Study Title

Statistical Analysis of Butadiene Mouse Data from Hackett *et al.* (1987)

Part 1 of 2

AUTHOR: John W. Green, Ph.D., Ph.D.

STUDY COMPLETED ON: September 29, 2003

PERFORMING LABORATORY: E.I. du Pont de Nemours and Company
Haskell Laboratory for Health and Environmental Sciences
Elkton Road, P.O. Box 50
Newark, Delaware 19714-0050

for

American Chemistry Council
Olefins Panel
1308 Wilson Boulvard
Arlington, Virginia 22209

LABORATORY PROJECT ID: DuPont-13474

WORK REQUEST NUMBER: 14833

SERVICE CODE NUMBER: 1403

SPONSOR CONTRACT ID: OLF-114.0-BD-stat-DHL

CERTIFICATION

I, the undersigned, declare that this report provides an accurate evaluation of data obtained from this study.

Issued by Study Director: _____ 29-Sep-2003

John W. Green, Ph.D., Ph.D.
Principal Research Biostatistician

Date

TABLE OF CONTENTS

Page

STUDY PERSONNEL

Study Director: John W. Green, Ph.D., Ph.D.
Management: Janice L. Connell, M.S., B.A., C.I.H.

Report Preparation: Sean M. Callaghan, B.A.
Management: Nancy S. Selzer, M.S.

SUMMARY

Data reported by Hackett *et al.* (1987) were re-analyzed. Errors were found in the earlier analysis. A NOAEL could not be established by Hackett *et al*. (1987) as male fetal weight was reduced at the lowest dose administered, 40 ppm. Application of a correct statistical analysis indicates that the 40 ppm exposure concentration is a NOAEL in this study. Other endpoints previously analyzed were also analyzed by more appropriate methodology. In each instance, the NOAEL was at least as high as previously reported. For a few endpoints, a higher NOAEL was found. The overall NOAEL for this study is 40 ppm, based on the fetal weights.

INTRODUCTION

Hackett *et al.* (1987) reported results from a teratology study in mice exposed to 1,3-butadiene. Pregnant female CD-1 mice were exposed to concentrations of 0, 40, 200 or 1000 ppm 1,3-butadiene via inhalation for 6 hr/day on gestation days 6-15 and litters were harvested on gestation day 18. Assessment of maternal and developmental toxicity was made.

A critical aspect of that report was a finding of statistically significant effects on fetal weights at 18 days of gestation. Specifically, it was reported that the mean male fetal weight per dam was significantly lower in the group of pregnant females exposed to 40 ppm of 1,3-butadiene. Some criticism has been raised over the statistical methods used in reaching this conclusion.

The objectives of this new statistical analysis were (1) evaluate the statistical methodology reported by Hackett *et al.* (1987); (2) determine appropriate statistical methods for re-analysis if appropriate; (3) establish a new NOAEL if appropriate.

MATERIALS AND METHODS

A. Evaluation of Earlier Methods

Analysis of variance (ANOVA) was used in Hackett *et al.* (1987) to analyze weights. If the overall *F*-test of the ANOVA was significant, then *t*-tests were performed to determine which exposed groups differed from each other or from the control. Such an approach is referred to as *protected t*-tests. Orthogonal contrasts were used to test for presence of a dose-response trend, but no use of the results appears to have been made. This is an inappropriate statistical methodology for this study, for reasons stated in detail below.

The report states that these protected *t*-tests were "performed to determine if exposed groups were significantly different from the control group." In summary Table 8 of Hackett *et al.* (1987), which is reproduced in part below, it is clear that these *t*-tests were used not just for comparing exposed groups to the control but also to each other. Indeed, protected *t*-tests are intended for an entirely different type of experiment, where there are unrelated treatments and no group is more "important" than another; specifically, there is no control to which other groups are compared. Moreover, even for this type of experiment, protected *t*-tests are of limited value and cannot be considered definitive. Rather, this is an exploratory approach that may suggest further work for verification. The significant *F*-test indicates that some contrast of the various group means is significant. It does not imply that any pair of treatment group means differ, nor does it imply that any exposed group differs significantly from the control. The use of *t*-tests following a significant *F*-test is merely an attempt to find differences among the groups that *might* account for the *F*-test result. Further discussion of the merits and limitations of these tests can be found in Hocking (1985), Milliken and Johnson (1984) and numerous other standard references on ANOVA.

Furthermore, a protected *t*-test, such as used by Hackett *et al.* (1987), has both the potential of missing significant effects and of declaring that significant effects exist when there are none. The first can happen because the *F*-test, by its nature, protects against many differences and contrasts that are of no interest in a toxicity study. Using the *F*-test as a "gatekeeper" before further testing can be done means that it is possible that effects of interest will be missed, lost among all the comparisons being protected by this gatekeeper. On the other hand, it can happen that some two exposed groups will differ significantly (e.g., through a hormetic effect at a low concentration and a small but apparently adverse effect at a higher concentration) and this will trigger the *F*-test, when there is really no exposed group that differs significantly from the control. The use of a *t*-test unadjusted in any way for the number of comparisons being made means that, once the "gatekeeper" *F*-test is found significant for possibly the wrong reason, the number of comparisons made makes the likelihood of a false positive finding to increase beyond the nominal 5% rate claimed. It is much sounder practice to use a procedure that is designed only to compare exposed groups to control and which does not have a "gatekeeper" that is designed for a different purpose. Such a procedure is described below and was followed in the current report. Further discussion of the relative merits of various approaches to analyzing dose-response studies is given in Hochberg and Tamhane (1987).

Furthermore, it is quite common with data of this sort to use analysis of covariance (ANCOVA) rather than ANOVA, since it is well known that fetus weights are generally negatively correlated with litter size, positively correlated with dam weight, and possibly correlated with sex ratio, the proportion of males in the litter. This was known in 1987 (*e.g.*, Kempthorne, 1952).

It is possible for sample size to influence statistical conclusions. For example, the larger the sample size, the more sensitive a given statistical method becomes, other factors being unchanged. Thus, in a large experiment, it is more likely to find small effects statistically significant than in a small experiment. In the study under review, the number of litters examined varied from 18 to 21 in the various treatment groups. This is not so large, given observed variability, as to suggest false positives on this basis.

B. Method of Re-Analysis

The preferred approach to analyzing fetal weights is in the context of ANCOVA. Within this context, a test procedure designed to compare means of exposed groups to control after both are adjusted for the effects of the covariate(s) is the Dunnett-Hsu test (Hsu, 1992; Hsu and Nelson, 1998). It is designed to be used in ANCOVA (as well as in certain other situations), is applied to the treatment means after the effects of the covariates have been taken into account, uses a reduced variance estimate that also takes the covariates into account, and is specifically designed to compare means of exposed groups to the control mean. Furthermore, this test does not require a previous significant *F*-test or any preliminary test for differences among means. The Dunnett-Hsu test can be thought of as the familiar Dunnett test after adjustment for the covariates.

The analysis of mean fetal weight per dam, mean fetal weight per fetal sex per dam, mean placental weight per dam, and mean placenta weight per fetal sex per dam was analysis of covariance (ANCOVA) (Milliken and Johnson, 1984), treating concentration as a class variable and using sex ratio and litter size as covariates. Dam pre-weight, dam weight on gestation day zero, and number of male fetuses (instead of, or in addition to, litter size) were also considered as covariates, but these

proved not to contribute significantly to the models, had no effect on conclusions, and were ultimately omitted. Mean fetal weight was expected to be (and in fact, was) negatively correlated with litter size and correlated with sex ratio. Since the chemical may itself have an effect on dam weight, the covariate to be used in this regard is dam weight just prior to exposure, either pre-weight or weight on 0 dg. Chemical exposure could also have an effect on litter size, percentage of live fetuses or sex ratio, so these covariates themselves were investigated. After adjustment for those covariates that were retained, a Dunnett-Hsu test was used to compare treatment group means to the control mean. These analyses presume normally distributed, homogeneous responses. Normality was assessed through examination of the residuals from the ANCOVA. This examination was through appropriate plots and formal tests. ANCOVA is known to be robust against mild violations of the normality assumption. Where plots or formal tests indicated possible non-normality, a normalizing transformation of the response was attempted.

If no normalizing transformation was found and the non-normality was severe, a non-parametric analysis of covariance (Stephenson and Jacobson, 1988) was performed. If no normalizing in transformation was found and the non-normality was judged to be mild, then a parametric ANCOVA was performed on the grounds of greater power. However, a non-parametric analysis was also done for completeness.

Sex ratio was analyzed by ANCOVA of arc-sine square-root transformed sex ratios, using litter size and dam pre-weights as covariates. After these adjustments, treatment effects were determined from a Dunnett-Hsu comparison of treatment groups to control.

In addition to a comparison of treatment means to the control as indicated above, the ratio of treatment mean to control mean and a 95% confidence interval for this ratio were calculated, the latter using Fieller's theorem (Collett, 1991) and the variance-covariance matrix from the ANCOVA.

Maternal measures (maternal weight on 0 and 18 dg, gravid uterus weight, extragestational weight, and extragestational weight gain) were analyzed by ANOVA without covariates. Dunnett's test was used to compare treatment means to the control mean. Normality was assessed through examination of the residuals from the ANOVA. This examination was through appropriate plots and formal tests. The formal test was a Shapiro-Wilk (Shapiro and Wilk, 1965) test for normality. Variance homogeneity was assessed through Levene's test (Box, 1953) and appropriate data plots.

Reproductive measures (number of resorptions, number of early resorptions, number of late resorptions, litter size, percent of fetuses resorbed, percent of early resorptions, and percent of late resorptions) were analyzed by ANOVA without covariates. In the case of the three percentages, the analyses were conducted on the arc-sin square-root transform of the corresponding proportion. Dunnett's test was used to compare treatment means to the control mean. Counts, such as number of resorptions, are not expected to be normally distributed. However, there is sufficient variation in these counts that methods based on normality are reasonable. The analysis of the indicated percents is, in part, to guard against errors in using normal based methods on counts.

All computations were done using the SAS system, version 8.2.

RESULTS AND DISCUSSION

A. Results of Analysis:

For the fetal weight (male and female combined), male fetal weight, and female fetal weight, the NOAEL was 40 ppm as summarized in Table 1. Details of the re-analysis are given in Appendices A and B. For comparison, the original summary from Hackett *et al.* (1987) is reproduced in Table 2 below. A Shapiro-Wilk (Shapiro and Wilk, 1965) test for normality was significant for all three types of fetal weights. However, plots of the data indicated that the departure from normality was not severe and ANCOVA is known to be robust against mild violations of the normality assumption. In addition, an attempt was made to find a normalizing transformation that preserved variance homogeneity. The transforms explored were logarithm, arctangent, and a Box-Cox (Box and Cox, 1964) power transform. None of these transforms removed the significant Shapiro-Wilk result and *none altered the conclusions*. The problems with normality appear to arise from several outliers. However, there was no biological justification for omitting these observations from the analysis.

Since no normalizing transformation was found, even though the non-normality was not severe, a non-parametric analysis of covariance (Stephenson and Jacobson, 1988) was performed and is presented below in Appendix B. This yielded the same conclusions regarding male, female and combined fetal weights as the parametric ANCOVA.

Variance homogeneity was assessed through Levene's test (Box, 1953) and appropriate data plots. No heterogeneity problem was observed. For these reasons, the results from the untransformed data were accepted and are presented below.

For all these reasons, the confidence in the conclusions regarding fetal weights is greatly improved.

In addition to a comparison of treatment means to the control as indicated above, the ratio of treatment mean to control mean and a 95% confidence interval for this ratio were calculated, the latter using Fieller's theorem (Collett, 1991) and the variance-covariance matrix from the ANCOVA.

To ease understanding of the results, the percent change from the control mean of each Table 1 treatment mean is provided in Tables 3 and 4. For example, the percent change in the 200 ppm group mean from the control mean varied from 15% for fetal weight to 17% for male fetal weight, whereas for the 40 ppm group, these percentages were all under 5%. For each of placenta weight, male placenta weight and female placenta weight, the NOAEL was also 200 ppm. The observed percent change in the 200 ppm group mean from the control mean varied from 8% for placenta weight and male placenta weight to 9% for female placenta weight, whereas for the 40 ppm group, the mean varied from less than 1% below the control mean to 2% above. For sex ratio, there were no significant effects at any concentration, nor was there any indication of dose-response trend.

Maternal endpoints (maternal body weight on 0 dg (and pre-weight), maternal body weight on gestation day 18, weight of gravid uterus, extragestational weight, extra gestational weight gain) were

analyzed by ANOVA. The Shapiro-Wilk test for normality was significant for most of these endpoints. However, the plots indicated that the departure from normality was not severe and ANOVA is known to be robust against mild violations of the normality assumption. No heterogeneity problem was evident, either in Levene's test or in plots of the data. For these reasons, the results from the untransformed data were accepted and are presented below. Summary results are presented in Tables 5 and 6 and details in Appendix C. The NOAEL was determined from Dunnett's test (Hochberg and Tamhane, 1987; Miller, 1981). The NOAEL for extragestational weight gain was 40 ppm. For all other endpoints in this category, no significant effects were observed at any concentration. A summary of the new results is provided in Table 5. Table 6 reproduces the results from Hackett *et al.* (1987) concerning comparisons to control. Details are provided in Appendix C.

Reproductive endpoints (litter size, resorptions, early resorptions, late resorptions, percent resorptions, percent early resorptions, percent late resorptions, percent live fetuses) were analyzed by ANOVA rather than ANCOVA, since little reason was seen to expect these endpoints to be affected by dam pre-weight and no other covariate seemed plausible that was not confounded with these reproductive endpoints. The four percentage endpoints in this category were analyzed from an arc-sine square-root transform on the corresponding proportion. The NOAEL was determined from Dunnett's test (Hochberg and Tamhane, 1987; Miller, 1981). No significant effects were found for any of these endpoints at any concentration. In particular, the significance of early resorptions and percent early resorptions at 200 ppm reported in Hackett *et al.* (1987) was not found. However, the p-value for significance found was p=0.0803 and the mean for that group in Hackett *et al.* (1987) was smaller than that found and analyzed here. This would most likely account for the different conclusion drawn here (Table 7 compared to Table 8). Details are provided in Appendix C.

Tables 7 and 8 show that the analysis of counts and the analysis of percents agreed, both in the current analysis and in that reported by Hackett *et al.* (1987).

B. Data Issues: *Maternal and Fetal Weight*

The new analysis was done on the data as reported in Hackett, *et al*. (1987). It was not possible to obtain original raw data. There are some inconsistencies between the data reported and the tables presented in Hackett, *et al.* (1987). These are indicated under the heading of data issues. Except as noted, these inconsistencies were minor and had little or no impact on the conclusions.

There appears to be confusion in the original report about when 0 dg occurs. The reported means and standard errors in Table 6 of Hackett *et al.* (1987) for maternal body weight on 0 dg are actually for what is called PREWT in the data file. However, for extragestational weight gain, defined as extragestational weight minus body weight on 0 dg, the values used for 0 dg are from DG0 WT, not PREWT. This confusion should not affect the reported analysis of fetal weights, but is indicative of possible problems in the original report.

Also, calculations for mean maternal body weight PREWT from data presented in this report differ slightly in the high treatment group from those reported by Hackett *et al.* (1987) and the standard error for the control group also differs slightly. Similarly, the mean and standard error reported for the high treatment group at 18 days post gestation (actually labeled DG20 WT in the data file) calculated from

these data differ slightly from those in Table 6 of Hackett *et al*. (1987). Their table and the corresponding table based on currently analyzed data are given in Tables 5 and 6, below. A possible explanation for these differences is availability to the original statistician of raw data to more significant figures than reported in Hackett *et al.* (1987). A second possibility is a data entry error. These data have been checked repeatedly and subjected to some diagnostics and cross-checking. The quality of the printed report copy is poor in places (digits 0, 3, 5, and especially 6 and 8 appear similar in some cases). The differences in reported means and standard errors are quite small and should have minimal impact on the new analysis, except as noted below.

Small differences occurred in mean fetal weights and mean placental weights. The differences are quite small and unlikely to affect the analysis. To allow appreciation of these differences, Tables 1 and 2 below reproduce Table 8 of Hackett *et al.* (1987) using the data as currently analyzed and as reported by Hackett, *et al.* (1987). Also, raw data files as currently analyzed are reported in Appendices D and E, so that direct comparisons to the original can be made. An electronic file of the data as currently analyzed is also available.

C. Data Issues: *Sex Ratio*

There is one instance in the high concentration group where the sex of a fetus is reported even though that fetus was resorbed at an early stage. In the judgment of reproductive toxicologists at Haskell Laboratory, such a sex determination is unlikely to have been made and a data entry error is suspected. This one sex determination will be ignored in the current analysis.

There are apparent minor discrepancies between the data reported and the tables and conclusions with regard to sex ratio. The sex ratios reported are not in agreement with the reported data, and these differences cannot be ascribed to the quality of the printed report. It is possible that some unusual weighting scheme or some covariate was used in obtaining the reported values, but nothing appears in the report regarding such an adjustment and no such adjustment suggests itself. These discrepancies should have minimal impact on the analysis. Tables 1 and 2 reproduce Table 8 of Hackett *et al.* (1987) using the sex ratio data as currently analyzed and as reported by Hackett *et al.* (1987).

D. Data Issues: *Reproductive Data*

The mean number of early resorptions per litter reported in Table 7 of Hackett *et al.* (1987) for the 200 ppm treatment group is higher than can be derived from the raw data provided. Also, the mean number of late resorptions per litter in that same group is lower than can be derived from the data presented. These differences are shown in Tables 7 and 8 below. The likely explanation is that one late resorption has been mis-reported as early or one early resorption has been mis-analyzed as late. Correspondingly, the percent of early and late resorptions show the same pattern. While the differences are relatively small, there may be an effect on the conclusions on resorptions. This point is discussed further under the heading A of "Results of Analysis." They should have no impact on the analysis of fetal weights.

CONCLUSIONS

This new statistical analysis showed that: (1) Inconsistencies were found between the data reported in Hackett *et al.* (1987) and the summary results also reported there. The inconsistencies were associated with the presentation and calculation of mean values for maternal and fetal body weights, sex ratio, and reproductive data (resorptions). They had no significant impact on the overall study conclusions. (2) The statistical methodology reported by Hackett *et al.* (1987) was not appropriate for the nature of the study. (3) When more appropriate methods are used, there is no statistically significant effect in any fetal weight endpoint at 40 ppm. Instead, the NOAEL for each of the three fetal weights (male, female, total) is 40 ppm. (4) The NOAEL for the entire study was 40 ppm.

REFERENCES

Box, G. E. P. (1953); Non-normality and tests on variances, Biometrika 40, 318-335.

Box, G.E.P., Cox, D. R. (1964); An Analysis of Transformations, J. Royal Statistical Society B-26, 211-252.

Collett, D. (1991); Modelling Binary Data, Chapman and Hall, London, pp 99-100.

Hochberg, Y.; Tamhane, A.C. (1987); Multiple comparison procedures, Wiley, New York, pp 70-71.

Hackett, P. K., Silkov, M. R. Mast, T. J., Brown, M. G., Buschbom, R. L., Clark, M. L., Decker, J. R., Evanoff, J. J., Roomereim, R. L., Rowe, S. E., and Westerberg, R. B., (1987); Inhalation developmental toxicology studies: teratology study of 1,3-butadiene in mice, Prepared for the National Institute of Environmental Health Sciences, National Toxicology Program, Pacific Northwest Laboratory, Battelle Memorial Institute, Final Report No. NIH-401-ES-40131, Richland, WA, unpublished.

Hocking, R. R. (1985); The Analysis of Linear Models, Brooks-Cole, Monterey, CA.

Hsu, J. C. (1992); The Factor Analytic Approach to Simultaneous Confidence Interval for Multiple Comparisons with the Best, Journal of Computational Statistics and Graphics 1, 151-168.

Hsu, J. C.; Nelson, B. (1998); Multiple Comparisons in the General Linear Model, Journal of Computational Statistics and Graphics 7(1), 23-41.

Kempthorne, O. (1952); Design and Analysis of Experiments, Wiley, New York.

Miller, R.G. (1981), Simultaneous statistical inference, second edition, Springer-Verlag, New York, pp 88-89.

Milliken, G. A.; Johnson, D. F. (1984); Analysis of Messy Data Volume I: Designed Experiments, Lifetime Learning Publications, London.

SAS (1999); SAS Version 8.2, SAS Institute, Cary, North Carolina.

Shapiro, S. S.; Wilk, M. B. (1965); An analysis of variance test for normality (complete samples), Biometrika 52, 591-611.

Stephenson, W. R.; Jacobson, D. (1988); A Comparison of Nonparametric Analysis of Covariance Techniques, Communications in Statistics - Simulations 17. 17(2), 451-461.

TABLES

Summary Of Results

TABLE 1
FETAL AND PLACENTAL MEASURES AS RE-ANALYZED

[Mean (Standard Error)] for Mouse Litters Exposed to 1,3 Butadiene(As Analyzed)
Corresponds to Table 8 of Hackett *et al.* (1987)

	Concentration 0		40		200		1000	
LITTERS	18		19		21		20	
FETUSES	211		237		259		244	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
FETAL WT	1.350	(0.028)	1.283	(0.013)	1.126*	(0.021)	1.038*	(0.025)
FEM FETAL WT	1.309	(0.021)	1.253	(0.012)	1.100*	(0.022)	1.015*	(0.026)
MAL FETAL WT	1.382	(0.033)	1.307	(0.016)	1.132*	(0.016)	1.060*	(0.024)
SEXRATIO	51.55	(3.866)	48.66	(2.947)	51.44	(3.667)	51.80	(3.310)
PLACENTA WT	86.99	(2.960)	85.30	(2.283)	78.65	(3.243)	73.06*	(1.826)
FEM PLACENTA WT	83.15	(3.023)	80.89	(2.474)	74.33	(3.540)	70.84*	(2.284)
MAL PLACENTA WT	89.58	(2.995)	89.71	(2.263)	80.27	(2.324)	74.64*	(1.785)

* INDICATES STATISTICALLY DIFFERENT FROM CONTROL

NOTE: Additional significant figures used to avoid misinterpretation due to rounding. For example, mean placenta weight at 200 ppm rounds to 78.7, making the difference from the earlier report (78.6) appear larger than it is.

TABLE 2
FETAL AND PLACENTAL MEASURES AS REPORTED BY HACKETT *ET AL*. (1987)

[Mean (Standard Error)] for Mouse Litters Exposed to 1,3 Butadiene (As Reported by Hackett *et al*.(1987))
Corresponds to Table 8 of Hackett *et al*.(1987)

	Concentration 0		40		200		1000	
LITTERS	18		19		21		20	
FETUSES	211		237		259		244	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
FETAL WT	1.34	(0.03)	1.28	(0.01)	1.13*	(0.02)	1.04*	(0.03)
FEM FETAL WT	1.30	(0.02)	1.25	(0.01)	1.10*	(0.02)	1.02*	(0.03)
MAL FETAL WT	1.38	(0.03)	1.31*	(0.02)	1.13*	(0.02)	1.06*	(0.02)
SEXRATIO	51.6	(3.91)	49.8	(3.06)	51.5	(3.68)	51.8	(3.29)
PLACENTA WT	86.8	(2.99)	85.4	(2.29)	78.6*	(3.24)	72.6*	(1.88)
FEM PLACENTA WT	83.1	(3.03)	80.9	(2.46)	74.7	(3.52)	70.1*	(2.33)
MAL PLACENTA WT	89.3	(3.05)	89.5	(2.27)	80.1*	(2.35)	74.5*	(1.81)

* INDICATES STATISTICALLY DIFFERENT FROM CONTROL

TABLE 3
FETAL WEIGHT AS PERCENT OF CONTROL

Treatment Means As Percent of Control, with 95% Confidence Bounds

COVARIATES= FETUSES SEXRATIO, RESPONSE=FETAL WEIGHT

CONC	RATIO	LOWER BOUND	UPPER BOUND
0	100.0	.	.
40	96.1	91.9	100.5
200	84.1	79.8	88.2
1000	77.3	72.9	81.5

COVARIATES= FETUSES SEXRATIO, RESPONSE=FEMALE FETAL WEIGHT

CONC	RATIO	LOWER BOUND	UPPER BOUND
0	100.0	.	.
40	96.5	92.2	100.9
200	84.6	80.3	88.8
1000	77.9	73.4	82.2

COVARIATES= FETUSES SEXRATIO, RESPONSE=MALE FETAL WEIGHT

CONC	RATIO	LOWER BOUND	UPPER BOUND
0	100.0	.	.
40	95.7	91.3	100.1
200	82.6	77.6	87.2
1000	77.0	72.0	81.5

TABLE 4
PLACENTA WEIGHT AS PERCENT OF CONTROL

Treatment Means As Percent of Control, with 95% Confidence Bounds

COVARIATES= FETUSES SEXRATIO, RESPONSE=PLACENA WEIGHT

CONC	RATIO	LOWER BOUND	UPPER BOUND
0	100.0	.	.
40	100.5	93.6	107.9
200	92.0	85.2	98.9
1000	85.2	78.2	92.0

COVARIATES= FETUSES SEXRATIO, RESPONSE=FEMALE PLACENA WEIGHT

CONC	RATIO	LOWER BOUND	UPPER BOUND
0	100.0	.	.
40	99.4	91.3	108.0
200	91.3	83.4	99.3
1000	86.5	78.3	94.4

COVARIATES= FETUSES SEXRATIO, RESPONSE=MALE PLACENA WEIGHT

CONC	RATIO	LOWER BOUND	UPPER BOUND
0	100.0	.	.
40	102.1	95.4	109.3
200	91.6	84.3	98.4
1000	84.2	77.0	90.9

TABLE 5
MATERNAL MEASURES AS RE-ANALYZED

[Mean (Standard Error)] for Mouse Litters Exposed to
1,3 Butadiene (As Analyzed)
Corresponds to Table 6 of Hackett *et al.* (1987)

	Concentration 0		40		200		1000	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
PREWT	28.41	(0.279)	28.26	(0.320)	28.17	(0.316)	28.46	(0.318)
WT0DG	27.91	(0.252)	28.11	(0.243)	28.32	(0.288)	28.26	(0.276)
WT18DG	54.85	(1.206)	55.37	(1.091)	52.52	(1.013)	50.84	(0.867)
GRAV UTERUS WT	19.34	(1.001)	20.29	(0.800)	18.01	(0.866)	16.78	(0.679)
XTRA GEST WT	35.51	(0.462)	35.08	(0.443)	34.51	(0.465)	34.06	(0.397)
XTRA GEST GAIN	7.60	(0.485)	6.98	(0.379)	6.19*	(0.383)	5.80*	(0.296)

* INDICATES STATISTICALLY DIFFERENT FROM CONTROL

NOTE: Additional significant figures used to avoid misinterpretation due to rounding.

