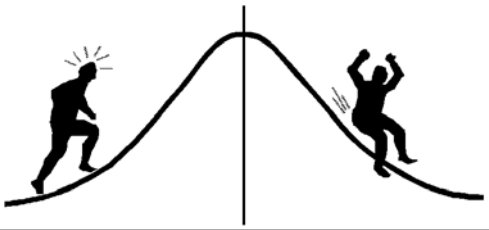

BIOMETRICS INFORMATION

Index of Pamphlet Topics

for pamphlets #1 to #63 as of January, 2007

Adjusted R-square

18: Multiple regression: selecting the best subset

ANCOVA: Analysis of Covariance

13: ANCOVA: comparing adjusted means
31: ANCOVA: The linear models behind the F-tests
62: The Box-Cox transformation

ANOVA: Analysis of Variance

2: The importance of replication in analysis of variance
3: ANOVA using SAS: specifying error terms
4: ANOVA using SAS: How to pool error terms
6: Using plot means for ANOVA
9: Reading category variables with statistics software
14: ANOVA: Factorial designs with a separate control
16: ANOVA: Contrasts viewed as t-tests
19: ANOVA: Approximate or Pseudo F-tests
21: What are degrees of freedom?
22: ANOVA: Using a hand calculator to test a one-way ANOVA
23: ANOVA: Contrasts viewed as correlation coefficients
25: ANOVA: The within sums of squares as an average variance
26: ANOVA: Equations for linear and quadratic contrasts
27: When the t-test and the F-test are equivalent
28: Simple regression with replication: testing for lack of fit
39: A repeated measures example
40: Finding the expected mean squares and the proper error terms with SAS
45: Calculating contrast F-tests when SAS will not
48: ANOVA: Why a fixed effect is tested by its interaction with a random effect
49: Power analysis and sample sizes for completely randomized designs with subsampling
50: Power analysis and sample sizes for randomized block designs with subsampling
51: Programs for power analysis/sample size calculations for CR and RB designs with subsampling
52: Post-hoc power analyses for ANOVA F-tests
53: Balanced incomplete block (BIB) study designs
54: Incomplete block designs: Connected designs can be analysed
55: Displaying factor relationships in experiments
56: The use of indicator variables in non-linear regression
57: Interpreting main effects when a two-way interaction is present
58: On the presentation of statistical results: a synthesis
59: ANOVA: Coefficients for contrasts and means of incomplete factorial designs
60: MANOVA: Profile Analysis - an example using SAS
61: ANOVA: Power of Linear Contrasts - Interpreting the Non-centrality Parameter
62: The Box-Cox transformation

ASCII

1: Producing ASCII files with SAS

Blocks

17: What is the design?
34: When are blocks pseudo-replicates?
53: Balanced incomplete block (BIB) study designs
54: Incomplete block designs: Connected designs can be analysed

Bonferroni

13: ANCOVA: comparing adjusted means

Boxplots

33: Box plots

BRITISH COLUMBIA Ministry of Forests Research Program

Chi-square Distribution
15: Using SAS to obtain probability values for F-, t-, and Chi-square statistics
36: Contingency tables and log-linear models

Cluster sampling
43: Standard error formulas for cluster sampling (unequal cluster sizes)

Completely Randomized Designs
5: Understanding replication and pseudo-replication
17: What is the design?
48: ANOVA: Why a fixed effect is tested by its interaction with a random effect
49: Power analysis and sample sizes for completely randomized designs with subsampling
55: Displaying factor relationships in experiments
57: Interpreting main effects when a two-way interaction is present
59: ANOVA: Coefficients for contrasts and means of incomplete factorial designs

Confidence Intervals
29: Simple Regression: Confidence intervals for a predicted X-value
30: Interpretation of probability p-values

Confidence Level
11: Sample sizes: for one mean

Contingency Tables
21: What are degrees of freedom?
36: Contingency tables and log-linear models
41: Power analysis and sample size determination for contingency table tests
58: On the presentation of statistical results: a synthesis

