



**SAS in IR:**

**Behind the  
scenes tips and  
tricks**

**CAIR 2016**

# About the University of California, Irvine

- Established in 1965.
- 87 undergraduate degree programs, 59 master's, and 46 Ph.D. programs, with over 8,700 degrees awarded in 2014-15.
- Association of American Universities member.
- Over 30,000 students and more than 15,000 non-student employees.



- Ranked #1 in 2015 by *The New York Times* among U.S. universities that do the most for low-income students; our undergraduates are 29% URM, 50% 1<sup>st</sup> generation, and 35% low-income.
- Ranked in the top 10 of public universities by *U.S. News & World Report*
- A four year graduation rate of over 70%.

## About us...

- Ryan Cherland
  - Assistant Vice Chancellor for Institutional Research and Decision-Support.
  - Involved in Institutional Research starting in 1985 as a graduate assistant, working at five different institutions over those thirty years.
  - Started using SAS in the early 1980s.
- Joshua Saldana
  - Principal Research Analyst
  - Three years of experience across two offices and two years of working with SAS
- Aliana Flores
  - Statistical and Information Coordinator
  - Over five years of experience in Institutional Research and three years working with SAS Software.

# Why SAS?



# Why SAS?

UC Irvine

Distribution of Undergraduate Student Credit Hours by Student Residency 2006-07 to 2015-16

Page 1  
11/03/16  
1821.48

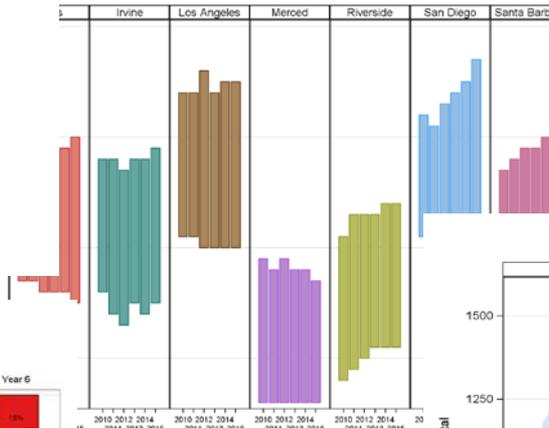
Notes: Excludes Summer Session

		2006-07		2007-08		2008-09		2009-10		2010-11	
SCH for UC Credit Only		SCH	%	SCH	%	SCH	%	SCH	%	SCH	%
Resident rates	Lower Division	528,251.8	87.6%	548,427.4	87.6%	538,433.2	88.4%	521,884.4	84.0%	510,975.8	83.9%
	Upper Division	348,083.3	58.2%	385,664.4	60.2%	387,126.1	59.4%	411,722.8	62.9%	424,944.0	62.7%
	Subtotal	876,335.1	95.8%	934,091.8	95.6%	925,559.3	95.8%	933,607.2	96.7%	935,919.8	96.6%
Nonresident rates	Lower Division	21,458.8	3.3%	24,117.1	3.8%	24,654.2	3.8%	18,013.8	1.9%	18,488.8	2.0%
	Upper Division	18,877.0	1.6%	17,242.0	1.5%	18,185.5	1.9%	13,275.0	1.4%	13,855.0	1.5%
	Subtotal	38,882.8	4.2%	41,359.0	4.4%	42,839.7	4.4%	31,888.8	3.3%	32,372.8	3.4%
<b>Total</b>	<b>915,217.9</b>	<b>100.0%</b>	<b>975,450.8</b>	<b>100.0%</b>	<b>968,399.0</b>	<b>100.0%</b>	<b>965,496.0</b>	<b>100.0%</b>	<b>968,292.6</b>	<b>100.0%</b>	

		2011-12		2012-13		2013-14		2014-15		2015-16	
SCH for UC Credit Only		SCH	%	SCH	%	SCH	%	SCH	%	SCH	%
Resident rates	Lower Division	523,837.8	84.9%	514,002.7	81.4%	518,827.3	80.2%	510,982.2	80.0%	501,872.8	78.9%
	Upper Division	395,131.0	62.7%	395,217.0	59.4%	395,814.0	59.0%	402,906.0	59.0%	402,324.0	58.7%
	Subtotal	918,968.8	88.5%	909,219.7	82.8%	914,641.3	89.7%	913,888.2	89.0%	904,196.8	82.6%
Nonresident rates	Lower Division	27,000.0	2.9%	11,783.0	1.3%	80,464.8	7.0%	100,802.0	9.8%	133,164.8	12.2%
	Upper Division	15,130.0	1.6%	17,943.0	1.9%	24,411.0	2.4%	30,500.0	3.0%	37,871.0	3.3%
	Subtotal	42,089.8	4.5%	29,726.0	3.2%	104,875.8	10.3%	131,302.0	13.1%	171,035.8	17.4%
<b>Total</b>	<b>961,058.6</b>	<b>100.0%</b>	<b>938,945.7</b>	<b>100.0%</b>	<b>1,019,517.1</b>	<b>100.0%</b>	<b>1,045,190.2</b>	<b>100.0%</b>	<b>1,075,232.6</b>	<b>100.0%</b>	

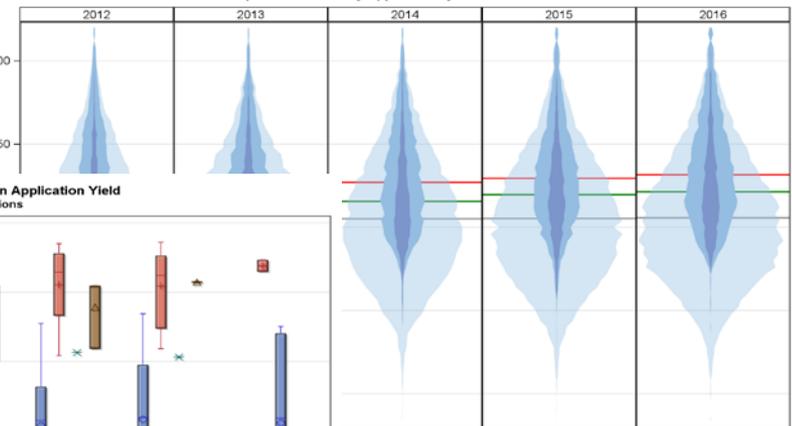
UC Freshman Class Trends  
Math SAT 25th and 75th Percentile Score Bounds



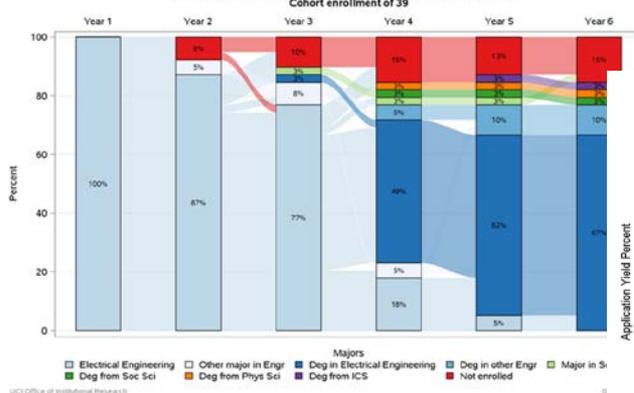
3 Year Change in Fall Student Credit Hours by UCI's 2012 Workload Metric as a % of AAU Public's Metric (SCH per Faculty FTE) Controlling for Discipline Differences in Metric



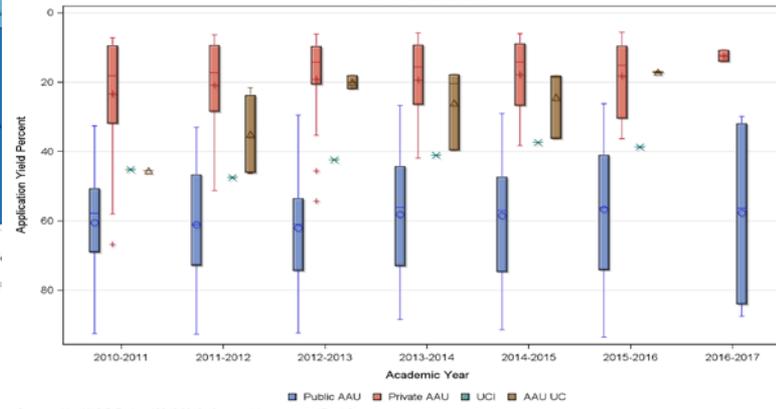
Fall 2012 through Fall 2016 New Freshman V+M SAT Total Scores for Underrepresented Minority Applicants by Enrollment Status



Six Year Student Success Patterns for New Freshman starting in Fall 2009 University of California, Irvine Starting School of Engineering and Major of Electrical Engineering Cohort enrollment of 39



Distribution of New Freshman Application Yield for AAU Institutions



Generated by: X:\OIR\Projects\2016\2016-10-mc-achievement-gap\FreshStats.sas



# Presentation Overview

- Setting up SAS resources to help maintain an IR office identity.
- Data management and enhancement of institutional data resources
- Geocoding / HTML click maps / ODS PDF reports
- Useful Resources to learn more



## Benefits of setting up Shared resources for your IR office

- One location to manage:
  - Useful macros
  - An office ODS styles and templates
  - Makes it easy update / change to a new “brand” when needed.

