

The SURVEYFREQ Procedure

Rao-Scott Chi-Square Test

The Rao-Scott chi-square test is a design-adjusted version of the Pearson chi-square test, which involves differences between observed and expected frequencies. For two-way tables, the null hypothesis for this test is no association between the row and column variables. For one-way tables, the Rao-Scott chi-square tests the null hypothesis of equal proportions, or you can specify null proportions for one-way tables with the [TESTP=](#) option.

Two forms of the design correction are available for the Rao-Scott tests. One form of the design correction uses the proportion estimates, and you request the corresponding Rao-Scott chi-square test with the [CHISQ](#) option. The other form of the design correction uses the null hypothesis proportions. You request this test, called the Rao-Scott modified chi-square test, with the [CHISQ1](#) option.

Refer to Lohr (1999), Thomas, Singh, and Roberts (1996), and Rao and Scott (1981, 1984, 1987) for details on design-adjusted chi-square tests.

Two-Way Tables

The Rao-Scott chi-square statistic is computed from the Pearson chi-square statistic and a design correction based on the design effects of the proportions. Under the null hypothesis of no association between the row and column variables, this statistic approximately follows a chi-square distribution with $(R - 1)(C - 1)$ degrees of freedom. An F approximation is also given.

The Rao-Scott chi-square is computed as

$$Q_{RS} = Q_P / D$$

where D is the design correction described in the "[Design Correction for Two-Way Tables](#)" section, and Q_P is the Pearson chi-square based on the estimated totals.

$$Q_P = \sum_r \sum_c (\hat{N}_{rc} - E_{rc})^2 / E_{rc}$$

where \hat{N}_{rc} is the estimated total for table cell (r, c) , and E_{rc} is the expected total for cell (r, c) under the null hypothesis of no association,

$$E_{rc} = \hat{N}_r \hat{N}_c / \hat{N}$$

Under the null hypothesis of no association, the Rao-Scott chi-square Q_{RS} approximately follows a chi-square distribution with $(R - 1)(C - 1)$ degrees of freedom. A better approximation may be obtained by the F statistic

$$F = Q_{RS} / (R - 1)(C - 1)$$

which has an F distribution with $(R - 1)(C - 1)$ and $(R - 1)(C - 1)K$ degrees of freedom under the null hypothesis, where K equals the number of clusters minus the number of strata, as described in the section "[Degrees of Freedom](#)."

Design Correction for Two-Way Tables

If you specify the CHISQ option, the design correction is computed from the estimated proportions, as

$$D = \left\{ \sum_r \sum_c (1 - \hat{P}_{rc}) \text{DEFF}(\hat{P}_{rc}) - \sum_r (1 - \hat{P}_{r.}) \text{DEFF}(\hat{P}_{r.}) - \sum_c (1 - \hat{P}_{.c}) \text{DEFF}(\hat{P}_{.c}) \right\} / (R - 1)(C - 1)$$

where

$$\begin{aligned} \text{DEFF}(\hat{P}_{rc}) &= \widehat{\text{Var}}(\hat{P}_{rc}) / \text{Var}_{\text{SRS}}(\hat{P}_{rc}) \\ &= \widehat{\text{Var}}(\hat{P}_{rc}) / \left\{ (1 - f) \hat{P}_{rc} (1 - \hat{P}_{rc}) / (n - 1) \right\} \end{aligned}$$

as described in the section "[Design Effect](#)." \hat{P}_{rc} is the estimate of the proportion in table cell (r, c) , $\widehat{\text{Var}}(\hat{P}_{rc})$ is the variance of the estimate, f is the overall sampling fraction, and n is the number of observations in the sample. $\text{DEFF}(\hat{P}_{r.})$, the design effect for the estimate of the proportion in row r , and $\text{DEFF}(\hat{P}_{.c})$, the design effect for the estimate of the proportion in row c , are computed similarly.