Contrasts
12: Determining polynomial contrast coefficients
13: ANCOVA: comparing adjusted means
14: ANOVA: Factorial designs with a separate control
16: ANOVA: Contrasts viewed as t-tests
23: ANOVA: Contrasts viewed as correlation coefficients
26: ANOVA: Equations for linear and quadratic contrasts
45: Calculating contrast F-tests when SAS will not
59: ANOVA: Coefficients for contrasts and means of incomplete factorial designs
61: ANOVA: Power of Linear Contrasts - Interpreting the Non-centrality Parameter

Control
14: ANOVA: Factorial designs with a separate control

Correlation Coefficient
23: ANOVA: Contrasts viewed as correlation coefficients

Crossed Factors
17: What is the design?
48: ANOVA: Why a fixed effect is tested by its interaction with a random effect
55: Displaying factor relationships in experiments
57: Interpreting main effects when a two-way interaction is present

Degrees of Freedom
19: ANOVA: Approximate or Pseudo F-tests
21: What are degrees of freedom?

Dunn-Bonferroni
13: ANCOVA: comparing adjusted means

EDA (Exploratory Data Analysis)
33: Box plots

Error Bars
38: Plotting error bars with SAS/Graph

Error Sums of Squares - see Residual sums of squares or Within sums of squares

Error Terms
3: ANOVA using SAS: specifying error terms
4: ANOVA using SAS: How to pool error terms
19: ANOVA: Approximate or Pseudo F-tests
48: ANOVA: Why a fixed effect is tested by its interaction with a random effect

Index of Pamphlet Topics

Expected Mean Squares
40: Finding the expected mean squares and the proper error terms with SAS

Experimental Design
17: What is the design?
34: When are blocks pseudo-replicates?
44: What do we look for in a working plan?

Experimental unit - see Treatment unit

F-Distribution
15: Using SAS to obtain probability values for F-, t-, and Chi-square statistics
37: A general description of hypothesis testing and power analysis
52: Post-hoc power analyses for ANOVA F-tests

F-Max Test
25: ANOVA: The within sums of squares as an average variance

F-Test
18: Multiple regression: selecting the best subset
27: When the t-test and the F-test are equivalent
28: Simple Regression with replication: testing for lack of fit
31: ANCOVA: The linear models behind the F-tests
45: Calculating contrast F-tests when SAS will not
46: GLM: Comparing regression lines

Factor Relationship Diagram
55: Displaying factor relationships in experiments

Factorial Design
14: ANOVA: Factorial designs with a separate control
17: What is the design?
48: ANOVA: Why a fixed effect is tested by its interaction with a random effect
53: Balanced incomplete block (BIB) study designs
54: Incomplete block designs: Connected designs can be analysed
55: Displaying factor relationships in experiments
57: Interpreting main effects when a two-way interaction is present
59: ANOVA: Coefficients for contrasts and means of incomplete factorial designs
60: MANOVA: Profile Analysis - an example using SAS

Homogeneity of Variance
25: ANOVA: The within sums of squares as an average variance

Hypothesis Testing
30: Interpretation of probability p-values
37: A general description of hypothesis testing and power analysis
48: ANOVA: Why a fixed effect is tested by its interaction with a random effect

Indicator (Dummy) Variables
56: The use of indicator variables in non-linear regression

Inference
63: Comparing design-based and model-based inference: an introduction

Lack of Fit
28: Simple regression with replication: testing for lack of fit

Linear Combination
16: ANOVA: Contrasts viewed as t-tests

Linear Models
28: Simple regression with replication: testing for lack of fit
31: ANCOVA: The linear models behind the F-tests
46: GLM: Comparing regression lines

Log-linear model
36: Contingency tables and log-linear models

Logistic Regression
7: Logistic regression analysis: model statements in PROC CATMOD