TABLE 6
MATERNAL MEASURES AS REPORTED BY HACKETT *ET AL.* (1987)

[Mean (Standard Error)] for Mouse Litters Exposed to
1,3 Butadiene (As reported by Hackett *et al.* (1987))
Corresponds to Table 6 of Hackett *et al.* (1987)

	Concentration 0		40		200		1000	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
WT0DG+++	28.4	(0.25)	28.3	(0.32)	28.2	(0.32)	28.4	(0.32)
WT18DG	54.9	(1.21)	55.4	(1.09)	52.5	(1.01)	50.8*	(0.87)
GRAV UTERUS WT	19.3	(1.00)	20.3	(0.80)	18.0	(0.87)	16.7*	(0.67)
XTRA GEST WT	35.5	(0.48)	35.1	(0.44)	34.5	(0.46)	34.1*	(0.36)
XTRA GEST GAIN	7.60	(0.48)	6.99	(0.38)	6.20*	(0.38)	5.91*	(0.28)

* INDICATES STATISTICALLY DIFFERENT FROM CONTROL
+++ Pre-weight was evidently mislabeled in Hackett as WT0DG.

TABLE 7
REPRODUCTIVE MEASURES AS RE-ANALYZED

[Mean (Standard Error)] for Mouse Litters Exposed to 1,3 Butadiene
(As Analyzed)
Corresponds to Table 7 of Hackett *et al.* (1987)

	Concentration							
	0		40		200		1000	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
RESORP	1.056	(0.221)	0.842	(0.206)	0.667	(0.199)	0.900	(0.191)
EARLY RES	1.000	(0.229)	0.579	(0.207)	0.476	(0.148)	0.750	(0.160)
LATE RES	0.056	(0.056)	0.263	(0.104)	0.190	(0.112)	0.150	(0.082)
FETUSES	11.72	(0.666)	12.47	(0.515)	12.33	(0.618)	12.20	(0.511)
PCT RESORPTNS	9.749	(2.828)	6.728	(1.944)	4.801	(1.442)	7.251	(1.594)
PCT EARLY RES	9.352	(2.877)	4.958	(2.000)	3.415	(1.082)	6.169	(1.352)
PCT LATE RES	0.397	(0.397)	1.770	(0.702)	1.387	(0.808)	1.082	(0.603)
PCT LIVE FETUS	90.25	(2.828)	93.27	(1.944)	95.20	(1.442)	92.75	(1.594)

* INDICATES STATISTICALLY DIFFERENT FROM CONTROL

NOTE: Additional significant figures used to avoid misinterpretation due to rounding.

TABLE 8
REPRODUCTIVE MEASURES AS REPORTED BY HACKETT *ET AL.* (1987)

[Mean (Standard Error)] for Mouse Litters Exposed to 1,3 Butadiene
(As Reported by Hackett *et al.* (1987))
Corresponds to Table 7 of Hackett *et al.* (1987)

	Concentration							
	0		40		200		1000	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
RESORP	1.06	(0.22)	0.84	(0.21)	0.67	(0.20)	0.900	(0.19)
EARLY RES	1.00	(0.23)	0.58	(0.21)	0.43*	(0.13)	0.750	(0.16)
LATE RES	0.06	(0.06)	0.26	(0.10)	0.24	(0.12)	0.15	(0.08)
FETUSES	11.7	(0.66)	12.5	(0.52)	12.3	(0.62)	12.2	(0.51)
PCT RESORPTNS	9.75	(2.83)	6.73	(1.94)	4.80	(1.44)	7.25	(1.59)
PCT EARLY RES	9.35	(2.88)	4.96	(2.00)	3.07*	(0.96)	6.17	(1.35)
PCT LATE RES	0.40	(0.40)	1.77	(0.70)	1.73	(0.85)	1.08	(0.60)
PCT LIVE FETUS	90.3	(2.83)	93.3	(1.94)	95.2	(1.44)	92.8	(1.59)

* INDICATES STATISTICALLY DIFFERENT FROM CONTROL

Study Title

Statistical Analysis of Butadiene Mouse Data from Hackett *et al.* (1987)

Part 2 of 2

AUTHOR: John W. Green, Ph.D., Ph.D.

STUDY COMPLETED ON: August 8, 2003

PERFORMING LABORATORY: E.I. du Pont de Nemours and Company
Haskell Laboratory for Health and Environmental Sciences
Elkton Road, P.O. Box 50
Newark, Delaware 19714-0050
For
American Chemistry Council
Olefins Panel
1308 Wilson Boulvard
Arlington, Virginia 22209

LABORATORY PROJECT ID: DuPont-13474

WORK REQUEST NUMBER: 14833

SERVICE CODE NUMBER: 1403

SPONSOR CONTRACT ID: OLF-114.0-BD-stat-DHL

APPENDICES

APPENDIX A

ANCOVA Results

ANCOVA OF FETAL WEIGHTS

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	72	48.13	<.0001	.007936391	1.14588	0.57142
fetuses	1	72	18.61	<.0001	.007936391	0.14771	0.57142
sexratio	1	72	2.12	0.1498	.007936391	0.01682	0.57142

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
1.33148	0.57142	1.90290	0.69971

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.05182	0.02954	72	-1.75	0.0837	Dunnett-Hsu	0.1968
Conc	200	0	-0.2137	0.02872	72	-7.44	<.0001	Dunnett-Hsu	<.0001
Conc	1000	0	-0.3043	0.02901	72	-10.49	<.0001	Dunnett-Hsu	<.0001

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	1.3415	0.02109	72	63.60	<.0001
Conc	40	1.2897	0.02053	72	62.81	<.0001
Conc	200	1.1278	0.01945	72	57.98	<.0001
Conc	1000	1.0371	0.01993	72	52.04	<.0001

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	1.2000	0.06169	72	19.45	<.0001
Conc	0	0.3043	0.02901	72	10.49	<.0001
Conc	40	0.2525	0.02865	72	8.82	<.0001
Conc	200	0.09066	0.02784	72	3.26	0.0017
Conc	1000	0	.	.	.	.
fetuses	_	-0.01748	0.004052	72	-4.31	<.0001
sexratio	_	0.09874	0.06783	72	1.46	0.1498

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.08614546	Variance	0.00742104
Skewness	-0.1752236	Kurtosis	1.17962489
Uncorrected SS	0.57142013	Corrected SS	0.57142013
Coeff Variation	.	Std Error Mean	0.00975405

Basic Statistical Measures

Location		Variability	
Mean	0.000000	Std Deviation	0.08615
Median	0.008217	Variance	0.00742
Mode	.	Range	0.50595
		Interquartile Range	0.08041

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	2	Pr >= |M|	0.7343
Signed Rank	S	80.5	Pr >= |S|	0.6912

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
Tests for Normality

Test		--Statistic---		-----p Value------
Shapiro-Wilk	W	0.973025	Pr < W	0.0964
Kolmogorov-Smirnov	D	0.09365	Pr > D	0.0894
Cramer-von Mises	W-Sq	0.151339	Pr > W-Sq	0.0228
Anderson-Darling	A-Sq	0.86512	Pr > A-Sq	0.0249

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.26544010
99%	0.26544010
95%	0.14728662
90%	0.09380292
75% Q3	0.04299574
50% Median	0.00821746
25% Q1	-0.03741290
10%	-0.12187342

SHAPIRO-WILK TEST OF NORMALITY OF FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Quantiles (Definition 5)

Quantile	Estimate
5%	-0.16643340
1%	-0.24051154
0% Min	-0.24051154

Extreme Observations

------Lowest------		------Highest-----	
Value	Obs	Value	Obs
-0.240512	71	0.113330	56
-0.200874	30	0.147287	17
-0.169120	64	0.158573	3
-0.166433	61	0.180762	55
-0.165692	5	0.265440	75

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

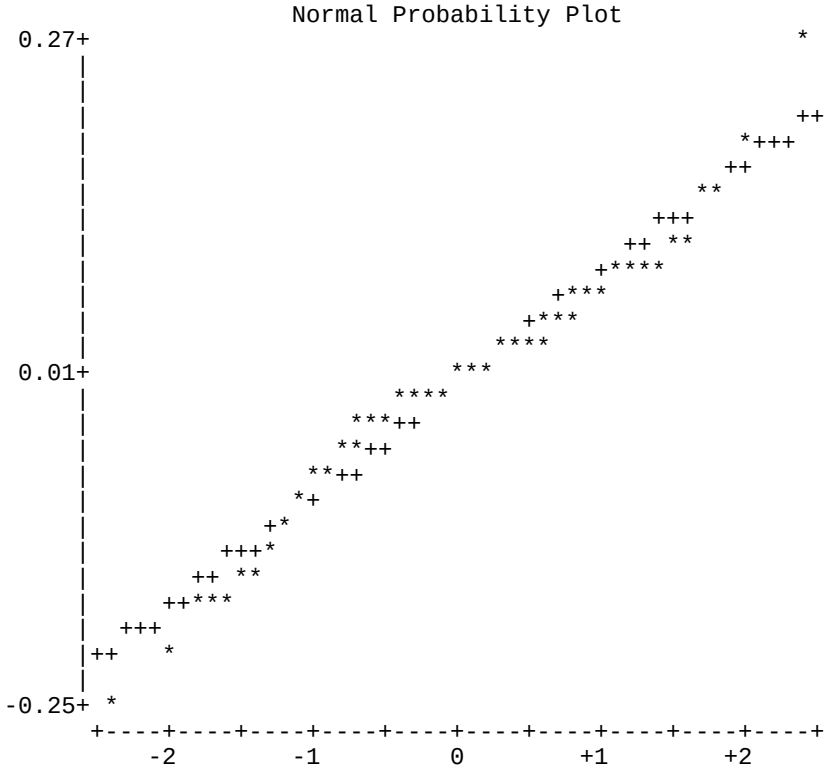
Stem	Leaf	#	Boxplot
26	5	1	0
24			
22			
20			
18	1	1	0
16			
14	79	2	|
12			|
10	33	2	|
8	15044	5	|
6	58333	5	|
4	33266	5	+-----+
2	03366890278	11	| |
0	779444588	9	*--+--*
-0	975421105210	12	| |
-2	733118	6	+-----+
-4	8207	4	|
-6	6503	4	|
-8	2	1	|
-10	90	2	|
-12	2	1	|
-14	50	2	|
-16	966	3	0
-18			
-20	1	1	0
-22			
-24	1	1	0

----+----+----+----+
Multiply Stem.Leaf by 10**-2

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
POSSIBLE OUTLIERS FROM ANOVA ON FETAL WEIGHT
FULL DATA SET

Obs	Conc	ftlwt	Pred	Resid	LB	UB
1	0	1.1865	1.35219	-0.16569	-0.15803	0.16361
2	40	1.19616667	1.39704	-0.20087	-0.15803	0.16361
3	200	1.4365	1.25574	0.18076	-0.15803	0.16361
4	1000	0.88618182	1.05262	-0.16643	-0.15803	0.16361
5	1000	0.84964286	1.01876	-0.16912	-0.15803	0.16361
6	1000	0.8242	1.06471	-0.24051	-0.15803	0.16361
7	1000	1.3499	1.08446	0.26544	-0.15803	0.16361

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LEVENE TEST FOR FETAL WEIGHT
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.95258	0.41993

1,3-Butadiene RESPONSE=FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LEVENE TEST FOR FETAL WEIGHT
FULL DATA SET

NOTE
By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	72	44.15	<.0001	.007813820	1.03490	0.56260
fetuses	1	72	11.02	0.0014	.007813820	0.08607	0.56260
sexratio	1	72	0.03	0.8570	.007813820	0.00026	0.56260

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
1.14753	0.56260	1.71012	0.67102

1,3-Butadiene RESPONSE=FEMALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

1,3-Butadiene RESPONSE=FEMALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.04558	0.02931	72	-1.56	0.1243	Dunnett-Hsu	0.2809
Conc	200	0	-0.2010	0.02850	72	-7.05	<.0001	Dunnett-Hsu	<.0001
Conc	1000	0	-0.2880	0.02878	72	-10.00	<.0001	Dunnett-Hsu	<.0001

1,3-Butadiene RESPONSE=FEMALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	1.3030	0.02093	72	62.26	<.0001
Conc	40	1.2574	0.02037	72	61.72	<.0001
Conc	200	1.1020	0.01930	72	57.09	<.0001
Conc	1000	1.0150	0.01978	72	51.33	<.0001

1,3-Butadiene RESPONSE=FEMALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	1.1715	0.06122	72	19.14	<.0001
Conc	0	0.2880	0.02878	72	10.00	<.0001
Conc	40	0.2424	0.02842	72	8.53	<.0001
Conc	200	0.08698	0.02763	72	3.15	0.0024
Conc	1000	0	.	.	.	.
fetuses	_	-0.01335	0.004021	72	-3.32	0.0014
sexratio	_	0.01217	0.06730	72	0.18	0.8570

1,3-Butadiene RESPONSE=FEMALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF FEMALE FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.08547765	Variance	0.00730643
Skewness	0.09349985	Kurtosis	1.47789881
Uncorrected SS	0.56259501	Corrected SS	0.56259501
Coeff Variation	.	Std Error Mean	0.00967844

Basic Statistical Measures

Location		Variability	
Mean	0.000000	Std Deviation	0.08548
Median	0.000994	Variance	0.00731
Mode	.	Range	0.51640
		Interquartile Range	0.09309

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	0	Pr >= |M|	1.0000
Signed Rank	S	9.5	Pr >= |S|	0.9626

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.978009	Pr < W	0.1961
Kolmogorov-Smirnov	D	0.082122	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.077761	Pr > W-Sq	0.2249
Anderson-Darling	A-Sq	0.530251	Pr > A-Sq	0.1780

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.279651588
99%	0.279651588
95%	0.133136098
90%	0.096761650
75% Q3	0.051304273
50% Median	0.000994262
25% Q1	-0.041790331
10%	-0.103481734

1,3-Butadiene RESPONSE=FEMALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF FEMALE FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Quantiles (Definition 5)

Quantile	Estimate
5%	-0.172889326
1%	-0.236748256
0% Min	-0.236748256

Extreme Observations

------Lowest------		------Highest-----	
Value	Obs	Value	Obs
-0.236748	71	0.113750	67
-0.199900	61	0.133136	17
-0.174234	30	0.167116	10
-0.172889	64	0.204710	55
-0.122721	46	0.279652	75

1,3-Butadiene RESPONSE=FEMALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF FEMALE FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

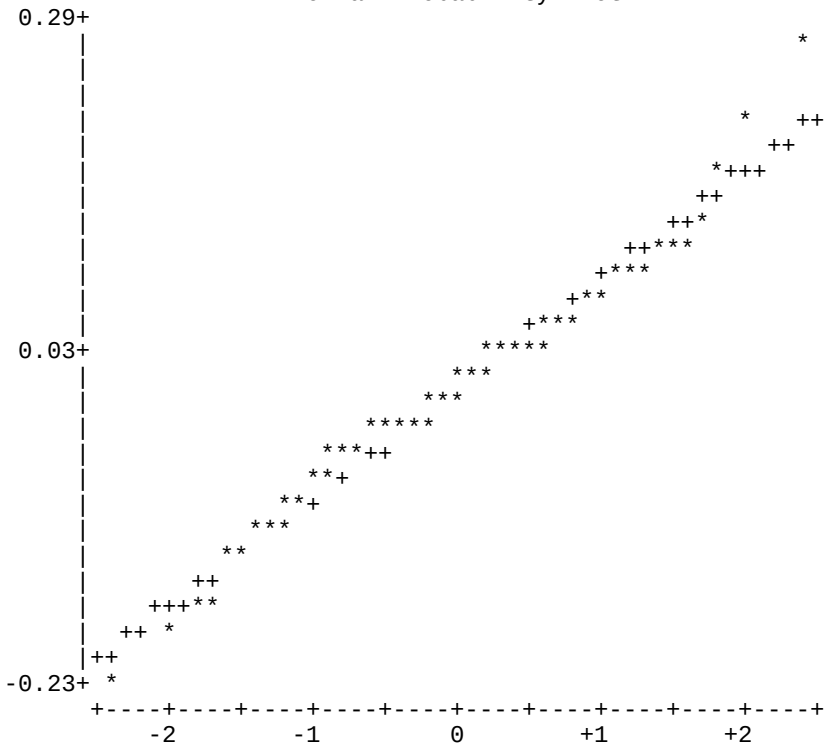
Stem	Leaf	#	Boxplot
28	0	1	0
26			
24			
22			
20	5	1	0
18			
16	7	1	|
14			|
12	3	1	|
10	044	3	|
8	8917	4	|
6	3378	4	|
4	4013589	7	+-----+
2	0489023578	10	| |
0	2359014	7	*--+--*
-0	7510960	7	| |
-2	997520009661	12	| |
-4	543962	6	+-----+
-6	582	3	|
-8	55	2	|
-10	933	3	|
-12	32	2	|
-14			|
-16	43	2	|
-18			
-20	0	1	0
-22	7	1	0

Multiply Stem.Leaf by 10**-2

1,3-Butadiene RESPONSE=FEMALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF FEMALE FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



1,3-Butadiene RESPONSE=FEMALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
POSSIBLE OUTLIERS FROM ANOVA ON FEMALE FETAL WEIGHT
FULL DATA SET

Obs	Conc	femwt	Pred	Resid	LB	UB
1	200	1.4365	1.23179	0.20471	-0.18143	0.19095
2	1000	0.83033333	1.03023	-0.19990	-0.18143	0.19095
3	1000	0.80616667	1.04291	-0.23675	-0.18143	0.19095
4	1000	1.325	1.04535	0.27965	-0.18143	0.19095

1,3-Butadiene RESPONSE=FEMALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LEVENE TEST FOR FEMALE FETAL WEIGHT
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	1.67572	0.17982

NOTE
By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	71	47.97	<.0001	.008671502	1.24785	0.61568
fetuses	1	71	7.52	0.0077	.008671502	0.06524	0.61568
sexratio	1	71	5.05	0.0278	.008671502	0.04375	0.61568

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
1.41056	0.61568	2.02624	0.69615

1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.05950	0.03089	71	-1.93	0.0581	Dunnett-Hsu	0.1412
Conc	200	0	-0.2393	0.03086	71	-7.75	<.0001	Dunnett-Hsu	<.0001
Conc	1000	0	-0.3162	0.03035	71	-10.42	<.0001	Dunnett-Hsu	<.0001

1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	1.3739	0.02214	71	62.05	<.0001
Conc	40	1.3144	0.02148	71	61.19	<.0001
Conc	200	1.1347	0.02110	71	53.77	<.0001
Conc	1000	1.0577	0.02083	71	50.77	<.0001

1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	1.1319	0.07917	71	14.30	<.0001
Conc	0	0.3162	0.03035	71	10.42	<.0001
Conc	40	0.2567	0.02995	71	8.57	<.0001
Conc	200	0.07697	0.02969	71	2.59	0.0116
Conc	1000	0	.	.	.	.
fetuses	_	-0.01334	0.004864	71	-2.74	0.0077
sexratio	_	0.1750	0.07792	71	2.25	0.0278

1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF MALE FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	77	Sum Weights	77
Mean	0	Sum Observations	0
Std Deviation	0.0900056	Variance	0.00810101
Skewness	-0.0868828	Kurtosis	1.57446279
Uncorrected SS	0.61567661	Corrected SS	0.61567661
Coeff Variation	.	Std Error Mean	0.01025709

Basic Statistical Measures

Location		Variability	
Mean	0.000000	Std Deviation	0.09001
Median	0.015293	Variance	0.00810
Mode	.	Range	0.49043
		Interquartile Range	0.08371

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	6.5	Pr >= |M|	0.1711
Signed Rank	S	138.5	Pr >= |S|	0.4855

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.939113	Pr < W	0.0011
Kolmogorov-Smirnov	D	0.119721	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.295864	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	1.716972	Pr > A-Sq	<0.0050

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.2731897
99%	0.2731897
95%	0.1248357
90%	0.0828472
75% Q3	0.0396063
50% Median	0.0152926
25% Q1	-0.0441061
10%	-0.1236363

1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF MALE FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Quantiles (Definition 5)

Quantile	Estimate
5%	-0.1913034
1%	-0.2172453
0% Min	-0.2172453

Extreme Observations

------Lowest------		------Highest-----	
Value	Obs	Value	Obs
-0.217245	71	0.102909	1
-0.205056	9	0.124836	56
-0.202145	5	0.151839	17
-0.191303	64	0.262997	75
-0.169446	30	0.273190	3

Missing Values

Missing Value	Count	-----Percent Of----- All Obs	Missing Obs
.	1	1.28	100.00

1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF MALE FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

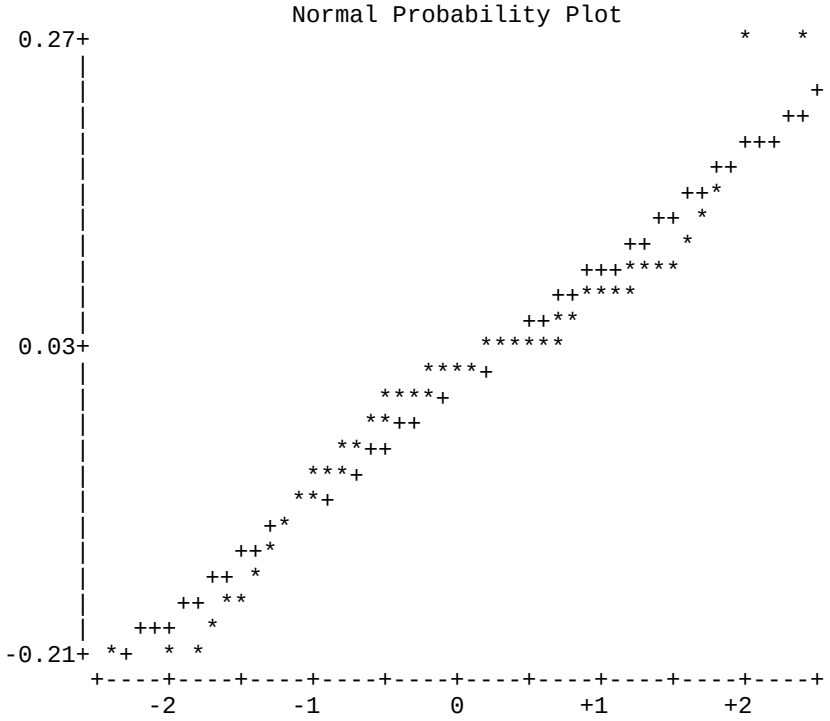
Stem	Leaf	#	Boxplot
26	33	2	0
24			
22			
20			
18			
16			
14	2	1	|
12	5	1	|
10	3	1	|
8	01346	5	|
6	33582	5	|
4	03019	5	+-----+
2	56666902335799	14	| |
0	11894456799	11	*--+--*
-0	97288652	8	| |
-2	9720	4	| |
-4	9364	4	+-----+
-6	6061	4	|
-8	44	2	|
-10	22	2	|
-12	4	1	|
-14	8	1	|
-16	96	2	|
-18	1	1	0
-20	752	3	0

Multiply Stem.Leaf by 10**-2

1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF MALE FETAL WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
POSSIBLE OUTLIERS FROM ANOVA ON MALE FETAL WEIGHT
FULL DATA SET

Obs	Conc	malewt	Pred	Resid	LB	UB
1	0	1.798	1.52481	0.27319	-0.16967	0.16517
2	0	1.188	1.39015	-0.20215	-0.16967	0.16517
3	0	1.1235	1.32856	-0.20506	-0.16967	0.16517
4	200	.	1.18218	.	-0.16967	0.16517
5	1000	0.86633333	1.05764	-0.19130	-0.16967	0.16517
6	1000	0.85125	1.06850	-0.21725	-0.16967	0.16517
7	1000	1.3665	1.10350	0.26300	-0.16967	0.16517

1,3-Butadiene RESPONSE=MALE FETAL WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LEVENE TEST FOR MALE FETAL WEIGHT
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.21664	0.88455

NOTE
By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

ANCOVA of ARCSIN Square-Root Transform of SEXRATIO=SEXRAS

1,3-Butadiene RESPONSE=SEXRAS
Arc-Sin Square-Root Transform with Covariate = FETUSES PREWT

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	72	0.17	0.9145	0.030093	0.015593	2.16671
fetuses	1	72	1.44	0.2342	0.030093	0.043319	2.16671
PREWT	1	72	1.95	0.1671	0.030093	0.058610	2.16671

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
0.12687	2.16671	2.29358	0.055316

1,3-Butadiene RESPONSE=SEXRAS
Arc-Sin Square-Root Transform with Covariate = FETUSES PREWT
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

1,3-Butadiene RESPONSE=SEXRAS
Arc-Sin Square-Root Transform with Covariate = FETUSES PREWT
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.03811	0.05743	72	-0.66	0.5091	Dunnett-Hsu	0.8411
Conc	200	0	-0.01717	0.05607	72	-0.31	0.7603	Dunnett-Hsu	0.9798
Conc	1000	0	-0.00630	0.05649	72	-0.11	0.9116	Dunnett-Hsu	0.9990

1,3-Butadiene RESPONSE=SEXRAS
Arc-Sin Square-Root Transform with Covariate = FETUSES PREWT
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	0.8070	0.04109	72	19.64	<.0001
Conc	40	0.7689	0.03987	72	19.28	<.0001
Conc	200	0.7899	0.03794	72	20.82	<.0001
Conc	1000	0.8007	0.03884	72	20.62	<.0001

1,3-Butadiene RESPONSE=SEXRAS
Arc-Sin Square-Root Transform with Covariate = FETUSES PREWT
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	0.1016	0.4241	72	0.24	0.8113
Conc	0	0.006297	0.05649	72	0.11	0.9116
Conc	40	-0.03181	0.05570	72	-0.57	0.5697
Conc	200	-0.01088	0.05439	72	-0.20	0.8420
Conc	1000	0	.	.	.	.
fetuses	_	0.009480	0.007901	72	1.20	0.2342
PREWT	_	0.02060	0.01476	72	1.40	0.1671

1,3-Butadiene RESPONSE=SEXRAS
Arc-Sin Square-Root Transform with Covariate = FETUSES PREWT
SHAPIRO-WILK TEST OF NORMALITY OF SEXRAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.16774711	Variance	0.02813909
Skewness	-0.7605295	Kurtosis	3.28988725
Uncorrected SS	2.16671006	Corrected SS	2.16671006
Coeff Variation	.	Std Error Mean	0.01899362