If you specify the CHISQ1 option for the Rao-Scott modified test, the design correction uses the null hypothesis cell proportions, computed as the product of the corresponding estimated row and cell proportions.

$$D_0 = \left\{ \sum_r \sum_c (1 - P_{rc}^0) \text{DEFF}_0(\hat{P}_{rc}) - \sum_r (1 - \hat{P}_{r.}) \text{DEFF}(\hat{P}_{r.}) - \sum_c (1 - \hat{P}_{.c}) \text{DEFF}(\hat{P}_{.c}) \right\} / (R - 1)(C - 1)$$

where

$$P_{rc}^0 = \hat{P}_{r.} \cdot \hat{P}_{.c}$$

and

$$\begin{aligned} \text{DEFF}_0(\hat{P}_{rc}) &= \widehat{\text{Var}}(\hat{P}_{rc}) / \text{Var}_{\text{SRS}}(P_{rc}^0) \\ &= \widehat{\text{Var}}(\hat{P}_{rc}) / \left\{ (1 - f) P_{rc}^0 (1 - P_{rc}^0) / (n - 1) \right\} \end{aligned}$$

One-Way Tables

For one-way tables, the Rao-Scott chi-square statistic provides a design-based goodness-of-fit test for equal proportions. Or if you specify null proportions with the [TESTP=](#) option, PROC SURVEYFREQ computes the goodness-of-fit test for the specified proportions. Under the null hypothesis, the Rao-Scott chi-square statistic approximately follows a chi-square distribution with $(C - 1)$ degrees of freedom for a table with C levels. PROC SURVEYFREQ also computes an F statistic that may provide a better approximation.

The Rao-Scott chi-square is computed as

$$Q_{RS} = Q_P / D$$

where D is the design correction described in the section "[Design Correction for One-Way Tables](#)," and Q_P is the Pearson chi-square based on the estimated totals,

$$Q_P = \sum_c (\hat{N}_c - E_c)^2 / E_c$$

where E_c is the expected total for level c under the null hypothesis. For the null hypothesis of equal proportions,

$$E_c = \hat{N} / C$$

For specified null proportions,

$$E_c = \hat{N} \cdot P_c^0$$

where P_c^0 is the null proportion for level c .

Under the null hypothesis, the one-way Rao-Scott chi-square Q_{RS} approximately follows a chi-square distribution with $(C - 1)$ degrees of freedom. A better approximation may be obtained by the F statistic

$$F = Q_{RS} / (C - 1)$$

which has an F distribution with $(C - 1)$ and $(C - 1)\kappa$ degrees of freedom under the null hypothesis, where κ equals the number of clusters minus the number of strata, as described in the section "[Degrees of Freedom](#)."

Design Correction for One-Way Tables

If you specify the CHISQ option, the design correction is computed from the estimated proportions, as

$$D = \sum_c (1 - \hat{P}_c) \text{DEFF}(\hat{P}_c) / (C - 1)$$

where

$$\text{DEFF}(\hat{P}_c) = \widehat{\text{Var}}(\hat{P}_c) / \left\{ (1 - f) \hat{P}_c (1 - \hat{P}_c) / (n - 1) \right\}$$

\hat{P}_c is the proportion estimate for table level c , $\widehat{\text{Var}}(\hat{P}_c)$ is the variance of the estimate, f is the overall sampling fraction, and n is the number of observations in the sample.

If you specify the CHISQ1 option for the Rao-Scott modified test, the design correction uses the null hypothesis proportions -- either equal proportions for all levels, or the proportions you specify with the TESTP= option.

$$D_0 = \sum_c (1 - P_c^0) \text{DEFF}_0(\hat{P}_c) / (C - 1)$$

where

$$\text{DEFF}_0(\hat{P}_c) = \widehat{\text{Var}}(\hat{P}_c) / \{(1-f)P_c^0(1-P_c^0)/(n-1)\}$$

and $P_c^0 = 1/C$ for equal proportions, or P_c^0 takes the value specified with the TESTP= option.

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The SURVEYFREQ Procedure

Rao-Scott Likelihood Ratio Chi-Square Test

The Rao-Scott likelihood ratio chi-square test is a design-adjusted version of the likelihood ratio test, which involves ratios between observed and expected frequencies and tests the null hypothesis of no association between the row and column variables in a two-way table. For a one-way tables the null hypothesis is equal proportions for the table levels, or you can specify other null proportions with the [TESTP=](#) option. Refer to Lohr (1999), Thomas, Singh, and Roberts (1996), and Rao and Scott (1981, 1984, 1987).

Two forms of the design correction are available for the Rao-Scott tests. One form of the design correction uses the proportion estimates, and you request the corresponding Rao-Scott likelihood ratio test with the [LRCHISQ](#) option. The other form of the design correction uses the null hypothesis proportions. You request this test, called the Rao-Scott modified likelihood ratio test, with the [LRCHISQ1](#) option.