## Steps to setup shared resources

- Determine location on office network drive
- Create folder structures for macros, shared style templates, setup programs, etc.
  - X:\SAS\macros
  - X:\SAS\Setups
  - X:\SAS\Examples

## Start with your “autoexec.sas” file...

- Look at the bottom of your SAS Window environment, that is where SAS starts up:



- If you put a “autoexec.sas” file there with SAS code, it will run the code at each initialization

## Start with the local “autoexec.sas” file...

```
/* An example SAS Autoexec file */  
/* First, bring in a central office setup file */  
%inc "X:\SAS\macros\OIRautoexec.sas";  
%put Initializing my settings...;  
/* Include any individual setups */  
%inc "C:\Users\&sysuserid\Documents\MySAS\sassetups.sas";
```

# Code that might be in a Shared setup file...

```
1 /* OIR common Autoexec file -- do not edit without checking with RMC */
2 **;
3 %put Initializing OIR common environment...;
4 filename _oirsys 'X:\SAS\macros';
5 filename _oirutl 'X:\SAS\macros\util';
6 **;
7 options sasautos=(_oirsys _oirutl SASAUTOS);
8 **;
9 libname _oir '\\128.200.163.243\share\SAS\macros';
10 **;
11 data _null_;
12   if "&sysver" ge '9.4' then call execute('ods path (prepend) _oir.templat94b(read) _oir.templat94(read);');
13   else if "&sysver" le '9.3' then call execute('ods path (prepend) _oir.templat(read);');
14 run;
15 *;
16 ods results off;
17
```

# SAS Log from running Shared setup...

```
Log - (Untitled)
SAS/IML 14.1
SAS/QC 14.1

NOTE: Additional host information:

X64_7PRO WIN 6.1.7601 Service Pack 1 Workstation

NOTE: SAS initialization used:
      real time          6.69 seconds
      cpu time           0.59 seconds

NOTE: AUTOEXEC processing beginning; file is C:\Users\rcherlan\autoexec.sas.

Initializing OIR common environment...
NOTE: Libref _OIR was successfully assigned as follows:
      Engine:           V9
      Physical Name: X:\SAS\macros

NOTE: DATA statement used (Total process time):
      real time          0.38 seconds
      cpu time           0.00 seconds

NOTE: CALL EXECUTE generated line.
1  + ods path (prepend) _oir.templat94(read);
Initializing my settings...

NOTE: AUTOEXEC processing completed.
```

Now that you have a common location, create some shared resources

First, an ODS style template for reports

Note: Code samples will be available on our website.

```
Style_OIR.sas
1  /*****
2  *****/
3  **      Office of Institutional Research      **
4  **      SAS Program                          **
5  **  -----  **
6  ** Description:                             **
7  ** OIR Formal report style for RTF and PDF ODS report **
8  ** output.                                  **
9  **  -----  **
10 ** Created: 01/22/13                        By: R Cherland **
11 *****/
12 *****/
13 libname _oir 'X:\SAS\macros';
14 *;
15 ods path _oir.templat94(update) sashelp.tmplmst(read);
16 *;
17 proc template;
18     define style Oir / store = _oir.TEMPLAT94;
19         parent = styles.listing;
20         style fonts /
21             'TitleFont2' = ("Arial, Helvetica",10pt)
22             'TitleFont' = ("Arial, Helvetica",11pt)
23             'StrongFont' = ("Arial, Helvetica",9pt,bold)
24             'EmphasisFont' = ("Arial, Helvetica",9pt,italic)
25             'FixedEmphasisFont' = ("Courier",8pt,italic)
26             'FixedStrongFont' = ("Courier",8pt,bold)
```

Provide useful macros, here is one that identifies the network path and name “stem” of the running program for use in naming output:

outpath.sas

```
1  /* When you do not want to type in the pathname for your output report. The extension parameter allows
2     you to add numbers or letters after the main name segment in those cases where multiple reports are
3     being generated by the program.  Created 1/24/07  R. Cherland */
4  %macro outpath(ext);
5     %if %symexist(_SASPROGRAMFILE) %then %unquote(%str(%')%substr(%sysget(_SASPROGRAMFILE),1,%length(%sysget
6 %else %unquote(%str(%')%substr(%sysget(SAS_EXECFILEPATH),1,%length(%sysget(SAS_EXECFILEPATH))-4) &ext%str
7 %mend outpath;
```

```
91  ods _all_ close;
92  options orientation=Landscape papersize=letter;
93  ods rtf body=%outpath(&_amp;sysdate..rtf) style=oir;
```

And one that sets up an office “title” framework and stamps as a footnote the output with the SAS program name that created the output:

```
31 %let image=X:\SAS\Setups\OIR_logo300.jpg;
32 title1 j=l h=8pt "(*ESC*)S={preimage=' &image' }"
33     j=c h=11pt "(*ESC*)S={fontweight=BOLD} &ttl1(*ESC*) n&ttl2(*ESC*) n&ttl3"
34     j=r h=8pt "(*ESC*)S={fontweight=MEDIUM} &right1(*ESC*) n&right2(*ESC*) n&right3";
35 footnote1 j=l h=8pt "Generated by: &path.&prog";
36 *;
37 options nodate nonumber;
38 %mend UCFORMAL;
```

```
94 %ucformal(Distribution of Undergraduate Student Credit Hours,
95     by Student Residency,
96     2006-07 to 2015-16);
97 title2 j=1 'Notes: Excludes Summer Session';
98 proc tabulate data=rpt missing;
```

# Example output using office style and title macro

Distribution of Undergraduate Student Credit  
Hours  
by Student Residency  
2006-07 to 2015-16

Notes: Excludes Summer Session

SCH for UC Credit Only		2006-07		2007-08		2008-09		2009-10		2010-11	
		SCH	%								
Resident rates	Lower Division	525,031.5	57.6%	546,427.4	57.6%	539,433.2	55.6%	521,694.4	54.0%	510,973.6	53.9%
	Upper Division	348,063.3	38.2%	360,954.4	38.0%	387,179.1	39.9%	411,732.0	42.6%	404,844.0	42.7%
	Subtotal	873,094.8	95.8%	907,381.8	95.6%	926,612.3	95.6%	933,426.4	96.7%	915,817.6	96.6%
Nonresident rates	Lower Division	21,405.9	2.3%	24,117.1	2.5%	24,654.2	2.5%	18,012.8	1.9%	18,489.8	2.0%
	Upper Division	16,677.0	1.8%	17,242.5	1.8%	18,185.5	1.9%	13,975.0	1.4%	13,883.0	1.5%
	Subtotal	38,082.9	4.2%	41,359.6	4.4%	42,839.7	4.4%	31,987.8	3.3%	32,372.8	3.4%
<b>Total</b>		<b>911,177.7</b>	<b>100.0%</b>	<b>948,741.4</b>	<b>100.0%</b>	<b>969,452.0</b>	<b>100.0%</b>	<b>965,414.2</b>	<b>100.0%</b>	<b>948,190.4</b>	<b>100.0%</b>

SCH for UC Credit Only		2011-12		2012-13		2013-14		2014-15		2015-16	
		SCH	%	SCH	%	SCH	%	SCH	%	SCH	%
Resident rates	Lower Division	523,537.6	54.8%	514,902.7	53.4%	518,507.3	50.9%	519,985.2	48.9%	501,672.8	45.8%
	Upper Division	388,131.0	40.7%	380,217.0	39.4%	395,814.0	38.8%	403,908.0	38.0%	402,324.0	36.7%
	Subtotal	911,668.6	95.5%	895,119.7	92.8%	914,321.3	89.7%	923,893.2	86.9%	903,996.8	82.6%
Nonresident rates	Lower Division	27,950.9	2.9%	51,788.2	5.4%	80,464.8	7.9%	100,692.6	9.5%	133,164.8	12.2%
	Upper Division	15,139.0	1.6%	17,940.0	1.9%	24,411.0	2.4%	38,508.0	3.6%	57,671.0	5.3%
	Subtotal	43,089.9	4.5%	69,708.2	7.2%	104,875.8	10.3%	139,200.6	13.1%	190,835.8	17.4%
<b>Total</b>		<b>954,758.5</b>	<b>100.0%</b>	<b>964,827.9</b>	<b>100.0%</b>	<b>1,019,197.1</b>	<b>100.0%</b>	<b>1,063,093.8</b>	<b>100.0%</b>	<b>1,094,832.6</b>	<b>100.0%</b>

**As Campus “branding” changes, you can adjust you macro code and Style templates to line it up with the new font and color themes...**

**UCI**

Office of Institutional Research

A testing of a new Style  
Template and Banner Graphic  
Just a PROC PRINT

Obs	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69.0	112.5
2	Alice	F	12	56.5	84.0

**IR also has  
challenging data  
management tasks  
that come up,**

**Josh will discuss  
how SAS features  
can help with those  
next...**



# Wrangling Data with SAS



# Rankings



## Name Variations\*

- UCI
- UC Irvine
- U-Cal Irvine
- Cal-Irvine
- University of California, Irvine
- University of California-Irvine
- Univ of California (Irvine)
- Univ. of California, Irvine CA

\*partial list

## Why SAS?

- Over STATA or SPSS
- Over R or Python

# Typical Rankings Data

## NTU Ranking

Performance Ranking of Scientific Papers for World Universities

World Rank	Country Rank	University	Total Score <small>hide</small>	11 Years Articles	Current Articles	11 Years Citations	Current Citations	Ave. Citations	H-Index	HiCi Papers	Hi-Impact Journal Articles	Ref. Rank (normalized by number of faculty)
1	1	Harvard University	98.1	100.0	100.0	100.0	100.0	81.3	100.0	100.0	100.0	1
2	2	Stanford University	93.1	86.2	89.7	97.1	100.0	75.1	89.7	100.0	100.0	2
3	3	Johns Hopkins University	92.9	91.5	92.8	100.0	98.9	72.6	86.3	96.0	97.6	4
6	4	University of Washington, Seattle	90.0	87.8	86.2	95.2	94.5	71.7	83.5	99.2	94.5	5
7	5	University of California, Berkeley	88.3	82.2	81.1	91.4	95.8	74.0	84.9	99.6	92.3	6
8	6	University of Michigan, Ann Arbor	88.0	92.6	90.7	93.5	89.9	66.0	76.6	90.7	95.2	12
9	7	Massachusetts Institute of Technology	87.6	75.6	74.7	93.4	90.1	85.4	84.9	100.0	91.6	2
10	8	University of California, Los Angeles	86.7	88.1	84.0	95.1	85.2	71.3	78.0	93.5	90.6	8

# Exported

	A	B	C	D
1	World Rank	Country Rank	University	Total Score
2	1	1	Harvard University	98.1
3	2	2	Stanford University	93.1
4	3	3	Johns Hopkins University	92.9
5	6	4	University of Washington, Seattle	90
6	7	5	University of California, Berkeley	88.3
7	8	6	University of Michigan, Ann Arbor	88
8	9	7	Massachusetts Institute of Technology	87.6
9	10	8	University of California, Los Angeles	86.7