Basic Statistical Measures

Location		Variability	
Mean	0.000000	Std Deviation	0.16775
Median	0.001109	Variance	0.02814
Mode	.	Range	1.14126
		Interquartile Range	0.18501

Tests for Location: Mu0=0

Test	-Statistic-		p Value-	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	0	Pr >= |M|	1.0000
Signed Rank	S	67.5	Pr >= |S|	0.7391

Tests for Normality

Test	--Statistic---		p Value-	
Shapiro-Wilk	W	0.954259	Pr < W	0.0070
Kolmogorov-Smirnov	D	0.084727	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.102183	Pr > W-Sq	0.1045
Anderson-Darling	A-Sq	0.658346	Pr > A-Sq	0.0860

1,3-Butadiene RESPONSE=SEXRAS
Arc-Sin Square-Root Transform with Covariate = FETUSES PREWT
SHAPIRO-WILK TEST OF NORMALITY OF SEXRAS
FULL DATA SET

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.44231661
99%	0.44231661
95%	0.26591226
90%	0.19756356
75% Q3	0.09643068
50% Median	0.00110864
25% Q1	-0.08857785
10%	-0.18637328

The UNIVARIATE Procedure
Variable: Resid

Quantiles (Definition 5)

Quantile	Estimate
5%	-0.31930081
1%	-0.69894415
0% Min	-0.69894415

Extreme Observations

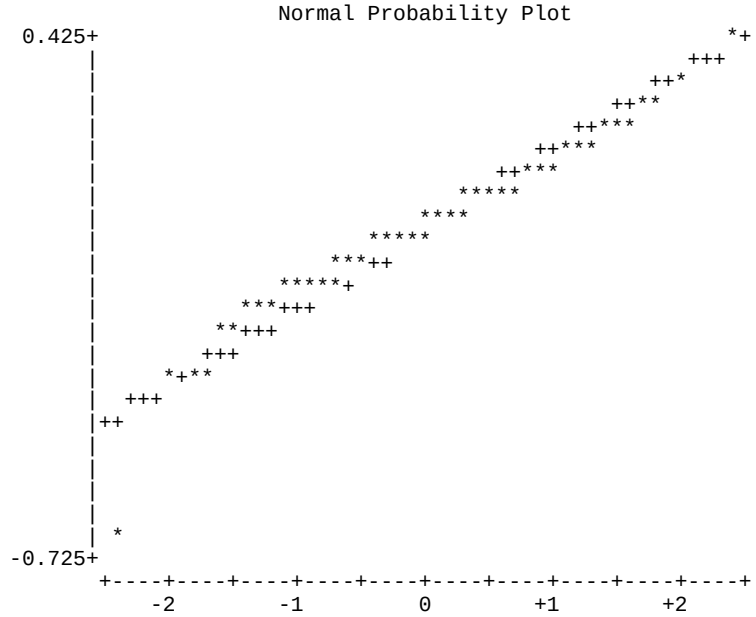
-Lowest----		-Highest	
Value	Obs	Value	Obs
-0.698944	55	0.233839	3
-0.326973	36	0.265912	49
-0.321664	77	0.287253	72
-0.319301	16	0.329544	58
-0.248230	21	0.442317	11

```
Stem Leaf                     #             Boxplot
   4 4                        1                0
   3                                           |
   3 3                        1                |
   2 79                       2                |
   2 0133                     4                |
   1 899                      3                |
   1 000112224                9             ++
   0 55556677788899          14             |     |
   0 01124                    5             *--+--*
  -0 4433333222100           13             |     |
  -0 9977555                  7             ++
  -1 433332210                9                |
  -1 987                      3                |
  -2 20                       2                |
  -2 5                        1                |
  -3 322                      3                |
  -3
  -4
  -4
  -5
  -5
  -6
  -6
  -7 0                        1                *
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

1,3-Butadiene RESPONSE=SEXRAS
Arc-Sin Square-Root Transform with Covariate = FETUSES PREWT
SHAPIRO-WILK TEST OF NORMALITY OF SEXRAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



1,3-Butadiene RESPONSE=SEXRAS
Arc-Sin Square-Root Transform with Covariate = FETUSES PREWT
POSSIBLE OUTLIERS FROM ANOVA ON SEXRAS
FULL DATA SET

Obs	Conc	SEXRAS	Pred	Resid	LB	UB
1	0	1.27795	0.83564	0.44232	-0.36609	0.37394
2	200	0.00000	0.69894	-0.69894	-0.36609	0.37394

1,3-Butadiene RESPONSE=SEXRAS
Arc-Sin Square-Root Transform with Covariate = FETUSES PREWT
LEVENE TEST FOR SEXRAS
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.54753	0.65141

NOTE
By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

ANCOVA OF PLACENTA WEIGHTS

Butadienne RESPONSE=PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	72	8.57	<.0001	85.4330	2197.50	6151.18
fetuses	1	72	46.31	<.0001	85.4330	3956.59	6151.18
sexratio	1	72	0.02	0.8781	85.4330	2.02	6151.18

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
6364.25	6151.18	12515.43	0.50851

Butadienne RESPONSE=PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne RESPONSE=PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	0.4359	3.0650	72	0.14	0.8873	Dunnett-Hsu	0.9979
Conc	200	0	-6.5840	2.9801	72	-2.21	0.0303	Dunnett-Hsu	0.0768
Conc	1000	0	-12.5530	3.0097	72	-4.17	<.0001	Dunnett-Hsu	0.0002

Butadienne RESPONSE=PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	85.6480	2.1884	72	39.14	<.0001
Conc	40	86.0840	2.1302	72	40.41	<.0001
Conc	200	79.0640	2.0182	72	39.18	<.0001
Conc	1000	73.0950	2.0678	72	35.35	<.0001

Butadienne RESPONSE=PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	108.53	6.4010	72	16.96	<.0001
Conc	0	12.5530	3.0097	72	4.17	<.0001
Conc	40	12.9889	2.9722	72	4.37	<.0001
Conc	200	5.9690	2.8886	72	2.07	0.0424
Conc	1000	0	.	.	.	.
fetuses	_	-2.8612	0.4204	72	-6.81	<.0001
sexratio	_	-1.0829	7.0371	72	-0.15	0.8781

Butadienne RESPONSE=PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF PLACENTA WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	8.9378647	Variance	79.8854254
Skewness	0.34263258	Kurtosis	-0.7079669
Uncorrected SS	6151.17775	Corrected SS	6151.17775
Coeff Variation	.	Std Error Mean	1.01201389

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	8.93786
Median	-0.58777	Variance	79.88543
Mode	.	Range	35.64881
		Interquartile Range	14.32426

Tests for Location: Mu0=0

Test	-Statistic-		p Value-	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	-2	Pr >= |M|	0.7343
Signed Rank	S	-48.5	Pr >= |S|	0.8109

Tests for Normality

Test	--Statistic---		p Value-	
Shapiro-Wilk	W	0.970114	Pr < W	0.0634
Kolmogorov-Smirnov	D	0.072691	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.081375	Pr > W-Sq	0.2036
Anderson-Darling	A-Sq	0.577083	Pr > A-Sq	0.1344

Quantiles (Definition 5)

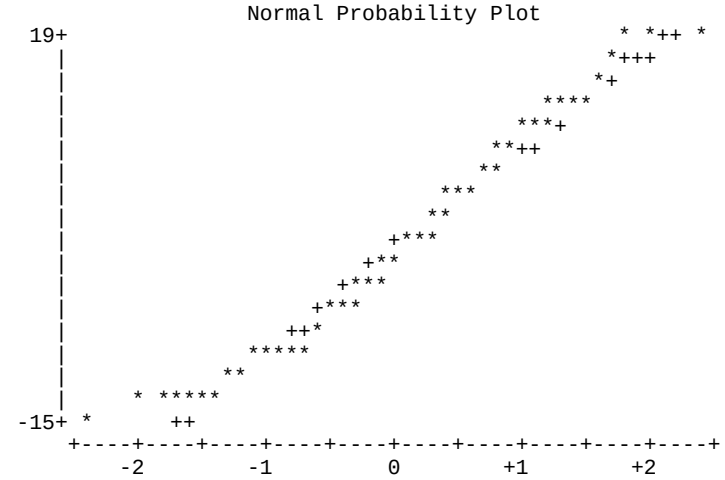
Quantile	Estimate
100% Max	19.829375
99%	19.829375
95%	17.092766
90%	12.870340
75% Q3	6.268727
50% Median	-0.587767
25% Q1	-8.055532
10%	-11.595040

```
      Butadienne RESPONSE=PLACENTA WEIGHT
  No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF PLACENTA WEIGHT
                 FULL DATA SET

             The UNIVARIATE Procedure
                 Variable:  Resid

             Quantiles (Definition 5)

             Quantile        Estimate

             5%            -13.040465
             1%            -15.819434
             0% Min        -15.819434

               Extreme Observations

    -Lowest        Highest

       Value      Obs           Value      Obs

    -15.8194       32         14.3711       68
    -13.4852       74         17.0928       51
    -13.4779       30         18.2224       55
    -13.0405       47         19.7143       25
    -12.9909       14         19.8294       44

 Stem Leaf                     #             Boxplot
   18 278                      3                |
   16 1                        1                |
   14 4                        1                |
   12 1996                     4                |
   10 04882                    5                |
    8 509                      3                |
    6 345                      3              ++
    4 012890                   6              |  |
    2 6459                     4              |  |
    0 2468379                  7              |  +  |
   -0 77021                    5              **
   -2 264433                   6              |  |
   -4 7609870                  7              |  |
   -6 197                      3              |  |
   -8 6550851111              10              ++
  -10 642                      3                |
  -12 550021                   6                |
  -14 8                        1                |
      ----+----+----+----+
```

Butadienne RESPONSE=PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF PLACENTA WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne RESPONSE=PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
FULL DATA SET

NOTE
No outliers found.

Butadienne RESPONSE=PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LEVENE TEST FOR PLACENTA WEIGHT
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.62547	0.60086

NOTE
By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

Butadienne RESPONSE=FEMALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	72	5.07	0.0031	106.192	1614.89	7645.81
fetuses	1	72	37.21	<.0001	106.192	3951.39	7645.81
sexratio	1	72	3.15	0.0803	106.192	334.18	7645.81

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
6366.66	7645.81	14012.47	0.45436

Butadienne RESPONSE=FEMALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne RESPONSE=FEMALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.5077	3.4171	72	-0.15	0.8823	Dunnett-Hsu	0.9976
Conc	200	0	-7.0841	3.3225	72	-2.13	0.0364	Dunnett-Hsu	0.0912
Conc	1000	0	-10.9055	3.3554	72	-3.25	0.0018	Dunnett-Hsu	0.0049

Butadienne RESPONSE=FEMALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	81.8979	2.4398	72	33.57	<.0001
Conc	40	81.3902	2.3749	72	34.27	<.0001
Conc	200	74.8138	2.2500	72	33.25	<.0001
Conc	1000	70.9924	2.3054	72	30.79	<.0001

Butadienne RESPONSE=FEMALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	112.94	7.1365	72	15.83	<.0001
Conc	0	10.9055	3.3554	72	3.25	0.0018
Conc	40	10.3978	3.3137	72	3.14	0.0025
Conc	200	3.8214	3.2205	72	1.19	0.2393
Conc	1000	0	.	.	.	.
fetuses	_	-2.8594	0.4687	72	-6.10	<.0001
sexratio	_	-13.9180	7.8456	72	-1.77	0.0803

Butadienne RESPONSE=FEMALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF FEMALE PLACENTA WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	9.96474849	Variance	99.2962125
Skewness	0.39835693	Kurtosis	-0.5852013
Uncorrected SS	7645.80836	Corrected SS	7645.80836
Coeff Variation	.	Std Error Mean	1.12828559

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	9.96475
Median	-0.92193	Variance	99.29621
Mode	.	Range	43.46379
		Interquartile Range	14.90951

Tests for Location: Mu0=0

Test	-Statistic-		p Value-	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	-5	Pr >= |M|	0.3082
Signed Rank	S	-56.5	Pr >= |S|	0.7804

Tests for Normality

Test	--Statistic---		p Value-	
Shapiro-Wilk	W	0.973151	Pr < W	0.0981
Kolmogorov-Smirnov	D	0.08013	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.093868	Pr > W-Sq	0.1367
Anderson-Darling	A-Sq	0.624642	Pr > A-Sq	0.1001

Quantiles (Definition 5)

Quantile	Estimate
100% Max	25.021334
99%	25.021334
95%	17.260956
90%	15.035879
75% Q3	6.494566
50% Median	-0.921926
25% Q1	-8.414949
10%	-12.233226

```
      Butadienne RESPONSE=FEMALE PLACENTA WEIGHT
    No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF FEMALE PLACENTA WEIGHT
                  FULL DATA SET

              The UNIVARIATE Procedure
                  Variable:  Resid

              Quantiles (Definition 5)

              Quantile        Estimate

              5%            -13.885938
              1%            -18.442455
              0% Min        -18.442455


                Extreme Observations

   -Lowest        Highest

      Value      Obs           Value      Obs

   -18.4425       74         16.0146        3
   -15.9867       47         17.2610       25
   -15.3975       77         19.5576       71
   -13.8859       30         20.9831       22
   -13.7422       75         25.0213       44


  Stem Leaf                     #             Boxplot
    24 0                        1                |
    22                                           |
    20 0                        1                |
    18 6                        1                |
    16 003                      3                |
    14 09                       2                |
    12 2506                     4                |
    10 0138                     4                |
     8                                           |
     6 005248                   6             ++
     4 67780                    5             |     |
     2 2893                     4             |     |
     0 689                      3             |  +  |
    -0 988999872                9             **
    -2 7096                     4             |     |
    -4 8720911                  7             |     |
    -6 621                      3             |     |
    -8 999540                   6             ++
   -10 2988832                  7                |
   -12 97942                    5                |
   -14 4                        1                |
   -16 0                        1                |
   -18 4                        1                |
       ----+----+----+----+
```

```
      Butadienne RESPONSE=FEMALE PLACENTA WEIGHT
     No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF FEMALE PLACENTA WEIGHT
                   FULL DATA SET

               The UNIVARIATE Procedure
                   Variable:  Resid

                    Normal Probability Plot
  25+                                                    *+
    |                                                   ++
    |                                                *++
    |                                              *++
    |                                            **+
    |                                         ***+
    |                                       ***++
    |                                     ***++
    |                                      ++
    |                                   **
    |                                ***
   3+                              **
    |                           ++*
    |                         +***
    |                       ++**
    |                     +***
    |                   ++**
    |                 ++**
    |               ****
    |          *****
    |       * * ++
    |         ++
  -19+ *    ++
      +----+----+----+----+----+----+----+----+----+----+----+
          -2        -1         0        +1        +2


      Butadienne RESPONSE=FEMALE PLACENTA WEIGHT
    No Transform with Covariate = FETUSES SEXRATIO
                   FULL DATA SET

NOTE
No outliers found.

                     Butadienne RESPONSE=FEMALE PLACENTA WEIGHT
            No Transform with Covariate = FETUSES SEXRATIO
                       LEVENE TEST FOR  FEMALE PLACENTA WEIGHT
                            FULL DATA SET

                  Effect    DF     LEVENE    P_VALUE

                   Conc      3    0.39622    0.75610

          NOTE
           By Levene's test, the within-group variances are
           equal. A standard ANOVA will be done.
```

Butadienne RESPONSE=MALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	71	11.97	<.0001	83.3364	2991.73	5916.89
fetuses	1	71	20.68	<.0001	83.3364	1723.53	5916.89
sexratio	1	71	0.29	0.5943	83.3364	23.85	5916.89

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
5016.66	5916.89	10933.55	0.45883

Butadienne RESPONSE=MALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne RESPONSE=MALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	1.8729	3.0283	71	0.62	0.5382	Dunnett-Hsu	0.8667
Conc	200	0	-6.9639	3.0249	71	-2.30	0.0243	Dunnett-Hsu	0.0623
Conc	1000	0	-13.9174	2.9749	71	-4.68	<.0001	Dunnett-Hsu	<.0001

Butadienne RESPONSE=MALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	88.2739	2.1708	71	40.66	<.0001
Conc	40	90.1468	2.1060	71	42.81	<.0001
Conc	200	81.3100	2.0685	71	39.31	<.0001
Conc	1000	74.3564	2.0422	71	36.41	<.0001

Butadienne RESPONSE=MALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	98.9771	7.7613	71	12.75	<.0001
Conc	0	13.9174	2.9749	71	4.68	<.0001
Conc	40	15.7904	2.9357	71	5.38	<.0001
Conc	200	6.9536	2.9109	71	2.39	0.0196
Conc	1000	0	.	.	.	.
fetuses	_	-2.1686	0.4769	71	-4.55	<.0001
sexratio	_	4.0868	7.6391	71	0.53	0.5943

Butadienne RESPONSE=MALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF MALE PLACENTA WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	77	Sum Weights	77
Mean	0	Sum Observations	0
Std Deviation	8.82347863	Variance	77.8537751
Skewness	0.55684174	Kurtosis	-0.0781371
Uncorrected SS	5916.88691	Corrected SS	5916.88691
Coeff Variation	.	Std Error Mean	1.00552871

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	8.82348
Median	-0.54840	Variance	77.85378
Mode	.	Range	40.34680
		Interquartile Range	12.23382

Tests for Location: Mu0=0

Test	-Statistic-		p Value-	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	-3.5	Pr >= |M|	0.4944
Signed Rank	S	-109.5	Pr >= |S|	0.5816

Tests for Normality

Test	--Statistic---		p Value-	
Shapiro-Wilk	W	0.969915	Pr < W	0.0646
Kolmogorov-Smirnov	D	0.080891	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.101822	Pr > W-Sq	0.1058
Anderson-Darling	A-Sq	0.701877	Pr > A-Sq	0.0678

Quantiles (Definition 5)

Quantile	Estimate
100% Max	22.704660
99%	22.704660
95%	17.886669
90%	12.212215
75% Q3	5.743164
50% Median	-0.548405
25% Q1	-6.490660
10%	-9.755733

Butadienne RESPONSE=MALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF MALE PLACENTA WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Quantiles (Definition 5)

Quantile	Estimate
5%	-12.580233
1%	-17.642143
0% Min	-17.642143

Extreme Observations

-Lowest		Highest	
Value	Obs	Value	Obs
-17.6421	32	16.4662	44
-15.7178	14	17.8867	3
-12.8644	58	19.6781	51
-12.5802	61	20.1370	40
-11.1649	35	22.7047	25

Missing Values

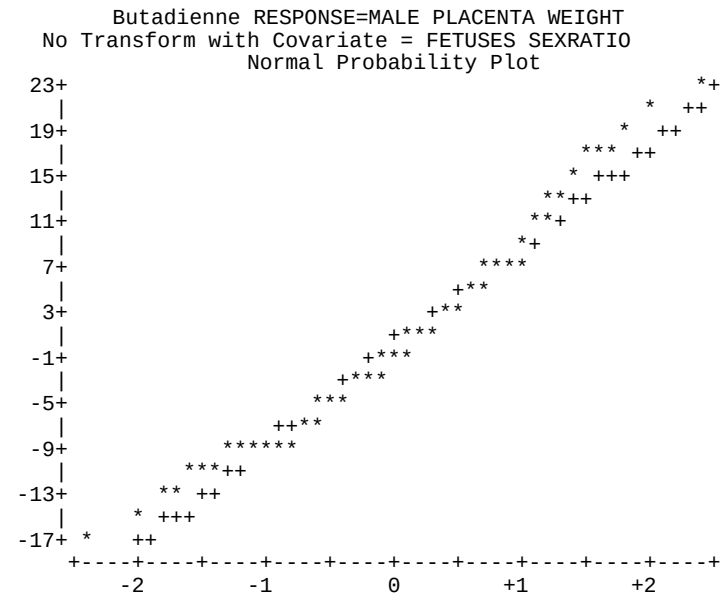
Missing Value	Count	Percent Of All Obs	Missing Obs
.	1	1.28	100.00

Butadienne RESPONSE=MALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF MALE PLACENTA WEIGHT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Stem	Leaf	#	Boxplot
22	7	1	
20	1	1	
18	7	1	
16	459	3	
14	2	1	
12	22	2	
10	05	2	
8	4	1	
6	3456279	7	
4	607	3	
2	023405	6	
0	0452467	7	
-0	775321	6	
-2	62106511	8	
-4	9662201	7	
-6	8655	4	
-8	8620553333	10	
-10	253	3	
-12	96	2	
-14	7	1	
-16	6	1	

----+----+----+----+



Butadienne RESPONSE=MALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
POSSIBLE OUTLIERS FROM ANOVA ON MALE PLACENTA WEIGHT
FULL DATA SET

Obs	Conc	MPLACEWT	Pred	Resid	LB	UB
1	200	.	101.594	.	-24.8414	24.0939

Butadienne RESPONSE=MALE PLACENTA WEIGHT
No Transform with Covariate = FETUSES SEXRATIO
LEVENE TEST FOR MALE PLACENTA WEIGHT
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.22552	0.87835

NOTE
By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

APPENDIX B

Non-Parametric ANCOVA

FETAL WEIGHT

Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
No Transform with Covariate = RFETUSES RSEXRATIO

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	72	37.47	<.0001	0.38076	42.8041	27.4147
rfetuses	1	72	8.19	0.0055	0.38076	3.1180	27.4147
rsexratio	1	72	3.20	0.0781	0.38076	1.2167	27.4147

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
47.5779	27.4147	74.9926	0.63443

Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
No Transform with Covariate = RFETUSES RSEXRATIO
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
No Transform with Covariate = RFETUSES RSEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.3268	0.2043	72	-1.60	0.1140	Dunnett-Hsu	0.2601
Conc	200	0	-1.2810	0.1992	72	-6.43	<.0001	Dunnett-Hsu	<.0001
Conc	1000	0	-1.8765	0.2008	72	-9.35	<.0001	Dunnett-Hsu	<.0001

Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
No Transform with Covariate = RFETUSES RSEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	0.9056	0.1460	72	6.20	<.0001
Conc	40	0.5788	0.1421	72	4.07	0.0001
Conc	200	-0.3753	0.1349	72	-2.78	0.0069
Conc	1000	-0.9709	0.1380	72	-7.03	<.0001

Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
No Transform with Covariate = RFETUSES RSEXRATIO
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	-0.9709	0.1380	72	-7.03	<.0001
Conc	0	1.8765	0.2008	72	9.35	<.0001
Conc	40	1.5497	0.1983	72	7.81	<.0001
Conc	200	0.5956	0.1930	72	3.09	0.0029
Conc	1000	0	.	.	.	.
rfetuses	_	-0.2077	0.07259	72	-2.86	0.0055
rsexratio	_	0.1280	0.07160	72	1.79	0.0781

Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
No Transform with Covariate = RFETUSES RSEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.59668657	Variance	0.35603487
Skewness	0.32831279	Kurtosis	1.49567324
Uncorrected SS	27.4146847	Corrected SS	27.4146847
Coeff Variation	.	Std Error Mean	0.06756145

Basic Statistical Measures

Location		Variability	
Mean	0.000000	Std Deviation	0.59669
Median	0.018570	Variance	0.35603
Mode	.	Range	3.41827
		Interquartile Range	0.68205

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	4	Pr >= |M|	0.4282
Signed Rank	S	5.5	Pr >= |S|	0.9784

Tests for Normality

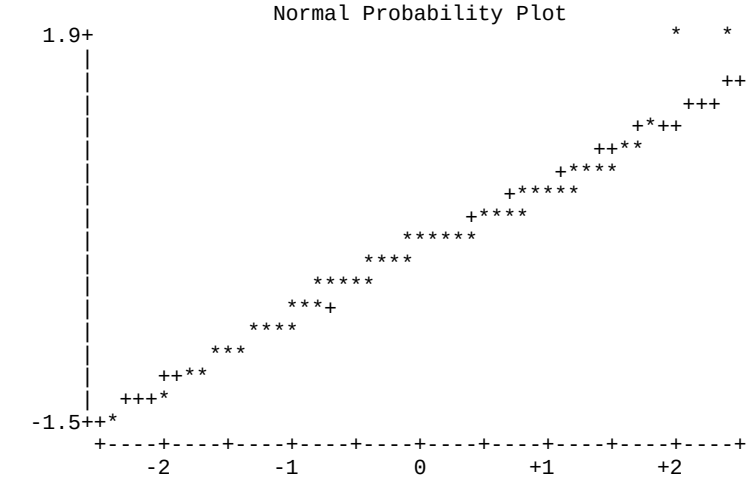
Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.971265	Pr < W	0.0748
Kolmogorov-Smirnov	D	0.068654	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.107971	Pr > W-Sq	0.0894
Anderson-Darling	A-Sq	0.642505	Pr > A-Sq	0.0926

```
            Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
                No Transform with Covariate = RFETUSES RSEXRATIO

                            Quantiles (Definition 5)

                            Quantile        Estimate

                            100% Max       1.8647345
                            99%            1.8647345
                            95%            0.9313727
                            90%            0.6959269
                            75% Q3         0.3344267
                            50% Median     0.0185701
                            25% Q1        -0.3476246
                            10%           -0.7701569

-------------------------------------------------------------------------------

             Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
                No Transform with Covariate = RFETUSES RSEXRATIO
             SHAPIRO-WILK TEST OF NORMALITY OF RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
                               FULL DATA SET

                            The UNIVARIATE Procedure
                                Variable:  Resid

                            Quantiles (Definition 5)

                            Quantile        Estimate

                            5%            -1.0317588
                            1%            -1.5535389
                            0% Min        -1.5535389


                              Extreme Observations

                  ------Lowest------        ------Highest-----

                      Value      Obs            Value      Obs

                  -1.553539       71         0.874813       67
                  -1.269283       46         0.931373        3
                  -1.042351        5         1.098681       17
                  -1.031759       64         1.822072       75
                  -0.941341       61         1.864734       55