Two-Way Tables

The Rao-Scott likelihood ratio statistic is computed from the likelihood ratio chi-square statistic and a design correction based on the design effects of the proportions. Under the null hypothesis of no association, this statistic approximately follows a chi-square distribution with $(R - 1)(C - 1)$ degrees of freedom. An F approximation is also given.

The Rao-Scott likelihood ratio chi-square is computed as

$$G_{RS}^2 = G^2 / D$$

where G^2 is the likelihood ratio chi-square based on the estimated totals, and D is the design correction.

$$G^2 = 2 \sum_r \sum_c \hat{N}_{rc} \ln(\hat{N}_{rc} / E_{rc})$$

where \hat{N}_{rc} is the estimated total for table cell (r, c) , and E_{rc} is the expected total for cell (r, c) under the null hypothesis of no association,

$$E_{rc} = \hat{N}_r \cdot \hat{N}_c / \hat{N}$$

The Rao-Scott likelihood ratio chi-square uses the same design correction D as the Rao-Scott (Pearson) chi-square uses, which is described in the section "[Design Correction for Two-Way Tables](#)." If you specify the [LRCHISQ](#) option, the design correction is computed from the estimated proportions. If you specify the [LRCHISQ1](#) option for the Rao-Scott modified test, the design correction uses the null hypothesis cell proportions, computed as the product of the corresponding estimated row and column proportions.

Under the null hypothesis of no association, the Rao-Scott likelihood ratio chi-square G_{RS}^2 approximately follows a chi-square distribution with $(R - 1)(C - 1)$ degrees of freedom. A better approximation may be obtained by the F statistic

$$F = G_{RS}^2 / (R - 1)(C - 1)$$

which has an F distribution with $(R - 1)(C - 1)$ and $(R - 1)(C - 1)\kappa$ degrees of freedom under the null hypothesis, where κ equals the number of clusters minus the number of strata, as described in the section "[Degrees of Freedom](#)."

One-Way Tables

For one-way tables, the Rao-Scott likelihood ratio chi-square statistic provides a design-based goodness-of-fit test for equal proportions. Or if you specify null proportions with the [TESTP=](#) option, PROC SURVEYFREQ computes the goodness-of-fit test for the specified proportions. Under the null hypothesis, the Rao-Scott likelihood ratio statistic approximately follows a chi-square distribution with $(C - 1)$ degrees of freedom for a table with C levels. An F approximation is also given.

The Rao-Scott likelihood ratio chi-square is computed as

$$G_{RS}^2 = G^2 / D$$

where G^2 is the likelihood ratio chi-square based on the estimated totals, and D is the design correction.

$$G^2 = 2 \sum_c \hat{N}_c \ln(\hat{N}_c / E_c)$$

where E_c is the expected total for level c under the null hypothesis. For the null hypothesis of equal proportions,

$$E_c = \hat{N} / C$$

For specified null proportions P_c^0 ,

$$E_c = \hat{N} \cdot P_c^0$$

The Rao-Scott likelihood ratio chi-square uses the same design correction D as the Rao-Scott (Pearson) chi-square uses, which is described in the section "[Design Correction for One-Way Tables](#)." If you specify the LRCHISQ option, the design correction is computed from the estimated proportions. If you specify the LRCHISQ1 option for the Rao-Scott modified test, the design correction uses the null hypothesis cell proportions.

Under the null hypothesis of no association, the Rao-Scott likelihood ratio chi-square G_{RS}^2 approximately follows a chi-square distribution with $(C - 1)$ degrees of freedom. A better approximation may be obtained by the F statistic

$$F = G_{RS}^2 / (C - 1)$$

which has an F distribution with $(C - 1)$ and $(C - 1)\kappa$ degrees of freedom under the null hypothesis, where κ equals the number of clusters minus the number of strata, as described in the section "[Degrees of Freedom](#)."

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Wald Chi-Square Test

PROC SURVEYFREQ provides two Wald chi-square tests for independence of the row and column variables in two-way tables: a Wald chi-square test based on the difference between observed and expected weighted cell frequencies, and a Wald log-linear chi-square test based on the log odds ratio. These statistics test for independence of the row and column variables in two-way tables, taking into account the complex survey design. Refer to Bedrick (1983), Koch, Freeman, and Freeman (1975), and Wald (1943) for information on Wald statistics and their applications to categorical data analysis.

