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•
• Tendencia central y Dispersión a
• partir de un programa de análisis
• estadístico
•



Dr. Servio Interiano
Dra. Claudeth Recinos
2010

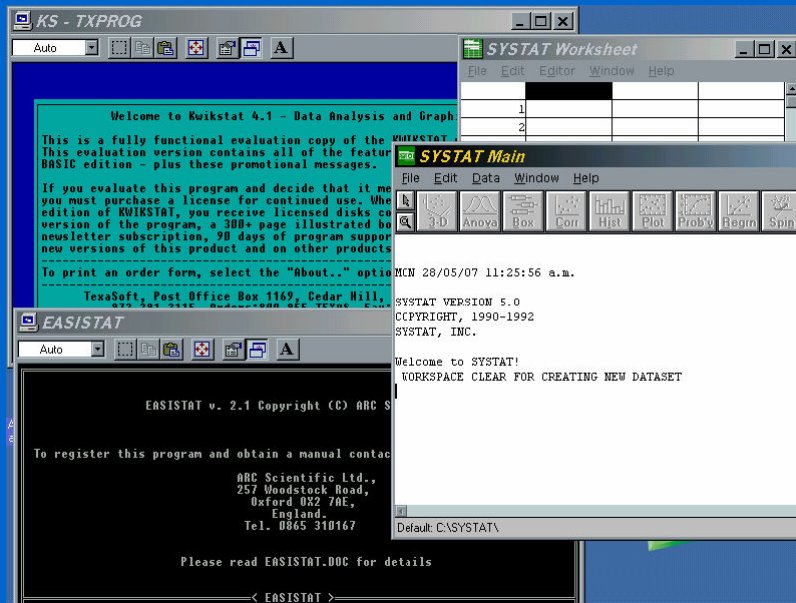
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Introducción

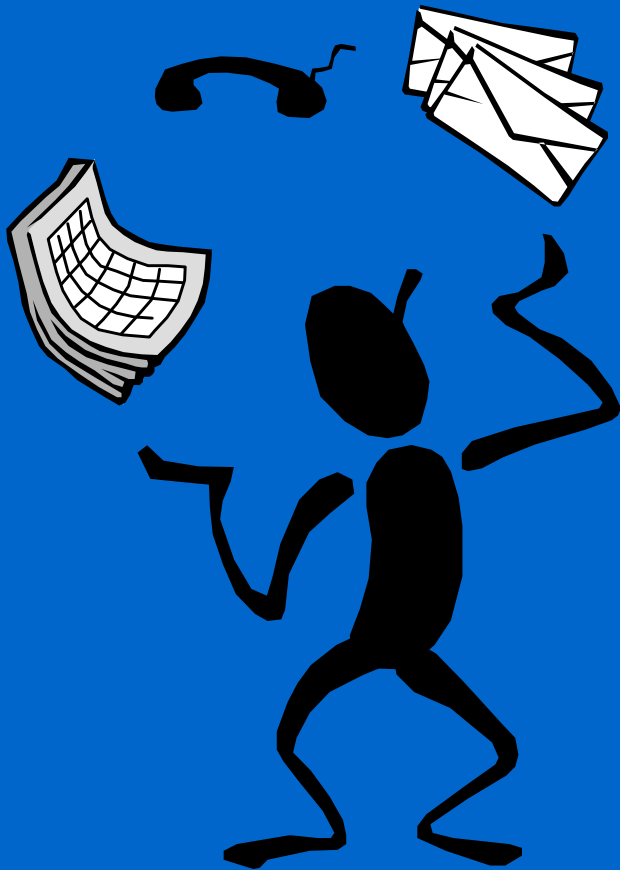
- En la mayoría de las investigaciones los cálculos de la tendencia central, la dispersión y las medidas de forma de un grupo, lo realiza un computador personal, a través de un programa de análisis estadístico.