LSD (Least Significant Difference)
13: ANCOVA: comparing adjusted means
57: Interpreting main effects when a two-way interaction is present

Mallow's CP
18: Multiple regression: selecting the best subset

MANOVA
39: A repeated measures example
60: MANOVA: Profile Analysis - an example using SAS

Means
6: Using plot means for ANOVA
11: Sample sizes: for one mean
43: Standard error formulas for cluster sampling (unequal cluster sizes)
58: On the presentation of statistical results: a synthesis
59: ANOVA: Coefficients for contrasts and means of incomplete factorial designs

Multiple Range Tests
13: ANCOVA: comparing adjusted means

Multiple Regression
8: Standard errors for predicted values from multiple regression
18: Multiple regression: selecting the best subset
27: When the t-test and the F-test are equivalent
56: The use of indicator variables in non-linear regression
62: The Box-Cox transformation

Non-linear Regression
39: A repeated measures example
56: The use of indicator variables in non-linear regression

Polynomial Contrasts
12: Determining polynomial contrast coefficients
26: ANOVA: Equations for linear and quadratic contrasts
32: Analysing a split-plot in time with the proper repeated measures ANOVA
61: ANOVA: Power of Linear Contrasts - Interpreting the Non-centrality Parameter

Power
37: A general description of hypothesis testing and power analysis
41: Power analysis and sample size determination for contingency table tests
49: Power analysis and sample sizes for completely randomized designs with subsampling
50: Power analysis and sample sizes for randomized block designs with subsampling
51: Programs for power analysis/sample size calculations for CR and RB designs with subsampling
52: Post-hoc power analyses for ANOVA F-tests
61: ANOVA: Power of Linear Contrasts - Interpreting the Non-centrality Parameter

Predicted values
8: Standard errors for predicted values from multiple regression
29: Simple Regression: Confidence intervals for a predicted X-value

Probability values
15: Using SAS to obtain probability values for F-, t-, and Chi-square statistics
30: Interpretation of probability p-values

Approximate or Pseudo F-tests
19: ANOVA: Approximate or Pseudo F-tests

Pseudo-Replication
5: Understanding replication and pseudo-replication
34: When are blocks pseudo-replicates?

Questionnaire
10: Results of biometrics questionnaire

R-square
18: Multiple regression: selecting the best subset

Random Factors
40: Finding the expected mean squares and the proper error terms with SAS
48: ANOVA: Why a fixed effect is tested by its interaction with a random effect

Randomized Block Designs
5: Understanding replication and pseudo-replication
17: What is the design?
34: When are blocks pseudo-replicates?
50: Power analysis and sample sizes for randomized block designs with subsampling
55: Displaying factor relationships in experiments

Regression
21: What are degrees of freedom?
27: When the t-test and the F-test are equivalent
28: Simple regression with replication: testing for lack of fit
29: Simple regression: Confidence intervals for a predicted X-value
31: ANCOVA: The linear models behind the F-tests
46: GLM: Comparing regression lines
56: The use of indicator variables in non-linear regression
58: On the presentation of statistical results: a synthesis
62: The Box-Cox transformation

Repeated Measures
32: Analysing a split-plot in time with the proper repeated measures ANOVA
39: A repeated measures example
58: On the presentation of statistical results: a synthesis
60: MANOVA: Profile Analysis - an example using SAS

Replication
2: The importance of replication in analysis of variance
5: Understanding replication and pseudo-replication
17: What is the design?
28: Simple regression with replication: testing for lack of fit
48: ANOVA: Why a fixed effect is tested by its interaction with a random effect

Residual Sums of Squares
31: ANCOVA: The linear models behind the F-tests
62: The Box-Cox transformation

Sample Size
11: Sample sizes: for one mean
41: Power analysis and sample size determination for contingency table tests
49: Power analysis and sample sizes for completely randomized designs with subsampling
50: Power analysis and sample sizes for randomized block designs with subsampling

Sampling
11: Sample sizes: for one mean
43: Standard error formulas for cluster sampling (unequal cluster sizes)
44: What do we look for in a working plan?
63: Comparing design-based and model-based inference: an introduction

Sampling Units
17: What is the design?