                 Stem Leaf                     #             Boxplot
                   18 26                       2                0
                   16
                   14
                   12
                   10 0                        1                |
                    8 73                       2                |
                    6 00015                    5                |
                    4 166278                   6                |
                    2 0134673447              10             +-----+
                    0 11122355678889189       17             *--+--*
                   -0 654077621                9             |     |
                   -2 855429321                9             +-----+
                   -4 88652                    5                |
                   -6 75286                    5                |
                   -8 464                      3                |
                  -10 43                       2                |
                  -12 7                        1                |
                  -14 5                        1                0
                      ----+----+----+----+
                  Multiply Stem.Leaf by 10**-1
```

Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
No Transform with Covariate = RFETUSES RSEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
No Transform with Covariate = RFETUSES RSEXRATIO
POSSIBLE OUTLIERS FROM ANOVA ON RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
FULL DATA SET

Obs	Conc	rftlwt	Pred	Resid	LB	UB
1	200	1.68157	-0.18316	1.86473	-1.37070	1.35750
2	1000	-2.40950	-0.85596	-1.55354	-1.37070	1.35750
3	1000	1.16010	-0.66197	1.82207	-1.37070	1.35750

Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
No Transform with Covariate = RFETUSES RSEXRATIO
LEVENE TEST FOR RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	1.38574	0.25407

Butadienne RESPONSE=RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
No Transform with Covariate = RFETUSES RSEXRATIO
LEVENE TEST FOR RANK-TRANSFORMED FETAL WEIGHT=RFTLWT
FULL DATA SET

NOTE

By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

FEMALE FETAL WEIGHTS

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	72	33.45	<.0001	0.41253	41.3935	29.7022
rfetuses	1	72	7.29	0.0086	0.41253	3.0063	29.7022
rsexratio	1	72	0.09	0.7674	0.41253	0.0364	29.7022

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
45.2904	29.7022	74.9926	0.60393

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.3296	0.2126	72	-1.55	0.1255	Dunnett-Hsu	0.2834
Conc	200	0	-1.2750	0.2073	72	-6.15	<.0001	Dunnett-Hsu	<.0001
Conc	1000	0	-1.8437	0.2090	72	-8.82	<.0001	Dunnett-Hsu	<.0001

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	0.8963	0.1520	72	5.90	<.0001
Conc	40	0.5667	0.1479	72	3.83	0.0003
Conc	200	-0.3787	0.1404	72	-2.70	0.0087
Conc	1000	-0.9474	0.1437	72	-6.59	<.0001

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	-0.9474	0.1437	72	-6.59	<.0001
Conc	0	1.8437	0.2090	72	8.82	<.0001
Conc	40	1.5142	0.2064	72	7.34	<.0001
Conc	200	0.5688	0.2009	72	2.83	0.0060
Conc	1000	0	.	.	.	.
rfetuses	_	-0.2040	0.07556	72	-2.70	0.0086
rsexratio	_	0.02213	0.07453	72	0.30	0.7674

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.62108219	Variance	0.38574309
Skewness	0.53802164	Kurtosis	1.6795494
Uncorrected SS	29.7022181	Corrected SS	29.7022181
Coeff Variation	.	Std Error Mean	0.07032371

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	0.62108
Median	-0.08268	Variance	0.38574
Mode	.	Range	3.64087
		Interquartile Range	0.75617

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	-3	Pr >= |M|	0.5716
Signed Rank	S	-46.5	Pr >= |S|	0.8186

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.962438	Pr < W	0.0213
Kolmogorov-Smirnov	D	0.077954	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.083023	Pr > W-Sq	0.1938
Anderson-Darling	A-Sq	0.67007	Pr > A-Sq	0.0811

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO

Quantiles (Definition 5)

Quantile	Estimate
100% Max	1.9786521
99%	1.9786521
95%	0.9191319
90%	0.6309842
75% Q3	0.3738869
50% Median	-0.0826804
25% Q1	-0.3822880
10%	-0.7926205

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Quantiles (Definition 5)

Quantile	Estimate
5%	-0.9957728
1%	-1.6622214
0% Min	-1.6622214

Extreme Observations

------Lowest------		------Highest-----	
Value	Obs	Value	Obs
-1.662221	71	0.824498	17
-1.017914	30	0.919132	67
-1.015157	61	1.565675	10
-0.995773	46	1.873844	75
-0.956068	64	1.978652	55

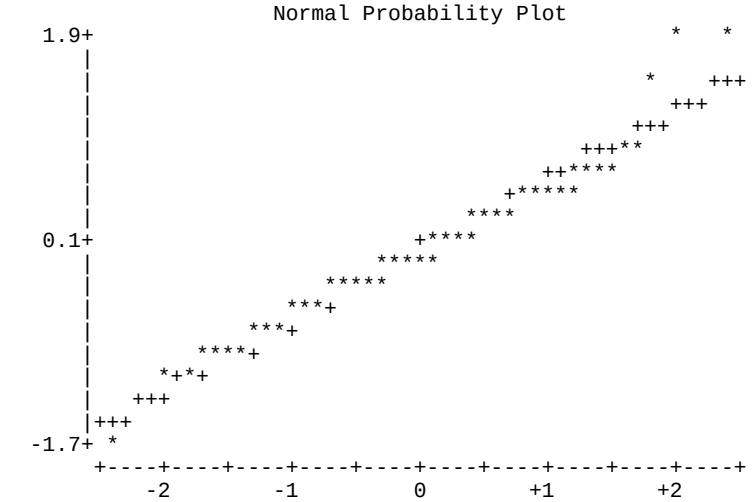
Stem	Leaf	#	Boxplot
18	78	2	0
16			
14	7	1	0
12			
10			
8	22	2	|
6	02307	5	|
4	03589127	8	|
2	178912378	9	+-----+
0	824456699	9	| + |
-0	9987654332443	13	*-----*
-2	88710865332	11	+-----+
-4	7654442	7	|
-6	9492	4	|
-8	610	3	|
-10	220	3	|
-12			
-14			
-16	6	1	0

----+----+----+----+
Multiply Stem.Leaf by 10**-1

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO
POSSIBLE OUTLIERS FROM ANOVA ON RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
FULL DATA SET

Obs	Conc	rfemwt	Pred	Resid	LB	UB
1	0	2.40950	0.84382	1.56567	-1.51655	1.50815
2	200	2.03816	0.05951	1.97865	-1.51655	1.50815
3	1000	-2.40950	-0.74728	-1.66222	-1.51655	1.50815
4	1000	1.16010	-0.71374	1.87384	-1.51655	1.50815

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO
LEVENE TEST FOR RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	1.60842	0.19492

Butadienne RESPONSE=RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
No Transform with Covariate = RFETUSES RSEXRATIO
LEVENE TEST FOR RANK-TRANSFORMED FEMALE FETAL WEIGHT=RFEMWT
FULL DATA SET

NOTE

By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

MALE FETAL WEIGHTS

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	71	43.17	<.0001	0.35327	45.7567	25.0818
rfetuses	1	71	2.20	0.1424	0.35327	0.7773	25.0818
rsexratio	1	71	6.32	0.0142	0.35327	2.2323	25.0818

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
48.9161	25.0818	73.9979	0.66105

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.3373	0.1968	71	-1.71	0.0909	Dunnett-Hsu	0.2127
Conc	200	0	-1.4023	0.1959	71	-7.16	<.0001	Dunnett-Hsu	<.0001
Conc	1000	0	-1.9169	0.1934	71	-9.91	<.0001	Dunnett-Hsu	<.0001

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	0.9453	0.1410	71	6.71	<.0001
Conc	40	0.6081	0.1369	71	4.44	<.0001
Conc	200	-0.4569	0.1343	71	-3.40	0.0011
Conc	1000	-0.9716	0.1330	71	-7.31	<.0001
Conc	0	0.9453	0.1410	71	6.71	<.0001
Conc	40	0.6081	0.1369	71	4.44	<.0001
Conc	200	-0.4569	0.1343	71	-3.40	0.0011
Conc	1000	-0.9716	0.1330	71	-7.31	<.0001
Conc	0	0.9453	0.1410	71	6.71	<.0001
Conc	40	0.6081	0.1369	71	4.44	<.0001
Conc	200	-0.4569	0.1343	71	-3.40	0.0011
Conc	1000	-0.9716	0.1330	71	-7.31	<.0001

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	-0.9738	0.1329	71	-7.32	<.0001
Conc	0	1.9169	0.1934	71	9.91	<.0001
Conc	40	1.5796	0.1910	71	8.27	<.0001
Conc	200	0.5146	0.1893	71	2.72	0.0082
Conc	1000	0	.	.	.	.
rfetuses	_	-0.1096	0.07390	71	-1.48	0.1424
rsexratio	_	0.1828	0.07273	71	2.51	0.0142

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	77	Sum Weights	77
Mean	0	Sum Observations	0
Std Deviation	0.57447745	Variance	0.33002434
Skewness	-0.1413607	Kurtosis	0.33821088
Uncorrected SS	25.0818498	Corrected SS	25.0818498
Coeff Variation	.	Std Error Mean	0.06546778

Basic Statistical Measures

Location		Variability	
Mean	0.000000	Std Deviation	0.57448
Median	0.051971	Variance	0.33002
Mode	.	Range	3.05695
		Interquartile Range	0.67143

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	2.5	Pr >= |M|	0.6488
Signed Rank	S	42.5	Pr >= |S|	0.8308

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.9855	Pr < W	0.5314
Kolmogorov-Smirnov	D	0.065723	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.066853	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.41552	Pr > A-Sq	>0.2500

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO

Quantiles (Definition 5)

Quantile	Estimate
100% Max	1.6625775
99%	1.6625775
95%	0.8601849
90%	0.7250799
75% Q3	0.3667124
50% Median	0.0519712
25% Q1	-0.3047194
10%	-0.8101552

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Quantiles (Definition 5)

Quantile	Estimate
5%	-1.0991035
1%	-1.3943687
0% Min	-1.3943687

Extreme Observations

------Lowest-----		------Highest-----	
Value	Obs	Value	Obs
-1.39437	71	0.794587	74
-1.22682	46	0.860185	25
-1.15131	64	0.986644	17
-1.09910	5	1.025359	3
-1.07539	9	1.662578	75

Missing Values

Missing Value	Count	-----Percent Of----- All Obs	Missing Obs
.	1	1.28	100.00

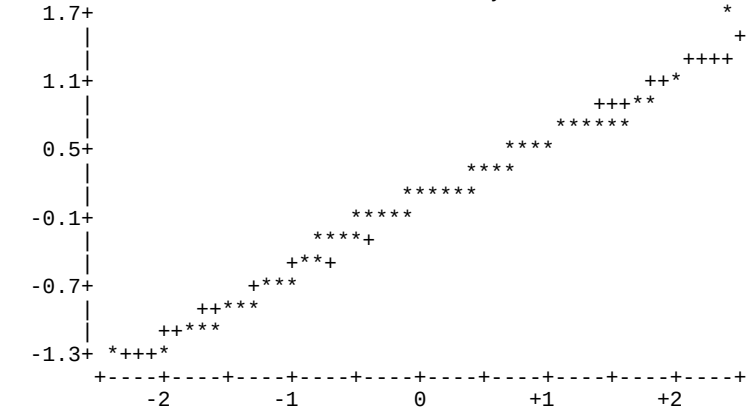
Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO

```
Stem Leaf                     #             Boxplot
  16 6                        1                0
  14
  12
  10 3                        1                |
   8 69                       2                |
   6 1693349                  7                |
   4 0880556                  7                |
   2 13350278                 8             +-----+
   0 555588123456679         15             *--+--*
  -0 975422298661            12             |     |
  -2 87208530                 8             +-----+
  -4 431                      3                |
  -6 81963                    5                |
  -8 941                      3                |
 -10 508                      3                |
 -12 93                       2                0
     ----+----+----+----+
  Multiply Stem.Leaf by 10**-1
```

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO
SHAPIRO-WILK TEST OF NORMALITY OF RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO
POSSIBLE OUTLIERS FROM ANOVA ON RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
FULL DATA SET

Obs	Conc	rmalewt	Pred	Resid	LB	UB
1	200	.	-0.63560	.	-1.31187	1.37386
2	1000	-2.40480	-1.01043	-1.39437	-1.31187	1.37386
3	1000	0.92927	-0.73331	1.66258	-1.31187	1.37386

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO
LEVENE TEST FOR RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.73001	0.53748

Butadienne RESPONSE=RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
No Transform with Covariate = RFETUSES RSEXRATIO
LEVENE TEST FOR RANK-TRANSFORMED MALE FETAL WEIGHT=RMALEWT
FULL DATA SET

NOTE

By Levene's test, the within-group variances are equal. A standard ANOVA will be done.

APPENDIX C

ANOVA Results

ANOVA OF MATERNAL MEASURES

Butadienne Maternal Body PreWeight
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	0.19	0.9038	1.88207	1.06562	139.273

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
1.06562	139.273	140.338	.007593186

Butadienne Maternal Body PreWeight
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Maternal Body PreWeight
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.1480	0.4512	74	-0.33	0.7439	Dunnett	0.9756
Conc	200	0	-0.2397	0.4407	74	-0.54	0.5881	Dunnett	0.9033
Conc	1000	0	0.04889	0.4457	74	0.11	0.9130	Dunnett	0.9990

Butadienne Maternal Body PreWeight
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	28.4111	0.3234	74	87.86	<.0001
Conc	40	28.2632	0.3147	74	89.80	<.0001
Conc	200	28.1714	0.2994	74	94.10	<.0001
Conc	1000	28.4600	0.3068	74	92.78	<.0001

Butadienne Maternal Body PreWeight
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	28.4600	0.3068	74	92.78	<.0001
Conc	0	-0.04889	0.4457	74	-0.11	0.9130
Conc	40	-0.1968	0.4395	74	-0.45	0.6555
Conc	200	-0.2886	0.4286	74	-0.67	0.5029
Conc	1000	0	.	.	.	.

Butadienne Maternal Body PreWeight
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PREWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	1.3448934	Variance	1.80873825
Skewness	0.45447611	Kurtosis	-0.65931
Uncorrected SS	139.272845	Corrected SS	139.272845
Coeff Variation	.	Std Error Mean	0.15227919

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	1.34489
Median	-0.23556	Variance	1.80874
Mode	-1.26316	Range	5.20000
		Interquartile Range	2.14795

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	-5	Pr >= |M|	0.3082
Signed Rank	S	-79.5	Pr >= |S|	0.6948

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.958837	Pr < W	0.0130
Kolmogorov-Smirnov	D	0.089176	Pr > D	0.1270
Cramer-von Mises	W-Sq	0.160653	Pr > W-Sq	0.0182
Anderson-Darling	A-Sq	0.97703	Pr > A-Sq	0.0145

Quantiles (Definition 5)

Quantile	Estimate
100% Max	2.828571
99%	2.828571
95%	2.628571
90%	1.940000
75% Q3	1.136842
50% Median	-0.235556
25% Q1	-1.011111
10%	-1.463158

Butadienne Maternal Body PreWeight
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PREWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

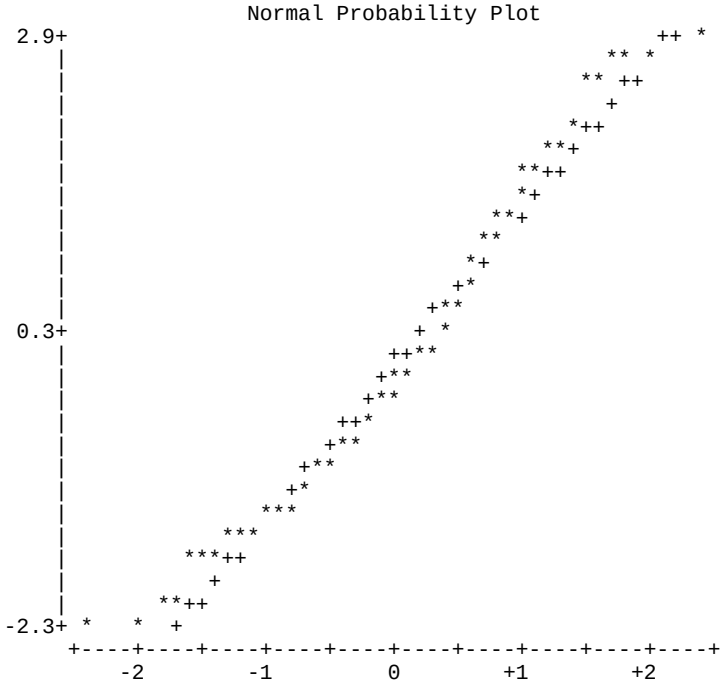
Quantiles (Definition 5)

Quantile	Estimate
5%	-2.060000
1%	-2.371429
0% Min	-2.371429

Extreme Observations

------Lowest-----		-----Highest-----	
Value	Obs	Value	Obs
-2.37143	38	2.54000	76
-2.26000	68	2.62857	39
-2.06316	19	2.73684	34
-2.06000	78	2.78889	5
-1.77143	48	2.82857	50

```
        Butadienne Maternal Body PreWeight
          No Transform and no Covariate
     SHAPIRO-WILK TEST OF NORMALITY OF PREWT
                 FULL DATA SET

           The UNIVARIATE Procedure
               Variable:  Resid

 Stem Leaf                     #             Boxplot
   28 3                        1                |
   26 349                      3                |
   24 44                       2                |
   22                                           |
   20 4                        1                |
   18 334                      3                |
   16 39                       2                |
   14 4                        1                |
   12 3449                     4                |
   10 449                      3             +-----+
    8 44                       2             |     |
    6 4                        1             |     |
    4 344                      3             |     |
    2 99                       2             |     |
    0 444499                   6             |  +  |
   -0 7761                     4             |     |
   -2 77661                    5             *-----*
   -4 766                      3             |     |
   -6 7776611                  7             |     |
   -8 77711                    5             |     |
  -10 61                       2             +-----+
  -12 7666661                  7                |
  -14 6661                     4                |
  -16 761                      3                |
  -18                                           |
  -20 66                       2                |
  -22 76                       2                |
      ----+----+----+----+
  Multiply Stem.Leaf by 10**-1
```




```
        Butadienne Maternal Body PreWeight
          No Transform and no Covariate
                 FULL DATA SET

NOTE
```

```
No outliers found.

                  Butadienne Maternal Body PreWeight
                    No Transform and no Covariate
                         LEVENE TEST FOR  PREWT
                             FULL DATA SET

                  Effect    DF     LEVENE    P_VALUE

                   Conc      3    0.34387    0.79366

                  Butadienne Maternal Body PreWeight
                    No Transform and no Covariate
                         LEVENE TEST FOR  PREWT
                             FULL DATA SET

               NOTE
               By Levene's test, the within-group variances are
               equal. A standard ANOVA will be done.
```

Butadienne Maternal Body Weight at 0 DG
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	0.46	0.7098	1.39694	1.93537	103.373

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
1.93537	103.373	105.309	0.018378

Butadienne Maternal Body Weight at 0 DG
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Maternal Body Weight at 0 DG
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	0.1942	0.3888	74	0.50	0.6190	Dunnett	0.9225
Conc	200	0	0.4127	0.3796	74	1.09	0.2805	Dunnett	0.5598
Conc	1000	0	0.3489	0.3840	74	0.91	0.3665	Dunnett	0.6838

Butadienne Maternal Body Weight at 0 DG
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	27.9111	0.2786	74	100.19	<.0001
Conc	40	28.1053	0.2712	74	103.65	<.0001
Conc	200	28.3238	0.2579	74	109.82	<.0001
Conc	1000	28.2600	0.2643	74	106.93	<.0001

Butadienne Maternal Body Weight at 0 DG
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	28.2600	0.2643	74	106.93	<.0001
Conc	0	-0.3489	0.3840	74	-0.91	0.3665
Conc	40	-0.1547	0.3786	74	-0.41	0.6840
Conc	200	0.06381	0.3693	74	0.17	0.8633
Conc	1000	0	.	.	.	.

Butadienne Maternal Body Weight at 0 DG
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF DGWT0
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	1.15866777	Variance	1.342511
Skewness	0.11917069	Kurtosis	-0.3420304
Uncorrected SS	103.373347	Corrected SS	103.373347
Coeff Variation	.	Std Error Mean	0.13119329

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	1.15867
Median	0.01737	Variance	1.34251
Mode	-1.66000	Range	5.40000
		Interquartile Range	1.75474

NOTE: The mode displayed is the smallest of 5 modes with a count of 3.

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	0	Pr >= |M|	1.0000
Signed Rank	S	-31.5	Pr >= |S|	0.8765

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.987474	Pr < W	0.6465
Kolmogorov-Smirnov	D	0.076273	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.043183	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.308379	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

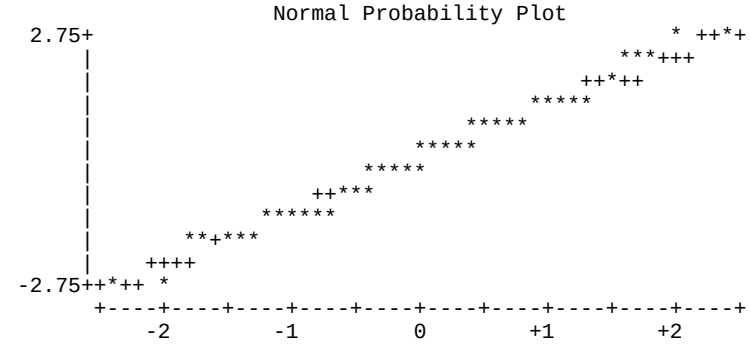
Quantile	Estimate
100% Max	2.8761905
99%	2.8761905
95%	2.0888889
90%	1.4888889
75% Q3	0.6947368
50% Median	0.0173684

```
                Butadienne Maternal Body Weight at 0 DG
                     No Transform and no Covariate
                SHAPIRO-WILK TEST OF NORMALITY OF DGWT0
                             FULL DATA SET

                        The UNIVARIATE Procedure
                            Variable:  Resid

                        Quantiles (Definition 5)

                        Quantile        Estimate

                        25% Q1        -1.0600000
                        10%           -1.5052632
                        5%            -1.6600000
                        1%            -2.5238095
                        0% Min        -2.5238095


                          Extreme Observations

                   ------Lowest-----        -----Highest-----

                      Value      Obs           Value      Obs

                   -2.52381       41         2.07619       43
                   -2.52381       38         2.08889        2
                   -1.70526       25         2.09474       36
                   -1.66000       77         2.54000       76
                   -1.66000       65         2.87619       50


                Stem Leaf                     #             Boxplot
                   2 59                       2                |
                   2 111                      3                |
                   1 557                      3                |
                   1 111333                   6                |
                   0 5555577777799999        16             +-----+
                   0 111333333                9             *--+--*
                  -0 33333311111             11             |     |
                  -0 97777555                 8             |     |
                  -1 33333111111             11             +-----+
                  -1 7777555                  7                |
                  -2                                           |
                  -2 55                       2                |
                     ----+----+----+----+
```

Butadienne Maternal Body Weight at 0 DG
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF DGWT0
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



NOTE
No outliers found.

Butadienne Maternal Body Weight at 0 DG
No Transform and no Covariate
LEVENE TEST FOR DGWT0
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.28466	0.83632

NOTE
By Levene's test, the within-group variances are equal. A standard ANOVA will be done.

Butadienne Mouse Uterus Weight
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	3.35	0.0235	13.7202	137.837	1015.30

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
137.837	1015.30	1153.13	0.11953

Butadienne Mouse Uterus Weight
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Uterus Weight
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	0.9506	1.2183	74	0.78	0.4377	Dunnett	0.7702
Conc	200	0	-1.3294	1.1898	74	-1.12	0.2675	Dunnett	0.5391
Conc	1000	0	-2.5639	1.2034	74	-2.13	0.0365	Dunnett	0.0914

Butadienne Mouse Uterus Weight
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	19.3389	0.8731	74	22.15	<.0001
Conc	40	20.2895	0.8498	74	23.88	<.0001
Conc	200	18.0095	0.8083	74	22.28	<.0001
Conc	1000	16.7750	0.8283	74	20.25	<.0001

Butadienne Mouse Uterus Weight
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	16.7750	0.8283	74	20.25	<.0001
Conc	0	2.5639	1.2034	74	2.13	0.0365
Conc	40	3.5145	1.1866	74	2.96	0.0041
Conc	200	1.2345	1.1573	74	1.07	0.2896
Conc	1000	0	.	.	.	.

Butadienne Mouse Uterus Weight
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF UTERUSWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	3.63120721	Variance	13.1856658
Skewness	-1.5514482	Kurtosis	4.12971821
Uncorrected SS	1015.29627	Corrected SS	1015.29627
Coeff Variation	.	Std Error Mean	0.41115325

Basic Statistical Measures

Location		Variability	
Mean	0.000000	Std Deviation	3.63121
Median	0.517763	Variance	13.18567
Mode	1.161111	Range	19.63452
		Interquartile Range	4.01447

NOTE: The mode displayed is the smallest of 5 modes with a count of 2.

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	7	Pr >= |M|	0.1405
Signed Rank	S	205.5	Pr >= |S|	0.3091

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.882301	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.118406	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.265804	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	1.852431	Pr > A-Sq	<0.0050

Quantiles (Definition 5)

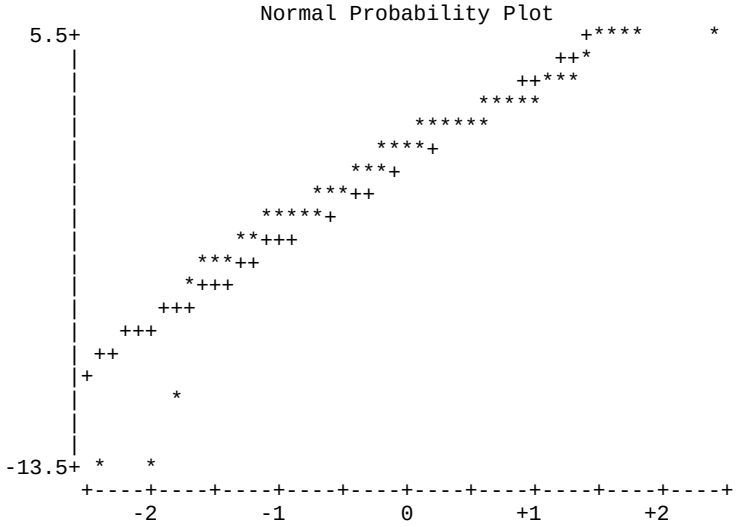
Quantile	Estimate
100% Max	5.725000
99%	5.725000
95%	5.210526
90%	3.190476
75% Q3	2.225000
50% Median	0.517763

```
        Butadienne Mouse Uterus Weight
        No Transform and no Covariate
   SHAPIRO-WILK TEST OF NORMALITY OF UTERUSWT
                FULL DATA SET

            The UNIVARIATE Procedure
                Variable:  Resid

            Quantiles (Definition 5)

            Quantile        Estimate

            25% Q1         -1.789474
            10%            -3.989474
            5%             -5.575000
            1%            -13.909524
            0% Min        -13.909524


              Extreme Observations

  ------Lowest------        -----Highest-----

      Value      Obs           Value      Obs

  -13.90952       55         5.16111       17
  -13.03889        3         5.21053       27
  -10.88947       30         5.49048       41
   -5.57500       74         5.49048       56
   -4.43889       15         5.72500       67