Proramas Estadísticos

- Minitab
- Systat
- SPSS
- Stata
- Kwikstat
- Easistat
- Excel



Algunas consideraciones previas



- Cada programa tiene su propia forma de cargar los datos.
- No trabajan con notaciones estandarizadas (cada cual usa sus propios códigos para los resultados)

Algunas consideraciones previas

- Si se reportan dos varianzas o desviaciones estándar, la más grande es la de la muestra
- $\sigma^2 = \sum (x_i - \mu)^2 / N$
- $s^2 = \sum (x_i - \bar{x})^2 / n-1$

Algunas consideraciones previas

- Si únicamente se reporta una varianza o desviación estándar, generalmente es un estadístico.
- Si se está trabajando con la población es necesario hacer un ajuste en el resultado.
- $s^2 = \Sigma (x_i - \bar{x})^2 / n-1$
- Se multiplica el resultado por (n-1) y luego se divide por la “n”.

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- $s^2 = \sum (x_i - \bar{x})^2 / (n - 1)$

- $s^2 = \sum (x_i - \bar{x})^2$

- $s^2 = \sum (x_i - \bar{x})^2 / n$

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-
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Easistat

EASISTAT v. 2.1 Copyright (C) ARC Scientific 1989

To register this program and obtain a manual contact:

ARC Scientific Ltd.,
257 Woodstock Road,
Oxford OX2 7AE,
England.
Tel. 0865 310167

Please read EASISTAT.DOC for details

← EASISTAT →

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```
Help
Basics [G] [ranks] col [if cond]
List [if cond or Variables]
Wilcoxon [S] [col]
Anova [G or N] [col]
Kolmogorov [G] [col]
Multiple regression [col [col]]
Minimise [expression]
Widen [cond]
New [col or row or next]
Format [col or default [width dec]]
Delete [col or row or all]
Input [filename or close]
Log [filename or close]
Screen
Pause
Limits [c]
Macro [list or label expression]
Titles
Data [save] [filename]
Chisq [G] [Fish] [Num] [cols rows]
Ttest [paired]
Kendall's [col col]
Regress [G] [col col [col]]
Component analysis [G]
Narrow cond
Arithmetic [expression]
Label [col [name]]
Derive [col [expression]]
Echo
Output [filename or close]
Edit
Sort [d[own]] [col]
System [command]
Copy [lc,tr,rc,br,new lc,new tr]
Quit
```

< EASISTAT >

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```
DATA1 - C1
Column total = 4465.010 Number of items = 100
Mean = 44.65010
Minimum = 33.080 Maximum = 57.760
Mode = 42.720 Median = 44.295
Variance = 26.26114 Population variance = 26.52640
Standard deviation = 5.12456 Population standard deviation = 5.15038
Standard error of mean = 0.51504
Skewness = 0.0747 Kurtosis = -0.2351
```

