

Module 9

Use of Google Maps within SASPAC

The advent of Web Mapping has made mapping technologies and geographic data freely available to users on the World Wide Web. Previously, these facilities would be restricted to companies and mapping agencies with access to expensive hard and software, large quantities of geographic information and skilled cartographers. However, the release of Web Mapping applications like Google and Yahoo Maps have made these technologies accessible to everyone and greatly increased the use of these datasets. Currently, mapping applications typically include maps of the road network, aerial photography and routing tools (see screen shot below).

The screenshot shows the Google Maps interface with a route calculated from Downing St, Westminster, London SW1A, UK to Southwark, London SE1 2AA, UK. The route is shown as a blue line on a map of Central London. The left panel displays the following directions:

- From: Downing St Westminster, London SW1A, UK
- Drive: 3.1 mi – about 12 mins
- 1 Head east on Downing St toward A3212/Whitehall 233 ft
- 2 Continue on Richmond Terrace 213 ft
- 3 Continue straight to stay on Richmond Terrace 331 ft
- 4 Turn left at A3211/Victoria Embankment 2.0 mi Continue to follow A3211
- 5 Turn left at Monument St 0.1 mi
- 6 Turn left at A3/King William St 0.3 mi
- 7 Turn left at King William St 95 ft
- 8 Slight left at A200/Duke Street Hill Continue to follow A200 0.4 mi
- 9 Turn left at Potters Fields 220 ft
- To: Southwark, London SE1 2AA UK

The map shows a network of roads in Central London, with the route highlighted in blue. The route starts on Downing St, goes east, then turns left onto Richmond Terrace, then left onto Victoria Embankment, then left onto Monument St, then left onto King William St, then left onto Duke Street Hill, and finally left onto Potters Fields. The map also shows various landmarks, including the River Thames, the London Underground, and several parks.

A screen shot of Google Maps data for Central London depicting a route between two locations as a blue line, with directions describing the route in the panel to the left of the map. It is possible to zoom in/out, scroll across the map, display aerial photography and terrain datasets.

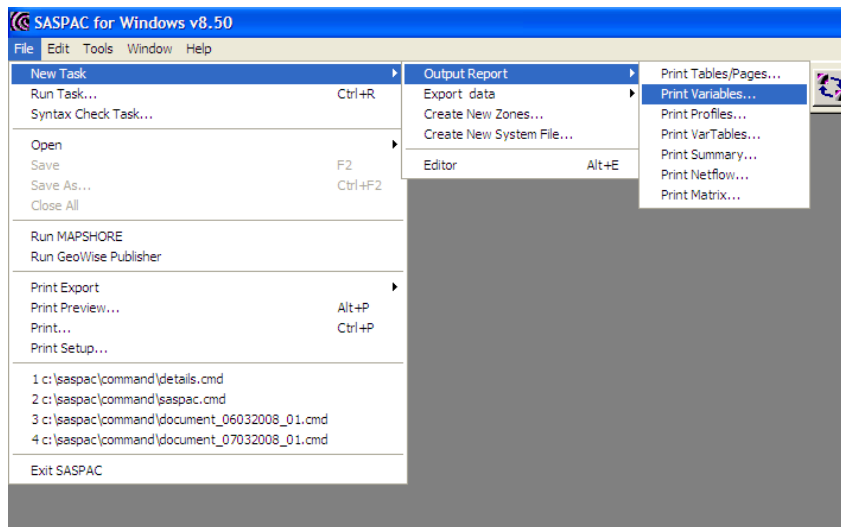
In addition to providing access to these applications via a web address, many mapping providers make their services available for reuse in other web pages by publishing their API (Application Programming Interface). Since the release of SASPAC v8.5 users can take advantage of these technologies and seamlessly use Google Maps within a SASPAC task. The Google Maps facility can be launched through the 'Select Areas' and 'Radial Search' function in SASPAC. This allows a user to search for a place name or postcode and visualise this on a map via www.google.co.uk. There are also a number of other SASPAC/Google Map utilities that are demonstrated through the following worked example.

Example

Output to a Print file the population resident within 1 mile of London Bridge rail station, the population aged 16 to 74 in employment and the number of these that travel to work on foot. Use the 'Explore' tool to find the appropriate System File and Google Maps to locate and visualise the search area. Choose to print the file with statistics.