Stem Leaf                     #             Boxplot
   5 122557                   6                |
   4 5                        1                |
   3 1112                     4                |
   2 02224567799             11             +-----+
   1 2225566677778           13             |     |
   0 33345555669             11             *--+--*
  -0 997421                   6             |     |
  -1 8643200                  7             +-----+
  -2 766333110                9                |
  -3 7                        1                |
  -4 44300                    5                |
  -5 6                        1                |
  -6
  -7
  -8
  -9
 -10 9                        1                0
 -11
 -12
 -13 90                       2                0
     ----+----+----+----+
```

Butadienne Mouse Uterus Weight
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF UTERUSWT
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne Mouse Uterus Weight
No Transform and no Covariate
POSSIBLE OUTLIERS FROM ANOVA ON UTERUSWT
FULL DATA SET

Obs	Conc	UTERUSWT	Pred	Resid	LB	UB
1	0	6.3	19.3389	-13.0389	-7.81118	8.24671
2	40	9.4	20.2895	-10.8895	-7.81118	8.24671
3	200	4.1	18.0095	-13.9095	-7.81118	8.24671

Butadienne Mouse Uterus Weight
No Transform and no Covariate
LEVENE TEST FOR UTERUSWT
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.11895	0.94870

NOTE
By Levene's test, the within-group variances are equal. A standard ANOVA will be done.

Butadienne Mouse Extragestational Weight
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	2.02	0.1179	3.82347	23.2166	282.937

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
23.2166	282.937	306.153	0.075833

Butadienne Mouse Extragestational Weight
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Extragestational Weight
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.4269	0.6432	74	-0.66	0.5089	Dunnett	0.8415
Conc	200	0	-0.9968	0.6281	74	-1.59	0.1168	Dunnett	0.2661
Conc	1000	0	-1.4511	0.6353	74	-2.28	0.0252	Dunnett	0.0646

Butadienne Mouse Extragestational Weight
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	35.5111	0.4609	74	77.05	<.0001
Conc	40	35.0842	0.4486	74	78.21	<.0001
Conc	200	34.5143	0.4267	74	80.89	<.0001
Conc	1000	34.0600	0.4372	74	77.90	<.0001

Butadienne Mouse Extragestational Weight
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	34.0600	0.4372	74	77.90	<.0001
Conc	0	1.4511	0.6353	74	2.28	0.0252
Conc	40	1.0242	0.6264	74	1.64	0.1063
Conc	200	0.4543	0.6109	74	0.74	0.4595
Conc	1000	0	.	.	.	.

Butadienne Mouse Extragestational Weight
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF XTRAGEST
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	1.9168994	Variance	3.67450331
Skewness	0.06041319	Kurtosis	0.44124295
Uncorrected SS	282.936755	Corrected SS	282.936755
Coeff Variation	.	Std Error Mean	0.21704612

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	1.91690
Median	0.03571	Variance	3.67450
Mode	-2.11429	Range	9.93008
		Interquartile Range	2.23008

NOTE: The mode displayed is the smallest of 5 modes with a count of 2.

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	0	Pr >= |M|	1.0000
Signed Rank	S	14.5	Pr >= |S|	0.9430

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.987618	Pr < W	0.6559
Kolmogorov-Smirnov	D	0.072416	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.058738	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.370401	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

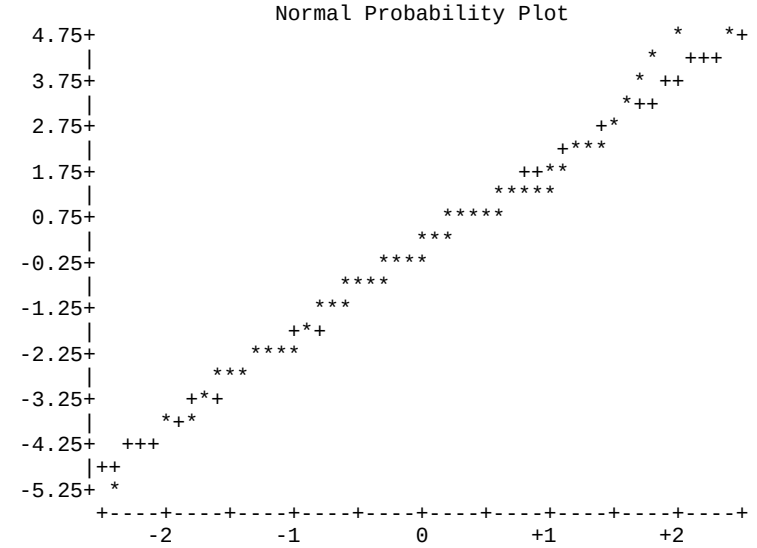
Quantile	Estimate
100% Max	4.8157895
99%	4.8157895
95%	3.6857143
90%	2.2400000
75% Q3	1.0157895
50% Median	0.0357143

```
                 Butadienne Mouse Extragestational Weight
                      No Transform and no Covariate
                 SHAPIRO-WILK TEST OF NORMALITY OF XTRAGEST
                              FULL DATA SET

                          The UNIVARIATE Procedure
                              Variable:  Resid

                          Quantiles (Definition 5)

                          Quantile        Estimate

                          25% Q1        -1.2142857
                          10%           -2.4842105
                          5%            -3.3600000
                          1%            -5.1142857
                          0% Min        -5.1142857

                            Extreme Observations

                 ------Lowest-----        -----Highest-----

                    Value      Obs           Value      Obs

                 -5.11429       41         3.28889        1
                 -3.98421       19         3.68571       53
                 -3.61429       38         4.24000       76
                 -3.36000       66         4.58889       17
                 -2.91111       13         4.81579       34

               Stem Leaf                     #             Boxplot
                  4 68                       2                0
                  4 2                        1                |
                  3 7                        1                |
                  3 03                       2                |
                  2                                           |
                  2 1124                     4                |
                  1 77                       2                |
                  1 000222444                9              +-----+
                  0 5556777888899           13              |     |
                  0 13344                    5              *--+--*
                 -0 443332110                9              |     |
                 -0 8877655                  7              |     |
                 -1 4332100                  7              +-----+
                 -1 985                      3                 |
                 -2 32211                    5                 |
                 -2 9765                     4                 |
                 -3 4                        1                 |
                 -3 6                        1                 |
                 -4 0                        1                 |
                 -4
                 -5 1                        1                 0
                    ----+----+----+----+
```

Butadienne Mouse Extragestational Weight
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF XTRAGEST
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne Mouse Extragestational Weight
No Transform and no Covariate
POSSIBLE OUTLIERS FROM ANOVA ON XTRAGEST
FULL DATA SET

Obs	Conc	XTRAGEST	Pred	Resid	LB	UB
1	0	40.1	35.5111	4.58889	-4.55940	4.36090
2	40	39.9	35.0842	4.81579	-4.55940	4.36090
3	200	29.4	34.5143	-5.11429	-4.55940	4.36090

Butadienne Mouse Extragestational Weight
No Transform and no Covariate
LEVENE TEST FOR XTRAGEST
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.089663	0.96551

NOTE
By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

Butadienne Mouse Extragestational Weight Gain
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	4.22	0.0082	2.92364	37.0457	216.350

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
37.0457	216.350	253.395	0.14620

Butadienne Mouse Extragestational Weight Gain
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Extragestational Weight Gain
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.6211	0.5624	74	-1.10	0.2731	Dunnett	0.5480
Conc	200	0	-1.4095	0.5492	74	-2.57	0.0123	Dunnett	0.0326
Conc	1000	0	-1.8000	0.5555	74	-3.24	0.0018	Dunnett	0.0050

Butadienne Mouse Extragestational Weight Gain
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	7.6000	0.4030	74	18.86	<.0001
Conc	40	6.9789	0.3923	74	17.79	<.0001
Conc	200	6.1905	0.3731	74	16.59	<.0001
Conc	1000	5.8000	0.3823	74	15.17	<.0001

Butadienne Mouse Extragestational Weight Gain
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	5.8000	0.3823	74	15.17	<.0001
Conc	0	1.8000	0.5555	74	3.24	0.0018
Conc	40	1.1789	0.5478	74	2.15	0.0346
Conc	200	0.3905	0.5342	74	0.73	0.4671
Conc	1000	0	.	.	.	.

Butadienne Mouse Extragestational Weight Gain
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF xtragain
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	1.67622672	Variance	2.80973603
Skewness	0.20942915	Kurtosis	-0.2763264
Uncorrected SS	216.349674	Corrected SS	216.349674
Coeff Variation	.	Std Error Mean	0.1897953

Basic Statistical Measures

Location		Variability	
Mean	0.000000	Std Deviation	1.67623
Median	0.109524	Variance	2.80974
Mode	0.421053	Range	7.49048
		Interquartile Range	2.60000

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	3	Pr >= |M|	0.5716
Signed Rank	S	-25.5	Pr >= |S|	0.8999

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.978098	Pr < W	0.1986
Kolmogorov-Smirnov	D	0.07224	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.056747	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.428145	Pr > A-Sq	>0.2500

Quantiles (Definition 5)

Quantile	Estimate
100% Max	4.400000
99%	4.400000
95%	3.009524
90%	2.000000
75% Q3	1.109524
50% Median	0.109524
25% Q1	-1.490476
10%	-2.390476

```
 Butadienne Mouse Extragestational Weight Gain
        No Transform and no Covariate
  SHAPIRO-WILK TEST OF NORMALITY OF xtragain
               FULL DATA SET

          The UNIVARIATE Procedure
              Variable:  Resid

          Quantiles (Definition 5)

          Quantile       Estimate

          5%            -2.590476
          1%            -3.090476
          0% Min        -3.090476

            Extreme Observations

    ------Lowest-----        -----Highest-----

       Value      Obs           Value      Obs

    -3.09048       54         2.20000       60
    -3.00000       10         3.00952       53
    -2.67895       26         3.72105       34
    -2.59048       41         3.90000       17
    -2.57895       30         4.40000        1

  Stem Leaf                     #             Boxplot
     4 4                        1                |
     3 79                       2                |
     3 0                        1                |
     2                                           |
     2 0112                     4                |
     1 556789                   6                |
     1 0133344                  7             +-----+
     0 555777888999            12             |     |
     0 011134444                9             *--+--*
    -0 43322                    5             |     |
    -0 99987665                 8             |     |
    -1 110                      3             |     |
    -1 998886665                9             +-----+
    -2 44220                    5                |
    -2 7665                     4                |
    -3 10                       2                |
       ----+----+----+----+

                  Normal Probability Plot
 4.25+                                                  *+
     |                                                * *+++
     |                                               *+++
 2.75+                                             +++
     |                                         +** *
     |                                      ****
 1.25+                                  ****
     |                              *****
     |                          ***+
-0.25+                       ***
     |                    ****
     |                 +**
-1.75+              *****
     |         ****
     |      * ***+
-3.25+ *   +++
      +----+----+----+----+----+----+----+----+----+----+
          -2        -1         0        +1        +2
```

Butadienne Mouse Extragestational Weight Gain
No Transform and no Covariate
FULL DATA SET

NOTE
No outliers found.

Butadienne Mouse Extragestational Weight Gain
No Transform and no Covariate
LEVENE TEST FOR xtragain
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	1.20623	0.31349

NOTE
By Levene's test, the within-group variances are equal. A standard ANOVA will be done.

REPRODUCTIVE ENDPOINTS ANOVA

Butadienne Mouse Implantations per Dam
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	0.17	0.9134	5.31103	2.77850	393.016

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
2.77850	393.016	395.795	.007020044

Butadienne Mouse Implantations per Dam
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Implantations per Dam
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	0.5380	0.7580	74	0.71	0.4801	Dunnett	0.8144
Conc	200	0	0.2222	0.7402	74	0.30	0.7649	Dunnett	0.9810
Conc	1000	0	0.3222	0.7487	74	0.43	0.6682	Dunnett	0.9480

Butadienne Mouse Implantations per Dam
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	12.7778	0.5432	74	23.52	<.0001
Conc	40	13.3158	0.5287	74	25.19	<.0001
Conc	200	13.0000	0.5029	74	25.85	<.0001
Conc	1000	13.1000	0.5153	74	25.42	<.0001

Butadienne Mouse Implantations per Dam
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	13.1000	0.5153	74	25.42	<.0001
Conc	0	-0.3222	0.7487	74	-0.43	0.6682
Conc	40	0.2158	0.7383	74	0.29	0.7709
Conc	200	-0.1000	0.7200	74	-0.14	0.8899
Conc	1000	0	.	.	.	.

Butadienne Mouse Implantations per Dam
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF SITES
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	2.25922747	Variance	5.10410876
Skewness	-1.8445966	Kurtosis	6.82370472
Uncorrected SS	393.016374	Corrected SS	393.016374
Coeff Variation	.	Std Error Mean	0.25580714

Basic Statistical Measures

Location		Variability	
Mean	0.000000	Std Deviation	2.25923
Median	0.453216	Variance	5.10411
Mode	1.222222	Range	14.90000
		Interquartile Range	2.32222

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	4.5	Pr >= |M|	0.3492
Signed Rank	S	128	Pr >= |S|	0.4852

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.875401	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.118998	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.263681	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	1.686517	Pr > A-Sq	<0.0050

Quantiles (Definition 5)

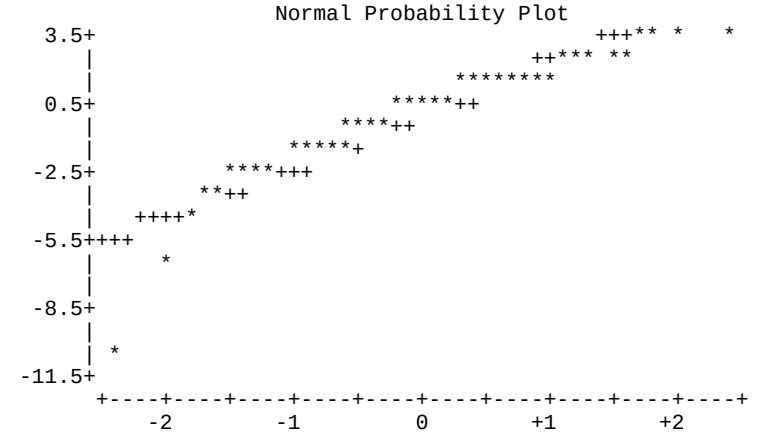
Quantile	Estimate
100% Max	3.900000
99%	3.900000
95%	3.000000
90%	2.222222
75% Q3	1.222222
50% Median	0.453216
25% Q1	-1.100000
10%	-2.315789

```
      Butadienne Mouse Implantations per Dam
          No Transform and no Covariate
     SHAPIRO-WILK TEST OF NORMALITY OF SITES
                 FULL DATA SET

          The UNIVARIATE Procedure
              Variable:  Resid

          Quantiles (Definition 5)

          Quantile        Estimate

          5%             -3.100000
          1%            -11.000000
          0% Min        -11.000000


            Extreme Observations

   ------Lowest------        -----Highest-----

       Value      Obs           Value      Obs

   -11.00000       55         2.90000       67
    -6.77778        3         3.00000       56
    -4.31579       30         3.00000       57
    -3.10000       72         3.68421       27
    -3.10000       59         3.90000       78


  Stem Leaf                     #             Boxplot
     3 0079                     4                |
     2 0002279                  7                |
     1 00000022222222777999    20             +-----+
     0 000002277779999         15             *--+--*
    -0 888333311                9             |     |
    -1 333111110                9             +-----+
    -2 883311000                9                |
    -3 11                       2                |
    -4 3                        1                |
    -5
    -6 8                        1                0
    -7
    -8
    -9
   -10
   -11 0                        1                *
       ----+----+----+----+
```

Butadienne Mouse Implantations per Dam
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF SITES
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne Mouse Implantations per Dam
No Transform and no Covariate
POSSIBLE OUTLIERS FROM ANOVA ON SITES
FULL DATA SET

Obs	Conc	sites	Pred	Resid	LB	UB
1	0	6	12.7778	-6.7778	-4.58333	4.70556
2	200	2	13.0000	-11.0000	-4.58333	4.70556

Butadienne Mouse Implantations per Dam
No Transform and no Covariate
LEVENE TEST FOR SITES
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.062664	0.97934

NOTE
By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

Butadienne Mouse Resorptions per Dam
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	0.62	0.6030	0.80997	1.51129	59.9374

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
1.51129	59.9374	61.4487	0.024594

Butadienne Mouse Resorptions per Dam
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Resorptions per Dam
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.2135	0.2960	74	-0.72	0.4731	Dunnett	0.8075
Conc	200	0	-0.3889	0.2891	74	-1.35	0.1826	Dunnett	0.3933
Conc	1000	0	-0.1556	0.2924	74	-0.53	0.5963	Dunnett	0.9086

Butadienne Mouse Resorptions per Dam
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	1.0556	0.2121	74	4.98	<.0001
Conc	40	0.8421	0.2065	74	4.08	0.0001
Conc	200	0.6667	0.1964	74	3.39	0.0011
Conc	1000	0.9000	0.2012	74	4.47	<.0001

Butadienne Mouse Resorptions per Dam
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	0.9000	0.2012	74	4.47	<.0001
Conc	0	0.1556	0.2924	74	0.53	0.5963
Conc	40	-0.05789	0.2883	74	-0.20	0.8414
Conc	200	-0.2333	0.2812	74	-0.83	0.4093
Conc	1000	0	.	.	.	.

Butadienne Mouse Resorptions per Dam
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF RESORP
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.88227441	Variance	0.77840814
Skewness	0.87464354	Kurtosis	0.06502112
Uncorrected SS	59.9374269	Corrected SS	59.9374269
Coeff Variation	.	Std Error Mean	0.09989791

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	0.88227
Median	-0.05556	Variance	0.77841
Mode	-0.66667	Range	3.38889
		Interquartile Range	1.17544

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	-2	Pr >= |M|	0.7343
Signed Rank	S	-2.5	Pr >= |S|	0.9901

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.889877	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.185319	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.45813	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	2.867847	Pr > A-Sq	<0.0050

Quantiles (Definition 5)

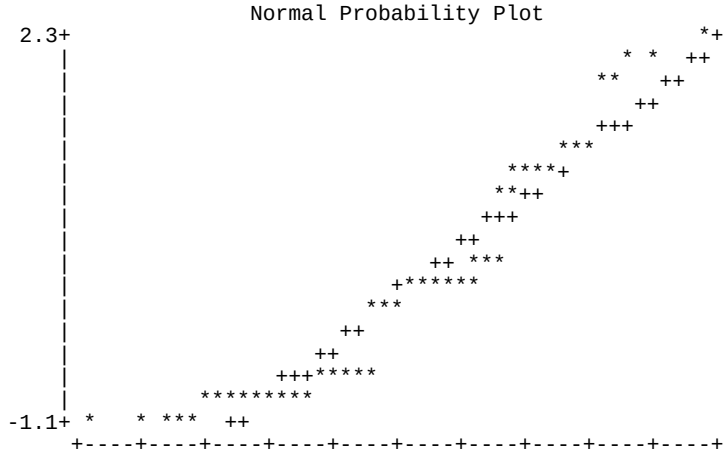
Quantile	Estimate
100% Max	2.3333333
99%	2.3333333
95%	1.9444444
90%	1.3333333
75% Q3	0.3333333
50% Median	-0.0555556
25% Q1	-0.8421053
10%	-0.9000000

```
                Butadienne Mouse Resorptions per Dam
                   No Transform and no Covariate
                SHAPIRO-WILK TEST OF NORMALITY OF RESORP
                            FULL DATA SET

                      The UNIVARIATE Procedure
                          Variable:  Resid

                      Quantiles (Definition 5)

                      Quantile        Estimate

                      5%            -1.0555556
                      1%            -1.0555556
                      0% Min        -1.0555556


                        Extreme Observations

              ------Lowest-----        -----Highest-----

                 Value      Obs           Value      Obs

              -1.05556       18         1.94444        3
              -1.05556        8         1.94444       15
              -1.05556        7         2.10000       74
              -1.05556        6         2.15789       30
              -1.05556        5         2.33333       46


            Stem Leaf                     #             Boxplot
              22 3                        1                0
              20 06                       2                0
              18 44                       2                |
              16                                           |
              14                                           |
              12 333                      3                |
              10 000666                   6                |
               8 44                       2                |
               6                                           |
               4                                           |
               2 33333                    5               +-----+
               0 0000000006666666        16               |  +  |
              -0 666666666                9               *-----*
              -2                                          |     |
              -4                                          |     |
              -6 777777777777            12               |     |
              -8 000000044444444         15               +-----+
             -10 66666                    5                  |
                 ----+----+----+----+
             Multiply Stem.Leaf by 10**-1
```

Butadienne Mouse Resorptions per Dam
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF RESORP
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne Mouse Resorptions per Dam
No Transform and no Covariate
POSSIBLE OUTLIERS FROM ANOVA ON RESORP
FULL DATA SET

Obs	Conc	RESORP	Pred	Resid	LB	UB
1	40	3	0.84211	2.15789	-2.60526	2.09649
2	200	3	0.66667	2.33333	-2.60526	2.09649
3	1000	3	0.90000	2.10000	-2.60526	2.09649

Butadienne Mouse Resorptions per Dam
No Transform and no Covariate
LEVENE TEST FOR RESORP
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.064525	0.97845

NOTE
By Levene's test, the within-group variances are
equal. A standard ANOVA will be done.

Butadienne Mouse Early Resorptions per Dam
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	1.49	0.2245	0.67054	2.99571	49.6197

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
2.99571	49.6197	52.6154	0.056936

Butadienne Mouse Early Resorptions per Dam
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Early Resorptions per Dam
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.4211	0.2693	74	-1.56	0.1223	Dunnett	0.2772
Conc	200	0	-0.5238	0.2630	74	-1.99	0.0501	Dunnett	0.1231
Conc	1000	0	-0.2500	0.2660	74	-0.94	0.3504	Dunnett	0.6622

Butadienne Mouse Early Resorptions per Dam
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	1.0000	0.1930	74	5.18	<.0001
Conc	40	0.5789	0.1879	74	3.08	0.0029
Conc	200	0.4762	0.1787	74	2.66	0.0094
Conc	1000	0.7500	0.1831	74	4.10	0.0001

Butadienne Mouse Early Resorptions per Dam
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	0.7500	0.1831	74	4.10	0.0001
Conc	0	0.2500	0.2660	74	0.94	0.3504
Conc	40	-0.1711	0.2623	74	-0.65	0.5164
Conc	200	-0.2738	0.2558	74	-1.07	0.2880
Conc	1000	0	.	.	.	.

Butadienne Mouse Early Resorptions per Dam
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF EARLY
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.80275236	Variance	0.64441135
Skewness	1.00642744	Kurtosis	0.45580126
Uncorrected SS	49.6196742	Corrected SS	49.6196742
Coeff Variation	.	Std Error Mean	0.09089381

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	0.80275
Median	-0.23810	Variance	0.64441
Mode	-0.47619	Range	3.42105
		Interquartile Range	1.00000

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	-4	Pr >= |M|	0.4030
Signed Rank	S	-206.5	Pr >= |S|	0.2284

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.893501	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.223475	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.472485	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	2.845967	Pr > A-Sq	<0.0050

Quantiles (Definition 5)

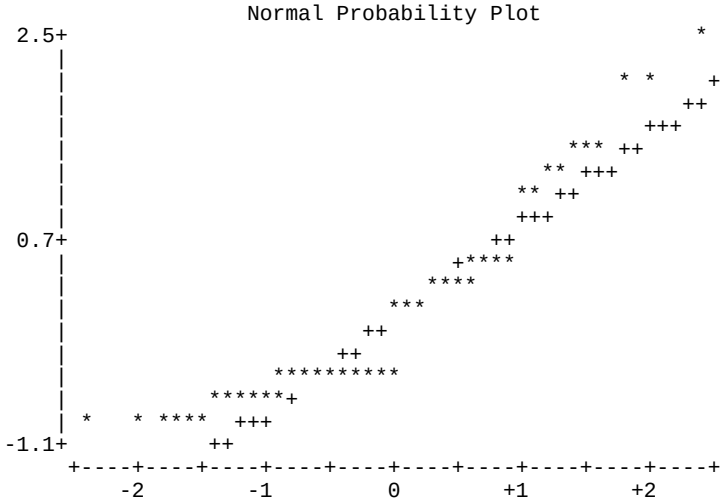
Quantile	Estimate
100% Max	2.421053
99%	2.421053
95%	1.523810
90%	1.250000
75% Q3	0.421053
50% Median	-0.238095
25% Q1	-0.578947
10%	-0.750000

```
                Butadienne Mouse Early Resorptions per Dam
                      No Transform and no Covariate
                 SHAPIRO-WILK TEST OF NORMALITY OF EARLY
                             FULL DATA SET

                        The UNIVARIATE Procedure
                            Variable:  Resid

                        Quantiles (Definition 5)

                        Quantile       Estimate

                        5%            -1.000000
                        1%            -1.000000
                        0% Min        -1.000000


                          Extreme Observations

                       ----Lowest----        -----Highest-----

                       Value      Obs           Value      Obs

                          -1       18         1.52381       53
                          -1       10         1.52381       58
                          -1        8         2.00000        3
                          -1        7         2.00000       15
                          -1        6         2.42105       30