=====< EASISTAT >=====

```
Select command - b c1
Select command - █
```

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-
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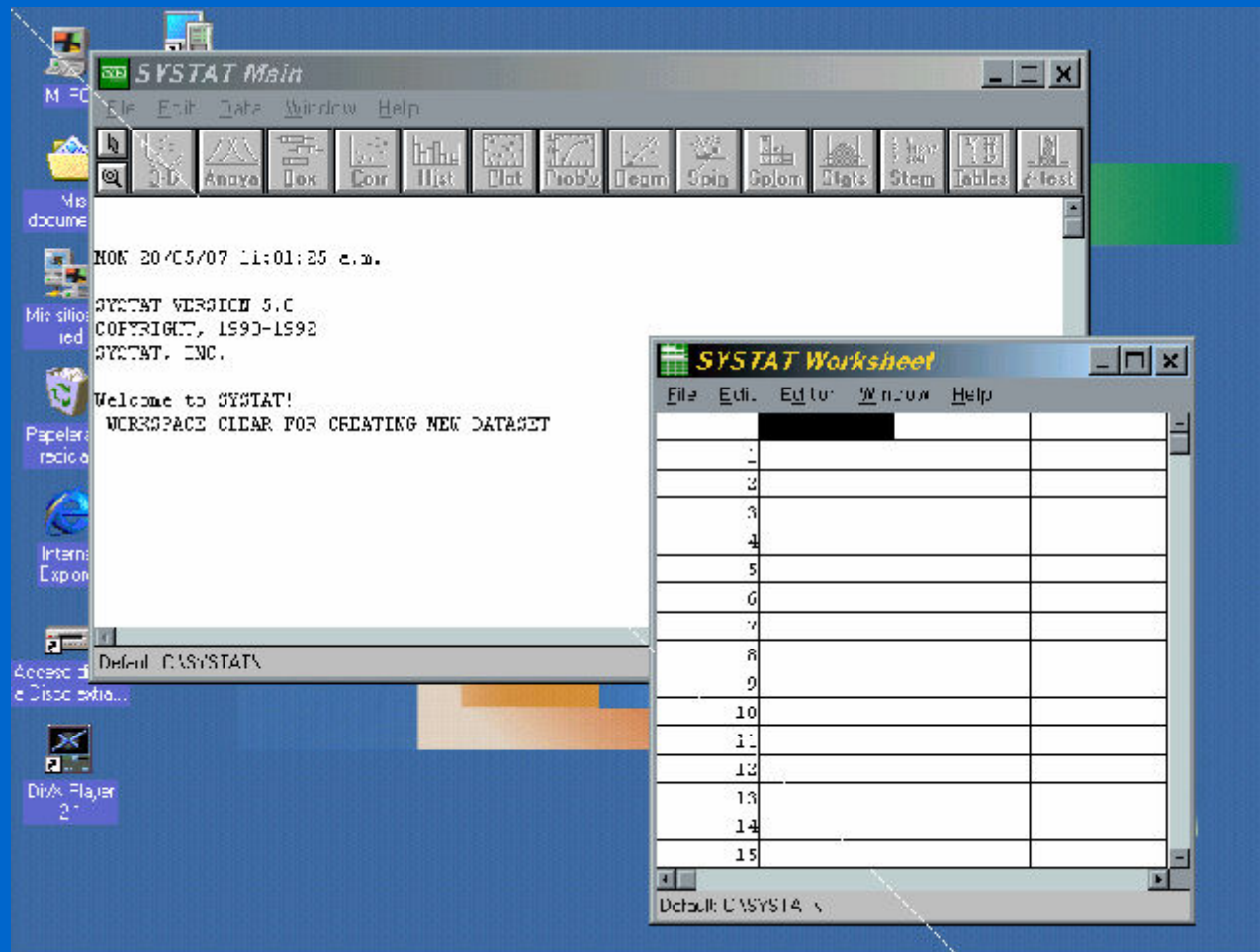
```
DATA2 - C1
Column total = 108.380 Number of items = 100
Mean = 1.08380
Minimum = 0.000 Maximum = 5.610
Mode = 0.050 Median = 0.765
Variance = 1.20362 Population variance = 1.21578
Standard deviation = 1.09710 Population standard deviation = 1.10262
Standard error of mean = 0.11026
Skewness = 1.8110 Kurtosis = 3.3751
```

◀ EASISTAT ▶

```
Select command - b c1
Select command - █
```

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Systat



SYSTAT Main

File Edit Data Window Help

3-D Anova Box Cor Hist Plot Probly Team Spin Splom Stigs Stem Tables t-test

MON 20/05/07 11:01:25 a.m.

SYSTAT VERSION 5.0
 COPYRIGHT, 1990-1992
 SYSTAT, INC.

Welcome to SYSTAT!
 WORKSPACE CLEAR FOR CREATING NEW DATASET

Default: C:\SYSTAT\

SYSTAT Worksheet

File Edit Editor Window Help

| | | |
|----|--|--|
| | | |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |

Default: C:\SYSTAT\

- New Ctrl+N
- Open... Ctrl+O**
- Save as... Ctrl+A
- Import...
- Export...
- Default paths...
- Save preferences

- Printer setup...
- Print... Ctrl+P

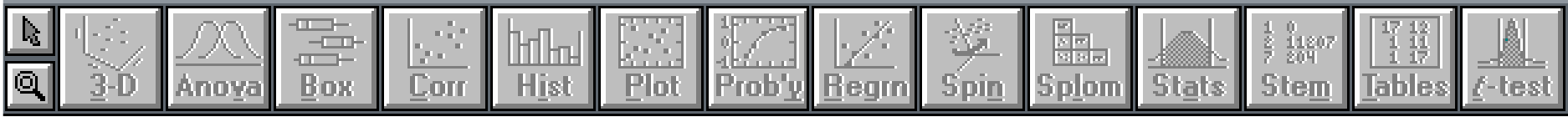
- Submit clipboard
- Submit file...

- Exit Alt+F4

- 1 C:\SYSTAT\ASIMETRI.SYS
- 2 C:\SYSTAT\AGESEX.SYS
- 3 C:\SYSTAT\SUICIDE.SYS

Prob'y Regm Spin Splom Stats Stem Tables t-test

.SET



TUE 29/05/07 9:40:05 a.m.

