SOCIAL SURVEY
For PalmOS®

Conduct surveys with your hand-held device and analyze the findings.

Fully-functional freeware.
Check for updates at http://www.palmgear.com

Warning

The author of this software disclaims all responsibility for damage to users because of programming errors, inaccurate calculations or faulty reasoning. However, he is reasonably teachable and recovers easily from complaints.

Features

File management: New, Open, Rename, Delete, Import, Export and Setup as many as 32 surveys.
Survey processing: Enter responses as numerals or by tapping on answer lists.
Statistical analysis: Variable description, three frequency tables, correlation, linear regression, two t tests of difference, one-way ANOVA, and chi-squared for goodness of fit.
Data editing: Correction, import, export and X-Y plot.
Many survey analyses require only the basic statistics provided here.

Installation

Hotsync® three files to your PalmOS device: **SocSurvey20.prc**, **CASLsoft.prc** and **MathLib.prc**. The math will be wrong without MathLib. I can also be downloaded from http://www.radiks.net/~rhuebner/mathlib.html

Procedure

1. *Launch* **"Soc Survey"** and tap on **Files** to create and use surveys.

2. *Manage* existing survey files:
   To rename a survey, tap on its name in the list, write or edit a new name, and tap on
   Ren. You can store as many as 32 surveys in this version.
   To delete a survey, tap on its name in the list and tap on **Del**. HotSync® important
   surveys to your PC before you delete them. They go into the Backup folder.
   To create a New survey, write a new survey name on the Name line and tap on **New**.
   Then tap on **Setup**.
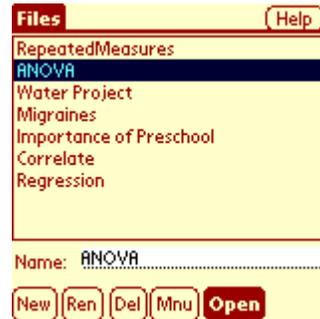
3. *Set up* a new survey by tapping on **Clear**. Write a question on the text entry lines, and
   tap on **Add**. Repeat this step as many as 100 times. That is, as many as 100 questions.
   To Replace a question, tap on it in the list, edit it or write a new one, and tap on
   Replace. This assumes that people like me think after they write.
   To insert a question into the list, click on the one above which to insert a new one,
   write the new one or edit it, and tap on **Ins**.
   To delete a question from the list, tap on it, then on **Del**.
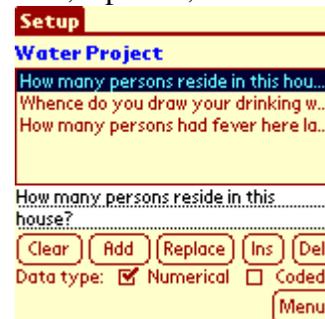
4. Specify the *response type*. The default response type is numerical. If a questions
   responses will be nominal or ordinal, that is, items in a list, then tap on the question in
   the list. Then tick the **Coded** box and tap on the button "Write Coded Answer List".
   Responses will be stored as integers called "code numbers".

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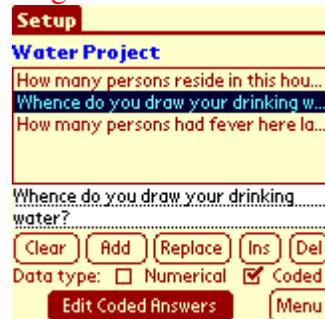
5. *Write answers* to the questions that use lists of coded responses. Write an answer on the text entry line and tap on Add. To generate Yes, No, Unsure, tap on **Y/N**. **Agree** generates a five-answer agreement list, **Much** five-level list, and **T/F** a true false list. To use the same list as the previous question's, tap on **Prev**, or of an earlier question's, enter the question's number and tap on **Same as**. It is recommended that the first item in a list be reserved for 'No response'. Not the same as missing data.
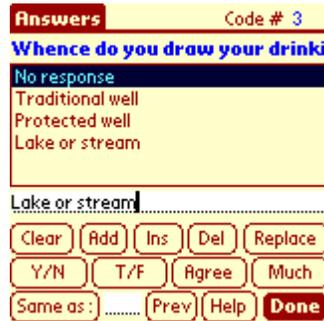
6. *Conduct a survey*. Tap on **Conduct**, and supply a serial number for each respondent. Also supply or verify a default value to be used in place of missing data. Missing data are not the same as 'No response'. Data go missing because of blunders; a respondent's inability to answer is no response. Then tap on **Conduct the Survey**.
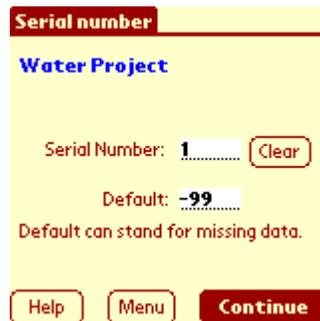
7. *Read the question and write the answer*. If there is no response, then tap on **Default** and the missing data value will be inserted. To advance to the next question, tap on **Next**. To abort the session, tap on **Menu**. To return to an earlier question, tap on Previous. There is no limit to the number of questionnaires or sessions that can be entered by repeating steps 6 and 7.

