

GPS exercise

GPS data collection

You are in charge of producing the census cartography for the island of Oahu. For the last census, hand drawn sketch maps were used. However, you have decided that it would be much better to have the census maps in digital form in a GIS. You want to have the maps referenced in a proper and consistent geographic coordinate system, so that the information can be combined with information from other government departments. You therefore decided to test mapping of census blocks on the University of Hawaii campus using a Global Positioning System (GPS) receiver.

There are many ways to go about doing this. Some systems let you download the coordinates that you collect in the field directly to your computer in the office or to a laptop computer that you can take into the field. Since this is a pilot study, however, you will record the coordinates manually on a sketch map that you will create either before you go out or while you are recording points (your choice), and then enter them into the computer later.

Take a map of the University of Hawaii campus. You want to end up with maybe 4-6 enumeration areas between East-West Road, Maile Way, University Avenue and Dole Street. The regions should be of approximately equal size. You will have to decide how many coordinates you want to record. Since these are enumeration area maps, the resolution of the boundaries does not have to be very high. So you will have to record only a few points to obtain a reasonable shape for your regions. Also, that way you will not have to enter very many coordinates into the computer.

You will learn how the GPS works, and relevant pages from the instruction manual will be given to you. Since all the base topographic maps for Oahu are in UTM coordinates, you want to use this coordinate system also for your census maps.

Coordinate data entry and import into ArcView

After you return to the lab, enter the coordinates into an Excel spreadsheet. Use only one row for the field names and then one row each for the coordinate pairs. You should use field names such as **x-coo** and **y-coo** for the coordinate fields. Each coordinate can have an identifier which could be a descriptive name or a number. After you are done entering the coordinates, save the file in Dbase IV format (DBF).

Then start ArcView and create a new project. In the project window, go to TABLES, and select ADD. Find your DBF file that contains the coordinates and click on OK. Then create a new view from the project window. With the view window active, select VIEW\ADD EVENT THEME from the menu. ArcView will probably automatically select your coordinate table if no other tables are currently open. Also ArcView looks for field names such as x-coo and y-coo and pre-selects these for you automatically. Otherwise you have to select the correct table and the x and y fields.

Your coordinates should now be displayed in the view as points. If you want, you can connect the points to create area features to which additional fields and data could be added. To do this you would create a new theme (VIEW\NEW THEME - the feature type is polygon). One could also import the points directly as lines if they are in the right sequence, but this would require a small script.