SAS Programs
1: Producing ASCII files with SAS
9: Reading category variables with statistics software
15: Using SAS to obtain probability values for F-, t-, and Chi-square statistics
29: Simple Regression: Confidence intervals for a predicted X-value
33: Box plots
35: The computation of tree shadow lengths
36: Contingency tables and log-linear models
41: Power analysis and sample size determination for contingency table tests
43: Standard error formulas for cluster sampling (unequal cluster sizes)
47: SAS: Adding observations when class variables (e.g. species list) are missing

51: Programs for power analysis/sample size calculations for CR and RB designs with subsampling
59: ANOVA: Coefficients for contrasts and means of incomplete factorial designs
60: MANOVA: Profile Analysis - an example using SAS

SAS Programs cont.
61: ANOVA: Power of Linear Contrasts - Interpreting the Non-centrality Parameter
62: The Box-Cox transformation

SAS: CATMOD
7: Logistic regression analysis: model statements in PROC CATMOD
36: Contingency tables and log-linear models

SAS: Data Step
20: Rearranging raw data files using SAS
24: Reading WATFILE file into SAS
47: SAS: Adding observations when class variables (e.g. species list) are missing

SAS: GLM
3: ANOVA using SAS: specifying error terms
4: ANOVA using SAS: How to pool error terms
6: Using plot means for ANOVA
32: Analysing a split-plot in time with the proper repeated measures ANOVA
40: Finding the expected mean squares and the proper error terms with SAS
45: Calculating contrast F-tests when SAS will not
46: GLM: Comparing regression lines
57: Interpreting main effects when a two-way interaction is present
59: ANOVA: Coefficients for contrasts and means of incomplete factorial designs
60: MANOVA: Profile Analysis - an example using SAS

SAS: Graph
38: Plotting error bars with SAS/Graph
42: Labelling curves in SAS/GRAPH

SAS: MIXED
59: ANOVA: Coefficients for contrasts and means of incomplete factorial designs

SAS: NLIN
39: A repeated measures example
56: The use of indicator variables in non-linear regression

SAS: REG
8: Standard errors for predicted values from multiple regression
18: Multiple regression: selecting the best subset

Shadow Lengths
35: The computation of Tree Shadow Lengths

Split-Plot Design
6: Using plot means for ANOVA
17: What is the design?
32: Analysing a split-plot in time with the proper repeated measures ANOVA
34: When are blocks pseudo-replicates?
55: Displaying factor relationships in experiments

Standard Errors
8: Standard errors for predicted values from multiple regression
11: Sample sizes: for one mean
43: Standard error formulas for cluster sampling (unequal cluster sizes)
58: On the presentation of statistical results: a synthesis
59: ANOVA: Coefficients for contrasts and means of incomplete factorial designs

SYSTAT
9: Reading category variables with statistics software

t-distribution
15: Using SAS to obtain probability values for F-, t-, and Chi-square statistics

t-test
16: ANOVA: Contrasts viewed as t-tests
27: When the t-test and the F-test are equivalent

Transformations
62: The Box-Cox transformation

Index of Pamphlet Topics

Treatment Unit

2: The importance of replication in analysis of variance
5: Understanding replication and pseudo-replication
17: What is the design?
34: When are blocks pseudo-replicates?
55: Displaying factor relationships in experiments

Type I & II errors

30: Interpretation of probability p-values
37: A general description of hypothesis testing and power analysis

WATFILE

24: Reading WATFILE file into SAS

Within Sums of Squares

25: ANOVA: The within sums of squares as an average variance
28: Simple regression with replication: testing for lack of fit