

```

3      /*
4      Examine differences among the following 6 treatments
5      N/N85 fed normally before weaning and 85 kcal/wk after
6      N/R40 fed normally before weaning and 40 kcal/wk after
7      N/R50 fed normally before weaning and 50 kcal/wk after
8      NP standard diet to satiation
9      R/R50 fed a reduced diet of 50 kcal/wk before and after weaning
10     lopro fed normally before weaning, 50 kcal/wk after and dietary protein
10     ! decreasing with age
11
12     Variable of interest - Lifetime of mice (in months) fed on three different diet
12     ! regimens.
13     */
14
15     /*
16     SAS applications of note:
17     data from external file (filename, infile combo)
18     use of a length statement
19     use of if statements in DATA step
20     Output multiple files to recombine
21     use of asterisk to deactivate statements
22     PROC TTEST
23     BY statement with notsorted option
24     */
25
26     dm'log;clear;output;clear';
27     options nodate nocenter nonumber ps=512 ls=132;
28     ODS HTML style=minimal rs=none
body='Z:\Current\EXST3201\Fall2005\SAS\MouseFeed01.html' ;
NOTE: Writing HTML Body file: Z:\Current\EXST3201\Fall2005\SAS\MouseFeed01.html
29
30     Title1 'Chapter 5 : Mouse feeding example';
31     filename input 'Z:\Current\EXST3201\Fall2005\SAS\CASE0501.csv';
32
33
34     data MouseFeed A B C D E; length diet $ 6;
35         infile input missover DSD dlm="," firstobs=2;
36         input Lifetime diet $;
37         output MouseFeed;
38         if diet eq 'N/R50' then output A;
39         if diet eq 'N/N85' then output A;
40         if diet eq 'N/R50' then output B;
41         if diet eq 'R/R50' then output B;
42         if diet eq 'N/R50' then output C;
43         if diet eq 'N/R40' then output C;
44         if diet eq 'N/R50' then output D;
45         if diet eq 'lopro' then output D;
46         if diet eq 'N/N85' then output E;
47         if diet eq 'NP' then output E;
48     datalines;
NOTE: The infile INPUT is:
File Name=Z:\Current\EXST3201\Fall2005\SAS\CASE0501.csv,
RECFM=V,LRECL=256
NOTE: 349 records were read from the infile INPUT.
The minimum record length was 7.
The maximum record length was 12.
NOTE: The data set WORK.MOUSEFEED has 349 observations and 2 variables.
NOTE: The data set WORK.A has 128 observations and 2 variables.
NOTE: The data set WORK.B has 127 observations and 2 variables.
NOTE: The data set WORK.C has 131 observations and 2 variables.
NOTE: The data set WORK.D has 127 observations and 2 variables.
NOTE: The data set WORK.E has 106 observations and 2 variables.
NOTE: DATA statement used (Total process time):
real time          0.12 seconds
cpu time           0.07 seconds
50     *proc print data=MouseFeed; run;
51     *proc print data=A; run;
52     *proc print data=B; run;
53

```

```
54         options ls=80;
55
56         proc ttest data=A; var lifetime; class diet;
57         Title2 'Test A: N/N85 versus N/R50';
58         run;
NOTE: There were 128 observations read from the data set WORK.A.
NOTE: The PROCEDURE TTEST printed page 1.
NOTE: PROCEDURE TTEST used (Total process time):
      real time          0.03 seconds
      cpu time           0.01 seconds
59         proc ttest data=B; var lifetime; class diet;
60         Title2 'Test B: N/R50 versus R/R50';
61         run;
NOTE: There were 127 observations read from the data set WORK.B.
NOTE: The PROCEDURE TTEST printed page 2.
NOTE: PROCEDURE TTEST used (Total process time):
      real time          0.01 seconds
      cpu time           0.00 seconds
62         proc ttest data=C; var lifetime; class diet;
63         Title2 'Test C: N/R40 versus N/R50';
64         run;
NOTE: There were 131 observations read from the data set WORK.C.
NOTE: The PROCEDURE TTEST printed page 3.
NOTE: PROCEDURE TTEST used (Total process time):
      real time          0.01 seconds
      cpu time           0.01 seconds
65         proc ttest data=D; var lifetime; class diet;
66         Title2 'Test D: N/R50 versus lopro';
67         run;
NOTE: There were 127 observations read from the data set WORK.D.
NOTE: The PROCEDURE TTEST printed page 4.
NOTE: PROCEDURE TTEST used (Total process time):
      real time          0.03 seconds
      cpu time           0.01 seconds
68         proc ttest data=E; var lifetime; class diet;
69         Title2 'Test E: N/N85 versus NP';
70         run;
NOTE: There were 106 observations read from the data set WORK.E.
NOTE: The PROCEDURE TTEST printed page 5.
NOTE: PROCEDURE TTEST used (Total process time):
      real time          0.01 seconds
      cpu time           0.01 seconds
```