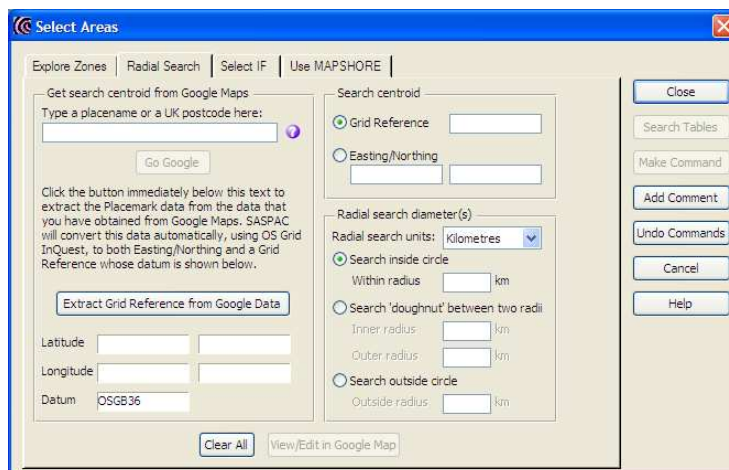
1. In this example, we are asked to define a specific search area, and output a number of variables to a print file. We must therefore define the task as one that outputs a report consisting of variables, and select areas using a radial search command. The usual procedure is thus followed, where the main task window is defined as:

'File / New Task / Output Report / Print Variable'.

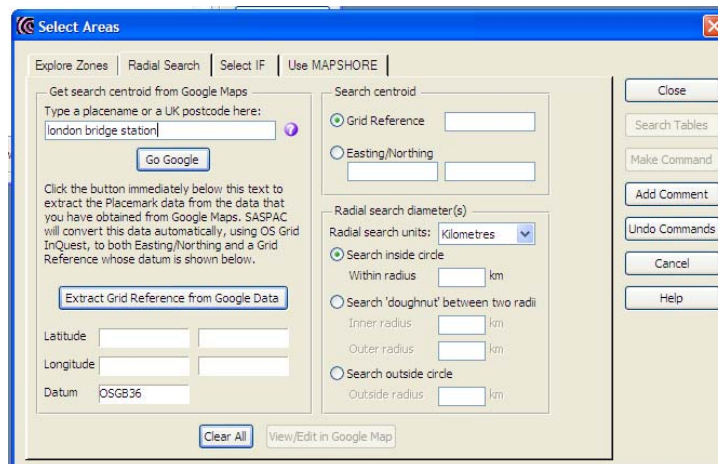


2. In the subsequent 'Print variables' window there are a number of different options available to us. This example asks us to use the 'Explore' tool to find the appropriate System File, it is advisable to define the variables required and select the areas that are within 1 mile of the search location first.

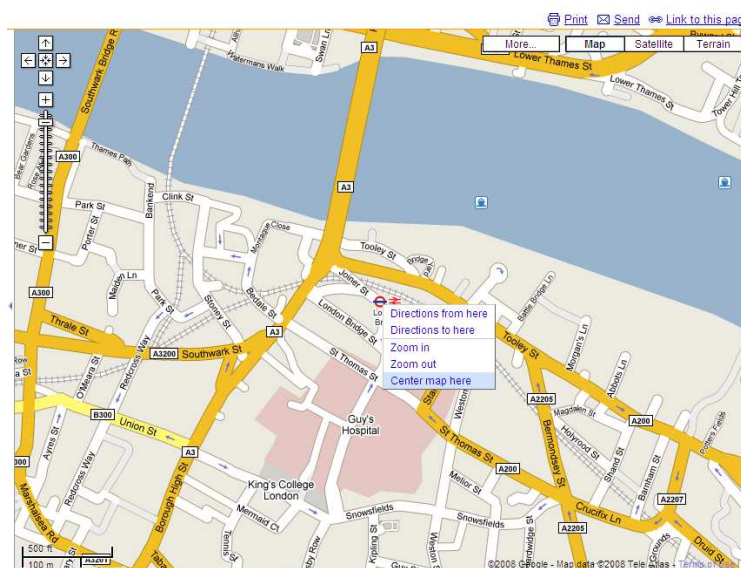
3. In this case we are asked to find the population resident within 1 mile of London Bridge station and to do so we need to select the Census Output Areas that fall within this zone. This is done through 'Select Areas' and the 'Radial Search' tab within the Print Variables task window.