SYSTAT VERSION
COPYRIGHT, 199
SYSTAT, INC.

Welcome to SYSTAT
WORKSPACE CL

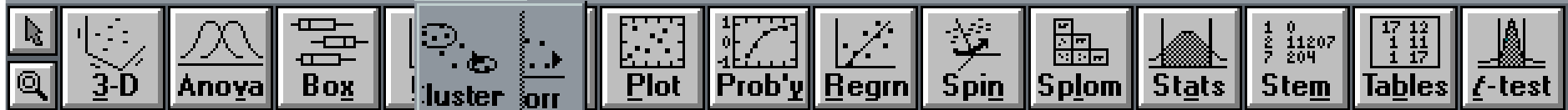
Open a File

File Name:

Directories:

List Files of Type:

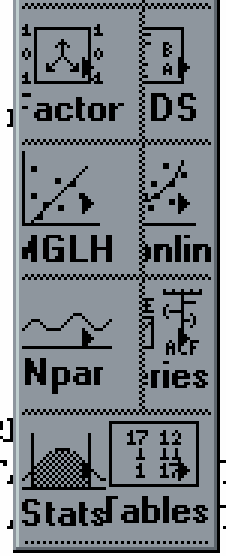
Drives:

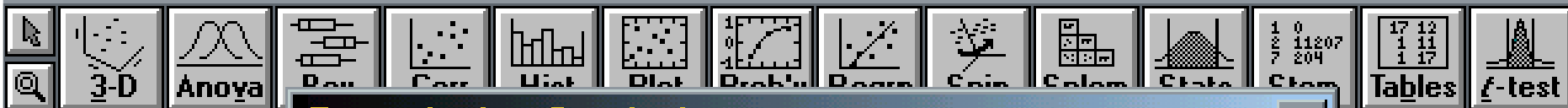


TUE 29/05/07 9:40:05 a.m.
SYSTAT VERSION 5.0
COPYRIGHT, 1990-1992
SYSTAT, INC.

Welcome to SYSTAT!

WORKSPACE CLEAR FOR CROSSTABS DATASET
Imported from: C:\SYSTAT\TEXT
SYSTAT FILE VARIABLES TO YOU ARE:
VAR





TUE 29/05/07 9:4

SYSTAT VERSION 5
COPYRIGHT, 1990-
SYSTAT, INC.

Welcome to SYSTA
WORKSPACE CLEAR
Imported from:
SYSTAT FILE VAR
VAR

Descriptive Statistics

File: **VAR**

All

Add ->

Remove

VAR

OK

Cancel

- All
- CV
- Kurtosis
- Maximum
- Mean
- Median
- Minimum
- Save statistic to file
- N
- Range
- SD
- SEM
- Skewness
- Sum
- Variance

Print all descriptive statistics.



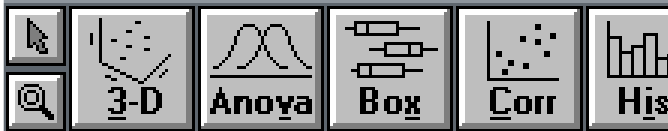
Imported from: C:\SYSTAT\NORMAL.TXT
 SYSTAT FILE VARIABLES AVAILABLE TO YOU ARE:
 VAR

TUE 29/05/07 9:43:25 a.m. C:\SYSTAT\NORMAL.SYS

TOTAL OBSERVATIONS: 100

VAR

| | |
|---------------|----------|
| N OF CASES | 100 |
| MINIMUM | 33.080 |
| MAXIMUM | 57.760 |
| RANGE | 24.680 |
| MEAN | 44.650 |
| VARIANCE | 26.526 |
| STANDARD DEV | 5.150 |
| STD. ERROR | 0.515 |
| SKEWNESS (G1) | 0.076 |
| KURTOSIS (G2) | -0.179 |
| SUM | 4465.010 |

