



Academic

PROC FREQ in version 8: new features

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The users of PROC FREQ know that the computations of exact tests may require an enormous amount of time or memory. For some problems, the asymptotic tests may be sufficient, but it is sometimes necessary to do exact tests anyway. For these situations, Monte Carlo estimation of exact P-values can now be done. In version 8 of SAS, some new features are available for PROC FREQ, that make life much easier.

The FREQ procedure now has an EXACT statement that computes exact tests or confidence limits for the specified statistics. It also supports some new options. The MAXTIME= option specifies the maximum clock time (in seconds) that PROC FREQ uses to compute an exact P-value directly or with Monte Carlo estimation before timing out. The MC option requests Monte Carlo estimation of exact P-values, instead of direct exact P-value computation. The N= option specifies the number of samples for Monte Carlo estimation (default=10000). The SEED= option specifies the initial seed for random number generation for Monte Carlo estimation (default is the time of the day from the computer's clock) and ALPHA= specifies the confidence level for the confidence limits for the Monte Carlo P-value estimates (default is 0.01, resulting in 99 percent confidence limits).

```
DATA test;
  INPUT a $ b $ n;
  CARDS;
a1 b1 25
a1 b2 25
a1 b3 12
a2 b1 0
a2 b2 1
a2 b3 3
;
RUN;

PROC FREQ DATA=test;
  TABLES a*b/CHISQ;
  WEIGHT n;
  EXACT FISHER/maxtime=10 mc;
run;
```