# IPEDES Raw Data

```

hd2013.csv
1 UNITID, INSTNM, ADDR, CITY, STABBR, ZIP, FIPS, OBEREG, CHFNM, CHFTITLE, GENTELE, FAXTELE, EIN, OPEID, O
PEFLAG, WEBADDR, ADMINURL, FAIDURL, APPLURL, NPRICURL, SECTOR, ICLEVEL, CONTROL, HLOFFER, UGOFFER, G
ROFFER, HDEGOFR1, DEGGRANT, HBCU, HOSPITAL, MEDICAL, TRIBAL, LOCALE, OPENPUBL, ACT, NEWID, DEATHYR, C
LOSEDAT, CYACTIVE, POSTSEC, PSEFLAG, PSET4FLG, RPTMTH, IALIAS, INSTCAT, CCBASIC, CCIIPUG, CCIIPGRAD, C
CUGPROF, CCENRPRF, CCSIZSET, CARNEGIE, LANDGRNT, INSTSIZE, CBSA, CBSATYPE, CSA, NECTA, F1SYSTYP, F1S
YSNAM, F1SYSCOD, COUNTYCD, COUNTYNM, CNGDSTCD, LONGITUD, LATITUDE, DFRCGID, DFRCUSCG
2 100654, "Alabama A & M University", "4900 Meridian Street", "Normal", "AL", "35762", 1,
5, "Dr. Andrew Hugine,
Jr.", "President", "2563725000", "2563725030", "636001109", "00100200", 1, "www.aamu.edu/", "www.
aamu.edu/admissions/pages/default.aspx", "www.aamu.edu/Admissions/fincialaid/Pages/default
.aspx", "www.aamu.edu/Admissions/apply/Pages/default.aspx", "galileo.aamu.edu/netpricecalcu
lator/npcalc.htm", 1, 1, 1, 9, 1, 1, 12, 1, 1, 2, 2, 2, 12, 1, "A
", -2, -2, "-2", 1, 1, 1, 1, 1, "AAMU", 2, 18, 13, 18, 9, 4, 14, 16, 1, 3, 26620, 1, 290, -2, 2, "
", "-2", 1089, "Madison County", 105, -86.568502, 34.783368, 138, 1
3 100663, "University of Alabama at Birmingham", "Administration Bldg Suite
1070", "Birmingham", "AL", "35294-0110", 1, 5, "Ray L.
Watts", "President", "2059344011", "2059757114", "636005396", "00105200", 1, "www.uab.edu", "www.
uab.edu/students/undergraduate-admissions", "www.uab.edu/students/paying-for-college", "ssb
.it.uab.edu/pls/sctprod/zsapk003_ug_web_appl.create_page", "www.collegeportraits.org/AL/UA
B/estimator/agree", 1, 1, 1, 9, 1, 1, 11, 1, 2, 1, 1, 2, 12, 1, "A ", -2, -2, "-2", 1, 1, 1, 1, 1, "
", 2, 15, 11, 17, 8, 5, 15, 15, 2, 4, 13820, 1, 142, -2, 1, "The University of Alabama

```

# Has SAS Code

```
hd2013.sas
16 ***                               ***;
17 *** This program does not include reserved values in its ***;
18 *** calculations for missing values. ***;
19 ***                               ***;
20 *** There may be missing data for some institutions due ***;
21 *** to the merge used to create this file. ***;
22 Data HD_2013A;
23 infile 'X:\OIR-Projects\2015\2015-05-js-school-codes\IPEDS Codes\Data\hd2013.csv' delimiter=',' DSD MISSOVER firstobs=2 lrecl=32736;
24
25 informat
26 unitid 6.
27 instnm $120.
28 addr $100.
29 city $30.
30 stabbr $2.
31 zip $10.
32 fips 2.
33 obereg 2.
34 chfnm $50.
35 chftitle $50.
36 gentele $15.
37 faxtele $15.
38 ein $9.
39 opeid $8.
40 opeflag 1.
41 webaddr $150.
42 adminurl $200.
43 faidurl $200.
44 applurl $200.
45 npricurl $200.
46 sector 2.
47 iclevel 2.
48 control 2.
```

## A little cleaner

VIEWTABLE: Work.Hd\_2013a

	unitid	instnm	city	addr	zip	
1	100654	Alabama A & M University	Normal	4900 Meridian Street	35762	Alabama
2	100663	University of Alabama at Birmingham	Birmingham	Administration Bldg Suite 1070	35294-0110	Alabama
3	100690	Amridge University	Montgomery	1200 Taylor Rd	36117-3553	Alabama
4	100706	University of Alabama in Huntsville	Huntsville	301 Sparkman Dr	35899	Alabama
5	100724	Alabama State University	Montgomery	915 S Jackson Street	36104-0271	Alabama
6	100733	University of Alabama System Office	Tuscaloosa	401 Queen City Ave	35401	Alabama
7	100751	The University of Alabama	Tuscaloosa	739 University Blvd	35487-0166	Alabama
8	100760	Central Alabama Community College	Alexander City	1675 Cherokee Rd	35010	Alabama
9	100812	Athens State University	Athens	300 N Beaty St	35611	Alabama

# A sampling of the character functions

Function	Sample
LENGTH	UC Irvine vs UC Irvin

## A sampling of the character functions

Function	Sample
LENGTH	UC Irvine vs UC Irvin
LOWCASE,UPCASE,PROPCASE	UC Irvine -> uc irvine

## A sampling of the character functions

Function	Sample
LENGTH	UC Irvine vs UC Irvin
LOWCASE,UPCASE,PROPCASE	UC Irvine -> uc irvine
SCAN, FIND, SUBSTR, TRIM,STRIP	UC Irvine -> Irvine

## A sampling of the character functions

Function	Sample
LENGTH	UC Irvine vs UC Irvin
LOWCASE,UPCASE,PROPCASE	UC Irvine -> uc irvine
SCAN, FIND, SUBSTR, TRIM,STRIP	UC Irvine -> Irvine
PRXPARSE, PRXMATCH	“University of California” vs “California State University”

## A sampling of the character functions

Function	Sample
LENGTH	UC Irvine vs UC Irvin
LOWCASE,UPCASE,PROPCASE	UC Irvine -> uc irvine
SCAN, FIND, SUBSTR, TRIM,STRIP	UC Irvine -> Irvine
PRXPARSE, PRXMATCH	“University of California” vs “California State University”

White space

End of line.

## A sampling of the character functions

Function	Sample
LENGTH	UC Irvine vs UC Irvin
LOWCASE,UPCASE,PROPCASE	UC Irvine -> uc irvine
SCAN, FIND, SUBSTR, TRIM,STRIP	UC Irvine -> Irvine
PRXPARSE, PRXMATCH	“University of California” vs “California State University”
COMPRESS,TRANWRD,COMPBL	UC Irvine -> UC Irvine

## A sampling of the character functions

Function	Sample
LENGTH	UC Irvine vs UC Irvin
LOWCASE,UPCASE,PROPCASE	UC Irvine -> uc irvine
SCAN, FIND, SUBSTR, TRIM,STRIP	UC Irvine -> Irvine
PRXPARSE, PRXMATCH	“University of California” vs “California State University”
COMPRESS,TRANWRD,COMPBL	UC Irvine -> UC Irvine
CATT,CATS,CATX	UC Irvine -> UC Irvine CA

## A sampling of the character functions

Function	Sample
LENGTH	UC Irvine vs UC Irvin
LOWCASE,UPCASE,PROPCASE	UC Irvine -> uc irvine
SCAN, FIND, SUBSTR, TRIM,STRIP	UC Irvine -> Irvine
PRXPARSE, PRXMATCH	“University of California” vs “California State University”
COMPRESS,TRANWRD,COMPBL	UC Irvine -> UC Irvine
CATT,CATS,CATX	UC Irvine -> UC Irvine CA
SPEDIT,COMPGED	University of California Irvine vs UC Irvine

```
%macro collegenameedit(schoolname) ;  
  
schoolname_edit=lowercase(&schoolname) ;  
schoolname_edit=scan(schoolname_edit,1,"(") ;
```

Before	After
The Pennsylvania State University-Main Campus (University Park)	the pennsylvania state university-main campus

```
schoolname_edit_new1=Tranwrd(schoolname_edit,"the ","");  
schoolname_edit_new1=Tranwrd(schoolname_edit,"-main campus"," ");
```

the pennsylvania state university-main campus	pennsylvania state university
---	-------------------------------

```
schoolname_edit=Compress(schoolname_edit,,'sp');
```

the pennsylvania state university	pennsylvaniastateuniversity
-----------------------------------	-----------------------------

```
schoolname_editCity=cats(schoolname_edit, lowercase(city));
```

the pennsylvania state university	pennsylvaniastateuniversityuniversitypark
-----------------------------------	---

```
UNIV= PRXPARSE( "/university$/i" );  
UNIV_INDEX = PRXMATCH(coll,strip(&schoolname));  
  
if COLL_INDEX ne 0 or COLLSP_INDEX then coll_change=  
tranwrd(schoolname_edit, " university", "univ");  
else coll_change=schoolname_edit;  
  
%mend collegenameedit;
```

Before	After
Pennsylvania state university	pennsylvania state univ

```
data ipeds; set Hd_2013a ;  
%collegenameedit(instnm);  
run;
```

# The first output

unitid	instnm	schoolname_edit	univ_change	schoolname_edit_arts
100654	Alabama A & M University	alabamaamuniversity	alabamaamuniv	alabamaamuniversity
100663	University of Alabama at Birmingham	universityofalabamaatbirmingham	universityofalabamaatbirmingham	universityalabamabirmingham
100690	Amridge University	amridgeuniversity	amridgeuniv	amridgeuniversity
100706	University of Alabama in Huntsville	universityofalabamainhuntsville	universityofalabamainhuntsville	universityalabamainhuntsville
100724	Alabama State University	alabamastateuniversity	alabamastateuniv	alabamastateuniversity
100751	The University of Alabama	theuniversityofalabama	theuniversityofalabama	universityalabama
100760	Central Alabama Community College	centralalabamacommunitycollege	centralalabamacommunitycollege	centralalabamacommunitycollege
100812	Athens State University	athensstateuniversity	athensstateuniv	athensstateuniversity

# The first output

unitid	instnm	schoolname_edit	univ_change	schoolname_edit_arts
100654	Alabama A & M University	alabamaamuniversity	alabamaamuniv	alabamaamuniversity
100663	University of Alabama at Birmingham	universityofalabamaatbirmingham	universityofalabamaatbirmingham	universityalabamabirmingham
100690	Amridge University	amridgeuniversity	amridgeuniv	amridgeuniversity
100706	University of Alabama in Huntsville	universityofalabamainhuntsville	universityofalabamainhuntsville	universityalabamainhuntsville
100724	Alabama State University	alabamastateuniversity	alabamastateuniv	alabamastateuniversity
100751	The University of Alabama	theuniversityofalabama	theuniversityofalabama	universityalabama
100760	Central Alabama Community College	centralalabamacommunitycollege	centralalabamacommunitycollege	centralalabamacommunitycollege
100812	Athens State University	athensstateuniversity	athensstateuniv	athensstateuniversity