            Stem Leaf                          #             Boxplot
              24 2                             1                0
              22
              20 00                            2                0
              18
              16
              14 2222                          4                |
              12 555                           3                |
              10 00                            2                |
               8                                               |
               6                                               |
               4 2222222222                   10             +-----+
               2 555555555                     9             |     |
               0 00000000                      8             |  +  |
              -0                                             |     |
              -2                                             *-----*
              -4 888888888888888888888888    25             +-----+
              -6 55555555                     8                |
              -8                                               |
             -10 000000                       6                |
                 ----+----+----+----+----+
             Multiply Stem.Leaf by 10**-1
```

Butadienne Mouse Early Resorptions per Dam
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF EARLY
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne Mouse Early Resorptions per Dam
No Transform and no Covariate
POSSIBLE OUTLIERS FROM ANOVA ON EARLY
FULL DATA SET

Obs	Conc	EARLY	Pred	Resid	LB	UB
1	0	3	1.00000	2.00000	-2.07895	1.92105
2	0	3	1.00000	2.00000	-2.07895	1.92105
3	40	3	0.57895	2.42105	-2.07895	1.92105

Butadienne Mouse Early Resorptions per Dam
No Transform and no Covariate
LEVENE TEST FOR EARLY
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.24105	0.86743

NOTE
By Levene's test, the within-group variances are equal. A standard ANOVA will be done.

Butadienne Mouse Late Resorptions per Dam
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	0.83	0.4829	0.16779	0.41658	12.4168

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
0.41658	12.4168	12.8333	0.032461

Butadienne Mouse Late Resorptions per Dam
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Late Resorptions per Dam
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	0.2076	0.1347	74	1.54	0.1276	Dunnett	0.2879
Conc	200	0	0.1349	0.1316	74	1.03	0.3085	Dunnett	0.6025
Conc	1000	0	0.09444	0.1331	74	0.71	0.4801	Dunnett	0.8145

Butadienne Mouse Late Resorptions per Dam
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	0.05556	0.09655	74	0.58	0.5668
Conc	40	0.2632	0.09397	74	2.80	0.0065
Conc	200	0.1905	0.08939	74	2.13	0.0364
Conc	1000	0.1500	0.09160	74	1.64	0.1057

Butadienne Mouse Late Resorptions per Dam
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	0.1500	0.09160	74	1.64	0.1057
Conc	0	-0.09444	0.1331	74	-0.71	0.4801
Conc	40	0.1132	0.1312	74	0.86	0.3913
Conc	200	0.04048	0.1280	74	0.32	0.7527
Conc	1000	0	.	.	.	.

Butadienne Mouse Late Resorptions per Dam
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF LATE
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.40156755	Variance	0.1612565
Skewness	2.31177678	Kurtosis	5.25650404
Uncorrected SS	12.4167502	Corrected SS	12.4167502
Coeff Variation	.	Std Error Mean	0.04546857

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	0.40157
Median	-0.15000	Variance	0.16126
Mode	-0.19048	Range	2.07268
		Interquartile Range	0.13492

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	-27	Pr >= |M|	<.0001
Signed Rank	S	-670.5	Pr >= |S|	0.0006

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.604731	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.401171	Pr > D	<0.0100
Cramer-von Mises	W-Sq	2.612322	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	13.11564	Pr > A-Sq	<0.0050

Quantiles (Definition 5)

Quantile	Estimate
100% Max	1.8095238
99%	1.8095238
95%	0.8500000
90%	0.7368421
75% Q3	-0.0555556
50% Median	-0.1500000
25% Q1	-0.1904762
10%	-0.2631579

Butadienne Mouse Late Resorptions per Dam
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF LATE
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Quantiles (Definition 5)

Quantile	Estimate
5%	-0.2631579
1%	-0.2631579
0% Min	-0.2631579

Extreme Observations

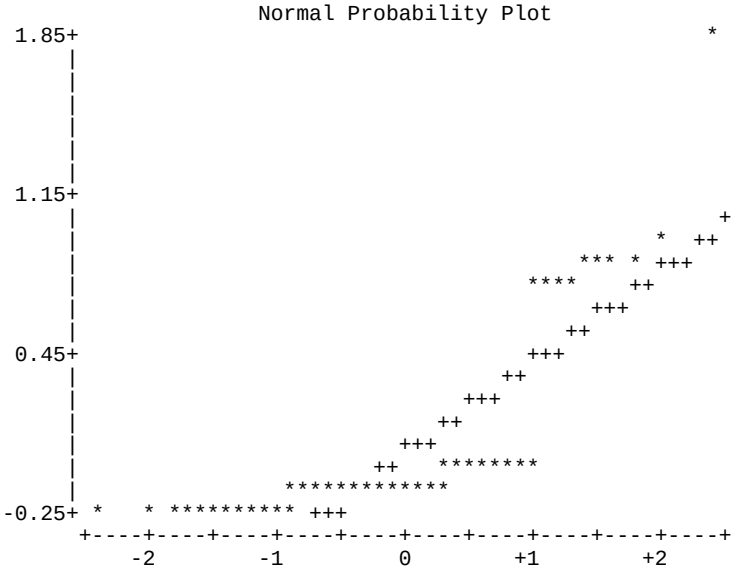
------Lowest------		------Highest-----	
Value	Obs	Value	Obs
-0.263158	36	0.850000	64
-0.263158	35	0.850000	74
-0.263158	34	0.850000	78
-0.263158	33	0.944444	10
-0.263158	32	1.809524	46

```
Stem Leaf                                     #             Boxplot
  18 1                                        1                *
  17
  16
  15
  14
  13
  12
  11
  10
   9 4                                        1                *
   8 11555                                    5                *
   7 44444                                    5                *
   6
   5
   4
   3
   2
   1
   0
  -0 66666666666666666                       17              +-----+
  -1 99999999999999999955555555555555555     35              *-----*
  -2 66666666666666                          14                 +
     ----+----+----+----+----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

Butadienne Mouse Late Resorptions per Dam
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF LATE
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne Mouse Late Resorptions per Dam
No Transform and no Covariate
POSSIBLE OUTLIERS FROM ANOVA ON LATE
FULL DATA SET

Obs	Conc	LATE	Pred	Resid	LB	UB
1	0	1	0.05556	0.94444	-0.39286	0.14683
2	40	1	0.26316	0.73684	-0.39286	0.14683
3	40	1	0.26316	0.73684	-0.39286	0.14683
4	40	1	0.26316	0.73684	-0.39286	0.14683
5	40	1	0.26316	0.73684	-0.39286	0.14683
6	40	1	0.26316	0.73684	-0.39286	0.14683
7	200	1	0.19048	0.80952	-0.39286	0.14683
8	200	2	0.19048	1.80952	-0.39286	0.14683
9	200	1	0.19048	0.80952	-0.39286	0.14683
10	1000	1	0.15000	0.85000	-0.39286	0.14683
11	1000	1	0.15000	0.85000	-0.39286	0.14683
12	1000	1	0.15000	0.85000	-0.39286	0.14683

Butadienne Mouse Late Resorptions per Dam
No Transform and no Covariate
LEVENE TEST FOR LATE
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.82757	0.48287

NOTE
By Levene's test, the within-group variances are equal. A standard ANOVA will be done.

Butadienne Mouse Percent Resorptions per Litter
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	1.28	0.2871	0.035043	0.13471	2.59318

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
0.13471	2.59318	2.72789	0.049382

Butadienne Mouse Percent Resorptions per Litter
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Percent Resorptions per Litter
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.06403	0.06157	74	-1.04	0.3018	Dunnett	0.5924
Conc	200	0	-0.1149	0.06013	74	-1.91	0.0599	Dunnett	0.1450
Conc	1000	0	-0.04143	0.06082	74	-0.68	0.4978	Dunnett	0.8314

Butadienne Mouse Percent Resorptions per Litter
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	0.2581	0.04412	74	5.85	<.0001
Conc	40	0.1940	0.04295	74	4.52	<.0001
Conc	200	0.1431	0.04085	74	3.50	0.0008
Conc	1000	0.2166	0.04186	74	5.18	<.0001

Butadienne Mouse Percent Resorptions per Litter
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	0.2166	0.04186	74	5.18	<.0001
Conc	0	0.04143	0.06082	74	0.68	0.4978
Conc	40	-0.02259	0.05997	74	-0.38	0.7075
Conc	200	-0.07348	0.05849	74	-1.26	0.2129
Conc	1000	0	.	.	.	.

Butadienne Mouse Percent Resorptions per Litter
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PRESORAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.18351469	Variance	0.03367764
Skewness	0.38959842	Kurtosis	-0.4379039
Uncorrected SS	2.59317827	Corrected SS	2.59317827
Coeff Variation	.	Std Error Mean	0.02077895

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	0.18351
Median	0.02851	Variance	0.03368
Mode	-0.14314	Range	0.78540
		Interquartile Range	0.31205

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	7	Pr >= |M|	0.1405
Signed Rank	S	-110.5	Pr >= |S|	0.5851

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.933503	Pr < W	0.0005
Kolmogorov-Smirnov	D	0.192562	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.322082	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	1.898069	Pr > A-Sq	<0.0050

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.5273379
99%	0.5273379
95%	0.3328408
90%	0.2444546
75% Q3	0.1180154
50% Median	0.0285102
25% Q1	-0.1940346
10%	-0.2166264

Butadienne Mouse Percent Resorptions per Litter
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PRESORAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Quantiles (Definition 5)

Quantile	Estimate
5%	-0.2580603
1%	-0.2580603
0% Min	-0.2580603

Extreme Observations

------Lowest-----		------Highest-----	
Value	Obs	Value	Obs
-0.25806	18	0.265538	15
-0.25806	8	0.332841	74
-0.25806	7	0.338133	46
-0.25806	6	0.421445	30
-0.25806	5	0.527338	3

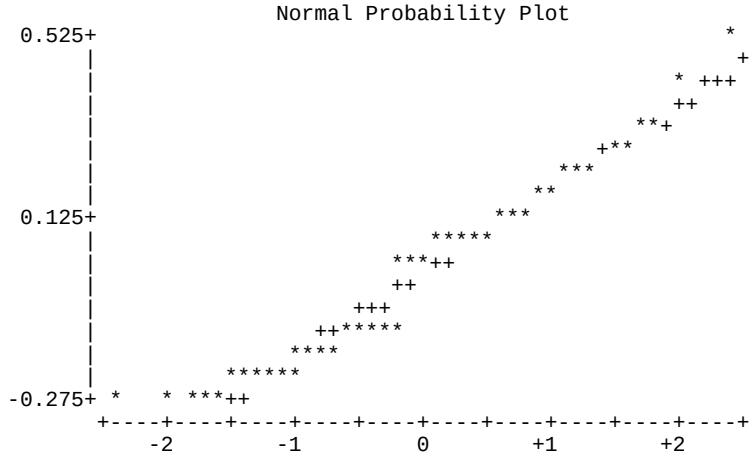
Stem	Leaf	#	Boxplot
5	3	1	
4			
4	2	1	
3			
3	34	2	
2	67	2	
2	01344	5	
1	689	3	
1	0111233344	10	+-----+
0	5566667888899	13	| |
0	011111144	9	*--+--*
-0			| |
-0			| |
-1	444444444444	12	| |
-1	99999999	8	+-----+
-2	2222222	7	|
-2	66666	5	|

Multiply Stem.Leaf by 10**-1

Butadienne Mouse Percent Resorptions per Litter
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PRESORAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



NOTE
No outliers found.

Butadienne Mouse Percent Resorptions per Litter
No Transform and no Covariate
LEVENE TEST FOR PRESORAS
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.057884	0.98158

NOTE
By Levene's test, the within-group variances are equal. A standard ANOVA will be done.

Butadienne Mouse Percent Early Resorptions per Litter
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	1.96	0.1267	0.033595	0.19799	2.48601

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
0.19799	2.48601	2.68400	0.073766

Butadienne Mouse Percent Early Resorptions per Litter
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Percent Early Resorptions per Litter
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	-0.1101	0.06029	74	-1.83	0.0717	Dunnett	0.1713
Conc	200	0	-0.1289	0.05887	74	-2.19	0.0317	Dunnett	0.0803
Conc	1000	0	-0.05017	0.05955	74	-0.84	0.4023	Dunnett	0.7290

Butadienne Mouse Percent Early Resorptions per Litter
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	0.2430	0.04320	74	5.63	<.0001
Conc	40	0.1329	0.04205	74	3.16	0.0023
Conc	200	0.1142	0.04000	74	2.85	0.0056
Conc	1000	0.1929	0.04098	74	4.71	<.0001
Conc	0	0.2430	0.04320	74	5.63	<.0001
Conc	40	0.1329	0.04205	74	3.16	0.0023
Conc	200	0.1142	0.04000	74	2.85	0.0056
Conc	1000	0.1929	0.04098	74	4.71	<.0001
Conc	0	0.2430	0.04320	74	5.63	<.0001
Conc	40	0.1329	0.04205	74	3.16	0.0023
Conc	200	0.1142	0.04000	74	2.85	0.0056
Conc	1000	0.1929	0.04098	74	4.71	<.0001

Butadienne Mouse Percent Early Resorptions per Litter
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	0.1929	0.04098	74	4.71	<.0001
Conc	0	0.05017	0.05955	74	0.84	0.4023
Conc	40	-0.05998	0.05872	74	-1.02	0.3103
Conc	200	-0.07871	0.05727	74	-1.37	0.1734
Conc	1000	0	.	.	.	.

Butadienne Mouse Percent Early Resorptions per Litter
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PEARLYAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.17968264	Variance	0.03228585
Skewness	0.64174355	Kurtosis	-0.0824116
Uncorrected SS	2.48601051	Corrected SS	2.48601051
Coeff Variation	.	Std Error Mean	0.02034505

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	0.17968
Median	-0.04801	Variance	0.03229
Mode	-0.11415	Range	0.78540
		Interquartile Range	0.27055

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	0	Pr >= |M|	1.0000
Signed Rank	S	-80.5	Pr >= |S|	0.6908

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.917501	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.237382	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.434461	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	2.385062	Pr > A-Sq	<0.0050

Quantiles (Definition 5)

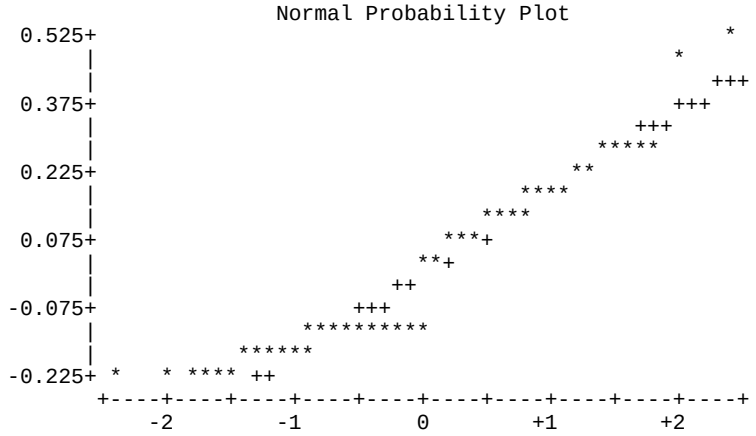
Quantile	Estimate
100% Max	0.5423684
99%	0.5423684
95%	0.2876513
90%	0.2476463
75% Q3	0.1376667
50% Median	-0.0480118
25% Q1	-0.1328831
10%	-0.1928643

```
            Butadienne Mouse Percent Early Resorptions per Litter
                       No Transform and no Covariate
                  SHAPIRO-WILK TEST OF NORMALITY OF PEARLYAS
                                FULL DATA SET

                            The UNIVARIATE Procedure
                                Variable:  Resid

                            Quantiles (Definition 5)

                            Quantile        Estimate

                            5%            -0.2430297
                            1%            -0.2430297
                            0% Min        -0.2430297

                              Extreme Observations

                 ------Lowest-----        ------Highest-----

                    Value      Obs            Value      Obs

                 -0.24303       18         0.280569       15
                 -0.24303       10         0.287651       33
                 -0.24303        8         0.288906       58
                 -0.24303        7         0.482597       30
                 -0.24303        6         0.542368        3

                Stem Leaf                          #             Boxplot
                   5 4                             1                |
                   4 8                             1                |
                   4                                                |
                   3                                                |
                   3                                                |
                   2 577899                        6                |
                   2 13                            2                |
                   1 5666678                       7                |
                   1 0013333444                   10             +-----+
                   0 578889                        6             |     |
                   0 233333                        6             |  +  |
                  -0                                             |     |
                  -0                                             *-----*
                  -1 333333333333111111111111    25             +-----+
                  -1 99999999                     8                |
                  -2 444444                       6                |
                     ----+----+----+----+----+
                 Multiply Stem.Leaf by 10**-1
```

Butadienne Mouse Percent Early Resorptions per Litter
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PEARLYAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne Mouse Percent Early Resorptions per Litter
No Transform and no Covariate
FULL DATA SET

NOTE
No outliers found.

Butadienne Mouse Percent Early Resorptions per Litter
No Transform and no Covariate
LEVENE TEST FOR PEARLYAS
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.23187	0.87391

NOTE
By Levene's test, the within-group variances are equal. A standard ANOVA will be done.

Butadienne Mouse Percent Late Resorptions per Litter
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	0.86	0.4636	0.010438	0.027064	0.77243

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
0.027064	0.77243	0.79949	0.033851

Butadienne Mouse Percent Late Resorptions per Litter
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Percent Late Resorptions per Litter
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	0.05394	0.03360	74	1.61	0.1127	Dunnett	0.2579
Conc	200	0	0.02969	0.03282	74	0.90	0.3685	Dunnett	0.6864
Conc	1000	0	0.02559	0.03319	74	0.77	0.4432	Dunnett	0.7762

Butadienne Mouse Percent Late Resorptions per Litter
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	0.01503	0.02408	74	0.62	0.5344
Conc	40	0.06897	0.02344	74	2.94	0.0043
Conc	200	0.04472	0.02229	74	2.01	0.0485
Conc	1000	0.04062	0.02285	74	1.78	0.0795
Conc	0	0.01503	0.02408	74	0.62	0.5344
Conc	40	0.06897	0.02344	74	2.94	0.0043
Conc	200	0.04472	0.02229	74	2.01	0.0485
Conc	1000	0.04062	0.02285	74	1.78	0.0795
Conc	0	0.01503	0.02408	74	0.62	0.5344
Conc	40	0.06897	0.02344	74	2.94	0.0043
Conc	200	0.04472	0.02229	74	2.01	0.0485
Conc	1000	0.04062	0.02285	74	1.78	0.0795

Butadienne Mouse Percent Late Resorptions per Litter
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	0.04062	0.02285	74	1.78	0.0795
Conc	0	-0.02559	0.03319	74	-0.77	0.4432
Conc	40	0.02835	0.03273	74	0.87	0.3892
Conc	200	0.004102	0.03192	74	0.13	0.8981
Conc	1000	0	.	.	.	.

Butadienne Mouse Percent Late Resorptions per Litter
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PLATEAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.10015741	Variance	0.01003151
Skewness	1.9739055	Kurtosis	2.52511185
Uncorrected SS	0.77242598	Corrected SS	0.77242598
Coeff Variation	.	Std Error Mean	0.01134059

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	0.10016
Median	-0.04062	Variance	0.01003
Mode	-0.04472	Range	0.41184
		Interquartile Range	0.02969

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	-27	Pr >= |M|	<.0001
Signed Rank	S	-670.5	Pr >= |S|	0.0006

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.611792	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.405799	Pr > D	<0.0100
Cramer-von Mises	W-Sq	2.695894	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	13.70029	Pr > A-Sq	<0.0050

Quantiles (Definition 5)

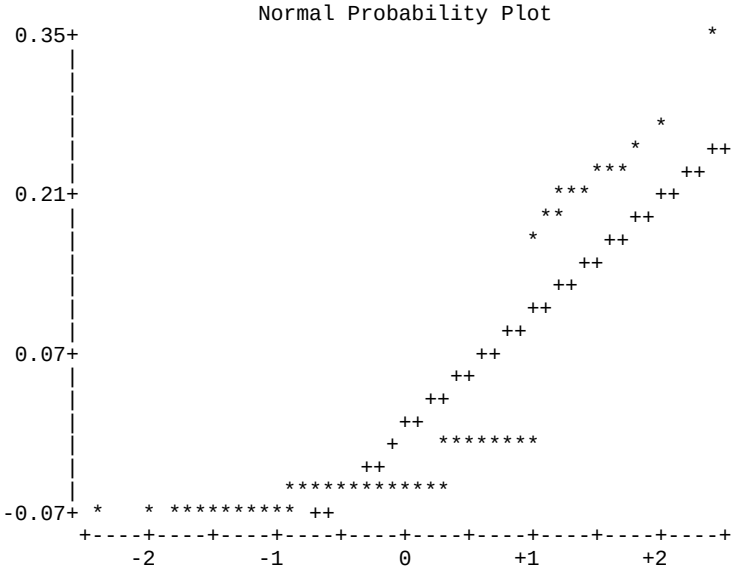
Quantile	Estimate
100% Max	0.3428738
99%	0.3428738
95%	0.2363120
90%	0.2043580
75% Q3	-0.0150305
50% Median	-0.0406207
25% Q1	-0.0447229
10%	-0.0689685

```
          Butadienne Mouse Percent Late Resorptions per Litter
                    No Transform and no Covariate
               SHAPIRO-WILK TEST OF NORMALITY OF PLATEAS
                           FULL DATA SET

                         The UNIVARIATE Procedure
                             Variable:  Resid

                         Quantiles (Definition 5)

                         Quantile        Estimate

                         5%            -0.0689685
                         1%            -0.0689685
                         0% Min        -0.0689685


                           Extreme Observations

                  -------Lowest------        ------Highest-----

                       Value      Obs             Value      Obs

                  -0.0689685       36         0.225827       40
                  -0.0689685       35         0.236312       52
                  -0.0689685       34         0.255519       10
                  -0.0689685       33         0.265657       74
                  -0.0689685       32         0.342874       46


        Stem Leaf                                  #             Boxplot
          34 3                                     1                *
          32
          30
          28
          26 6                                     1                *
          24 6                                     1                *
          22 166                                   3                *
          20 242                                   3                *
          18 42                                    2                *
          16 6                                     1                *
          14
          12
          10
           8
           6
           4
           2
           0
          -0 55555555555555555                    17             +-----+
          -2                                                     |     |
          -4 555555555555555555111111111111111111    35          *-----*
          -6 99999999999999                        14                +
             ----+----+----+----+----+----+----+
         Multiply Stem.Leaf by 10**-2
```

Butadienne Mouse Percent Late Resorptions per Litter
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PLATEAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



Butadienne Mouse Percent Late Resorptions per Litter
No Transform and no Covariate
POSSIBLE OUTLIERS FROM ANOVA ON PLATEAS
FULL DATA SET

Obs	Conc	PLATEAS	Pred	Resid	LB	UB
1	0	0.27055	0.015031	0.25552	-0.089261	0.029508
2	40	0.27055	0.068968	0.20158	-0.089261	0.029508
3	40	0.25268	0.068968	0.18371	-0.089261	0.029508
4	40	0.24498	0.068968	0.17601	-0.089261	0.029508
5	40	0.28103	0.068968	0.21207	-0.089261	0.029508
6	40	0.26116	0.068968	0.19219	-0.089261	0.029508
7	200	0.27055	0.044723	0.22583	-0.089261	0.029508
8	200	0.38760	0.044723	0.34287	-0.089261	0.029508
9	200	0.28103	0.044723	0.23631	-0.089261	0.029508
10	1000	0.26116	0.040621	0.22054	-0.089261	0.029508
11	1000	0.30628	0.040621	0.26566	-0.089261	0.029508
12	1000	0.24498	0.040621	0.20436	-0.089261	0.029508

Butadienne Mouse Percent Late Resorptions per Litter
No Transform and no Covariate
LEVENE TEST FOR PLATEAS
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.86425	0.46358

NOTE
By Levene's test, the within-group variances are equal. A standard ANOVA will be done.

Butadienne Mouse Percent Live Fetuses per Litter
No Transform and no Covariate

Effect	Num DF	Den DF	FValue	ProbF	MSERR	SSQRS	SSERR
Conc	3	74	1.28	0.2871	0.035043	0.13471	2.59318

ANOVA SUMMARY STATISTCS

MODELSS	SSERR	TOTSS	RSQUARE
0.13471	2.59318	2.72789	0.049382

Butadienne Mouse Percent Live Fetuses per Litter
No Transform and no Covariate
CLASS LEVEL INFORMATION
FULL DATA SET

Class	Levels	Values
Conc	4	0 40 200 1000

Butadienne Mouse Percent Live Fetuses per Litter
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	_Conc	Estimate	StdErr	DF	tValue	Probt	Adjustment	Adjp
Conc	40	0	0.06403	0.06157	74	1.04	0.3018	Dunnett	0.5924
Conc	200	0	0.1149	0.06013	74	1.91	0.0599	Dunnett	0.1450
Conc	1000	0	0.04143	0.06082	74	0.68	0.4978	Dunnett	0.8314

Butadienne Mouse Percent Live Fetuses per Litter
No Transform and no Covariate
LSMEANS
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Conc	0	1.3127	0.04412	74	29.75	<.0001
Conc	40	1.3768	0.04295	74	32.06	<.0001
Conc	200	1.4277	0.04085	74	34.95	<.0001
Conc	1000	1.3542	0.04186	74	32.35	<.0001
Conc	0	1.3127	0.04412	74	29.75	<.0001
Conc	40	1.3768	0.04295	74	32.06	<.0001
Conc	200	1.4277	0.04085	74	34.95	<.0001
Conc	1000	1.3542	0.04186	74	32.35	<.0001
Conc	0	1.3127	0.04412	74	29.75	<.0001
Conc	40	1.3768	0.04295	74	32.06	<.0001
Conc	200	1.4277	0.04085	74	34.95	<.0001
Conc	1000	1.3542	0.04186	74	32.35	<.0001

Butadienne Mouse Percent Live Fetuses per Litter
No Transform and no Covariate
PARAMETER ESTIMATES
FULL DATA SET

Effect	Conc	Estimate	StdErr	DF	tValue	Probt
Intercept	_	1.3542	0.04186	74	32.35	<.0001
Conc	0	-0.04143	0.06082	74	-0.68	0.4978
Conc	40	0.02259	0.05997	74	0.38	0.7075
Conc	200	0.07348	0.05849	74	1.26	0.2129
Conc	1000	0	.	.	.	.