If a list of answers appears, then tap on the item that corresponds to the answer. To abort the session, tap on **Quit**. You may have to untick an item to tick another. A tick is (a) what the clock says, (b) an itchy bug, (c) a check mark.
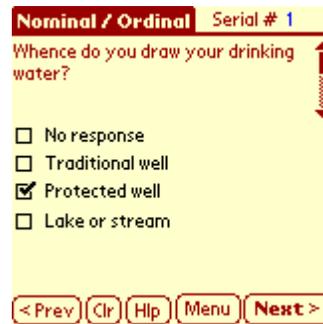
8. *Save the response data.* When all questions have been answered, a prompt will appear asking whether to save or discard the entered data. Usually, one will tap on **Save**. The data will then be stored in the survey's data file.

9. *Analyze a survey* after entering answers. At the menu, tap on **Statistics**.
   To see *descriptive statistics* for a variable (answer), tap on **m**.
   To see the *frequency* of nominal or ordinal answers, tap on **f**.
   To get a *correlation* coefficient between two variables (answers), tap on **r.**
   To get a linear *regression* and predict an outcome, tap on **y**.
   To get the *chi-square* statistic from cross-tabulated variables, tap on χ^2.
   To test for significant *difference* between two groups (samples) or between two measures of the same group (sample), tap on **t**.
   To do an analysis of *variance* between and within three groups, tap on **F**.
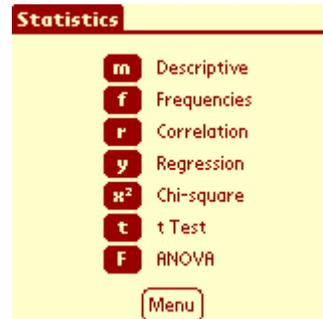

Those curious letters correspond to the customary symbols used for the statistical output of the several tests provided here. It might be useful to become familiar with them. Choosing an appropriate statistic can require help from a rocket scientist who understands a lot us stuff that is beneath her status. Numerical data can be normal or ranked, related or not, from repeated or independent measures, mono, bi or multi-variate, from single, pre & post tests or longitudinal studies, nominal, ordinal, interval or ratio, and so forth, with a statistic designed for every combination. To those who want to explore more than 200 tests and distributions at an affordable price, I recommend Knodt's Modstat: http://members.aol.com/rcknodt/pubpage.htm

10. Get *descriptive statistics* of any variable (answer). On the Statistics menu, tap **m**, then on **Go**. They are all useful… if you know statistics.
To do the same for other variables, write the variable number or tap on ⇓ or ◊ , then on **Calc.**

11. Get a *plot* of the intersection of any two variables (answers). At the menu screen, or on other statistical screens, tap on **X-Y Plot**, write the variable numbers or tap **<** or **>**, and tap on **Drw**. This can reveal the relationship between variables to the practiced eye. The example below shows no distinct pattern.
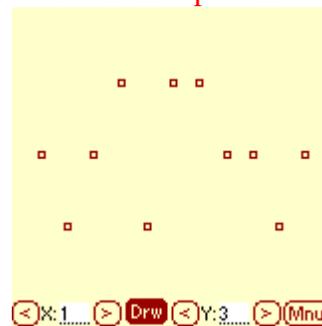
12. There are three *frequency* table formats. At the Statistics screen, tap on **f**. To move between the screens, tap on **Bar**, **Pct** or **Ans**. On the right-most screen, the parentheses present the probability interval as both values and percentages.

