**[Calculate Percentiles in SAS](https://sasexamplecode.com/3-easy-ways-to-calculate-percentiles-in-sas-examples/)**

proc univariate data=sashelp.baseball ;

var nHits;

histogram nHits /normal;

probplot nHits;

run;

Result



How to Calculate Non-Standard Percentiles?

/\* How to Calculate Non-Standard Percentiles?

res p\_99\_5 = 223 \*/

proc univar/iate data=sashelp.baseball;

var nHits;

output out=work.baseball\_percentile\_99\_5

pctlpts = 99.5

pctlpre = P\_;

run;

proc print data=work.baseball\_percentile\_99\_5 noobs;

run;

How to Calculate Multiple Percentiles?

**proc univariate** **data**=sashelp.baseball;

var nHits;

output out=work.baseball\_percentiles\_80\_99\_5

pctlpts = **80**, **99.5**

pctlpre = P\_;

**run**;

**proc print** **data**=work.baseball\_percentiles\_80\_99\_5 noobs;

**run**;

How to Calculate a Range of Percentiles?

**proc univariate** **data**=sashelp.baseball;

var nHits;

output out=work.baseball\_percentiles\_80\_90to92

pctlpts = **80**, **90** to **92** by **0.5**

pctlpre = P\_;

**run**;

**proc print** **data**=work.baseball\_percentiles\_80\_90to92 noobs;

**run**;

res:

| **P\_80** | **P\_90** | **P\_90\_5** | **P\_91** | **P\_91\_5** | **P\_92** |
| --- | --- | --- | --- | --- | --- |
| 145 | 163 | 163 | 168 | 168 | 169 |

### How to Calculate Percentiles by Group?

 We use [PROC SORT to order our dataset](https://sasexamplecode.com/how-to-easily-sort-a-dataset-in-sas/) before we run PROC UNIVARIATE.

/\* How to Calculate Percentiles by Group? \*/

proc sort data=sashelp.baseball out=work.baseball; by League; run;

proc univariate data=work.baseball; var nHits; by League;

output out=work.baseball\_percentiles\_by\_group

pctlpts = 80, 90 to 92 by 0.5

pctlpre = P\_; run;

proc print data=work.baseball\_percentiles\_by\_group noobs; run;

Res:

| **League** | **P\_80** | **P\_90** | **P\_90\_5** | **P\_91** | **P\_91\_5** | **P\_92** |
| --- | --- | --- | --- | --- | --- | --- |
| American | 149.5 | 168 | 169 | 169 | 169 | 169.5 |
| National | 141.0 | 158 | 159 | 159 | 160 | 161.0 |

## 2. Calculate Percentiles with PROC MEANS

**proc means** **data**=sashelp.baseball p1 p5 p10 p25 p50 p75 p90 p95 p99;

var nHits;

**run**;

| **\_TYPE\_** | **\_FREQ\_** | **P\_1** | **P\_5** | **P\_10** | **P\_25** | **P\_50** | **P\_75** | **P\_90** | **P\_95** | **P\_99** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 322 | 34 | 41 | 49 | 68 | 98.5 | 138 | 163 | 174 | 211 |

/\* 2. Calculate Percentiles with PROC MEANS \*/

proc means data=sashelp.baseball p1 p5 p10 p25 p50 p75 p90 p95 p99;

var nHits;

run;

/\* PROC MEANS doesn’t create an output dataset. \*/

proc means data=sashelp.baseball p1 p5 p10 p25 p50 p75 p90 p95 p99;

var nHits;

output out=work.percentiles\_proc\_means (drop = \_TYPE\_ \_FREQ\_)

p1 = P\_1

p5 = P\_5

p10 = P\_10

p25 = P\_25

p50 = P\_50

p75 = P\_75

p90 = P\_90

p95 = P\_95

p99 = P\_99;

run;

proc print data=work.percentiles\_proc\_means noobs;

/\* How to Calculate the Percentiles per Group \*/

proc sort data=sashelp.baseball

out=work.baseball;

by League;

run;

proc means data=work.baseball p1 p5 p10 p25 p50 p75 p90 p95 p99;

var nHits;

by league;

output out=work.percentiles\_proc\_means

p1 = P\_1

p5 = P\_5

p10 = P\_10

p25 = P\_25

p50 = P\_50

p75 = P\_75

p90 = P\_90

p95 = P\_95

p99 = P\_99;

run;

res:

**The MEANS Procedure**

**League at the End of 1986=American**

| **Analysis Variable : nHits Hits in 1986** | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1st Pctl** | **5th Pctl** | **10th Pctl** | **25th Pctl** | **50th Pctl** | **75th Pctl** | **90th Pctl** | **95th Pctl** | **99th Pctl** |
| 37.0000000 | 41.0000000 | 47.0000000 | 69.0000000 | 103.0000000 | 141.0000000 | 168.0000000 | 179.0000000 | 223.0000000 |

**League at the End of 1986=National**

| **Analysis Variable : nHits Hits in 1986** | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1st Pctl** | **5th Pctl** | **10th Pctl** | **25th Pctl** | **50th Pctl** | **75th Pctl** | **90th Pctl** | **95th Pctl** | **99th Pctl** |
| 32.0000000 | 40.0000000 | 51.0000000 | 64.0000000 | 92.0000000 | 132.0000000 | 158.0000000 | 174.0000000 | 210.0000000 |

3. Calculate Percentiles with PROC FREQ

/\* 3. Calculate Percentiles with PROC FREQ \*/

proc freq data=sashelp.baseball;

table nHits

/ out = work.frequency\_table outcum;

run;

proc sql;

create table work.P5 as

select \*

from work.frequency\_table

where cum\_pct ge 5

having nHits = min(nHits);

quit;

proc print data=work.p5 noobs;

run;

/\* How to Save a Percentile as a Macro Variable?\*/

proc freq data=sashelp.baseball;

table nHits

/ out = work.frequency\_table outcum;

run;

proc contents data = work.frequency\_table; run;

proc sql;

select nHits into :macro\_var\_percentile

from work.frequency\_table

where cum\_pct ge 5

having nHits = min(nHits);

quit;

%put &macro\_var\_percentile;

%put &= macro\_var\_percentile.;