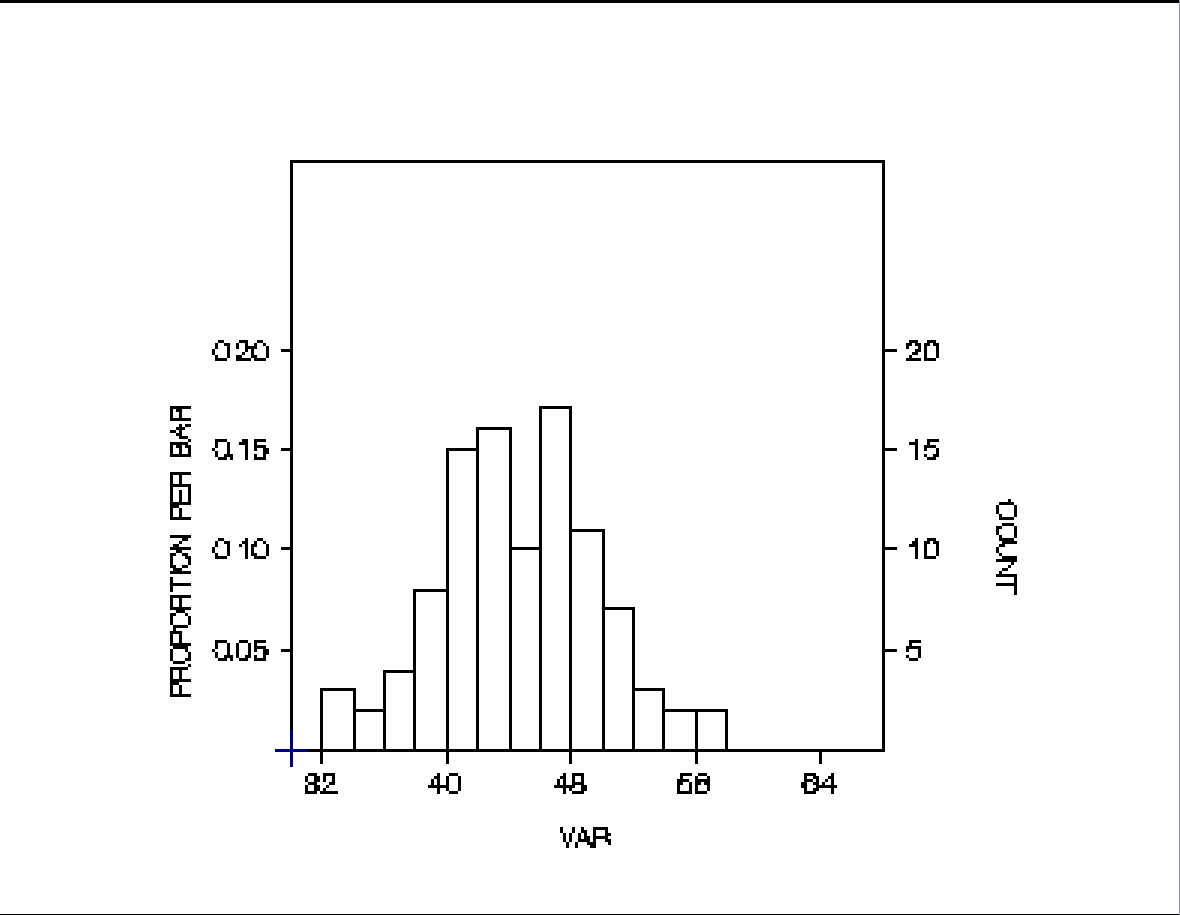


TUE 29/05/07 9:49:33 a.m. C:\S

TOTAL OBSERVATIONS: 100

VAR

| | |
|---------------|----------|
| N OF CASES | 100 |
| MINIMUM | 33.080 |
| MAXIMUM | 57.760 |
| RANGE | 24.680 |
| MEAN | 44.650 |
| VARIANCE | 26.526 |
| STANDARD DEV | 5.150 |
| STD. ERROR | 0.515 |
| SKEWNESS (G1) | 0.076 |
| KURTOSIS (G2) | -0.179 |
| SUM | 4465.010 |
| C.V. | 0.115 |
| MEDIAN | 44.295 |



File: C:\SYSTAT\NORMAL.SYS; Default: C:\SYSTAT



TUE 29/05/07 9:47:25 a.m. |

TOTAL OBSERVATIONS: 100

VAR

| | |
|---------------|---------|
| N OF CASES | 100 |
| MINIMUM | 0.000 |
| MAXIMUM | 5.610 |
| RANGE | 5.610 |
| MEAN | 1.084 |
| VARIANCE | 1.216 |
| STANDARD DEV | 1.103 |
| STD. ERROR | 0.110 |
| SKEWNESS (G1) | 1.838 |
| KURTOSIS (G2) | 3.504 |
| SUM | 108.380 |
| C.V. | 1.017 |
| MEDIAN | 0.765 |