# The first output

unitid	instnm	schoolname_edit	univ_change	schoolname_edit_arts
100654	Alabama A & M University	alabamaamuniversity	alabamaamuniv	alabamaamuniversity
100663	University of Alabama at Birmingham	universityofalabamaatbirmingham	universityofalabamaatbirmingham	universityalabamabirmingham
100690	Amridge University	amridgeuniversity	amridgeuniv	amridgeuniversity
100706	University of Alabama in Huntsville	universityofalabamainhuntsville	universityofalabamainhuntsville	universityalabamainhuntsville
100724	Alabama State University	alabamastateuniversity	alabamastateuniv	alabamastateuniversity
100751	The University of Alabama	theuniversityofalabama	theuniversityofalabama	universityalabama
100760	Central Alabama Community College	centralalabamacommunitycollege	centralalabamacommunitycollege	centralalabamacommunitycollege
100812	Athens State University	athensstateuniversity	athensstateuniv	athensstateuniversity

# The Crosswalk

unitid	instnm	InstNameMatch
100654	Alabama A & M University	alabamaamuniv
100654	Alabama A & M University	alabamaamunival
100654	Alabama A & M University	alabamaamuniversity
100654	Alabama A & M University	alabamaamuniversityal
100654	Alabama A & M University	alabamaamuniversitynormal
100654	Alabama A & M University	alabamaamuniversitynormalal
100654	Alabama A & M University	alabamaamunivnormal
100654	Alabama A & M University	alabamaamunivnormalal

# New Survey Data

Country Rank	University	TotalScore	HIndex
1	Harvard University	98.1	100
2	Stanford University	93.1	89.7
3	Johns Hopkins University	92.9	86.3
4	University of Washington, Seattle	90	83.5
5	University of California, Berkeley	88.3	84.9
6	University of Michigan, Ann Arbor	88	76.6
7	Massachusetts Institute of Technology	87.6	84.9
8	University of California, Los Angeles	86.7	78
9	University of Pennsylvania	85.4	79.4
10	Columbia University	84.9	78

# New Survey Data

Ranking Data			IPEDS Data Crosswalk		
HIndex	University	InstName_Adj	InstNameMatch	Institution (entity) name	unitid
100	Harvard University	harvarduniversity	harvarduniversity	Harvard University	166027
89.7	Stanford University	stanforduniversity	stanforduniversity	Stanford University	243744
86.3	Johns Hopkins University	johnshopkinsuniversity	johnshopkinsuniversity	Johns Hopkins University	162928
83.5	University of Washington, Seattle	universityofwashingtonseattle	universityofwashingtonseattle	University of Washington-Seattle Campus	236948
84.9	University of California, Berkeley	universityofcaliforniaberkeley	universityofcaliforniaberkeley	University of California-Berkeley	110635
76.6	University of Michigan, Ann Arbor	universityofmichiganannarbor	universityofmichiganannarbor	University of Michigan-Ann Arbor	170976
84.9	Massachusetts Institute of Technology	massachusettsinstituteoftechnology	massachusettsinstituteoftechnology	Massachusetts Institute of Technology	166683
78	University of California, Los Angeles	universityofcalifornialosangeles	universityofcalifornialosangeles	University of California-Los Angeles	110662
79.4	University of Pennsylvania	universityofpennsylvania	universityofpennsylvania	University of Pennsylvania	215062
78	Columbia University	columbiauniversity			

# Fuzzy matching

```
gedscore=compged( instname_Adj, InstNameMatch )
```

instname_Adj	InstNameMatch	gedscore
columbiauniversity	columbiauniversityint hecityofnewyork	180
columbiauniversity	colemanuniversity	400

# Output Code

```
ods rtf body=%outpath(&_amp;sysdate..rtf) style=oir;  
%ucformal(UCs Ranked on H-Index);  
proc print data=InstNameStandard noobs label;  
where flsysnam="University of California";  
var flsysnam instnm hindex ;  
label  
  flsysnam='System'  
  instnm='IPEDS Name'  
  university='Survey Name'  
  hindex='H-Index'  
;  
run;  
ods _all_ close;
```

# Ready to use report

## UCs Ranked on H-Index

System	IPEDS Name	H-Index
University of California	University of California-Berkeley	84.9
University of California	University of California-Los Angeles	78.0
University of California	University of California-San Francisco	82.8
University of California	University of California-San Diego	75.9
University of California	University of California-Davis	69.1
University of California	University of California-Irvine	62.2
University of California	University of California-Santa Barbara	69.1
University of California	University of California-Santa Cruz	64.3
University of California	University of California-Riverside	58.1

## Why SAS?

- Versatile
- Accessible
- Powerful

# State & Federal Legislative Maps

Employee and student data by State & Federal legislative districts.

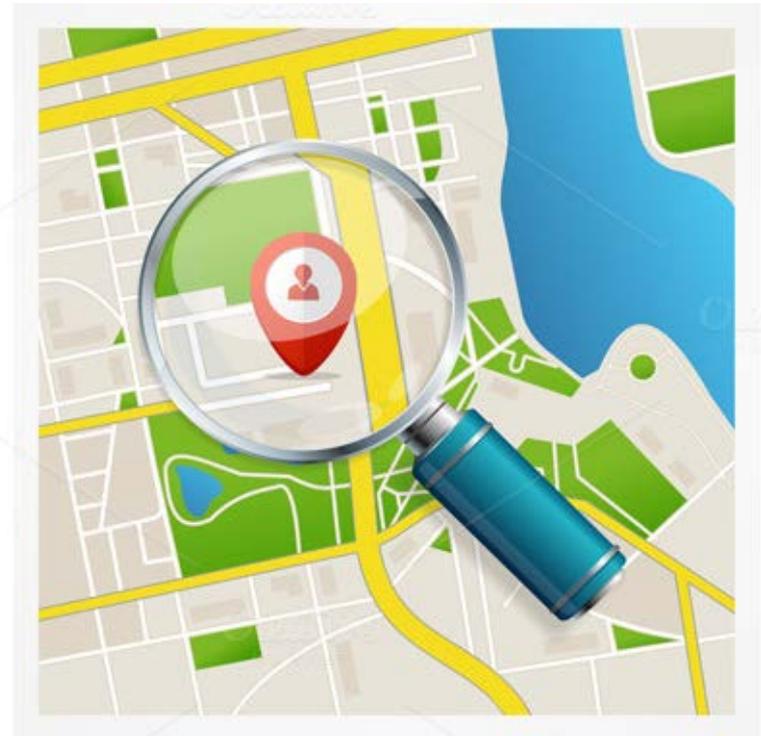
# Street Address to Longitude and Latitude

**PROC GEOCODE**



# PROC GEOCODE

- Takes an address and matches it with their lookup data
- Provides a longitude and latitude location.



# SAS Lookup Files

- Download the SAS street lookup data, found here:  
<http://support.sas.com/rnd/datavisualization/maponline/html/geocode.html>
- **SAS 9.4 or Later**

Prebuilt U.S. street lookup data for specific TIGER release  
(created with Ver. 12 of TIGER2Geocode):

[StreetLookupData \(9.4\)-2015.zip](#)  
[StreetLookupData \(9.4\)-2014.zip](#)  
[StreetLookupData \(9.4\)-2013.zip](#)  
[StreetLookupData \(9.4\)-2012.zip](#)  
[StreetLookupData \(9.4\)-2011.zip](#)  
[StreetLookupData \(9.4\)-2010.zip](#)  
[StreetLookupData \(9.4\)-2009.zip](#)

# SAS Code

```
proc geocode  
  method=street  
  data=calif_uci_sal  
  out=uci_sal_geocoded  
  lookupstreet=streetlu.usm  
  
run;
```

---

# Shapefiles

- Download the State and Federal Legislative map shapefiles located here: <http://www.census.gov/geo/maps-data/data/tiger-line.html>

## 2016 TIGER/Line Shapefiles

All legal boundaries and names are as of January 1, 2016. Released August 19, 2016.

### → Download

- [Web interface](#)
- [FTP site](#)

# PROC GINSIDE

- Compares data set of coordinates to the shapefiles
- Determines whether the X and Y coordinates for each point fall inside or outside of the map shape



```
proc ginside map=ushouse data=ushouse_empl out=byushouse INCLUDEBORDER ;  
  id uscongress;  
run;
```

# Final Report



**UC Irvine Employees  
Fall 2014 Headcount  
by California US Congressional  
Districts**

Page 1  
06/06/16  
13:47:35

California US Congressional District	Oct 2014 Headcount
01	8
02	9
03	22
04	18
05	18
06	33
07	50
08	74
09	28
10	27

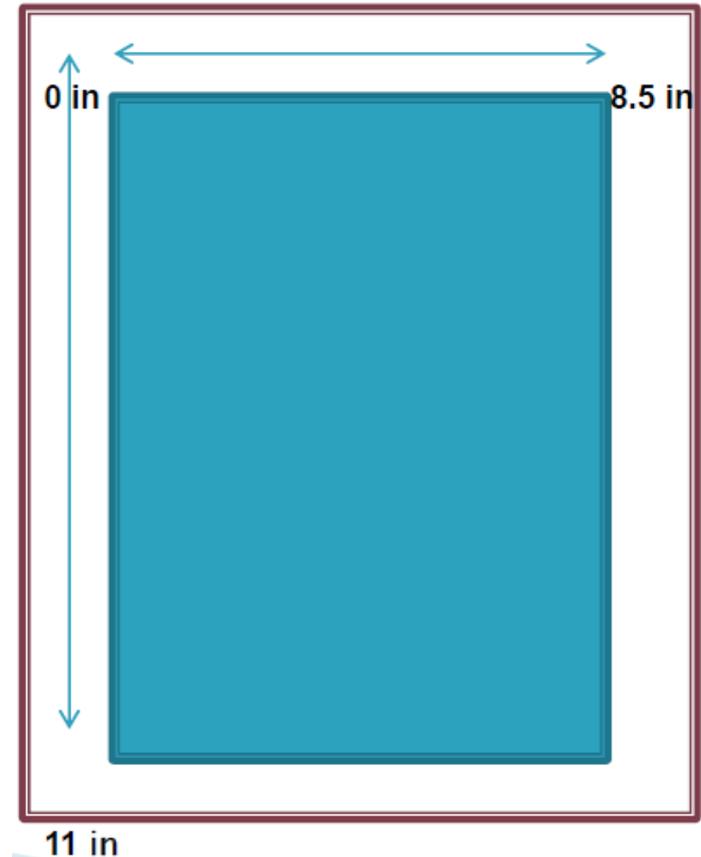
# Student Highlights by County

**SAS Output Delivery  
System (ODS)**



# ODS LAYOUT

```
options orientation=portrait  
papersize=letter  
nodate nonumber  
topmargin=0.0in  
bottommargin=0.0in  
leftmargin=0.0in  
rightmargin=0.0in;  
  
ods layout absolute  
width=8.0in height=11in
```



