ods graphics/ imagemap=on height=8in width=8in;

```

```

proc template;
define statgraph sgplot1;
begingraph;

  layout lattice / rows=3 rowweights=(.1 .8 .1) rowdata range=union rowgutter=2 columndatarange=unionall;

  layout overlay /
    xaxisopts=(display=none)
    yaxisopts=(display=(tickvalues ticks)
    linearopts=(viewmin=16 tickvaluessequence=(start=16 end=200 increment=10)));
  Scatterplot x=predictor y=response2/markerattrs=(color=darkslateblue symbol=circlefilled);
endlayout;

  layout overlay /
    xaxisopts=(display=none)
    yaxisopts=(label="Percent Bias"
    linearopts=(viewmin=-15 viewmax=15 tickvaluessequence=(start=-15 end=15 increment=5)));
  Referenceline y=0 / lineattrs=(pattern=2);
  ScatterPlot X=predictor Y=response/markerattrs=(color=darkslateblue symbol=circlefilled);
  regressionplot x=response y=predictor/ clm="confidence" lineattrs=(pattern=2) datatransparency=0.6;
  modelband "confidence" / display=(fill) fillattrs=GraphConfidence datatransparency=0.6;
endlayout;

  layout overlay /
    yaxisopts=(display=(tickvalues ticks)
    linearopts=(viewmax=-16 tickvaluessequence=(start=-200 end=-16 increment=-1)));
  Scatterplot x=predictor y=response3/markerattrs=(color=darkslateblue symbol=circlefilled);
endlayout;

  columnaxes;
  columnaxis / display=(label tickvalues ticks) label="Platform Concentration"
    labelattrs=(weight=bold);
endcolumnaxes;

endlayout;
endgraph;
end;
run;

proc sgrender data=data2 template=sgplot1;
run;

```

# SAS Code For Variable Axis Scaling

```
layout lattice / rows=3 rowweights=(.1 .8 .1) rowdatarange=union rowgutter=2 columndatarange=unionall;
```

```
layout overlay /   xaxisopts=(display=none)
                   yaxisopts=(display=(tickvalues ticks)
                                linearopts=(viewmin=16 tickvaluesequence=(start=16 end=200 increment=10)));
  Scatterplot x=predictor y=response2/markerattrs=(color=darkslateblue symbol=circlefilled );
endlayout;
```

```
layout overlay /   xaxisopts=(display=none)
                   yaxisopts=(label="Percent Bias" linearopts=(viewmin=-15 viewmax=15 tickvaluesequence=(start=-15 end=15 increment=5)));
  Referenceline y=0 / lineattrs=(pattern=2);
  ScatterPlot X=predictor Y=response/markerattrs=(color=darkslateblue symbol=circlefilled);
  regressionplot x=response y=predictor/ clm="confidence" lineattrs=(pattern=2) datatransparency=0.6;
  modelband "confidence" / display=(fill) fillattrs=GraphConfidence datatransparency=0.6;
endlayout;
```

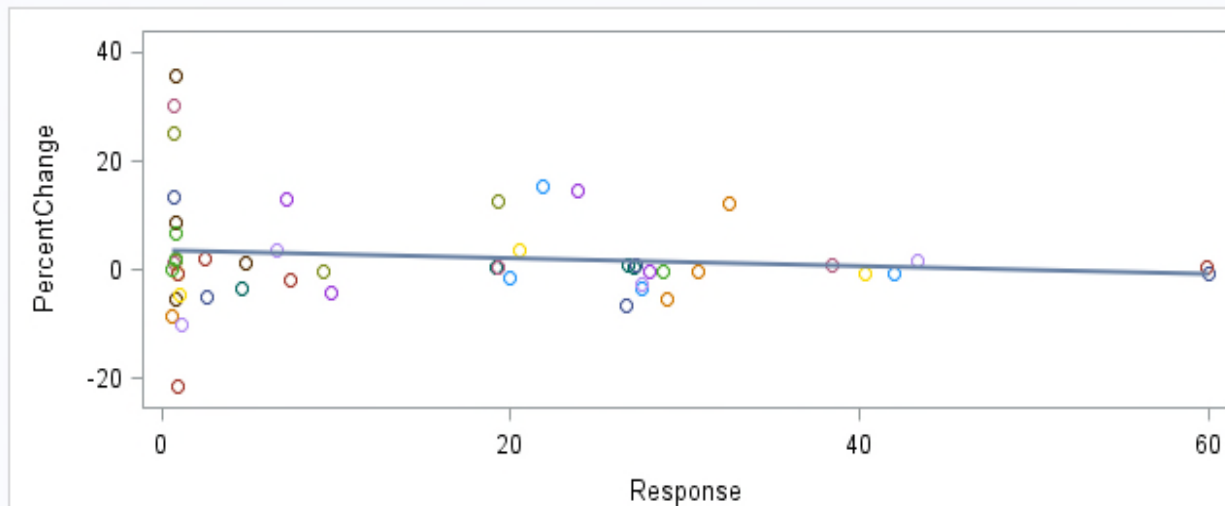
```
layout overlay /
  yaxisopts=(display=(tickvalues ticks)
              linearopts=(viewmax=-16 tickvaluesequence=(start=-200 end=-16 increment=-1)));
  Scatterplot x=predictor y=response3/markerattrs=(color=darkslateblue symbol=circlefilled);
endlayout;
```

## Another Example of the Use

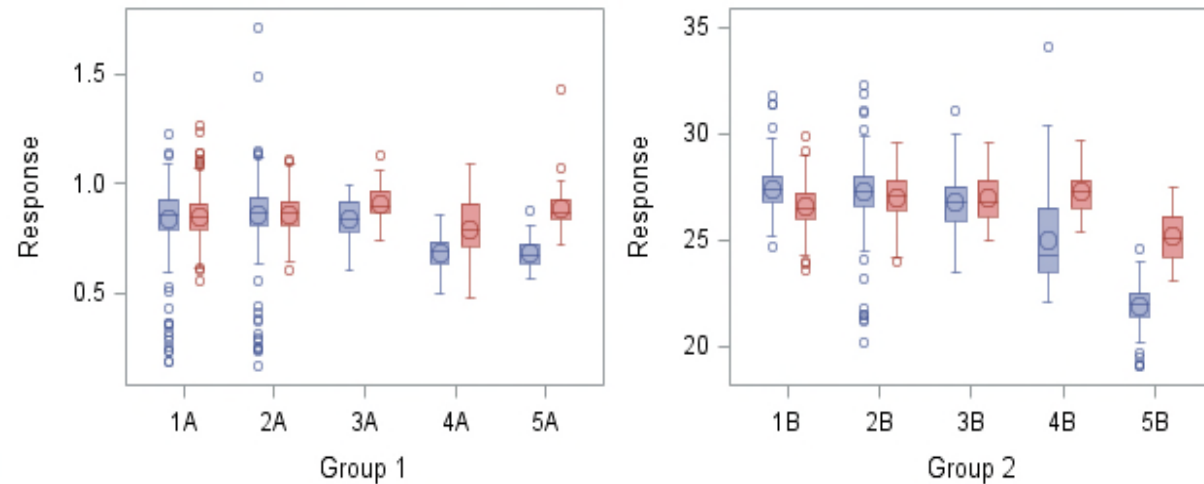
Bundling together common analysis that are preformed to make a complete graphic of statistical tools being used.

## Proc Template

Top graph - scatter plot with a regression fit



Bottom graphs -two groups from the scatter plot split up by the response variable the percent change was calculated





## SAS Code for Regression and Box Plots