Otros

The screenshot displays the KyPlot software window titled "KyPlot - [Spread1]". The interface includes a menu bar (File, Edit, View, Format, Data, Math, Statistics, Graph, Window, Help), a toolbar with various icons, and a formatting toolbar. The main workspace shows a spreadsheet with the following data:

| | A | B | C | D | E | F | G |
|-----|------------|-----------|---|------------------------|-----------|---|---|
| 102 | | | | | | | |
| 103 | | X1 | | | | | |
| 104 | Mean | 44.6501 | | Skewness | 0.0758222 | | |
| 105 | S.E.M. | 0.5150379 | | Kurtosis | -0.178965 | | |
| 106 | S.D. | 5.150379 | | Mu3 | 10.203914 | | |
| 107 | Variance | 26.526401 | | Mu4 | 1945.5191 | | |
| 108 | Coef. Var. | 0.1153498 | | Mean Deviation | 4.1980848 | | |
| 109 | Minimum | 33.08 | | | | | |
| 110 | Maximum | 57.76 | | Median | 44.295 | | |
| 111 | Sum | 4465.01 | | Range | 24.68 | | |
| 112 | N | 100 | | Confidence Level(0.95) | 1.0219469 | | |
| 113 | | | | Lower Confidence Limit | 44.135062 | | |
| 114 | | | | Upper Confidence Limit | 45.165138 | | |
| 115 | | | | | | | |
| 116 | | | | | | | |

The status bar at the bottom indicates "Ready".

A114 (R114C1) (1Row x 1Column)

Draw
 Reshape
 Arrange
 Transform

| | A | B | C | D | E | F | G |
|-----|------------|-----------|---|------------------------|-----------|---|---|
| 102 | | | | | | | |
| 103 | | X1 | | | | | |
| 104 | Mean | 44.6501 | | Skewness | 0.0758222 | | |
| 105 | S.E.M. | 0.5150379 | | Kurtosis | -0.178965 | | |
| 106 | S.D. | 5.1503787 | | Mu3 | 10.203914 | | |
| 107 | Variance | 26.526401 | | Mu4 | 1945.5191 | | |
| 108 | Coef. Var. | 0.1153498 | | Mean Deviation | 4.1980848 | | |
| 109 | Minimum | 33.08 | | | | | |
| 110 | Maximum | 57.76 | | Median | 44.295 | | |
| 111 | Sum | 4465.01 | | Range | 24.68 | | |
| 112 | N | 100 | | Confidence Level(0.95) | 1.0219469 | | |
| 113 | | | | Lower Confidence Limit | 44.135062 | | |
| 114 | | | | Upper Confidence Limit | 45.165138 | | |
| 115 | | | | | | | |
| 116 | | | | | | | |

ser Interface Copyright (c) 1992-1998 by Eric J.C. Wu

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DESCRIPTIVE STATISTICS

Variables are selected from file C:\EASYSSTAT\NORMAL.DAT

Number of cases in data file are 100

Variable

| ID | NAME | CASES | MEAN | SUM | SUM of SQUARE | |
|----|--------------------|----------|--------------|----------------|---------------|---------|
| 1 | DATA1 | 100 | 44.650 | 4465.010 | 2626.114 | |
| | Standard Deviation | Median | One Quartile | Three Quartile | Minimum | Maximum |
| 1 | 5.150 | 44.295 | 41.240 | 48.020 | 33.080 | 57.760 |
| ID | Range | SKEWNESS | KURTOSIS | | | |
| 1 | 24.680 | 0.077 | -0.126 | | | |

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Kwikstat

Welcome to Kwikstat 4.1 - Data Analysis and Graphics

This is a fully functional evaluation copy of the KWIKSTAT program. This evaluation version contains all of the features of the KWIKSTAT BASIC edition - plus these promotional messages.

If you evaluate this program and decide that it meets your needs, you must purchase a license for continued use. When you purchase any edition of KWIKSTAT, you receive licensed disks containing the latest version of the program, a 300+ page illustrated bound manual, a newsletter subscription, 90 days of program support, and discounts on new versions of this product and on other products from TexaSoft.

