You may not be aware that many non-parametric tests can be performed using PROC RANK with PROC ANOVA or PROC GLM. Frank Harrell and Bill Gjertsen of the Lipids Program at UNC-Chapel Hill have pointed out several such uses.

The Kruskal-Wallis test is a one-way analysis of variance on ranks. If you have a balanced one-way layout, with Y as the response variable and TMT as the classification variable, run these SAS statements:

```
PROC RANK; VARIABLES Y; RANKS YR;
PROC ANOVA; CLASSES TMT; MODEL YR=TMT;
```

Then compute

\[ H = \frac{SST*12}{N*(N+1)} \]

where SST is the sum of squares for TMT in ANOVA and N is the number of observations.

Critical values of significance probabilities for H, the Kruskal-Wallis statistic, can be found in tables, or a chi-square approximate value can be used.

The Friedman test is a two-way analysis of variance on ranks. If you have a two-way layout of blocks (BLOCK) and treatments (TMT) with one observation per cell and Y the response variable, run these SAS statements:

```
PROC SORT; BY BLOCK;
PROC RANK; BY BLOCK; VAR Y; RANKS YR;
PROC ANOVA; CLASSES BLOCK TMT; MODEL YR= BLOCK TMT;
```

Then compute

\[ F = \frac{SST*12}{(T^2(T+1))} \]

where SST is the sum of squares in ANOVA for TMT, and T is the number of treatments. Friedman's statistic F is tabled; it is approximately chi-square with T-1 degrees of freedom.

There are better ways of handling ties than averaging them as PROC RANK does. Also, you don't have to convert to a chi-square test. The F tests that PROC ANOVA produces are asymptotically valid, and may be reasonable even in fairly small samples.