As many as twelve nominal or ordinal responses are permitted to each question in this program. That was all I could fit onto a screen with my limited programming ability. The items include: Response codes (0-11), response frequencies (absolute counts), response percentages (%) and probability range (95% confidence) and the same range as a percentage. That is, there is a 95% probability that a larger population of people like those in your sample would answer somewhere within the range.

13. To get a *correlation* coefficient between two related variables, tap on **r** at the Statistics screen. Enter two variables by number, and tap on **Calculate**. Correlation requires "normally-distributed" data. A t statistic is also provided for the testing of hypotheses. See t test of difference below for the critical values of t.

Correlation

Correlate

1 .... X Values
2 .... Y Values

Exclude -99

Coefficient (r) **0.875**
Determination (r²) 0.766
Statistic (t) 3.130
Sample size (n) 5

[Help] [Menu] **Calculate**
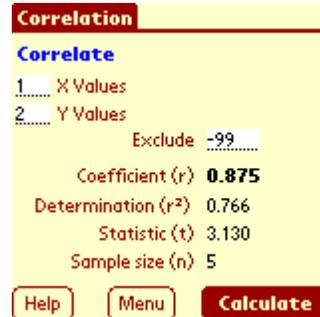
14. *Predictions* can be made from existing data. At the Statistics screen, tap on **y**. Enter two variables by number and tap on **Calculate**. Then put in an X value, and get the predicted Y.

Regression

Regression

1 .... X Values
2 .... Y Values

Exclude -99

Statistic (t) 2.981
Sample size (n) 5
y = 2.000 · x + -6.000
Input X: 3 .... Output Y: 1.344

[Help] [Menu] **Calculate**
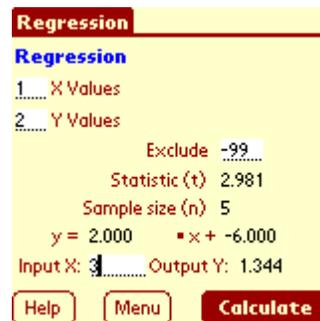
15. *Cross tabulated* nominal or ordinal data can be tested for "goodness of fit" (the effect of one variable on another) using the chi-squared statistic. At the Statistics screen, tap on χ^2. Enter two variables by number and tap on **Calculate**.

Chi-Squared

Water Project

2 .... Whence draw you your drinking w
3 .... How strongly to you agree with th

Exclude -99
Sample size (n) 13
df 25
Expected 3
X² **69.23**
WARNING: Cell contains less than 5 !

[Help] [Menu] **Calculate**
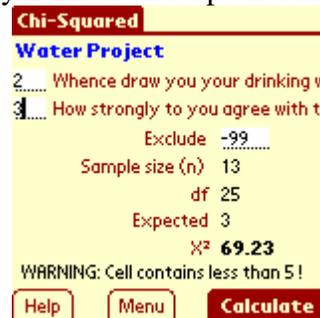
Several tests require one to compare the calculated statistic with those in tables of critical values. This is true for chi-squared, t-tests, and ANOVA. Of course, those tables and how to use them are not provided here.

Chi-squared test are not considered reliable if there are fewer than five cases per cell in the cross-tabulation. "Soc Survey" warns you if that is the case.

16. There are two *t tests of difference*, the one for **repeated** measures of the same sample, the other for **independent measures** of two samples. At the Statistics screen, tap on **t**. If it is a repeated-measures test, then tick the box. Enter two variables by number and tap on **Calculate**. The **Help** button provides a reminder of the critical values of 95% and 99% confidence levels.