To print an order form, select the "About.." option from the menu bar.

TexaSoft, Post Office Box 1169, Cedar Hill, Texas 75106-1169
972-291-2115, Orders:800-955-TEXAS, Fax:972-291-3400
E-mail: texasoft@dfw.net

Press Enter to continue



File Edit Analyze Helps About ←select→ **F1-Help**

- New Database**
- Open a database
- Subset database - Creates subset database
- Copy/Backup a database file

- List (display) the contents of a database
- Modify or Display database structure
- Kill- Delete database file
- File Utilities - Import, Report

- Exit

KWIKSTAT 4.1 Release 4 (c)Copyright, TexaSoft 1984-96

Open file:NORMAL.dbf

RECS: 100

Descriptive Statistics KWIKSTAT 4.1

Variable Name is FIELD1 From database: NORMAL.dbf

| | | | | | |
|---------|---|------------|---------------|---|----------|
| N | = | 100 | Missing | = | 0 |
| Mean | = | 44.65010 | St. Dev (n-1) | = | 5.15038 |
| Median | = | 44.29500 | St. Dev (n) | = | 5.12456 |
| Minimum | = | 33.08000 | S.E.M. | = | 0.51504 |
| Maximum | = | 57.76000 | Variance | = | 26.52640 |
| Sum | = | 4465.01000 | Coef.Var. | = | 0.11535 |

Percentiles:

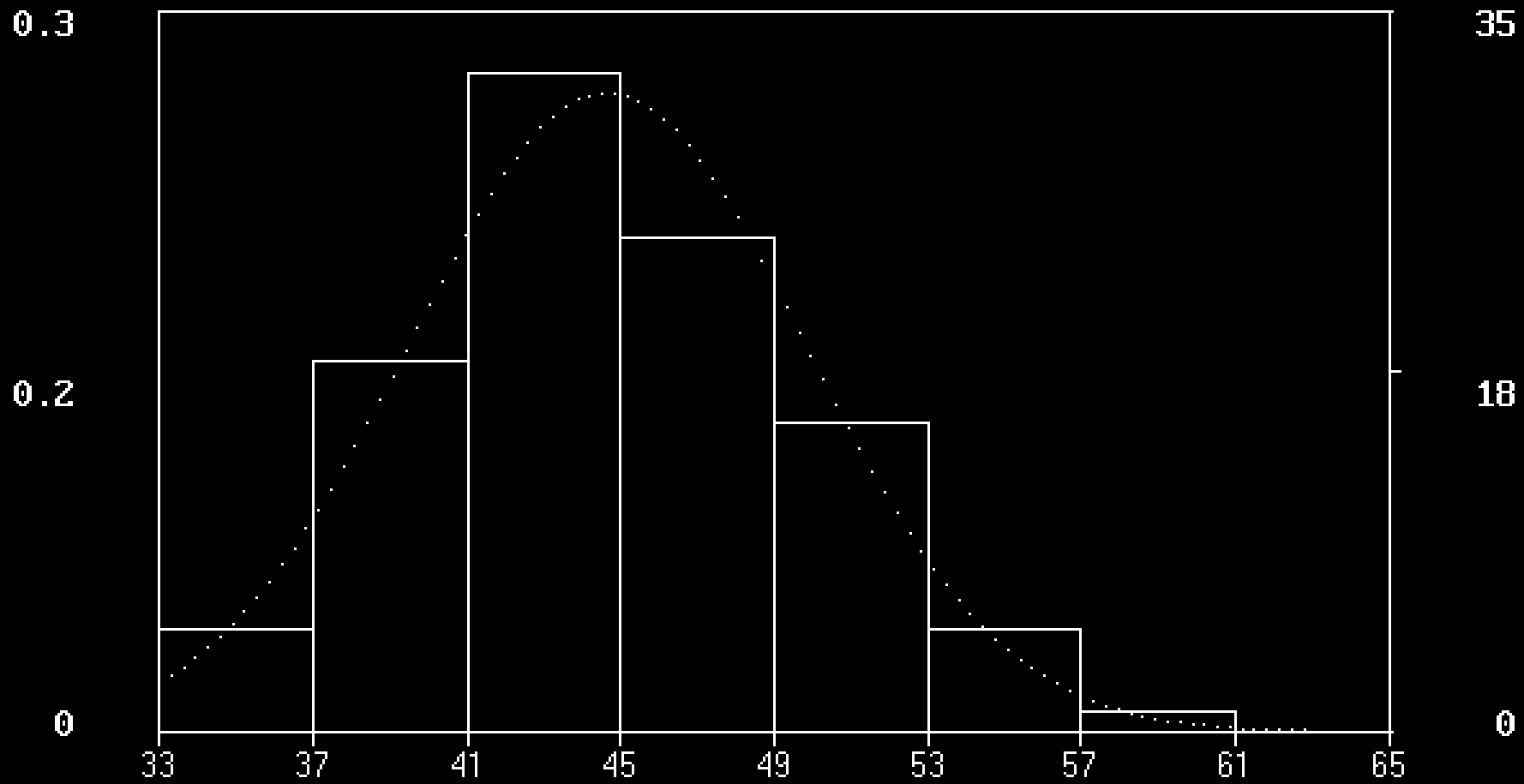
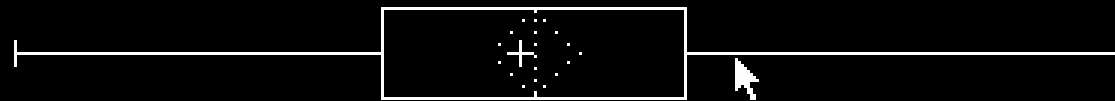
| | | | |
|--------|---|----------|----------|
| 0.0% | = | 33.08000 | Minimum |
| 0.5% | = | 33.08000 | |
| 2.5% | = | 33.51150 | |
| 10.0% | = | 38.11200 | |
| 25.0% | = | 41.20500 | Quartile |
| 50.0% | = | 44.29500 | Median |
| 75.0% | = | 48.03500 | Quartile |
| 90.0% | = | 51.29600 | |
| 97.5% | = | 56.04075 | |
| 99.5% | = | 57.76000 | |
| 100.0% | = | 57.76000 | Maximum |