For these two tests, PROC SURVEYFREQ computes the generalized Wald chi-square statistic, the corresponding Wald F statistic, and also an adjusted Wald F statistic for tables larger than 2×2 . Under the null hypothesis of independence, the Wald chi-square statistic approximately follows a chi-square distribution with $(R - 1)(C - 1)$ degrees of freedom for very large samples. However, it has been shown that this test may perform poorly in terms of actual significance level and power, especially for tables with a large number of cells or for samples with a relatively small number of clusters. Refer to Thomas and Rao (1984 and 1985) and Lohr (1999) for more information. Refer to Felligi (1980) and Hidiroglou, Fuller, and Hickman (1980) for information on the adjusted Wald F statistic. Thomas and Rao (1984) found that the adjusted Wald F statistic provides a more stable test than the chi-square statistic, although its power may be low when the number of sample clusters is not large. Refer also to Korn and Graubard (1990) and Thomas, Singh, and Roberts (1996).

If you specify the [WCHISQ](#) option in the TABLES statement, PROC SURVEYFREQ computes a Wald test for independence in the two-way table based on the differences between the observed (weighted) cell frequencies and the expected frequencies.

Under the null hypothesis of independence of the row and column variables, the expected cell frequencies are computed as

$$E_{rc} = \hat{N}_{r.} \hat{N}_{.c} / \hat{N}$$

where $\hat{N}_{r.}$ is the estimated total for row r , $\hat{N}_{.c}$ is the estimated total for column c , and \hat{N} is the estimated overall total, as described in the section "[Expected Weighted Frequency](#)." And the null hypothesis that the population weighted frequencies equal the expected frequencies is

$$H_0: Y_{rc} - N_{rc} - E_{rc} = 0$$

for all $r = 1, \dots, (R - 1)$ and $c = 1, \dots, (C - 1)$. This null hypothesis can be stated equivalently in terms of cell proportions, with the expected cell proportions computed as the products of the marginal row and column proportions.

The generalized Wald chi-square statistic is computed as

$$Q_{\text{Wald}} = \hat{\mathbf{Y}}' (\mathbf{H} \hat{\mathbf{V}}(\hat{\mathbf{N}}) \mathbf{H}')^{-1} \hat{\mathbf{Y}}$$

where $\hat{\mathbf{Y}}$ is the $(R - 1)(C - 1)$ array of the differences between the observed and expected weighted frequencies $(\hat{N}_{rc} - E_{rc})$, and $(\mathbf{H} \hat{\mathbf{V}}(\hat{\mathbf{N}}) \mathbf{H}')$ estimates the variance of $\hat{\mathbf{Y}}$.

$\hat{\mathbf{V}}(\hat{\mathbf{N}})$ is the covariance matrix of the estimates \hat{N}_{rc} , and its computation is described in the

section "[Covariance of Totals](#)."

\mathbf{H} is an $(R - 1)(C - 1)$ by RC matrix containing the partial derivatives of the elements of $\hat{\mathbf{Y}}$ with respect to the elements of $\hat{\mathbf{N}}$. The elements of \mathbf{H} are computed as follows, where a denotes a row different from row r , and b denotes a column different from column c .

$$\partial \hat{Y}_{rc} / \partial \hat{N}_{rc} = 1 - \left(\hat{N}_{r.} + \hat{N}_{.c} - \hat{N}_{.c} \hat{N}_{r.} / \hat{N} \right) / \hat{N}$$

$$\partial \hat{Y}_{rc} / \partial \hat{N}_{ac} = - \left(\hat{N}_{r.} - \hat{N}_{r.} \hat{N}_{.c} / \hat{N} \right) / \hat{N}$$

$$\partial \hat{Y}_{rc} / \partial \hat{N}_{rb} = - \left(\hat{N}_{.c} - \hat{N}_{r.} \hat{N}_{.c} / \hat{N} \right) / \hat{N}$$

$$\partial \hat{Y}_{rc} / \partial \hat{Y}_{ab} = \hat{N}_{r.} \hat{N}_{.c} / \hat{N}^2$$

Under the null hypothesis of independence, the statistic Q_{Wald} approximately follows a chi-square distribution with $(R - 1)(C - 1)$ degrees of freedom for very large samples.