Butadienne Mouse Percent Live Fetuses per Litter
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PLVFETAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Moments

N	78	Sum Weights	78
Mean	0	Sum Observations	0
Std Deviation	0.18351469	Variance	0.03367764
Skewness	-0.3895984	Kurtosis	-0.4379039
Uncorrected SS	2.59317827	Corrected SS	2.59317827
Coeff Variation	.	Std Error Mean	0.02077895

Basic Statistical Measures

Location		Variability	
Mean	0.00000	Std Deviation	0.18351
Median	-0.02851	Variance	0.03368
Mode	0.14314	Range	0.78540
		Interquartile Range	0.31205

Tests for Location: Mu0=0

Test	-Statistic-		-----p Value------	
Student's t	t	0	Pr > |t|	1.0000
Sign	M	-7	Pr >= |M|	0.1405
Signed Rank	S	110.5	Pr >= |S|	0.5851

Tests for Normality

Test	--Statistic---		-----p Value------	
Shapiro-Wilk	W	0.933503	Pr < W	0.0005
Kolmogorov-Smirnov	D	0.192562	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.322082	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	1.898069	Pr > A-Sq	<0.0050

Quantiles (Definition 5)

Quantile	Estimate
100% Max	0.2580603
99%	0.2580603
95%	0.2580603
90%	0.2166264
75% Q3	0.1940346
50% Median	-0.0285102
25% Q1	-0.1180154
10%	-0.2444546

Butadienne Mouse Percent Live Fetuses per Litter
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PLVFETAS

FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Quantiles (Definition 5)

Quantile	Estimate
5%	-0.3328408
1%	-0.5273379
0% Min	-0.5273379

Extreme Observations

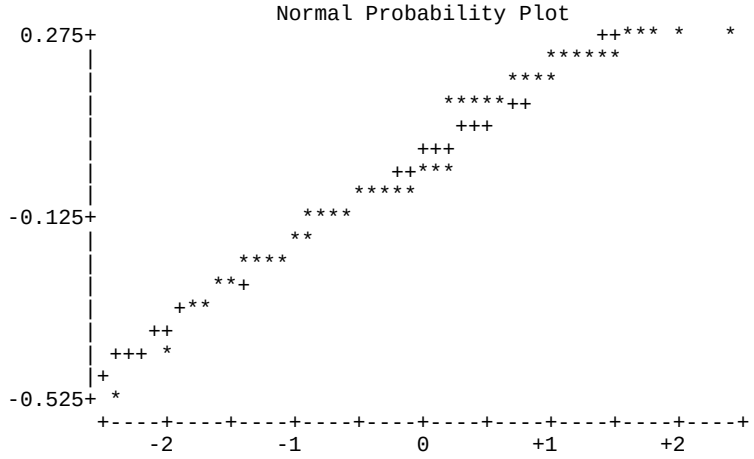
Lowest		Highest	
Value	Obs	Value	Obs
-0.527338	3	0.25806	5
-0.421445	30	0.25806	6
-0.338133	46	0.25806	7
-0.332841	74	0.25806	8
-0.265538	15	0.25806	18

```
Stem Leaf                     #             Boxplot
   2 66666                    5                |
   2 2222222                  7                |
   1 99999999                 8             +-----+
   1 444444444444            12             |     |
   0                                        |     |
   0                                        |  +  |
  -0 441111110                9             *-----*
  -0 9988887666655           13             |     |
  -1 4433321110              10             +-----+
  -1 986                      3                |
  -2 44310                    5                |
  -2 76                       2                |
  -3 43                       2                |
  -3                                           |
  -4 2                        1                |
  -4                                           |
  -5 3                        1                |
     ----+----+----+----+
 Multiply Stem.Leaf by 10**-1
```

Butadienne Mouse Percent Live Fetuses per Litter
No Transform and no Covariate
SHAPIRO-WILK TEST OF NORMALITY OF PLVFETAS
FULL DATA SET

The UNIVARIATE Procedure
Variable: Resid

Normal Probability Plot



NOTE
No outliers found.

Butadienne Mouse Percent Live Fetuses per Litter
No Transform and no Covariate
LEVENE TEST FOR PLVFETAS
FULL DATA SET

Effect	DF	LEVENE	P_VALUE
Conc	3	0.057884	0.98158

NOTE
By Levene's test, the within-group variances are equal. A standard ANOVA will be done.

APPENDIX D

Butadiene Mouse Fetal Data Reproduced from Hackett *et al.* (1987)

---------- Conc=0 ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
228	1	1	1	1.611	0.101
228	2	1	2	1.393	0.108
228	3	1	1	1.524	0.095
228	4	1	1	1.512	0.103
228	5	1	2	1.573	0.087
228	6	1	1	1.526	0.092
228	7	1	1	1.563	0.08
228	8	2	.	.	.
228	9	1	2	1.311	0.08
228	10	1	1	1.55	0.084
256	1	1	1	1.406	0.11
256	2	1	2	1.277	0.097
256	3	1	2	1.272	0.088
256	4	1	1	1.22	0.09
256	5	2	.	.	.
256	6	1	1	1.362	0.095
256	7	1	2	1.273	0.09
256	8	1	2	1.293	0.102
256	9	2	.	.	.
256	10	1	1	1.336	0.1
256	11	1	1	1.312	0.128
256	12	1	1	1.316	0.108
270	1	1	2	1.433	0.122
270	2	1	1	1.783	0.131
270	3	2	.	.	.
270	4	2	.	.	.
270	5	1	1	1.813	0.123
270	6	2	.	.	.
273	1	1	2	1.352	0.076
273	2	2	.	.	.
273	3	1	2	1.215	0.068
273	4	1	2	1.181	0.069
273	5	1	1	1.425	0.078
273	6	1	2	1.204	0.08
273	7	1	2	1.183	0.055
273	8	1	1	1.106	0.066
273	9	1	2	1.372	0.095
273	10	1	1	1.37	0.062
273	11	1	1	1.379	0.089
273	12	1	2	1.355	0.078
273	13	1	2	0.864	0.069
273	14	1	1	1.436	0.095
304	1	1	2	1.189	0.081
304	2	1	1	1.185	0.095
304	3	1	2	1.14	0.071
304	4	1	1	1.172	0.091
304	5	1	1	1.289	0.09
304	6	1	2	1.179	0.086
304	7	1	1	1.098	0.073

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=0 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
304	8	1	1	1.105	0.076
304	9	1	2	1.231	0.071
304	10	1	2	1.183	0.073
304	11	1	1	1.349	0.093
304	12	1	1	1.118	0.085
320	1	1	1	1.322	0.098
320	2	1	2	1.132	0.083
320	3	1	2	1.281	0.076
320	4	1	1	1.354	0.09
320	5	1	1	1.383	0.089
320	6	1	1	1.338	0.098
320	7	1	2	1.016	0.08
320	8	1	2	1.273	0.082
320	9	1	2	1.39	0.089
320	10	1	2	1.249	0.075
320	11	1	1	1.444	0.088
320	12	1	2	1.31	0.087
320	13	1	2	1.381	0.096
321	1	1	2	1.294	0.077
321	2	1	1	1.299	0.098
321	3	1	2	1.342	0.092
321	4	1	2	1.294	0.086
321	5	1	1	1.308	0.072
321	6	1	1	1.336	0.087
321	7	1	1	1.285	0.078
321	8	1	2	1.153	0.078
321	9	1	2	1.151	0.081
321	10	1	1	1.3	0.086
321	11	1	1	1.459	0.092
321	12	1	1	1.477	0.094
321	13	1	2	1.259	0.073
321	14	1	1	1.276	0.081
321	15	1	2	1.184	0.061
341	1	1	1	1.493	0.105
341	2	1	1	1.492	0.109
341	3	1	1	1.469	0.112
341	4	1	2	1.379	0.097
341	5	1	1	1.429	0.107
341	6	1	2	1.361	0.096
341	7	1	2	1.269	0.084
341	8	1	1	1.429	0.092
341	9	1	2	1.381	0.087
341	10	1	1	1.404	0.09
341	11	1	2	1.311	0.085
341	12	1	2	1.403	0.094
341	13	1	1	1.426	0.093
351	1	1	2	1.285	0.066
351	2	1	2	1.18	0.069

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=0 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
351	3	1	1	1.18	0.076
351	4	1	1	1.148	0.085
351	5	1	2	1.117	0.079
351	6	1	1	1.234	0.08
351	7	1	2	1.128	0.069
351	8	1	2	1.218	0.084
351	9	1	2	1.169	0.082
351	10	1	1	0.932	0.066
351	11	1	2	1.214	0.074
351	12	2	.	.	.
351	13	1	2	1.158	0.073
351	14	1	2	1.214	0.069
372	1	1	2	1.43	0.079
372	2	1	2	1.252	0.07
372	3	1	1	1.2	0.078
372	4	1	1	1.354	0.079
372	5	1	2	1.322	0.07
372	6	1	2	1.38	0.082
372	7	1	1	1.451	0.081
372	8	1	1	1.316	0.089
372	9	1	2	1.282	0.098
372	10	1	1	1.353	0.076
372	11	1	2	2.24	0.093
372	12	4	.	.	.
372	13	1	2	1.305	0.075
372	14	1	1	1.41	0.083
378	1	1	1	1.338	0.091
378	2	1	1	1.402	0.092
378	3	1	1	1.484	0.1
378	4	1	1	1.46	0.083
378	5	1	2	1.348	0.066
378	6	2	.	.	.
378	7	1	1	1.35	0.079
378	8	2	.	.	.
378	9	1	1	1.346	0.083
378	10	1	1	1.398	0.139
378	11	1	1	1.4	0.091
378	12	1	1	1.347	0.08
378	13	1	1	1.332	0.099
378	14	1	1	1.245	0.073
380	1	1	2	1.337	0.07
380	2	1	1	1.36	0.072
380	3	2	.	.	.
380	4	1	2	1.276	0.074
380	5	1	1	1.429	0.08
380	6	1	2	1.295	0.064
380	7	1	2	1.284	0.075
380	8	1	1	1.482	0.073

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

Conc=0 (continued)

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
380	9	1	2	1.334	0.06
380	10	1	2	1.236	0.074
380	11	1	1	1.385	0.067
380	12	1	1	1.357	0.085
380	13	1	2	1.38	0.089
380	14	1	1	1.275	0.084
388	1	2	.	.	.
388	2	1	1	1.511	0.08
388	3	1	2	1.37	0.094
388	4	1	1	1.459	0.1
388	5	1	2	1.428	0.087
388	6	1	2	1.345	0.095
388	7	1	2	1.441	0.097
388	8	1	2	1.376	0.09
388	9	1	1	1.279	0.104
388	10	1	2	1.419	0.087
391	1	1	2	1.208	0.059
391	2	1	1	1.341	0.06
391	3	1	2	1.362	0.084
391	4	1	1	1.482	0.087
391	5	1	2	1.46	0.077
391	6	1	1	1.281	0.063
391	7	1	1	1.179	0.061
391	8	2	.	.	.
391	9	1	2	1.07	0.058
391	10	1	2	1.261	0.063
391	11	1	1	1.269	0.057
391	12	1	1	1.344	0.064
391	13	1	1	1.489	0.082
391	14	1	1	1.502	0.098
415	1	1	1	1.459	0.086
415	2	2	.	.	.
415	3	2	.	.	.
415	4	1	1	1.364	0.085
415	5	2	.	.	.
415	6	1	2	1.288	0.085
415	7	1	1	1.226	0.089
415	8	1	2	1.332	0.082
415	9	1	2	1.137	0.082
415	10	1	1	1.333	0.094
415	11	1	1	1.217	0.074
415	12	1	1	1.456	0.102
418	1	1	2	1.154	0.109
418	2	1	2	1.281	0.073
418	3	1	2	1.383	0.091
418	4	1	1	1.354	0.09
418	5	1	2	1.318	0.094
418	6	1	2	0.957	0.073

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=0 ----------
(continued)

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
418	7	1	2	1.311	0.103
418	8	1	2	1.3	0.077
418	9	1	1	1.37	0.09
418	10	1	1	1.296	0.082
418	11	1	2	1.218	0.078
418	12	2	.	.	.
418	13	1	2	1.22	0.074
418	14	1	2	1.328	0.061
422	1	1	2	1.475	0.099
422	2	1	2	1.511	0.069
422	3	1	1	1.49	0.091
422	4	1	2	1.405	0.094
422	5	1	1	1.5	0.085
422	6	1	2	1.413	0.089
422	7	1	1	1.518	0.094
422	8	1	1	1.524	0.104
422	9	1	1	1.498	0.087
422	10	1	2	1.368	0.097
422	11	1	2	1.36	0.092
422	12	1	2	1.351	0.089
422	13	1	1	1.478	0.092
422	14	2	.	.	.
422	15	1	1	1.497	0.084
444	1	1	2	1.343	0.08
444	2	1	2	1.347	0.079
444	3	1	1	1.372	0.089
444	4	1	2	1.311	0.083
444	5	1	1	1.357	0.087
444	6	1	2	1.259	0.069
444	7	1	1	1.35	0.082
444	8	1	2	1.275	0.065
444	9	1	1	1.31	0.069
444	10	1	1	1.138	0.08
444	11	1	2	1.278	0.074
444	12	1	1	1.444	0.101
444	13	1	2	1.304	0.083
444	14	1	2	1.332	0.084

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=40 ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
242	1	1	1	1.47	0.091
242	2	2	.	.	.
242	3	1	1	1.377	0.1
242	4	1	1	1.429	0.106
242	5	1	2	1.363	0.083
242	6	1	2	1.325	0.089
242	7	1	1	1.269	0.091
242	8	1	1	1.319	0.09
242	9	1	2	1.33	0.086
242	10	1	1	1.381	0.084
242	11	1	2	1.214	0.073
242	12	1	2	1.302	0.1
242	13	2	.	.	.
246	1	1	2	1.422	0.112
246	2	1	2	1.394	0.103
246	3	1	2	1.237	0.102
246	4	1	1	1.329	0.094
246	5	1	2	1.372	0.108
246	6	1	2	0.94	0.084
246	7	1	2	1.287	0.105
246	8	1	1	1.356	0.106
246	9	1	2	1.29	0.092
246	10	1	2	1.304	0.096
246	11	1	1	1.168	0.109
263	1	1	2	1.308	0.083
263	2	1	1	1.313	0.084
263	3	1	2	1.373	0.085
263	4	1	2	1.275	0.076
263	5	1	2	1.378	0.078
263	6	1	2	1.295	0.068
263	7	1	2	1.301	0.083
263	8	1	1	1.287	0.081
263	9	2	.	.	.
263	10	1	2	1.326	0.084
263	11	1	1	1.363	0.097
263	12	1	2	1.312	0.086
263	13	1	2	1.321	0.078
263	14	1	2	1.048	0.08
286	1	1	1	1.429	0.095
286	2	1	2	1.233	0.188
286	3	1	1	1.32	0.086
286	4	1	1	1.326	0.083
286	5	1	1	1.359	0.095
286	6	1	2	1.334	0.088
286	7	1	2	1.321	0.083
286	8	1	1	1.426	0.106
286	9	1	1	1.407	0.081
286	10	1	2	1.283	0.088
286	11	1	2	1.356	0.076
286	12	1	2	1.142	0.055
286	13	1	1	1.409	0.09
286	14	1	1	1.313	0.098

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=40 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
295	1	1	1	1.428	0.106
295	2	1	1	1.292	0.091
295	3	1	1	1.25	0.074
295	4	1	1	1.443	0.076
295	5	1	2	1.241	0.09
295	6	1	2	1.23	0.089
295	7	1	1	1.289	0.102
295	8	4	.	.	.
295	9	1	1	1.376	0.106
295	10	1	1	1.287	0.084
295	11	1	2	1.157	0.08
295	12	1	2	1.291	0.088
295	13	1	1	1.349	0.09
295	14	1	2	1.264	0.066
302	1	1	1	1.133	0.096
302	2	1	1	1.14	0.104
302	3	1	2	1.065	0.088
302	4	1	1	1.193	0.105
302	5	1	2	1.079	0.091
302	6	1	1	1.108	0.084
302	7	4	.	.	.
302	8	1	1	1.183	0.082
302	9	1	2	1.191	0.091
302	10	1	1	1.172	0.098
302	11	1	2	1.121	0.061
302	12	1	1	1.038	0.077
302	13	1	1	1.13	0.083
302	14	1	1	1.22	0.105
302	15	1	1	1.167	0.09
302	16	1	1	1.173	0.093
307	1	1	2	1.343	0.091
307	2	1	2	1.227	0.099
307	3	1	1	1.356	0.13
307	4	1	1	1.423	0.113
307	5	1	1	1.351	0.096
307	6	1	2	1.179	0.078
307	7	1	2	1.364	0.093
307	8	1	1	1.397	0.112
307	9	1	1	1.362	0.102
307	10	1	1	1.384	0.114
307	11	1	2	1.252	0.095
307	12	1	2	1.265	0.107
307	13	1	2	1.35	0.116
311	1	1	1	1.378	0.083
311	2	1	1	1.337	0.083
311	3	1	1	1.4	0.089
311	4	1	2	1.315	0.078
311	5	1	2	1.297	0.082

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=40 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
311	6	1	1	1.43	0.079
311	7	1	1	1.38	0.087
311	8	1	2	1.294	0.077
311	9	1	2	1.296	0.074
311	10	1	2	1.31	0.066
311	11	1	1	1.28	0.078
311	12	1	2	1.063	0.078
312	1	1	1	1.344	0.095
312	2	1	1	1.239	0.067
312	3	1	2	1.273	0.083
312	4	1	2	1.249	0.072
312	5	1	2	1.259	0.089
312	6	1	2	1.149	0.063
312	7	1	1	1.312	0.083
312	8	1	2	1.217	0.072
312	9	1	2	1.386	0.098
312	10	1	1	1.235	0.098
312	11	1	2	1.151	0.07
312	12	1	1	1.215	0.085
312	13	1	1	1.291	0.075
312	14	1	1	1.146	0.092
312	15	1	2	1.199	0.066
312	16	4	.	.	.
312	17	1	1	1.305	0.075
314	1	1	1	1.405	0.093
314	2	1	2	1.184	0.077
314	3	1	1	1.184	0.092
314	4	1	1	1.424	0.082
314	5	1	2	1.3	0.077
314	6	1	1	1.313	0.094
314	7	1	1	1.416	0.108
314	8	1	1	1.437	0.09
314	9	1	2	1.288	0.065
314	10	2	.	.	.
314	11	1	2	1.287	0.071
314	12	1	2	1.321	0.08
318	1	1	1	1.482	0.11
318	2	1	2	1.289	0.086
318	3	1	1	1.245	0.073
318	4	1	1	1.379	0.095
318	5	1	2	1.256	0.075
318	6	1	1	1.217	0.093
318	7	1	2	1.339	0.092
318	8	1	2	1.308	0.081
318	9	4	.	.	.
318	10	1	2	1.205	0.073
318	11	1	1	1.49	0.169
318	12	1	2	1.284	0.105

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

Conc=40 (continued)

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
318	13	1	1	1.321	0.078
346	1	1	2	1.092	0.079
346	2	2	.	.	.
346	3	2	.	.	.
346	4	2	.	.	.
346	5	1	1	1.31	0.103
346	6	1	1	1.322	0.094
346	7	1	1	1.048	0.089
346	8	1	2	1.238	0.088
346	9	1	2	1.167	0.089
349	1	1	2	1.015	0.063
349	2	1	2	1.227	0.056
349	3	1	1	1.249	0.098
349	4	1	2	1.394	0.072
349	5	1	2	1.334	0.07
349	6	1	1	1.404	0.081
349	7	1	1	1.344	0.074
349	8	1	1	1.395	0.099
349	9	1	1	1.391	0.081
349	10	1	1	1.246	0.071
349	11	1	1	1.411	0.072
349	12	1	2	1.349	0.064
349	13	1	2	1.354	0.082
368	1	1	2	1.283	0.08
368	2	1	2	1.396	0.078
368	3	1	1	1.421	0.084
368	4	1	2	1.253	0.055
368	5	1	1	1.355	0.07
368	6	1	1	1.391	0.067
368	7	1	1	1.379	0.059
368	8	1	1	1.48	0.097
368	9	1	2	1.365	0.074
368	10	1	1	1.235	0.076
368	11	1	2	1.369	0.07
369	1	1	2	1.286	0.078
369	2	1	2	1.237	0.091
369	3	1	1	1.292	0.097
369	4	1	2	1.216	0.089
369	5	1	1	1.23	0.088
369	6	2	.	.	.
369	7	1	1	1.276	0.085
369	8	1	1	1.127	0.089
369	9	1	2	1.345	0.097
369	10	2	.	.	.
369	11	1	2	1.251	0.081
369	12	1	2	1.287	0.081
373	1	1	1	1.421	0.087
373	2	1	2	1.307	0.061

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

Conc=40 (continued)

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
373	3	1	2	1.28	0.062
373	4	1	1	1.342	0.076
373	5	1	2	1.315	0.061
373	6	1	1	1.382	0.093
373	7	1	1	1.391	0.076
373	8	1	1	1.338	0.069
373	9	1	1	1.301	0.08
373	10	1	1	1.289	0.067
373	11	1	1	1.266	0.086
373	12	1	2	1.27	0.066
373	13	1	2	1.308	0.065
373	14	1	2	1.268	0.057
373	15	1	2	1.259	0.061
381	1	2	.	.	.
381	2	1	1	1.401	0.075
381	3	1	2	1.243	0.074
381	4	1	2	1.077	0.062
381	5	1	1	1.278	0.086
381	6	1	1	1.283	0.072
381	7	1	1	1.289	0.08
381	8	1	1	1.399	0.073
381	9	1	2	1.238	0.059
381	10	1	1	1.234	0.059
381	11	1	1	1.344	0.082
381	12	1	2	1.41	0.074
381	13	1	2	1.39	0.075
381	14	1	2	0.902	0.059
381	15	1	2	1.37	0.069
390	1	1	2	1.277	0.077
390	2	1	1	1.338	0.095
390	3	1	2	1.25	0.072
390	4	1	2	1.211	0.056
390	5	1	2	1.215	0.079
390	6	1	2	1.058	0.051
390	7	1	2	1.082	0.064
390	8	1	2	1.078	0.063
390	9	1	2	1.085	0.071
390	10	1	1	1.009	0.078
390	11	1	1	1.187	0.058
390	12	1	2	1.351	0.084
390	13	1	2	1.303	0.067
390	14	1	2	1.298	0.08
433	1	1	1	1.314	0.101
433	2	1	1	1.225	0.1
433	3	1	2	1.115	0.093
433	4	1	1	1.141	0.086
433	5	1	2	1.202	0.112
433	6	1	2	1.214	0.089

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=40 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
433	7	1	1	1.23	0.092
433	8	1	1	1.194	0.088
433	9	1	1	1.293	0.098
433	10	1	1	1.358	0.11
433	11	1	2	1.168	0.078
433	12	2	.	.	.
433	13	4	.	.	.
433	14	1	2	1.239	0.085
433	15	1	2	1.252	0.086

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=200 ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
251	1	1	2	1.124	0.054
251	2	1	1	1.228	0.098
251	3	1	1	1.142	0.095
251	4	1	1	1.183	0.1
251	5	1	1	1.08	0.086
251	6	1	1	1.19	0.087
251	7	1	1	1.061	0.072
251	8	1	2	1.127	0.067
251	9	1	2	1.064	0.079
251	10	1	1	1.123	0.068
251	11	1	2	1	0.069
251	12	1	2	1.068	0.07
251	13	1	2	0.984	0.057
258	1	1	1	1.198	0.099
258	2	1	2	1.122	0.074
258	3	1	1	1.141	0.078
258	4	1	1	1.157	0.08
258	5	1	1	1.148	0.057
258	6	2	.	.	.
258	7	1	1	1.169	0.078
258	8	1	1	1.18	0.08
258	9	1	2	1.127	0.076
258	10	1	2	1.178	0.063
258	11	1	1	1.164	0.073
258	12	1	1	1.121	0.071
258	13	1	2	1.14	0.057
260	1	1	1	1.229	0.097
260	2	4	.	.	.
260	3	1	1	1.255	0.133
260	4	1	2	1.224	0.075
260	5	1	1	1.137	0.105
260	6	2	.	.	.

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=200 ----------
(continued)

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
260	7	1	1	1.294	0.101
260	8	1	2	1.088	0.077
260	9	1	2	1.223	0.081
260	10	1	2	1.175	0.067
260	11	1	1	1.181	0.093
260	12	1	2	1.13	0.067
260	13	1	1	1.186	0.094
260	14	1	1	1.217	0.094
265	1	1	2	1.075	0.077
265	2	1	1	1.049	0.077
265	3	1	2	1.131	0.083
265	4	1	1	1.139	0.091
265	5	1	1	1.118	0.062
265	6	1	2	1.038	0.066
265	7	1	2	1.078	0.075
265	8	1	2	1.064	0.057
265	9	1	2	0.988	0.065
265	10	1	1	0.974	0.095
265	11	1	2	0.978	0.073
265	12	1	2	0.921	0.05
265	13	1	2	1.051	0.056
272	1	1	1	1.041	0.073
272	2	1	1	0.953	0.08
272	3	1	2	1.051	0.064
272	4	1	2	1.018	0.076
272	5	1	2	1.037	0.071
272	6	1	2	1.01	0.066
272	7	1	1	0.953	0.055
272	8	1	2	0.962	0.066
272	9	1	2	1.026	0.067
272	10	1	1	1.127	0.065
272	11	1	1	0.993	0.066
272	12	1	1	1.122	0.071
272	13	1	2	0.905	0.068
272	14	1	2	1.06	0.082
274	1	1	1	1.135	0.073
274	2	1	1	1.192	0.083
274	3	1	1	1.13	0.066
274	4	1	2	0.983	0.062
274	5	1	1	1.187	0.087
274	6	1	2	0.995	0.082
274	7	1	2	1.115	0.08
274	8	1	1	0.826	0.056
274	9	1	2	0.967	0.047
274	10	1	1	1.15	0.07
274	11	1	1	1.176	0.079
274	12	1	2	1.106	0.089
274	13	1	1	1.167	0.069

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=200 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
274	14	1	2	1.038	0.069
274	16	1	1	1.138	0.081
296	1	1	2	1.19	0.108
296	2	1	1	1.1	0.103
296	3	1	1	1.159	0.106
296	4	1	2	1.124	0.116
296	5	1	1	1.092	0.081
296	6	1	1	1.18	0.106
296	7	1	2	1.063	0.095
296	8	1	2	1.113	0.112
296	9	1	2	1.097	0.11
296	10	1	1	1.094	0.106
296	11	1	2	1.06	0.083
319	1	1	2	1.071	0.071
319	2	1	2	1.207	0.085
319	3	1	2	1.175	0.06
319	4	1	2	1.139	0.077
319	5	1	1	1.148	0.074
319	6	1	1	1.144	0.083
319	7	1	2	1.092	0.079
319	8	2	.	.	.
319	9	1	2	0.951	0.054
319	10	1	1	1.182	0.087
319	11	1	1	1.146	0.07
319	12	1	1	1.186	0.07
319	13	1	2	0.973	0.034
319	14	1	1	1.073	0.068
319	15	1	1	1.121	0.055
328	1	2	.	.	.
328	2	1	2	0.975	0.072
328	3	1	1	1.028	0.089
328	4	1	2	1.007	0.101
328	5	1	1	1.033	0.101
328	6	4	.	.	.
328	7	1	1	1.1	0.113
328	8	1	2	0.906	0.076
328	9	1	1	0.843	0.072
328	10	4	.	.	.
328	11	1	1	0.99	0.081
328	12	1	2	1.064	0.088
328	13	1	2	1.026	0.107
328	14	1	1	1.002	0.1
337	1	1	1	1.205	0.08
337	2	1	2	1.102	0.053
337	3	1	1	1.231	0.076
337	4	1	2	1.112	0.066
337	5	1	2	1.098	0.066
337	6	1	2	1.087	0.055