```
ods graphics / antialiasmax=4700 tipmax=4700 imagemap=on ;
```

```
proc template;  
  define statgraph plot2;  
  
    beginingraph;  
  
    layout lattice / rows=2 columns=1 rowgutter=5 rowdatarange=data;  
  
    layout overlay/xaxisopts=(label="Response");  
      scatterplot x=predictor y=PercentChange /group=sample_id markerattrs=(size=10);  
      regressionplot x=predictor y=PercentChange ;  
    endlayout;  
  
    layout lattice /rows=1 columns=2 columngutter=10;  
  
    layout overlay /xaxisopts=(label="Group 1") yaxisopts=(label="Response");  
      boxplot y=response x=sample_id3/ orient=vertical groupdisplay=cluster group=group datatransparency=0.4;  
    endlayout;  
  
    layout overlay/xaxisopts=(label="Group 2") yaxisopts=(label="Response");  
      boxplot y=response x=sample_id2/ orient=vertical groupdisplay=cluster group=group datatransparency=0.4;  
    endlayout;  
  
    endlayout;  
  endlayout;  
  
  endgraph;  
end;  
run;
```

```
goptions reset=all device=activex;
```

```
proc sgrender data=one template=plot2;  
run;
```

```
ods html close;
```

## SAS Code for Regression and Box Plots

```
layout lattice / rows=2 columns=1 rowgutter=5 rowdatarange=data;
```

```
layout overlay/xaxisopts=(label="Response");  
  scatterplot x=predictor y=PercentChange /group=sample_id markerattrs=(size=10);  
  regressionplot x=predictor y=PercentChange ;  
endlayout;
```

```
layout lattice /rows=1 columns=2 columngutter=10;
```

```
layout overlay /xaxisopts=(label="Group 1") yaxisopts=(label="Response");  
  boxplot y=response x=sample_id3/ orient=vertical groupdisplay=cluster group=group datatransparency=0.4;  
endlayout;
```

```
layout overlay/xaxisopts=(label="Group 2") yaxisopts=(label="Response");  
  boxplot y=response x=sample_id2/ orient=vertical groupdisplay=cluster group=group datatransparency=0.4;  
endlayout;
```

```
endlayout;
```

```
endlayout;
```

```
endgraph;
```

```
end;
```

```
run;
```

---

# References

SAS Institute Inc. 2011. *SAS® 9.3 Graph Template Language: User's Guide*. Cary, NC:  
SAS Institute Inc.

# Questions?