PROC SURVEYFREQ computes the Wald F statistic as

$$F_{\text{Wald}} = Q_{\text{Wald}} / (R - 1)(C - 1)$$

Under the null hypothesis of independence, F_{Wald} approximately follows an F distribution with $(R - 1)(C - 1)$ numerator degrees of freedom. By default, PROC SURVEYFREQ computes the denominator degrees of freedom as the number of clusters minus the number of strata, as described in the section "[Degrees of Freedom](#)." Alternatively, you can specify the denominator degrees of freedom with the [DDF=](#) option in the TABLES statement.

For tables larger than 2 x 2, PROC SURVEYFREQ also computes the adjusted Wald F statistic

$$F_{\text{Adj Wald}} = \frac{s - k + 1}{k s} Q_{\text{Wald}}$$

where $k = (R - 1)(C - 1)$, and s is the number of clusters minus the number of strata.

Alternatively, you can specify the value of s with the [DDF=](#) option in the TABLES statement. Note that for 2 x 2 tables, $k = (R - 1)(C - 1) = 1$, so the the adjusted Wald F statistic equals the (unadjusted) Wald F statistic, with the same numerator and denominator degrees of freedom.

Under the null hypothesis, $F_{\text{Adj Wald}}$ approximately follows an F distribution with k numerator degrees of freedom and $(s - k + 1)$ denominator degrees of freedom.

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The SURVEYFREQ Procedure

Wald Log-Linear Chi-Square Test

If you specify the [WLLCHISQ](#) option in the TABLES statement, PROC SURVEYFREQ computes a Wald test for independence based on the log odds ratios. See the section "[Wald Chi-Square Test](#)" for more information on Wald tests.

For a two-way table of R rows and C columns, the Wald log-linear test is based on the $(R - 1)(C - 1)$ array of

$$\hat{Y}_{rc} = \log \hat{N}_{rc} - \log \hat{N}_{rC} - \log \hat{N}_{Rc} + \log \hat{N}_{RC}$$

where \hat{N}_{rc} is the estimated total for table cell (r, c) . The null hypothesis of independence between the row and column variables is $H_0: Y_{rc} = 0$ for all $r = 1, \dots, (R - 1)$ and $c = 1, \dots, (C - 1)$. This null hypothesis can be stated equivalently in terms of cell proportions.

The generalized Wald log-linear chi-square statistic is computed as

$$Q_{\text{Wald LL}} = \hat{\mathbf{Y}}' \hat{\mathbf{V}}(\hat{\mathbf{Y}})^{-1} \hat{\mathbf{Y}}$$

where $\hat{\mathbf{Y}}$ is the $(R - 1)(C - 1)$ array of the \hat{Y}_{rc} , and $\hat{\mathbf{V}}(\hat{\mathbf{Y}})$ estimates the variance of $\hat{\mathbf{Y}}$.

$$\hat{\mathbf{V}}(\hat{\mathbf{Y}}) = \mathbf{A} \mathbf{D}^{-1} \hat{\mathbf{V}}(\hat{\mathbf{N}}) \mathbf{D}^{-1} \mathbf{A}'$$

where $\hat{\mathbf{V}}(\hat{\mathbf{N}})$ is the covariance matrix of the estimates \hat{N}_{rc} , as described in the section "[Covariance of Totals](#)," \mathbf{D} is a diagonal matrix with the estimated totals \hat{N}_{rc} on the diagonal, and \mathbf{A} is the $(R - 1)(C - 1)$ by $RC \times RC$ linear contrast matrix.

Under the null hypothesis of independence, the statistic $Q_{\text{Wald LL}}$ approximately follows a chi-square distribution with $(R - 1)(C - 1)$ degrees of freedom for very large samples.

PROC SURVEYFREQ computes the Wald log-linear F statistic as

$$F_{\text{Wald LL}} = Q_{\text{Wald LL}} / (R - 1)(C - 1)$$

Under the null hypothesis of independence, $F_{\text{Wald LL}}$ approximately follows an F distribution with $(R - 1)(C - 1)$ numerator degrees of freedom. By default, PROC SURVEYFREQ computes the denominator degrees of freedom as the number of clusters minus the number of strata, as described in the section "[Degrees of Freedom](#)." Alternatively, you can specify the denominator degrees of freedom with the [DDF=](#) option in the TABLES statement.

For tables larger than 2 x 2, PROC SURVEYFREQ also computes the adjusted Wald log-linear F statistic

$$F_{\text{Adj Wald LL}} = \frac{s - k + 1}{k s} Q_{\text{Wald LL}}$$

where $k = (R - 1)(C - 1)$, and s is the number of clusters minus the number of strata.