# LAYOUT Design

```
ods region x=2.6in y=4.45in;
options nocenter;
ods graphics / height=3.75in width=5in border=off outputfmt=svg;
title1 "Enrollment by School" height=3.5pt;
proc sgplot data=Enr_College dattrmap=attrmap;
  hbar CollegeForReporting / name='bar'
    response=schoolcount stat=sum group=StudentLevelUCIRollup2 attrid=barid
    groupdisplay=stack grouporder=descending;
  keylegend 'bar' / POSITION=bottom VALUEATTRS=(size=9pt) ACROSS=2 NOBORDER;
  yaxis fitpolicy=thin display=(nolabel noticks) valueattrs=(size=9pt) discreteorder=data;
  xaxis grid display=(noticks nolabel) valueattrs=(size=8pt);
run;
```

# Output

## University of California, Irvine

www.uci.edu



### Fall 2015 Highlights for Students From Orange County

#### Student Characteristics

Full-Time	7,861
Part-Time	457
Freshman	711
Sophomore	880
Junior	1,874
Senior/Limited	2,590
<b>Total Undergraduates</b>	<b>6,055</b>
Credential/Masters	941
Doctoral	1,322
<b>Total Graduates</b>	<b>2,263</b>
<b>Total Students: 8,318</b>	

#### Student Demographics

Female	4,181
Male	4,137
First Generation	2,873
American Indian/Alaskan Native	57
Asian/Pacific Islander	3,349
Black Non-Hispanic	152
Hispanic	1,217
White Non-Hispanic	2,033
Unknown/Declined to State	522
International Student	988

#### New Freshman Admission Data

Entering Students	826	Mean SAT Verbal Score	591
Mean High School GPA	4.01	Mean SAT Math Score	631
Mean Total SAT Score	1816	Mean SAT Writing Score	593

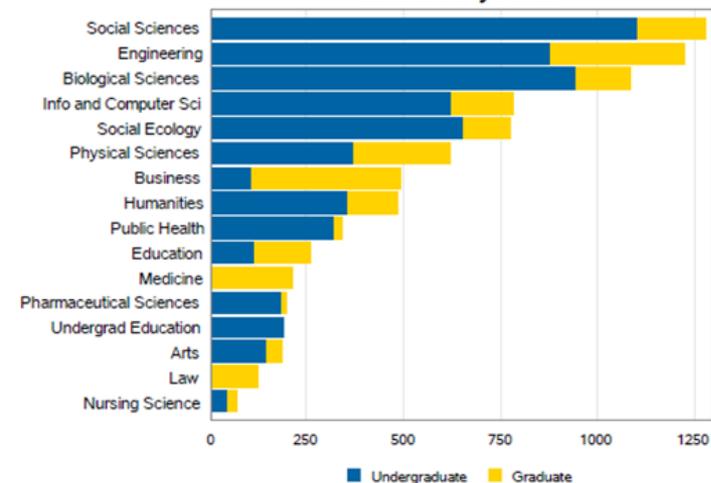
#### Top Freshman Feeder Schools

- La Quinta High School
- Westminster High School
- Fountain Valley High School
- Bolsa Grande High School
- Katella High School

#### Top Transfer Feeder Schools

- Irvine Valley College
- Orange Coast College
- Saddleback College
- Santa Ana College
- Golden West College

#### Enrollment by School



# Interactive Website Map

**SAS ODS (html)**



# ODS HTML Option

```
ODS HTML path=odsout body="Calif_Cascade.html"  
(title="California County Profile reports" no_bottom_matter no_top_matter)  
  style=pearl gpath("&path\images" (URL="/images/"));  
goptions device=png gunit=pct htitle=6 htext=4 noborder transparency  
vsize=4.69in hsize=6.25in;
```

# Map Design

```
proc gmap data=CAdata map=CALIFREGIONS all;  
id COUNTYGR;  
choro StuCnt / statistic=sum percent nolegend  
  outline=black levels=8 outline=darkorange  
  html=url  
  name='ca-map'  
  description='Student profiles by region';  
run;
```

# ODS Output

- You can find this on our website here:  
<http://www.oir.uci.edu/county-reports.html>



## Useful SAS Resources

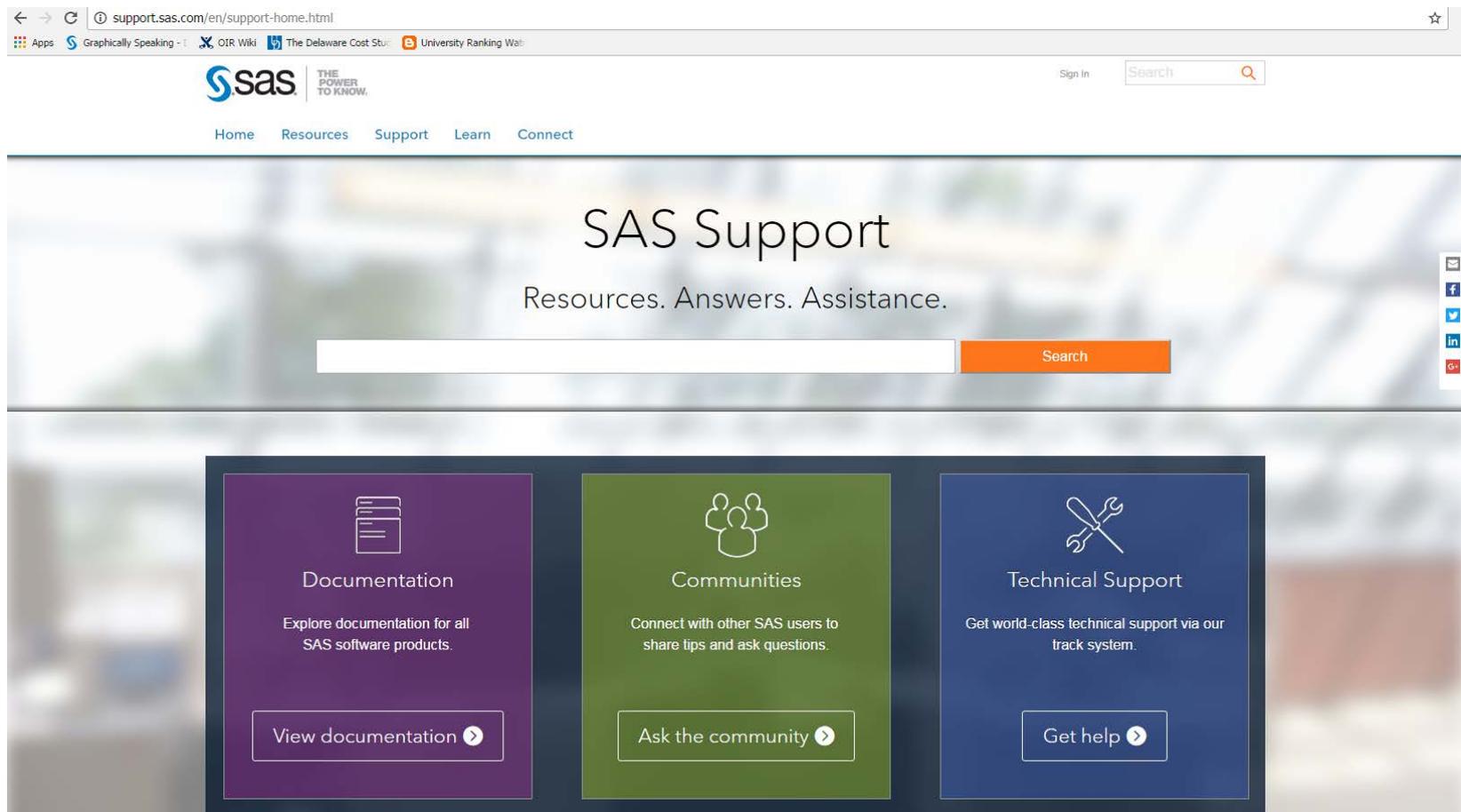
SAS provides a multitude of useful resources that one can access to learn new and useful ways of working with their products.

## Useful SAS Resources

- SAS Support website
  - Focused Areas
  - Technical Papers
  - Presentations and papers from the Global Forum
  - Special Interest Groups – One for IR! SUGIR
  - Links to Regional User groups
    - Western Users of SAS Software
  - Knowledge Base Search
  - Blogs
    - Graphically Speaking
    - Robert Allison's blog posts
      - and website
  - Built in Help of SAS
- \$\$
- Training (50% off for those at Academic institutions)
  - Books

# SAS Support Website

## (<http://support.sas.com>)



# SAS provides useful information on Focused Areas (<http://support.sas.com/rnd/index.html>)



[Home](#) [Resources](#) [Support](#) [Learn](#) [Connect](#)

## RESOURCES / FOCUS AREAS

### FOCUS AREAS

- Base SAS
- Graphics
- Enterprise Management Integration
- Migration
- Scalability & Performance
- Statistics & Operations Research
- SAS AppDev Studio

### SAS Focus Areas

SAS Focus Areas are here to address your needs as a SAS user and offer you an intimate look at new and existing SAS products and solutions. 2007.

#### The Focus Is On...

##### Base SAS®

Take your base SAS software skills to the edge!

▶ [visit now](#)

##### Graphics

Explore, discover, and communicate your information visually with SAS graphing components.

▶ [visit now](#)

# I particularly like the ODS Area in Base SAS

## ([support.sas.com/rnd/base/ods](http://support.sas.com/rnd/base/ods))

← → ↻ [support.sas.com/rnd/base/ods/index.html](http://support.sas.com/rnd/base/ods/index.html)

Apps [Graphically Speaking](#) - [OIR Wiki](#) [The Delaware Cost Stud](#) [University Ranking Wat](#)

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### RESOURCES / FOCUS AREAS

---

#### FOCUS AREAS

- **Base SAS**
  - ▶ CDISC
  - ▶ DATA Step
  - ▶ Macro Language
  - ▶ **ODS**
    - ODS DOCUMENT
    - ODS EPUB
    - ODS HTML
    - ODS MARKUP
    - ODS PACKAGES
    - ODS PDF
    - ODS RTF
    - ODS & Microsoft Office
    - SAS Notes for ODS
  - ▶ SAS®9
  - ▶ Universal Printing
  - ▶ XML Engine
  - ▶ Preproduction
- Graphics
- Enterprise Management Integration
- Migration
- Scalability & Performance
- Statistics & Operations Research

---

#### Base SAS

#### ODS (Output Delivery System)

This page is part of the [Base SAS Focus Area](#) and is an anchor point for lots of information regarding SAS ODS (Output Delivery System).