## Chapter 5 : Mouse feeding example

Test A: N/N85 versus N/R50

## The TTEST Procedure

## Statistics

Variable	diet	N	Lower CL Mean	Upper CL Mean	Lower CL Mean	Std Dev	Std Dev
Lifetime	N/N85	57	31.331	32.691	34.051	4.3271	5.1253
Lifetime	N/R50	71	40.458	42.297	44.136	6.6674	7.7682
Lifetime	Diff (1-2)		-11.97	-9.606	-7.24	5.9856	6.7231

## Statistics

Variable	diet	Upper CL Std Dev	Std Err	Minimum	Maximum
Lifetime	N/N85	6.2874	0.6789	17.9	42.3
Lifetime	N/R50	9.3078	0.9219	18.6	51.9
Lifetime	Diff (1-2)	7.6695	1.1957		

## T-Tests

Variable	Method	Variances	DF	t Value	Pr >  t
Lifetime	Pooled	Equal	126	-8.03	<.0001
Lifetime	Satterthwaite	Unequal	122	-8.39	<.0001

## Equality of Variances

Variable	Method	Num DF	Den DF	F Value	Pr > F
Lifetime	Folded F	70	56	2.30	0.0015

## Chapter 5 : Mouse feeding example

Test B: N/R50 versus R/R50

## The TTEST Procedure

## Statistics

Variable	diet	N	Lower CL Mean	Upper CL Mean	Lower CL Mean	Std Dev	Std Dev
Lifetime	N/R50	71	40.458	42.297	44.136	6.6674	7.7682
Lifetime	R/R50	56	41.096	42.886	44.675	5.6344	6.6832
Lifetime	Diff (1-2)		-3.174	-0.589	1.9973	6.5059	7.3106

## Statistics

Variable	diet	Upper CL Std Dev	Std Err	Minimum	Maximum
Lifetime	N/R50	9.3078	0.9219	18.6	51.9
Lifetime	R/R50	8.2153	0.8931	24.2	50.7
Lifetime	Diff (1-2)	8.3445	1.3066		

## T-Tests

Variable	Method	Variances	DF	t Value	Pr >  t
Lifetime	Pooled	Equal	125	-0.45	0.6532
Lifetime	Satterthwaite	Unequal	124	-0.46	0.6474

## Equality of Variances

Variable	Method	Num DF	Den DF	F Value	Pr > F
Lifetime	Folded F	70	55	1.35	0.2474

## Chapter 5 : Mouse feeding example

Test C: N/R40 versus N/R50

## The TTEST Procedure

## Statistics

Variable	diet	N	Lower CL Mean	Upper CL Mean	Lower CL Mean	Std Dev	Std Dev
Lifetime	N/R40	60	43.385	45.117	46.848	5.682	6.7034
Lifetime	N/R50	71	40.458	42.297	44.136	6.6674	7.7682
Lifetime	Diff (1-2)		0.2865	2.8195	5.3524	6.508	7.3005

## Statistics

Variable	diet	Upper CL Std Dev	Std Err	Minimum	Maximum
Lifetime	N/R40	8.1759	0.8654	19.6	54.6
Lifetime	N/R50	9.3078	0.9219	18.6	51.9
Lifetime	Diff (1-2)	8.3145	1.2802		

## T-Tests

Variable	Method	Variances	DF	t Value	Pr >  t
Lifetime	Pooled	Equal	129	2.20	0.0294
Lifetime	Satterthwaite	Unequal	129	2.23	0.0275

## Equality of Variances

Variable	Method	Num DF	Den DF	F Value	Pr > F
Lifetime	Folded F	70	59	1.34	0.2456

## Chapter 5 : Mouse feeding example

Test D: N/R50 versus lopro

## The TTEST Procedure

## Statistics

Variable	diet	N	Lower CL Mean	Upper CL Mean	Lower CL Mean	Std Dev	Std Dev
Lifetime	N/R50	71	40.458	42.297	44.136	6.6674	7.7682
Lifetime	lopro	56	37.813	39.686	41.558	5.8945	6.9917
Lifetime	Diff (1-2)		-0.019	2.6115	5.2419	6.6179	7.4365

## Statistics

Variable	diet	Upper CL Std Dev	Std Err	Minimum	Maximum
Lifetime	N/R50	9.3078	0.9219	18.6	51.9
Lifetime	lopro	8.5946	0.9343	23.4	49.7
Lifetime	Diff (1-2)	8.4881	1.3291		