Alternatively, you can specify the value of s with the [DDF=](#) option in the TABLES statement. Note that for 2 x2 tables, $k = (R - 1)(C - 1) = 1$, so the the adjusted Wald F statistic equals the (unadjusted) Wald F statistic, with the same numerator and denominator degrees of freedom.

Under the null hypothesis, $F_{Adj\ Wald\ LL}$ approximately follows an F distribution with k numerator degrees of freedom and $(s - k + 1)$ denominator degrees of freedom.

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Design Effect

If you specify the [DEFF](#) option in the TABLES statement, PROC SURVEYFREQ computes design effects for the overall proportion estimates in the frequency and crosstabulation tables. The design effect for an estimate is the ratio of the actual variance (estimated based on the sample design) to the variance of a simple random sample with the same number of observations. Refer to Lohr (1999) and Kish (1965).

The design effect for the proportion in table cell (r, c) is computed as

$$\begin{aligned} \text{DEFF}(\hat{P}_{rc}) &= \widehat{\text{Var}}(\hat{P}_{rc}) / \widehat{\text{Var}}_{\text{SRS}}(\hat{P}_{rc}) \\ &= \widehat{\text{Var}}(\hat{P}_{rc}) / \left\{ (1-f) \hat{P}_{rc} (1-\hat{P}_{rc}) / (n-1) \right\} \end{aligned}$$

where \hat{P}_{rc} is the estimate of the proportion in table cell (r, c) , $\widehat{\text{Var}}(\hat{P}_{rc})$ is the variance of the estimate, f is the overall sampling fraction, and n is the number of observations in the sample.

PROC SURVEYFREQ determines the value of f , the overall sampling fraction, based on the [RATE=](#) and [TOTAL=](#) options. If you do not specify either of these options, then PROC SURVEYFREQ assumes the value of f is negligible and does not use a finite population correction in the analysis, as described in the section "[Population Totals and Sampling Rates](#)." If you specify [RATE=value](#), then PROC SURVEYFREQ uses this value for the overall sampling fraction f . If you specify [TOTAL=value](#), then PROC SURVEYFREQ computes f as the ratio of the number of PSUs in the sample to the specified total.

If you specify stratum sampling rates with the [RATE=SAS-data-set](#) option, then PROC SURVEYFREQ computes stratum totals based on these stratum sampling rates and the number of sample PSUs in each stratum. The procedure sums the stratum totals to form the overall total, and computes f as the ratio of the number of sample PSUs to the overall total. Alternatively, if you specify stratum totals with the [TOTAL=SAS-data-set](#) option, then PROC SURVEYFREQ sums these totals to compute the overall total. The overall sampling fraction f is then computed as the ratio of the number of sample PSUs to the overall total.

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Table 68.2: TABLES Statement Options

Option	Description
Control Statistical Analysis	
ALPHA=	sets the level for confidence limits
CHISQ	requests Rao-Scott chi-square test
CHISQ1	requests Rao-Scott modified chi-square test
DDF=	specifies denominator DF for Wald chi-square tests
LRCHISQ	requests Rao-Scott likelihood ratio test
LRCHISQ1	requests Rao-Scott modified likelihood ratio test
TESTP=	specifies null proportions for one-way chi-square tests
WCHISQ	requests Wald chi-square test
WLLCHISQ	requests Wald log-linear chi-square test
Control Additional Table Information	
CL	displays confidence limits for percents
CLWT	displays confidence limits for weighted frequencies
COL	displays column percents and standard errors
CV	displays coefficients of variation for percents
CVWT	displays coefficients of variation for weighted frequencies
DEFF	displays design effects for percents
EXPECTED	displays expected weighted frequencies for two-way tables
ROW	displays row percents and standard errors
VAR	displays variances for percents
VARWT	displays variances for weighted frequencies
WTFREQ	displays weighted frequencies and standard errors when there is no WEIGHT statement
Control Displayed Output	
NOFREQ	suppresses display of frequency counts
NOPERCENT	suppresses display of percents
NOPRINT	suppresses display of tables but displays statistical tests
NOPARSE	suppresses display of zero rows and columns in two-way tables
NOSTD	suppresses display of standard errors for all estimates
NOTOTAL	suppresses display of row and column totals
NOWT	suppresses display of weighted frequencies