##### New ODS Destinations

New destinations added to this site include:

- ODS EXCEL added to [ODS and Microsoft Office](#) resources
- ODS HTML5 added to [ODS HTML](#) resources
- ODS POWERPOINT added to [ODS and Microsoft Office](#)
- ODS EPUB and ODS EPUB3 on the new [ODS EPUB](#) page

---

##### New and Notable Documents

- See what's new in [SAS Output Delivery System: User's Guide](#).
- [Staying Relevant in a Competitive World: Using the SAS Output Delivery System to Enhance, Customize, and Render Reports \(.pdf\)](#) *New! (2015)*
- [An Insider's Guide to ODS LAYOUT Using SAS® 9.4 \(.pdf\) | example code \(.zip\)](#) *New! (2015)*
- [Preparing Output from Statistical Procedures for Publication, Part 1: PROC REG to APA Format \(.pdf\)](#) *New! (2015)*
- [Advanced Mobile Reporting with the ODS EPUB3 Destination \(.pdf\)](#) (2014)
- [PDF vs. HTML: Can't We All Just Get Along? \(.pdf\) | slides \(.pdf\) | example code \(.zip\)](#) (2014)
- [Putting on the Ritz: New Ways to Style Your ODS Graphics to the Max \(.pdf\)](#) (2014)
- [Toe to Toe: Comparing ODS LAYOUT and the ODS Report Writing Interface \(.pdf\)](#) (2014)
- [ODS, PROC TEMPLATE, and ODS DOCUMENT from Scratch](#)
- [ODS Styles: Escaping PROC TEMPLATE Purgatory](#)

# And the Graphics Area... (support.sas.com/rnd/datavisualization)



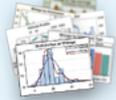
### RESOURCES / FOCUS AREAS

#### FOCUS AREAS

- Base SAS
- **Graphics**
  - Automatic Graphs
  - Your Graphs
  - Maps
- Enterprise Management Integration
- Migration
- Scalability & Performance
- Statistics & Operations Research
- SAS AppDev Studio

#### Graphics

Whether you are a novice SAS user or an expert SAS statistical user, you can create graphs ranging from simple scatter plots and bar charts to complex multi-page classification panels.

<div data-bbox="473 606 917 935"> <h4>Business Graphs</h4>  <p><b>Quick and Easy</b> ▶ <i>Less programming knowledge required</i></p>  <p><b>Highly Customized</b> ▶ <i>More programming knowledge required</i></p> </div>	<div data-bbox="937 606 1381 935"> <h4>Analytical Graphs</h4>  <p><b>Quick and Easy</b> ▶ <i>Less programming knowledge required</i></p>  <p><b>Highly Customized</b> ▶ <i>More programming knowledge required</i></p> </div>
--	---

[About the Images in the Examples...](#)

The easiest way to generate analytical graphs is to let the SAS analytical procedures automatically generate graphics along with their tabular output. Simply specify ODS GRAPHICS ON with the graphs).

Beginning in SAS 9.2, Base SAS extends the Output Delivery System (ODS) to provide ODS Graphics, which can produce business and analytical graphs. Of course, traditional SAS/GRAPH some of those alternatives.

#### Useful Links

Products	Books	Other Resources
<ul style="list-style-type: none"> <li>Base SAS</li> <li>SAS/GRAPH</li> <li>SAS AppDev Studio</li> </ul>	<ul style="list-style-type: none"> <li>Getting Started with the Graph Template Language</li> <li>Statistical Graphics Procedures by Example</li> <li>Clinical Graphs Using SAS</li> <li>Basic ODS Graphics Examples</li> <li>Advanced ODS Graphics Examples</li> <li>Base SAS (ODS Graphics documentation)</li> <li>SAS/GRAPH documentation</li> <li>SAS Publishing: SAS/GRAPH books</li> </ul>	<ul style="list-style-type: none"> <li>Graphically Speaking Blog, Visual Index</li> <li>SAS Global Forum Graphs</li> <li>SAS/GRAPH and ODS Graphics</li> <li>Graphics Samples Output Gallery</li> <li>Graphics Papers and Tip Sheets</li> <li>Downloads</li> </ul>

# SAS provides Technical Reports that can give you new ideas

(<http://support.sas.com/resources/papers/index.html>)

### RESOURCES / PAPERS

#### RESOURCES

- Products & Solutions
- System Requirements
- Samples
- Install Center
- Third-Party Software Reference
- Documentation
- **Papers**
- Focus Areas

#### SAS Technical Papers » Base SAS Language, PROCs, ODS, and Macros

Papers Topic List ↗

Date	Title
April 2016	<p><a href="#">Dealing with Nanoseconds in SAS® Datetime Values in Transaction Processing</a> (PDF)</p> <p>This paper describes a technique for dealing with the precision problems inherent in datetime values containing nanosecond data. Floating-point values cannot store sufficient precision for this, and this limitation can be a problem for transactional data where nanoseconds are pertinent. Methods discussed include separation of variables and using the special GROUPFORMAT feature of the BY statement with MERGE in the DATA step.</p>
April 2016	<p><a href="#">New for SAS® 9.4: A Technique for Including Text and Graphics in Your Microsoft Excel Workbooks, Part I</a> (PDF)</p> <p>A new ODS destination for creating Microsoft Excel workbooks is available starting in the third maintenance release for SAS® 9.4. This destination creates native Microsoft Excel XLSX files, supports graphic images, and offers other advantages over the older ExcelXP tagset. In this presentation you learn step-by-step techniques for quickly and easily creating attractive multi-sheet Excel workbooks that contain your SAS® output. The techniques can be used regardless of the platform on which SAS software is installed. You can even use them on a mainframe! Creating and delivering your workbooks on-demand and in real time using SAS server technology is discussed. Although the title is similar to previous presentations by this author, this presentation contains new and revised material not previously presented. Using the ExcelXP tagset with earlier versions of SAS to create multi-sheet workbooks is also discussed.</p> <p><a href="#">Read the paper</a> (PDF)   <a href="#">Download the zip file</a> (ZIP)</p>
April 2016	<p><a href="#">A Ringside Seat: The ODS Excel Destination versus the ODS ExcelXP Tagset</a> (PDF)</p> <p>The discussion covers features and benefits of the new Excel destination, differences between the Excel destination and the older ExcelXP tagset, and functionality that exists in the ExcelXP tagset that is not available in the Excel destination. These topics are all illustrated with meaningful examples. The paper also explains how you can bridge the gap that exists as a result of differences in the functionality between the destination and the tagset. In addition, the discussion outlines when it is beneficial for you to use the Excel destination versus the ExcelXP tagset, and vice versa.</p>
April 2016	<p><a href="#">The Dynamic Duo: ODS Layout and the ODS Destination for PowerPoint</a> (PDF)</p> <p>Through code examples this paper shows you how to create a custom title slide, as well as place the desired number of graphs and tables on each slide.</p>
April 2016	<p><a href="#">A Second Look at the ODS Destination for PowerPoint</a> (PDF)</p> <p>This paper demonstrates how to use the ODS destination for PowerPoint to create attractive presentations from your SAS® output.</p>
April 2016	<p><a href="#">That's All Right: More Complex Reports</a> (PDF)</p> <p>The paper presents a nuts-and-bolts look at more complex report examples gleaned from SAS® Community Forum questions and questions from students</p>

# And access to past Global Forum papers...

(<http://support.sas.com/events/sasglobalforum/previous/online.html>)

The screenshot shows a web browser window with the URL <https://support.sas.com/events/sasglobalforum/previous/online.html>. The browser's address bar and tabs are visible at the top. The main content area features the SAS Global Forum logo and a navigation menu with options: SAS GLOBAL USERS GROUP, 2017 CONFERENCE, PREVIOUS CONFERENCES, FUTURE CONFERENCES, and ABOUT. The 'PREVIOUS CONFERENCES' section is active, displaying 'ONLINE PROCEEDINGS'. The text explains that SAS Global Users Group and SAS Institute offer online versions of the proceedings, available as far back as SUGI 22. It notes that papers are for viewing only through a browser and that hardcopy and CD-ROM versions are no longer available. A requirement for Adobe Acrobat Reader 5 or higher is stated, with a 'Get Acrobat Reader' button provided. A search box for 'SAS Global Forum and SUGI 24-31 Proceedings' is also present, along with a 'Find' button and a link to 'Requirements'. A dropdown menu on the right allows users to select the year of the proceedings (2016, 2015, or 2014) and includes a 'Go' button.

SAS GLOBAL FORUM

SAS GLOBAL USERS GROUP 2017 CONFERENCE PREVIOUS CONFERENCES FUTURE CONFERENCES ABOUT

### ONLINE PROCEEDINGS

**Proceedings Online**  
SAS Global Users Group and SAS Institute offer the SUGI and SAS Global Forum *Proceedings* online. You can now view the online versions of the *Proceedings* for each conference as far back as SUGI 22!

These papers are intended for viewing only through your browser. The links between papers will not work if viewed any other way. If a paper (or the cover or table of contents) is downloaded, specific functionality (cross-linking) may be lost. **Hardcopy and CD-ROM versions of SUGI *Proceedings* are no longer available for purchase.**

You must use **Adobe Acrobat Reader 5** or higher in order to view the *Proceedings*. You can download the reader, for no charge, by clicking on the icon below.



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Take me to the  
2016 Proceedings  
2015 Proceedings  
2014 Proceedings  
Go

Search SAS Global Forum and SUGI 24-31 Proceedings  
  
Find

[Requirements](#)

### There are User Communities as well, one for IR... (<https://communities.sas.com/t5/SUGIR-Community/gp-p/sugir>)

The screenshot shows the SAS SUGIR Community page. At the top, there's a navigation bar with 'Communities' and 'SUGIR Community'. A blue banner invites users to attend the SUGIR Virtual Fall Meeting on November 16th. Below this, there's a 'New Message' button and 'Group Options'. A message states: 'This is an open group. Sign in and click the "Join Group" button to become a group member and start posting.' The main content is a list of posts with columns for Subject, Replies, Author, Likes, Views, and Latest Post.