t Test				t Test		
Importance of Preschool				**Migraines**		
1 Preschool				1 Before relaxation training		
2 No Preschool				2 After relaxation training		
☐ Repeated Measures				☑ Repeated Measures		
Exclude -99				Exclude -99		
X: n = 12	Y: n = 12	D: n =		X: n = 9	Y: n = 9	D: n = 9
m = 7.67	m = 6.25	m =		m = 5.11	m = 1.89	m = 3.22
s² = 1.15	s² = 1.30	s² =		s² = 3.36	s² = 3.11	s² = 7.69
t = 3.137				t = 3.485		
Help	Menu	Calculate		Help	Menu	Calculate
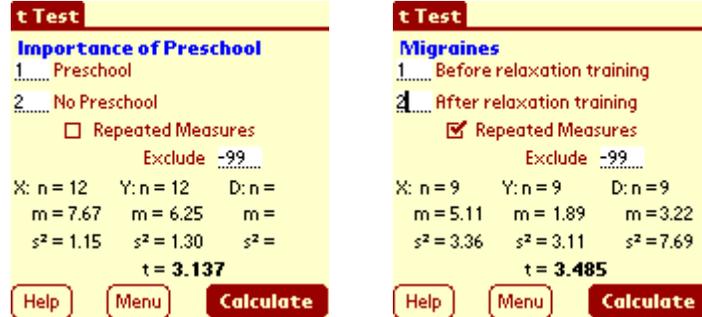
In the examples above, the t statistic of 3.485, being greater than 2.58, is "statistically significant" at a = .01, or 99% confidence. The t statistic of 1.416, being smaller that the critical values, is not significant even at a = .05 or 95% confidence. The former would allow you to reject a null hypothesis, ant the latter require you to retain it.

17. For *three groups* receiving different treatments, ANOVA tests for significant variance within groups and between groups. At the Statistics screen, tap on **F**. Enter three variables and tap on **Calculate**. Tap on the **Groups** button to get the means and standard deviations of each group.

| ANOVA		
1 Population A		
2 Population B		
3 Population C		
	Exclude	-99
	Variance between	35.00
Groups	df between	2
	Variance within	3.83
Help Menu	df within	12
Calculate	F ratio	9.130
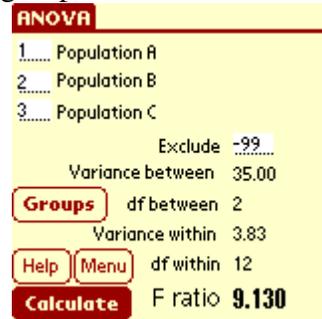
The F statistic of 9.130 with degrees of freedom of 2 and 12 indicates that there was significant variance between the groups. Well, which groups? Tap on the Groups button to see the means and standard deviations of each. Use these to sketch a chart. The rule of Thumb, states that, if the mean of one group lies outside the standard deviations range of another, then it is significantly different.

```
A |---------------+---------------|
                  1
                              B |-------------------+-------------------|
                                                    5
                                      C |-----------------+-----------------|
                                                          6
```
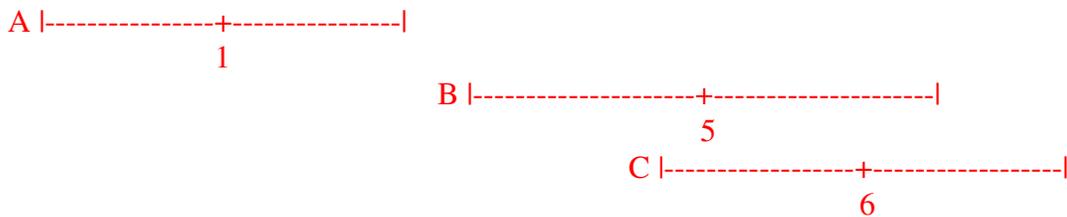
18. *Import data* from a memo by tapping on the **Import** button at the main menu. The memo must have the same name as the survey that will use the data. If the survey does not exist, then this will create a survey with the name of the memo. You must specify (a) how many variables there are and, when prompted, (b) whether the data already contain serial numbers; if they do not, then serial numbers will be supplied. All data in the memo must be followed by commas, and they can have line breaks which will be ignored.

19. *Export data* from a survey into the Memo pad by tapping on the **Export** button at the main menu. Two memos will be created having the same name as the survey. One will contain all the questions, and the other all the data, separated by commas.

Typical Application

1. Design your survey with questions and determine for each question whether its response will be numerical and be written in, or nominal or ordinal and be chosen from a list.
2. Create the survey by name in 'Soc Survey'' and tap on Setup.
3. Write the questions and indicate whether answers are numerical or nominal or ordinal, and write in any acceptable nominal or ordinal answers (or choose standard ones).
4. Conduct the survey, reading the questions and writing in numerical responses or tapping on lists on nominal or ordinal answers.
5. Perform appropriate statistical analyses, sorting data by category if desired.
Alternatively, you can enter data from completed questionnaires, either directly or by importing them from a memo.