| | | |
|------------|--------|----------|
| Tukey Five | Number | Summary: |
| Minimum | = | 33.08000 |
| Fourth | = | 41.24000 |
| Median | = | 44.29500 |
| Fourth | = | 48.02000 |
| Maximum | = | 57.76000 |

95.0% C.I. about mean is:
(43.64063, 45.65957)

Choose ◀ Exit ▶ < graph > < view/print > < ci > < percent > < new var > _

Descriptive Graphics on FIELD1: NORMAL.DBF





Descriptive Statistics

Variable Name is FIELD1

From database:ASIMETRI.dbf

| | | | | | |
|---------|---|-----------|---------------|---|---------|
| N | = | 100 | Missing | = | 0 |
| Mean | = | 1.08380 | St. Dev (n-1) | = | 1.10262 |
| Median | = | 0.76500 | St. Dev (n) | = | 1.09710 |
| Minimum | = | 0 | S.E.M. | = | 0.11026 |
| Maximum | = | 5.61000 | Variance | = | 1.21578 |
| Sum | = | 108.38000 | Coef.Var. | = | 1.01737 |

Percentiles:

| | | | |
|--------|---|---------|----------|
| 0.0% | = | 0 | Minimum |
| 0.5% | = | 0 | |
| 2.5% | = | 0.02575 | |
| 10.0% | = | 0.09200 | |
| 25.0% | = | 0.33500 | Quartile |
| 50.0% | = | 0.76500 | Median |
| 75.0% | = | 1.25500 | Quartile |
| 90.0% | = | 2.68000 | |
| 97.5% | = | 4.45100 | |
| 99.5% | = | 5.61000 | |
| 100.0% | = | 5.61000 | Maximum |

Tukey Five Number Summary:

| | | |
|---------|---|---------|
| Minimum | = | 0 |
| Fourth | = | 0.34000 |
| Median | = | 0.76500 |
| Fourth | = | 1.25000 |
| Maximum | = | 5.61000 |

95.0% C.I. about mean is:
(0.86769, 1.29991)

Choose ◀ Exit ▶ < graph > < view/print > < ci > < percent > < new var >

Descriptive Graphics on FIELD1: ASIMETRI.DBF