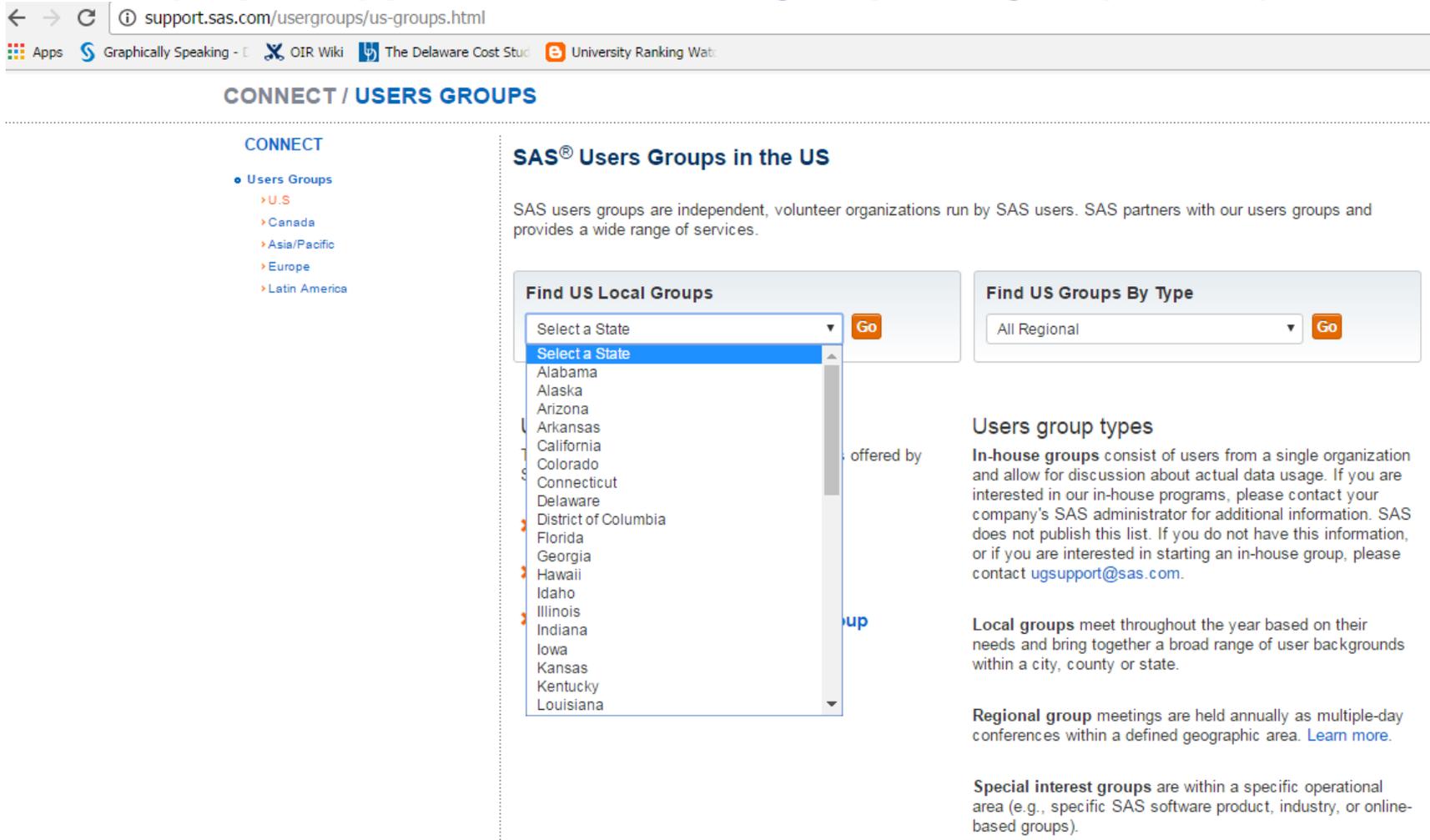
Subject	Replies	Author	Likes	Views	Latest Post
<b>ods pdf - unwanted page break between first tabula...</b>	3	jmartin-moreno	1	160	3 weeks ago by SoonerEngineer
<b>Be a Presenter at the SUGIR Virtual Fall Meeting!</b>	0	danapearson_sas	0	68	08-18-2016 10:29 AM by danapearson_sas
<b>Analytics Experience 2016</b>	0	danapearson_sas	0	63	07-20-2016 12:36 PM by danapearson_sas
<b>Left justify proc tabulate tables in gridded layou...</b>	0	jmartin-moreno	0	49	06-29-2016 05:17 PM by jmartin-moreno
<b>Recording of the SUGIR Summer 2016 Virtual Meeting</b>	5	danapearson_sas	0	250	06-22-2016 10:35 AM by danapearson_sas
<b>Slides - SUGIR Summer 2016 Virtual Meeting</b>	2	danapearson_sas	0	225	06-21-2016 02:22 PM by danapearson_sas

On the right side, there's a 'sugir' logo with the text 'SAS' USERS GROUP FOR INSTITUTIONAL RESEARCH'. Below it, a text box explains: 'This group is intended to help SAS Users in Institutional Research at colleges and universities network, share best practices and lessons learned. Anyone can view this site but if you want to participate, post or engage, you need to join this group.'

Below the logo is a section titled 'Upcoming 2016 Events' with the following details:

- FAIR:** Jan 28-29, Indian Rocks Beach, FL
- TAIR:** Feb 28 - Mar 2, San Antonio, TX
- INAIR:** Apr 7-8, Indianapolis, IN
- AIR:** May 31- Jun 3, New Orleans, LA
- SAIR:** Oct 10-13, Charlotte, NC
- RMAIR:** Oct. 26-28, Bozeman, MT
- MIDAIR:** Nov 10-11, Kansas City, MO
- NEAIR:** Nov 12-15, Baltimore, MD
- CAIR:** Nov. 16-18, Los Angeles, CA

# And Regional User Groups that hold their own meetings... (<http://support.sas.com/usergroups/us-groups.html>)



**CONNECT / USERS GROUPS**

**CONNECT**

- Users Groups
  - › U.S
  - › Canada
  - › Asia/Pacific
  - › Europe
  - › Latin America

### SAS® Users Groups in the US

SAS users groups are independent, volunteer organizations run by SAS users. SAS partners with our users groups and provides a wide range of services.

#### Find US Local Groups

Select a State Go

- Select a State
- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- District of Columbia
- Florida
- Georgia
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana

#### Find US Groups By Type

All Regional Go

#### Users group types

**In-house groups** consist of users from a single organization and allow for discussion about actual data usage. If you are interested in our in-house programs, please contact your company's SAS administrator for additional information. SAS does not publish this list. If you do not have this information, or if you are interested in starting an in-house group, please contact [ugsupport@sas.com](mailto:ugsupport@sas.com).

**Local groups** meet throughout the year based on their needs and bring together a broad range of user backgrounds within a city, county or state.

**Regional group** meetings are held annually as multiple-day conferences within a defined geographic area. [Learn more.](#)

**Special interest groups** are within a specific operational area (e.g., specific SAS software product, industry, or online-based groups).

### With these suggested for California...

#### CONNECT / USERS GROUPS

##### CONNECT

- Users Groups
  - U.S
  - Canada
  - Asia/Pacific
  - Europe
  - Latin America

#### SAS® Users Groups in the US

These groups are within your selected state, but they do not have an event scheduled at this time.

<b>CALIFORNIA CENTRAL COAST SAS USERS GROUP</b> Contact: Rebecca Ottesen Phone: 805-594-0441	Email: <a href="mailto:rottesen@calpoly.edu">rottesen@calpoly.edu</a>
<b>GREATER SACRAMENTO SAS USERS GROUP</b> Contact: Leonard Seitz Phone: 916-654-2610	Email: <a href="mailto:leonard.seitz@dot.ca.gov">leonard.seitz@dot.ca.gov</a> Website: <a href="http://www.sascommunity.org">www.sascommunity.org</a>
<b>LOS ANGELES BASIN SAS USERS GROUP</b> Contact: Kim LeBouton Phone: 562-305-1131	Email: <a href="mailto:labsug@gmail.com">labsug@gmail.com</a> Website: <a href="http://www.labsug.net">www.labsug.net</a>
<b>ORANGE COUNTY &amp; INLAND EMPIRE SAS UG</b> Contact: Lida Gharibvand Phone: 949-230-5439	Email: <a href="mailto:lida.gh07@gmail.com">lida.gh07@gmail.com</a> Website: <a href="http://www.sascommunity.org/wiki/Orange_County_and_Inland_Em">www.sascommunity.org/wiki/Orange_County_and_Inland_Em</a>
<b>SAN DIEGO SAS USERS GROUP</b> Contact: Wei Cheng Phone: 760-603-3807	Email: <a href="mailto:wcheng@isisph.com">wcheng@isisph.com</a> Website: <a href="http://www.sandsug.org">www.sandsug.org</a>
<b>SAS USERS GROUP WESTWOOD</b> Contact: Michael Johnston Phone: 310-280-6446	Email: <a href="mailto:michael.johnston.email@gmail.com">michael.johnston.email@gmail.com</a> Website: <a href="http://www.sascommunity.org/wiki/SAS_Users_Group_Westwood">www.sascommunity.org/wiki/SAS_Users_Group_Westwood</a>
<b>WESTERN USERS OF SAS SOFTWARE</b> Contact: SCOTT LESLIE	Email: <a href="mailto:PRESIDENT@WUSS.ORG">PRESIDENT@WUSS.ORG</a> Website: <a href="http://WWW.WUSS.ORG/">WWW.WUSS.ORG/</a>

# Searching their Knowledge base to fix errors or find out how to do something (<http://support.sas.com/en/technical-support.html>)

Standard Search | **Advanced Search** | Results Filter

inserting images into ods statements

1 - 6 of 6 results for **inserting images into ods statements**

Previous | 1 | Next

Sort by: [Date](#) | **Relevance**

[Hide results summaries](#)