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=200 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
337	7	1	1	1.07	0.067
337	8	1	1	1.207	0.079
337	9	1	2	1.048	0.059
337	10	1	1	1.173	0.068
337	11	1	2	0.945	0.058
337	12	1	1	1.141	0.072
339	1	1	1	1.163	0.095
339	2	1	1	1.207	0.082
339	3	1	2	1.072	0.071
339	4	1	1	1.09	0.094
339	5	1	1	0.993	0.074
339	6	1	2	1.049	0.065
339	7	1	2	1.073	0.084
339	8	1	1	1.11	0.072
339	9	1	2	1.034	0.078
339	10	1	1	1.056	0.086
339	11	1	1	0.73	0.069
342	1	1	2	0.979	0.094
342	2	1	1	1.148	0.094
342	3	1	1	1.028	0.07
342	4	1	1	1.116	0.086
342	5	1	1	1.162	0.083
342	6	1	1	1.135	0.096
342	7	1	2	1.026	0.066
342	8	1	2	1.071	0.087
342	9	1	1	1.119	0.073
342	10	1	1	1.116	0.098
342	11	1	1	1.134	0.076
343	1	2	.	.	.
343	2	1	2	1.097	0.068
343	3	1	2	1.118	0.066
343	4	1	1	1.052	0.063
343	5	1	1	1.133	0.088
343	6	1	2	1.087	0.056
343	7	1	2	0.981	0.059
343	8	1	1	1.049	0.079
343	9	1	1	1.077	0.061
343	10	1	2	1.036	0.063
343	11	1	2	1.159	0.079
343	12	1	2	0.94	0.044
343	13	1	1	1.101	0.064
343	14	1	2	1.057	0.061
348	1	1	2	1.257	0.102
348	2	1	2	1.162	0.073
348	3	1	1	1.255	0.1
348	4	1	2	1.181	0.096
348	5	1	2	1.154	0.08
348	6	1	1	1.161	0.09

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

Conc=200 (continued)

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
348	7	1	2	1.167	0.084
348	8	1	2	1.177	0.095
348	9	1	2	1.142	0.085
348	10	1	1	1.186	0.094
348	11	1	1	1.107	0.075
348	12	1	2	1.149	0.078
348	13	1	1	1.242	0.108
348	14	1	1	1.209	0.115
353	1	1	1	1.198	0.08
353	2	4	.	.	.
353	3	1	1	1.181	0.074
353	4	1	1	1.236	0.064
353	5	1	1	1.167	0.08
353	6	1	1	1.104	0.079
353	7	1	2	1.182	0.068
353	8	1	2	1.187	0.076
353	9	1	2	1.158	0.074
353	10	1	1	1.167	0.064
353	11	1	2	1.151	0.071
353	12	1	1	1.182	0.074
353	13	1	1	1.226	0.069
366	1	1	2	1.212	0.077
366	2	1	1	1.263	0.068
366	3	1	1	1.378	0.076
366	4	1	2	1.178	0.067
366	5	1	2	1.27	0.063
366	6	1	1	1.21	0.063
366	7	1	1	1.192	0.08
366	8	1	1	1.228	0.08
366	9	1	2	1.133	0.069
366	10	2	.	.	.
366	11	1	1	1.232	0.075
366	12	1	1	1.144	0.062
366	13	2	.	.	.
366	14	1	2	1.189	0.077
371	1	1	1	1.091	0.097
371	2	1	1	1.093	0.093
371	3	1	2	0.902	0.059
371	4	1	2	0.976	0.071
371	5	1	1	1.012	0.06
371	6	1	2	0.935	0.049
371	7	1	2	0.987	0.059
371	8	1	2	1.002	0.07
371	9	1	1	1.022	0.068
371	10	1	2	0.984	0.066
371	11	1	2	1.001	0.068
371	12	1	1	1.055	0.069
371	13	1	1	0.973	0.082

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=200 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
371	14	1	1	1.068	0.075
371	15	1	2	0.897	0.055
382	1	1	2	1.548	0.123
382	2	1	2	1.325	0.131
392	1	1	1	1.206	0.064
392	2	1	1	1.253	0.085
392	3	1	2	1.214	0.072
392	4	1	1	1.295	0.074
392	5	1	2	1.087	0.06
392	6	1	2	1.052	0.062
392	7	1	1	1.114	0.078
392	8	1	2	1.135	0.055
392	9	1	2	1.123	0.063
392	10	1	1	1.252	0.089
392	11	1	1	1.134	.
392	12	1	2	1.132	0.056
392	13	1	1	1.168	0.068
392	14	1	2	1.176	0.069
392	15	1	1	1.24	0.065
392	16	1	2	1.198	0.061
402	1	1	2	0.903	0.071
402	2	1	1	1.208	0.092
402	3	1	1	1.093	0.041
402	4	1	2	1.078	0.073
402	5	1	1	1.052	0.066
402	6	1	2	1.098	0.063
402	7	1	2	0.941	0.056
402	8	1	1	1.109	0.08
402	9	1	2	1.051	0.06
402	10	1	2	1.164	0.066
402	11	1	1	1.135	0.073
402	12	1	2	0.933	0.071
402	13	2	.	.	.
402	14	1	2	1.061	0.072
402	15	1	1	1.071	0.068
402	16	1	1	1.072	0.089
420	1	1	1	1.294	0.065
420	2	1	1	1.289	0.091
420	3	2	.	.	.
420	4	1	1	1.284	0.08
420	5	2	.	.	.
420	6	1	2	1.16	0.061
420	7	1	1	1.144	0.032
420	8	1	1	1.263	0.09
420	9	1	1	1.239	0.072
420	10	1	1	1.13	0.075
420	11	1	2	1.143	0.062
420	12	1	1	1.192	0.065
420	13	1	1	1.306	0.083

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=1000 ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
231	1	2	.	.	.
231	2	1	1	1.112	0.073
231	3	1	2	0.932	0.08
231	4	1	2	1.063	0.099
231	5	1	2	1.026	0.092
231	6	1	2	0.955	0.094
231	7	1	1	1.051	0.089
231	8	1	2	1.036	0.079
231	9	1	1	1.038	0.093
231	10	1	1	1.048	0.079
243	1	1	2	0.982	0.062
243	2	1	2	0.96	0.075
243	3	1	2	1.016	0.08
243	4	1	1	1.13	0.076
243	5	1	2	0.949	0.051
243	6	1	2	1.046	0.071
243	7	1	1	1.003	0.064
243	8	1	1	0.998	0.054
243	9	1	1	1.001	0.064
243	10	1	2	1.077	0.073
243	11	1	2	1.028	0.07
243	12	1	2	1.041	0.096
243	13	1	2	1.018	0.076
243	14	1	1	1.037	0.06
244	1	1	1	0.934	0.075
244	2	1	2	0.537	0.059
244	3	1	2	0.862	0.06
244	4	1	2	0.746	0.06
244	5	1	2	0.889	0.069
244	6	1	1	0.942	0.057
244	7	1	2	0.948	0.083
244	8	1	1	0.885	0.069
244	9	1	2	1	0.055
244	10	1	1	0.925	0.062
244	11	1	1	1.08	0.059
244	12	2	.	.	.
255	1	1	2	1.067	0.062
255	2	1	2	1.13	0.094
255	3	1	1	1.081	0.093
255	4	1	1	1.073	0.096

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=1000 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
255	5	1	1	1.056	0.084
255	6	1	2	1.034	0.05
255	7	1	1	1.087	0.073
255	8	1	2	1.078	0.089
255	9	1	2	1.058	0.09
255	10	1	1	1.087	0.08
255	11	1	1	1.133	0.077
255	12	1	1	1.131	0.07
264	1	1	1	1.067	0.074
264	2	1	1	0.901	0.06
264	3	1	2	1.057	0.07
264	4	1	2	0.96	0.063
264	5	1	2	1.036	0.06
264	6	1	2	0.856	0.054
264	7	1	2	0.937	0.069
264	8	1	1	0.95	0.078
264	9	1	2	1.09	0.071
264	10	1	1	1.162	0.075
264	11	1	2	1.074	0.069
264	12	1	1	1.004	0.074
264	13	1	1	1.083	0.079
264	14	1	2	1.001	0.059
276	1	1	1	0.862	0.061
276	2	1	2	0.93	0.053
276	3	1	2	0.786	0.058
276	4	1	2	0.783	0.058
276	5	4	.	.	.
276	6	1	2	0.809	0.05
276	7	1	1	0.737	0.061
276	8	1	1	0.964	0.069
276	9	1	1	1	0.067
276	10	1	1	0.84	0.06
276	11	1	1	0.85	0.058
276	12	1	1	0.695	0.049
276	13	1	1	0.934	0.059
276	14	1	2	0.79	0.05
276	15	1	1	0.915	0.063
294	1	1	1	1.047	0.08
294	2	1	1	1.164	0.101
294	3	1	1	1.091	0.101
294	4	1	2	0.917	0.082
294	5	1	1	1.085	0.084
294	6	1	1	1.059	0.077
294	7	1	2	0.934	0.061
294	8	1	1	1.042	0.085
294	9	1	2	0.958	0.061
294	10	1	2	1.029	0.065
294	11	1	1	0.958	0.065

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=1000 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
294	12	1	2	0.894	0.077
294	13	1	2	1.032	0.065
294	14	1	2	0.951	0.068
294	15	1	2	1.02	0.066
305	1	1	1	1.197	0.08
305	2	1	1	1.021	0.071
305	3	1	2	1.031	0.078
305	4	1	2	0.924	0.077
305	5	1	2	1.106	0.083
305	6	1	1	1.029	0.071
305	7	1	1	1.127	0.089
305	8	1	1	1.23	0.103
305	9	1	1	1.054	0.091
305	10	1	2	0.996	0.074
305	11	1	2	0.952	0.064
305	12	1	1	0.991	0.078
309	1	1	2	1.045	0.068
309	2	1	2	1.062	0.07
309	3	1	1	1.165	0.076
309	4	1	1	1.076	0.048
309	5	1	1	1.106	0.063
309	6	1	2	1.054	0.063
309	7	1	2	1.097	0.085
309	8	1	2	1.09	0.073
309	9	1	1	1.086	0.064
309	10	1	1	1.097	0.05
309	11	1	1	1.153	0.076
309	12	1	2	1.183	0.07
309	13	1	2	1.019	0.082
309	14	1	1	1.072	0.06
309	15	1	1	1.017	0.059
309	16	1	1	1.105	0.066
317	1	1	1	1.046	0.084
317	2	1	1	1.071	0.094
317	3	1	1	.	0.083
317	4	1	1	1.055	0.096
317	5	1	1	1.054	0.093
317	6	1	1	1.08	0.077
317	7	1	2	0.902	0.061
317	8	1	1	0.806	0.087
317	9	1	2	0.982	0.078
317	10	1	2	1.034	0.083
317	11	1	1	.	0.071
317	12	1	1	1.018	0.078
317	13	1	2	1.031	0.09
317	14	1	1	1.006	0.074
325	1	1	1	1.076	0.065
325	2	2	.	.	.

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

Conc=1000 (continued)

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
325	3	1	2	1.158	0.075
325	4	1	1	1.126	0.065
325	5	1	2	1.129	0.083
325	6	1	2	1.082	0.078
325	7	1	2	1.176	0.069
325	8	1	1	1.037	0.054
325	9	1	1	1.187	0.092
325	10	1	1	1.08	0.076
325	11	1	1	1.134	0.085
325	12	1	1	1.068	0.066
325	13	1	1	1.003	0.062
325	14	1	1	0.935	0.07
325	15	1	2	0.985	0.065
340	1	1	1	1.071	0.076
340	2	1	1	1.106	0.088
340	3	1	2	1.078	0.076
340	4	1	1	1.112	0.07
340	5	1	2	1.045	0.079
340	6	1	1	1.017	0.087
340	7	2	.	.	.
340	8	1	1	1.09	0.097
340	9	2	.	.	.
340	10	1	2	1.143	0.074
340	11	1	1	1.138	0.083
340	12	1	2	1.069	0.073
340	13	1	1	1.056	0.075
365	1	1	1	0.846	0.085
365	2	1	2	0.829	0.081
365	3	1	2	0.937	0.145
365	4	1	2	0.688	0.102
365	5	1	2	0.868	0.104
365	6	1	2	0.57	0.083
365	7	1	1	0.839	0.082
365	8	1	2	0.945	0.075
365	9	1	1	0.902	0.076
365	10	1	1	0.818	0.066
365	11	2	.	.	.
374	1	2	.	.	.
374	2	1	2	1.022	0.064
374	3	1	2	1.048	0.069
374	4	1	1	1.091	0.079
374	5	1	1	1.048	0.082
374	6	1	1	1.15	0.078
374	7	1	1	1.201	0.082
374	8	1	1	1.068	0.055
374	9	1	1	1.092	0.079
374	10	1	1	1.077	0.064
377	1	1	2	1.189	0.081

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

Conc=1000 (continued)

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
377	2	1	1	1.129	0.092
377	3	1	2	1.049	0.076
377	4	1	2	1.127	0.072
377	5	1	1	0.985	0.079
377	6	2	.	.	.
377	7	1	1	1.058	0.079
377	8	1	1	1.248	0.081
377	9	1	1	1.02	0.071
377	10	1	2	1.188	0.062
377	11	1	2	1.082	0.076
377	12	1	2	1.025	0.063
377	13	1	2	1.155	0.084
389	1	1	1	1.087	0.074
389	2	1	2	1.025	0.067
389	3	1	2	1.074	0.067
389	4	1	2	1.14	0.07
389	5	2	.	.	.
389	6	1	2	1.015	0.071
389	7	1	2	0.945	0.057
389	8	1	1	1.191	0.078
389	9	1	1	1.182	0.09
389	10	4	.	.	.
389	11	2	.	.	.
400	1	1	2	1.276	0.075
400	2	1	2	1.375	0.053
400	3	1	1	1.341	0.075
400	4	1	1	1.468	0.074
400	5	1	2	1.349	0.065
400	6	2	.	.	.
400	7	1	1	1.249	0.085
400	8	2	.	.	.
400	9	1	1	1.358	0.06
400	10	1	1	1.368	0.08
400	11	1	1	1.415	0.085
400	12	1	2	1.3	0.056
427	1	1	2	1.119	0.063
427	2	1	1	1.235	0.072
427	3	1	1	1.222	0.089
427	4	1	1	1.153	0.084
427	5	1	1	1.078	0.062
427	6	1	2	1.032	0.066
427	7	1	1	0.975	0.066
427	8	1	1	1.092	0.075
427	9	1	1	1.217	0.079
427	10	1	2	1.121	0.058
427	11	1	2	1.105	0.058
427	12	1	1	1.172	0.068
427	13	2	.	.	.

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

Butadiene Mouse Fetal Data

---------- Conc=1000 (continued) ----------

Dam	SITE	Status	Sex	Fetal Wt	Placenta Wt
427	14	1	1	1.188	0.065
428	1	1	2	1.017	0.065
428	2	1	1	0.965	0.068
428	3	1	2	1.044	0.081
428	4	1	2	0.993	0.07
428	5	1	2	0.971	0.054
428	6	1	1	1.011	0.072
428	7	1	2	0.928	0.06
428	8	1	2	0.956	0.07
428	9	2	.	.	.
428	10	1	2	1.069	0.061
428	11	1	2	0.935	0.047
428	12	1	2	0.982	0.064
445	1	1	1	0.889	0.056
445	2	4	.	.	.
445	3	1	2	0.926	0.054
445	4	1	1	1.105	0.069
445	5	1	1	1.058	0.064
445	6	1	2	.	0.071
445	7	1	2	1.039	0.066
445	8	1	1	1.067	0.069
445	9	1	2	0.983	0.067
445	10	1	1	1.056	0.056
445	11	1	2	0.977	0.061
445	12	1	2	0.975	0.057
445	13	1	2	0.993	0.062
445	14	2	.	.	.
445	15	1	2	1.021	0.05
445	16	1	2	0.53	0.055
445	17	1	1	1.03	0.082

Status: 1=Live; 2=Early Resorption; 3=Late Resorption
Sex: Male=1; Female=2

APPENDIX E

Butadiene Mouse Maternal Weights Reproduced from Hackett *et al.* (1987)

Butadiene Mouse Maternal Weights

Obs	DAM	GRP	PREG	PREWT	DG0 WT	DG6 WT	DG11 WT	DG18 WT	DG20 WT	UTERUSWT
1	228	1	1	27.4	26.8	31.6	38.4	49.8	56	17.2
2	256	1	1	30.2	30	30.4	37.8	48.8	53.9	16.7
3	270	1	1	28.4	26.4	30.6	32.8	39.4	41.6	6.3
4	273	1	1	27.8	26.6	29.6	35.8	48.8	54.9	19.8
5	304	1	1	31.2	29.4	30.6	34.4	48.2	52.9	18.1
6	320	1	1	27.6	26.8	30	36	51.2	57.7	21.3
7	321	1	1	28.8	29.4	30	36.4	53	60.4	24.4
8	341	1	1	28.2	27.8	30.2	35.8	50.2	58.5	22.4
9	351	1	1	26.8	28.2	30	35.2	49.8	53.8	19.6
10	372	1	1	28.6	28.2	30	34.6	48.4	54.7	21.9
11	378	1	1	29.8	27	30	35	50.4	55.9	20.5
12	380	1	1	27.2	27.4	30.6	36.2	50.4	56.1	21.1
13	388	1	1	27	26.8	27.8	33.4	43.8	48.2	15.6
14	391	1	1	27.6	28.4	31	35.6	50.2	55	20.9
15	415	1	1	27.8	27.6	31.2	33.8	44.2	48.1	14.9
16	418	1	1	28.6	28.2	31.4	36.4	50.6	55.4	20.5
17	422	1	1	29.6	28.6	32.2	41.6	57.4	64.6	24.5
18	444	1	1	28.8	28.8	34.4	40.6	54.2	59.6	22.4
19	234	1	0	28	29	28.6	29.8	30	29	0.1
20	240	1	0	29.2	29.4	32	30.8	32.2	32.4	0.2
21	268	1	0	28.2	28	31.6	32	33	31.7	0.3
22	282	1	0	28	28.8	30.6	31.4	30.4	29.7	0.1
23	283	1	0	27.6	26.4	29.2	28.4	28.6	28.3	0.3
24	293	1	0	31.2	30.4	30.4	29.8	30.4	30	0.1
25	301	1	0	28.8	24.8	29.2	30.8	30	29.9	0.2
26	323	1	0	28	27.2	28.6	29.6	29	26.4	0.1
27	338	1	0	29	28.6	28.2	28.4	30.2	28.6	0.1
28	352	1	0	26.4	27	30	29.4	29.6	28.3	0.1
29	355	1	0	27.8	27.6	30.4	28.8	29.2	28.6	0.3
30	387	1	0	29.8	29.2	32.6	31.2	30.2	28.5	0.1
31	399	1	0	28.8	28.6	31.2	30	29.2	28.6	0.1
32	409	1	0	29.8	28.8	29.8	31.2	32	30.9	0.2
33	242	2	1	26.2	26.6	29.2	33	44.2	50.1	19
34	246	2	1	29	28.6	30.8	37.2	48.6	54	18
35	263	2	1	27	28.8	32.2	38.2	50.8	56.7	20.6
36	286	2	1	28.4	29.4	32.8	37	50.4	58.5	22.7
37	295	2	1	29.6	28	32.8	38.8	51.2	57.3	21.9
38	302	2	1	29.2	28.2	31.4	36.8	50.8	57.1	23
39	307	2	1	27	26.4	29.6	36	49.6	55.3	21.5
40	311	2	1	30.8	29	31.2	37.2	48.4	52.7	19.4
41	312	2	1	26.8	28.8	32	38	54.4	61.8	25.5
42	314	2	1	27.2	27	31.8	38.8	50.2	54.3	18.7
43	318	2	1	27	26.8	30.2	37	49.6	55	20.7
44	346	2	1	27.6	28.2	26.8	30.2	39.6	42	9.4
45	349	2	1	28.4	28	31.8	38	50.4	56.6	21.8
46	350	2	0	28.6	28.4	28.6	29.8	29.6	28	0.2
47	368	2	1	27.6	26.8	28.6	34.2	45.8	51.4	18.5
48	369	2	1	27	27.8	30.8	36.4	49.2	52.4	16.3
49	373	2	1	31	29.2	34.8	41	57.6	64.7	24.8
50	381	2	1	29.6	28.8	31.2	38.8	51.6	59.2	22
51	390	2	1	29.4	30.2	33	37.8	49.8	56.2	20.8
52	433	2	1	28.2	27.4	30.6	37.4	51	56.8	20.9
53	229	2	0	28.4	29	30.4	30	30.6	28.1	0.2
54	237	2	0	27.8	26.6	28.4	30	30	28.3	0.1
55	269	2	0	28.4	27.8	30.6	31.6	30.4	29.2	0.1
56	279	2	0	31	29	30.8	31.6	31.8	31.5	0.2
57	289	2	0	27.6	29.4	31.2	30.6	30.6	30.1	0.3
58	291	2	0	28.4	27.4	28.2	29.6	29.8	28.5	0.1
59	315	2	0	27.2	27.8	32	31.8	31.4	29.1	0.1
60	326	2	0	25.4	25.4	27	27.4	27	27.2	0.2
61	329	2	0	27.6	27.6	29.2	28.6	27.6	27	0.3
62	376	2	0	27.2	26.4	29.6	30.4	28.8	26.9	0.2
63	379	2	0	29	28	30.8	31	30.8	29.5	0.1
64	395	2	0	30	28.8	28.6	29.4	30.2	28.1	0.2
65	401	2	0	28.8	28	28.6	29.8	29.8	27.8	0.1
66	251	3	1	25.8	25.8	28.6	32.6	43	49.4	18.5
67	258	3	1	30.8	29.4	31.4	37	47.2	51.3	17.3
68	260	3	1	30	29	32.2	37.4	49.6	55.5	20.2
69	265	3	1	27.2	25.8	30	36.8	48.8	52.9	23.5
70	272	3	1	30	27.6	30.8	35.4	47.8	54.8	18.9
71	274	3	1	29.8	30.4	32.2	39.4	52.8	58.4	20.9
72	296	3	1	27.8	29.6	32.6	38	46.8	52.8	15.9

Butadiene Mouse Maternal Weights

Obs	DAM	GRP	PREG	PREWT	DG0 WT	DG6 WT	DG11 WT	DG18 WT	DG20 WT	UTERUSWT
73	319	3	1	27.4	28	30.8	37	50	54.8	19.6
74	328	3	1	27.6	27	30	35	47.8	50.6	15.3
75	337	3	1	27.2	28	30.8	35.2	45.8	49.4	17
76	339	3	1	26.4	27.2	29.2	35	46.2	51.2	16
77	342	3	1	27.2	28.6	30.8	35	44.6	49	15.7
78	343	3	1	31	31.2	33.2	38.4	51.2	52.9	17.9
79	348	3	1	28	28	31.2	38.2	51.6	56.9	21.2
80	353	3	1	27.4	27.6	28.6	34.8	46.8	52.2	17.6
81	366	3	1	26.8	29	31.8	39	49.8	56.5	18.3
82	371	3	1	27.4	29.2	30.6	34.8	46.6	52	19.7
83	382	3	1	28.6	27.8	28.6	32.4	36.8	36.5	4.1
84	392	3	1	28	28.2	31.2	38	52.6	58	23.5
85	402	3	1	27.8	28.8	31	38.6	51	56.4	20.5
86	420	3	1	29.4	28.6	31	35.8	46.6	51.5	16.6
87	238	3	0	28.8	28.2	28	28.4	28	27.3	0.2
88	241	3	0	29.4	26.4	27.6	28.8	29.6	28.7	0.2
89	275	3	0	31.2	28.2	29.2	31.4	30.2	28.3	0.1
90	284	3	0	28.6	26	30	28.8	29.2	27.3	0.2
91	287	3	0	28.2	28	28.4	28	28.2	27.2	0.1
92	290	3	0	28.4	26.4	28	29	29.6	27.7	0.2
93	364	3	0	28.8	28.2	28.6	28.8	29.4	28.2	0.1
94	384	3	0	29.4	28	30.4	31	31.6	28.8	0.1
95	386	3	0	30.8	29	31.4	30.8	31.6	28.3	0.1
96	398	3	0	25.4	27.4	28.6	28.8	27.8	26.8	0.1
97	231	4	1	27	26.6	28.8	33.2	41.6	46.2	12.5
98	243	4	1	28.2	28.2	31.2	38.6	51	55.7	19.5
99	244	4	1	26.8	28	29.8	32.8	41.4	47.3	14.2
100	255	4	1	29	28.8	30.8	35	46.4	51.4	17.4
101	264	4	1	28.6	27	30	35	46.8	51.8	18.5
102	276	4	1	30.6	29.6	31	34.8	46.2	51	15.9
103	294	4	1	27.2	26.6	31.4	36.6	49.2	53.5	19.7
104	305	4	1	28	26.8	29.4	33.4	43	49	18.3
105	309	4	1	30	30	32.2	36.4	50.8	58	22.5
106	317	4	1	26.2	27.8	30.6	34.2	44.6	51.9	18.5
107	325	4	1	28.6	28.8	30.6	35.6	49	55.2	19.9
108	340	4	1	28.2	27.6	31	38.6	46.4	49.6	15.8
109	365	4	1	28	29.2	31	34.6	42.4	45	12.4
110	374	4	1	29.4	29.2	30	34.6	44.2	47.3	12.8
111	377	4	1	30.4	28.6	31	37.2	48.8	53.6	17.3
112	389	4	1	29	28.4	30.6	35.2	43.8	46.1	11.2
113	400	4	1	29.6	29.4	31.8	35.8	45.8	49.6	16.6
114	427	4	1	31	30.8	33.2	39.6	51.6	57.3	19
115	428	4	1	27	26.6	28	32.6	41.8	46	14.5
116	445	4	1	26.4	27.2	29.6	35.2	46.4	51.2	19
117	261	4	0	28.4	28.2	27.8	28.4	28.2	28.2	0.3
118	280	4	0	29.4	27.6	29.8	30.8	31.6	28.9	0.2
119	298	4	0	26	26.6	27.2	27.2	27.2	25.7	0.2
120	330	4	0	28	28.4	30.2	30.8	29.4	28.6	0.1
121	360	4	0	28.8	28.8	29	30.8	30.6	29.6	0.1
122	375	4	0	28.6	28.6	29	29.2	30	29.6	0.2
123	383	4	0	28.4	28	28.2	28	26.6	26.6	0.1
124	397	4	0	29.6	27.4	27.8	29.4	29.2	27	0.1
125	408	4	0	30	27.8	28.8	30.4	30.8	28.9	0.2
126	440	4	0	26.2	27.8	28.2	29.6	27.8	26.8	0.2
127	292	4	-1	28.2	29.4	31.6	27	-1	-1	-1
128	332	4	-1	27.2	27.8	26.8	22.2	-1	-1	-1

Subject to payment of data compensation for use in meeting regulatory requirements.