## T-Tests

Variable	Method	Variances	DF	t Value	Pr >  t
Lifetime	Pooled	Equal	125	1.96	0.0516
Lifetime	Satterthwaite	Unequal	123	1.99	0.0489

## Equality of Variances

Variable	Method	Num DF	Den DF	F Value	Pr > F
Lifetime	Folded F	70	55	1.23	0.4186

## Chapter 5 : Mouse feeding example

Test E: N/N85 versus NP

## The TTEST Procedure

## Statistics

Variable	diet	N	Lower CL Mean	Upper CL Mean	Lower CL Mean	Upper CL Std Dev	Lower CL Std Dev
Lifetime	N/N85	57	31.331	32.691	34.051	4.3271	5.1253
Lifetime	NP	49	25.64	27.402	29.164	5.115	6.1337
Lifetime	Diff (1-2)		3.1207	5.2892	7.4577	4.9431	5.6133

## Statistics

Variable	diet	Upper CL Std Dev	Std Err	Minimum	Maximum
Lifetime	N/N85	6.2874	0.6789	17.9	42.3
Lifetime	NP	7.6628	0.8762	6.4	35.5
Lifetime	Diff (1-2)	6.4953	1.0935		

## T-Tests

Variable	Method	Variances	DF	t Value	Pr >  t
Lifetime	Pooled	Equal	104	4.84	<.0001
Lifetime	Satterthwaite	Unequal	93.9	4.77	<.0001

## Equality of Variances

Variable	Method	Num DF	Den DF	F Value	Pr > F
Lifetime	Folded F	48	56	1.43	0.1954

```

72      options nodate nocenter nonumber ps=55 ls=111;
73      Title2 'PROC UNIVARIATE of variable lifetime for mouse feed diets';
74      proc univariate data=MouseFeed plot normal;
75          by diet notsorted;
76          var Lifetime;
77      run;
NOTE: The PROCEDURE UNIVARIATE printed pages 6-20.
NOTE: PROCEDURE UNIVARIATE used (Total process time):
      real time          0.17 seconds
      cpu time           0.14 seconds
78
79      ODS HTML close;

```

## Chapter 5 : Mouse feeding example

PROC UNIVARIATE of variable lifetime for mouse feed diets

diet=NP

## The UNIVARIATE Procedure

Variable: Lifetime

## Moments

N	49	Sum Weights	49
Mean	27.4020408	Sum Observations	1342.7
Std Deviation	6.13370096	Variance	37.6222874
Skewness	-1.5498625	Kurtosis	3.04434191
Uncorrected SS	38598.59	Corrected SS	1805.8698
Coeff Variation	22.3841027	Std Error Mean	0.87624299

Basic Statistical Measures

Location		Variability	
Mean	27.40204	Std Deviation	6.13370
Median	28.90000	Variance	37.62229
Mode	30.20000	Range	29.10000
		Interquartile Range	6.60000

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

Tests for Location: Mu0=0

Test	-Statistic-	-----p Value-----	
Student's t	t 31.27219	Pr >  t	<.0001
Sign	M 24.5	Pr >=  M	<.0001
Signed Rank	S 612.5	Pr >=  S	<.0001

Tests for Normality

Test	--Statistic--	-----p Value-----	
Shapiro-Wilk	W 0.874872	Pr < W	<0.0001
Kolmogorov-Smirnov	D 0.126303	Pr > D	0.0487
Cramer-von Mises	W-Sq 0.243101	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq 1.582098	Pr > A-Sq	<0.0050

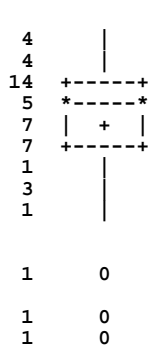
Quantiles (Definition 5)

Quantile	Estimate
100% Max	35.5
99%	35.5
95%	34.9
90%	33.8
75% Q3	31.4
50% Median	28.9
25% Q1	24.8
10%	20.0
5%	13.8
1%	6.4
0% Min	6.4

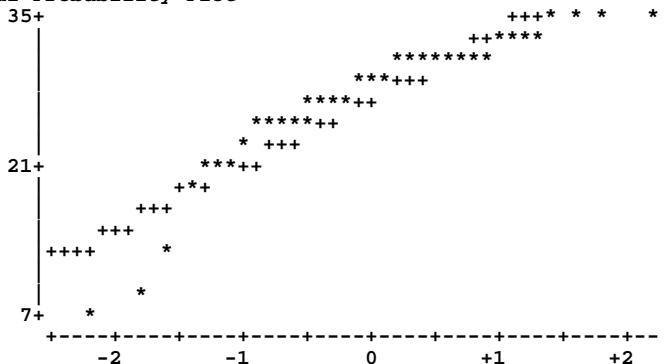
Extreme Observations

----Lowest----		----Highest----	
Value	Obs	Value	Obs
6.4	49	33.8	5
9.2	48	34.8	4
13.8	47	34.9	3
18.0	46	35.4	2
20.0	45	35.5	1