- 2012-05-22 **46552 - Embed images in a PROC REPORT table** - Sample  
This sample demonstrates how to insert images as column values in PROC REPORT output.  
<http://support.sas.com/kb/46/552.html>, 23KB
- 2012-05-22 **46552 - Embed images in a PROC REPORT table**  
... GRAPH@ GLOT procedure to create images to be inserted into the REPORT procedure output. You ... ods listing close; ods rtf file='sample.rtf'; ods pdf file='sample.pdf' notoc ... year 1986; column year sales image; define year / group; define image / 'Sales trend for year' computed ...  
<http://support.sas.com/kb/46/552.html>, 30KB
- 2016-08-11 **58682 - The PREIMAGE attribute is ignored in ODS RTF output when you use the new inline formatting syntax** - Problem Note  
Attempting to insert a logo or image in the ODS RTF destination using PREIMAGE in a TITLE or TEXT= statement using the new SAS<sup>@</sup> 9.2 inline formatting style syntax fails to place the image in the document. Use ...  
<http://support.sas.com/kb/58/682.html>, 22KB
- 2015-05-18 **55808 - ODS LAYOUT: Placing text, graphs, and images on the same PDF page** - Sample  
ODS LAYOUT ABSOLUTE is new syntax for SAS<sup>@</sup> 9.4 (TS1M0). ODS LAYOUT enables the precise placement of text, tables, and images on a PDF page using ODS REGION statements. This sample shows the use of ODS LAYOUT ...  
<http://support.sas.com/kb/55/808.html>, 26KB

# Reading the Blogs of SAS authors (<http://blogs.sas.com/content/>)

SAS BLOGS HOME

## Featured Post

SAS VOICES  
FALKO SCHULZ  
OCT 20, 2016 AT 11:32 AM ET

### Analyzing social networks using Python and SAS Viya

6465 0

The study of social networks has gained importance over the years within social and behavioral research on HIV and AIDS. Social network research can show routes of potential viral transfer, and be used to understand the influence of peer norms and practices on the risk behaviors of ... [Read More](#)

RECENT POSTS

STATE AND LOCAL CONNECTION  
**3 reasons why International Fraud Awareness Week matters to government**  
SHAUN BARRY | NOV 14, 2016  
International Fraud Awareness Week is here! I know, I know... Fraud Week is not quite as exciting as Shark Week. It doesn't appeal to your taste buds l... [Read More](#)

JMP BLOG  
**4 ways to use fixed/baseline (historical) control limits in Control Chart Builder**  
TONYA MAULDIN | NOV 14, 2016  
Customers often ask me how to use fixed/baseline control limits. This type of limit is sometimes referred to as historical control limit. Instead of a... [Read More](#)

STATE AND LOCAL CONNECTION

SEARCH

VISUAL ANALYTICS  
See your data for all it's worth.

THE POWER TO KNOW.

### Featured Bloggers

**ADELE SWEETWOOD**  
CUSTOMER INTELLIGENCE  
SENIOR VICE PRESIDENT OF GLOBAL MARKETING & SHARED SERVICES

**ANJELICA CUMMINGS**  
SAS VOICES  
SR ASSOCIATE COMMUNICATIONS SPECIALIST

**CAROLINE HERMON**  
SAS USERS  
SR ACCOUNT EXECUTIVE

**PRASHANT HEBBBAR**  
GRAPHICALLY SPEAKING  
PRINCIPAL SOFTWARE DEVELOPER

Subscribe to this blog

Enter your email address:

UCI Office of Institutional Research

79

# One of my favorites is Graphically Speaking... (<http://blogs.sas.com/content/graphicallyspeaking/>)

Graphically Speaking  
Data Visualization with a focus on SAS ODS Graphics

SAS BLOGS HOME > GRAPHICALLY SPEAKING

### Layers vs annotation

Sanjay Matange | NOVEMBER 7, 2016

1112
 0
 

 0

Last week a user asked about **BY variable group processing** for SGAnnotate with SGPLOT procedure. The user provided a simple use case for the question (always a good idea) using the sashelp.class data set. The graph included a display of reference lines for the mean value of height using annotation. The problem was that all the lines defined were being rendered in each graph and were not getting filtered with the BY group as SGAnnotate does not support BY variable processing. See the graph in the linked question above.

This is a good example of a user who is familiar with SAS/GRAPH programming using SGPLOT. When you do that, it is useful to remember that SGPLOT supports many plot statements that can be "Layered" together to create a graph. With SGPLOT, graphs should preferably be built by adding plot layers as far as possible. This will work for a large number of graphs and annotation may be needed only for a few cases.

This use case is actually better handled in SGPLOT by using plot layers. Instead of building a separate data set of the mean values by sex for the annotated reference lines, we can merge that data into the single data set. We compute the mean values by sex using the MEANS procedure and then we can merge the computed data into the original data set (by Sex). The last few rows of the final data set are shown on the right. The data set is a merge of the relevant columns of sashelp.class and the computed mean values by sex. I have also added a column called LBL for the label that I want to display on the mean reference line at x=zero.

Obs	meanHeight	Sex	Height	Weight	Lbl	Zero
14	.	F	66.5	112		.
15	.	M	72.0	150		.
16	.	M	64.8	128		.
17	.	M	67.0	133		.
18	.	M	57.5	85		.
19	.	M	66.5	112		.
20	60.6	F	.	.	Mean=60.6	0
21	63.9	M	.	.	Mean=63.9	0

SEARCH

### About this blog

Welcome to Graphically Speaking, a blog by Sanjay Matange focused on the usage of ODS Graphics for data visualization in SAS. The blog will cover topics related to the Statistical Graphics procedures, the Graph Template Language and the ODS Graphics Designer. Sanjay is author of *Clinical Graphs Using SAS*

*Clinical Graphs Using SAS*

*Getting Started with the Graph Template Language in SAS*

*Getting Started with the Graph Template Language in SAS*

*Statistical Graphics Procedures by Example: Effective Graphs Using SAS*

*Statistical Graphics Procedures by Example*

# And I like to check out anything done by Robert Allison... (<http://blogs.sas.com/content/sastraining/author/robertallison/>)

The screenshot shows a web browser displaying the SAS Learning Post blog page for Robert Allison. The browser's address bar shows the URL [blogs.sas.com/content/sastraining/author/robertallison/](http://blogs.sas.com/content/sastraining/author/robertallison/). The page features a blue header with navigation links for 'BLOG DIRECTORY', 'SAS SOFTWARE', and 'FOLLOW US'. Below the header is a banner for 'SAS Learning Post' with the tagline 'Technical tips and tricks from SAS instructors, authors and other SAS experts.' and the SAS logo with the slogan 'THE POWER TO KNOW.'.

The main content area includes a breadcrumb trail: 'SAS BLOGS HOME > SAS LEARNING POST > ROBERT ALLISON'. A profile section for Robert Allison, titled 'THE GRAPH GUY!', features a photo of him wearing a blue cap and sunglasses. The text describes his 20+ years at SAS, his expertise in SAS/GRAPH, his educational background (BS, MS, and PhD from NC State University), and his authorship of several conference papers and a book, 'SAS/GRAPH: Beyond the Basics'.

A 'RECENT POSTS' section lists three articles:
 

- 'Where did all my daylight go?' by Robert Allison, dated November 11, 2016, with 1363 views and 6 comments.
- 'You need a custom map, for US presidential election results!' by Robert Allison, dated November 9, 2016, with 1406 views and 0 comments.
- 'Your chance to vote ... for your favorite election graph!' by Robert Allison, dated November 4, 2016, with 2657 views and 2 comments.

On the right side of the page, there is a search bar with the text 'search this blog' and a 'SEARCH' button. Below the search bar is a section titled 'About this blog' which states: 'Ready to learn SAS? You've come to the right place. The SAS Learning Post is where you'll find tutorials, tips and practical information to help you become a better SAS user. You'll also receive information about training, books, events and certification news.'

At the bottom right, there is a promotional graphic for 'SAS Communities' with the text 'Get answers from SAS Users' and 'SAS COMMUNITIES'.

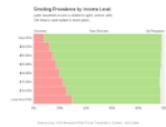
### As well as Robert's website... (<http://robslink.com/SAS/Home.htm>)

#### Robert Allison's SAS/Graph Samples #87

Click on thumbnail to see full-size chart.  
Click on label to see descriptions and SAS code.



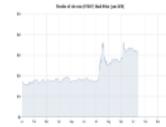
[Fireworks Animation](#)



[Smoking Prevalence](#)



[University Websites](#)



[Nintendo Stock](#)



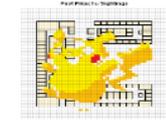
[Pokémon Analysis](#)



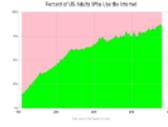
[US & Europe Overlay](#)



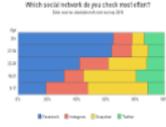
[Pikachu Grid Graph](#)



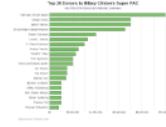
[Pikachu Analytics](#)



[Internet Users in US](#)



[Social Network Usage](#)



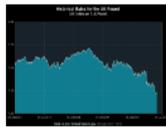
[Hillary top Donors](#)



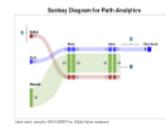
[Rare Pokémon Map](#)



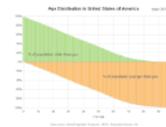
[Mapping British Isles](#)



[UK Pound \\$ Value](#)



[Hard-Coded Sankey](#)



[US Age Distribution](#)

# And of course there is always the built in Help of SAS...

The screenshot displays the SAS Help and Documentation interface. The left pane shows a tree view of the documentation structure, with 'What's New in SAS ODS Graphics Procedures 9.4' selected. The right pane shows the content of this page, including an overview and a list of enhancements.

**SAS Help and Documentation**

Quick Search

Contents | Index | Search | Results | Bookmarks

SAS System Documentation > SAS Products > Base SAS > ODS Graphics > SAS 9.4 ODS Graphics: Procedures Guide, Fifth Edition

Previous Page | Next Page

## What's New in SAS ODS Graphics Procedures 9.4

### Overview

The procedures have the following enhancements for SAS 9.4 as well as for the first, second, and third maintenance releases for SAS 9.4:

- [general changes](#)
- [new statements for the SGPLOT and SGPANEL procedures](#)
- [updates to plots and charts](#)
- [plot and chart updates in the first maintenance release for SAS 9.4](#)
- [plot and chart updates in the second maintenance release for SAS 9.4](#)
- [plot and chart updates in the third maintenance release for SAS 9.4](#)
- [enhancements to the SGRENDER procedure in the first maintenance release for SAS 9.4](#)
- [new gradient legend](#)
- [axis updates](#)
- [axis table updates](#)
- [annotation enhancements in the first maintenance release for SAS 9.4](#)
- [attribute map updates](#)

## And Make Sure to Keep Having Fun with It!

How to contact us:

[oir@uci.edu](mailto:oir@uci.edu)

Examples will be posted on our website, <http://www.oir.uci.edu>, by the end of November.

Look for the section heading “Professional Activities.”

Questions?