Stem	Leaf	Boxplot
34	8945	
32	4658	
30	01224578344568	
28	03936	
26	3568135	
24	0137819	
22	1	
20	058	
18	0	
16		
14		
12	8	
10		
8	2	
6	4	



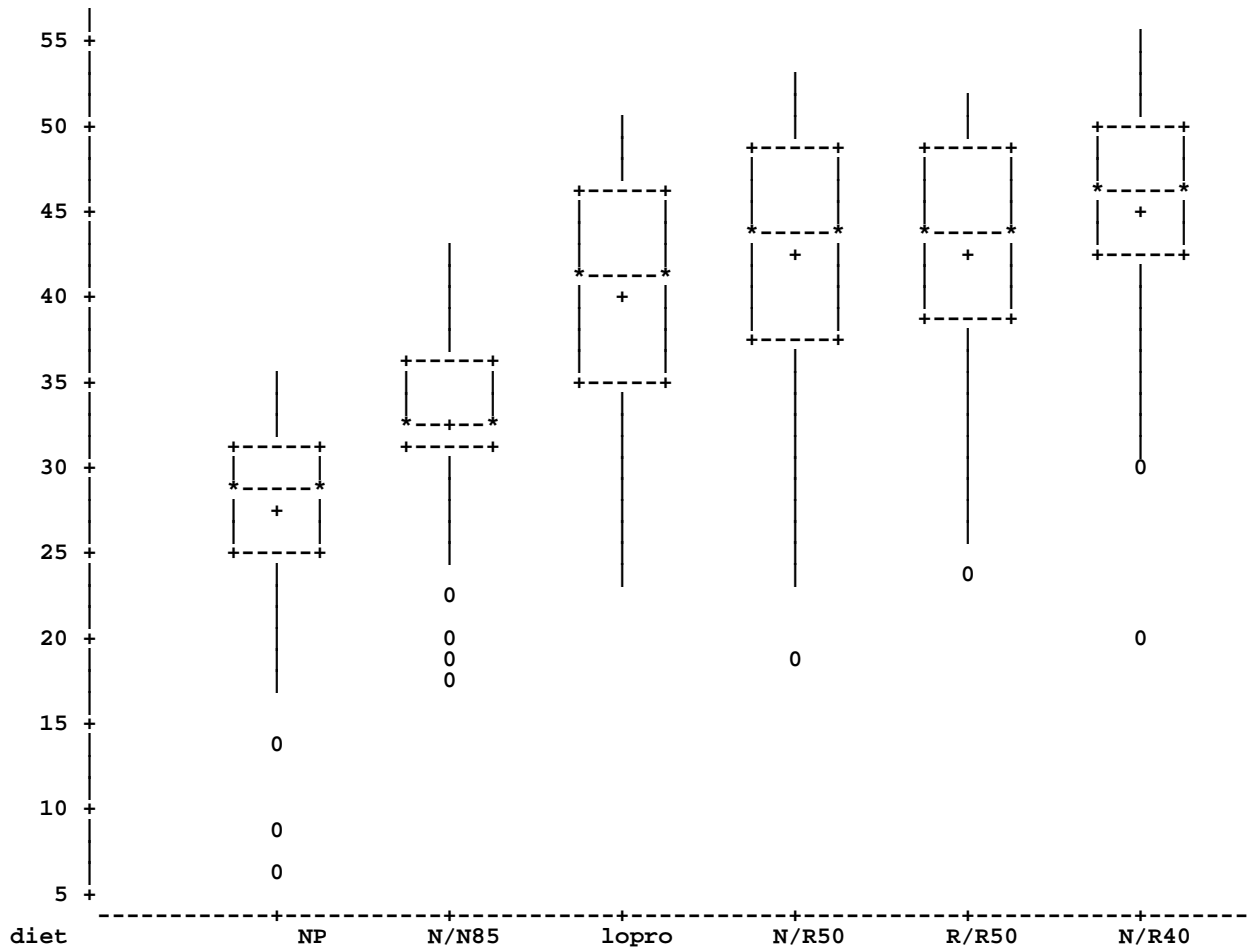
Normal Probability Plot



Chapter 5 : Mouse feeding example  
 PROC UNIVARIATE of variable lifetime for mouse feed diets

The UNIVARIATE Procedure  
 Variable: Lifetime

Schematic Plots



Display 5.1 Lifetimes of female mice fed on six different diet regimens