4. The 'Radial Search' tab allows users to select areas selected based upon a defined distance from a fixed point or 'search centroid'. This point can be defined by directly inputting, if known, an Ordnance Survey grid reference, or Easting and Northing, in the appropriate format. Alternatively, if this information is not known, a place name or UK postcode can be typed into the text box and Google Maps used to define a location.
5. This example asks us to select areas that are within 1 mile of London Bridge rail station and as we do not know the coordinates of this position, the first stage is to define the location of this point. To do this we type the text "london bridge station" into the text box and select 'Go Google'



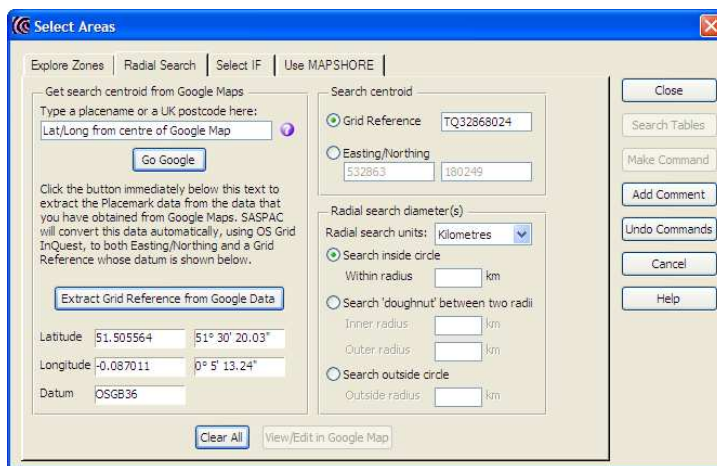
6. This opens an internet browser window, using Internet Explorer, with a red placemark over the approximate location of London Bridge station. In this case, the placemark is slightly southeast of the station itself, so to correct this we centre the map on the station by positioning the cursor over the station symbol and right-click the mouse button. Of the five options that are presented, choosing to 'centre map here' will shift the centre of the map to the cursor position.



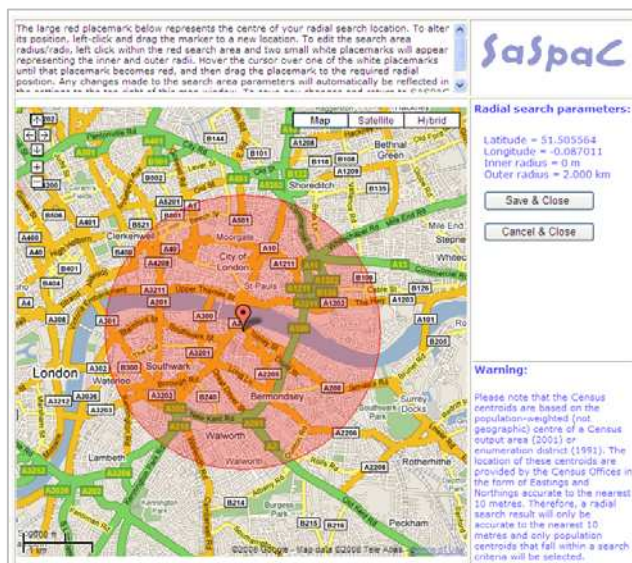
- Now that we are happy with the map position we can send this location back to SASPAC using the 'Link to this page' tool above the top right-hand corner of the map. This opens a 'Paste link in email or IM' window and by right-clicking the mouse on the highlighted text (or 'CTRL+C' on your keyboard), the location will be copied to your computer's clipboard.



Now we can return to SASPAC and select the 'Extract Grid Reference from Google Data' button to paste the geographical position into SASPAC. Notice that the latitude and longitude have been converted to the equivalent Ordnance Survey grid and easting/northing references.



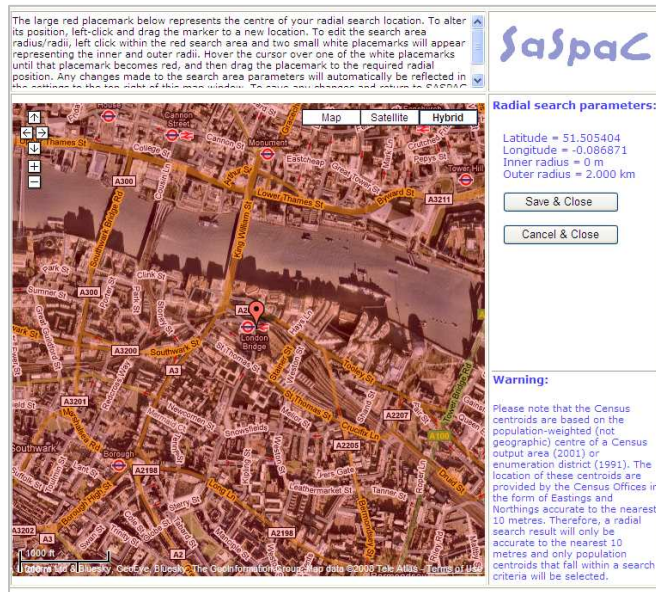
- The next step is to define the radial search diameter; in this case we set the units to 'miles' and type '1' into the 'Search inside circle' text box. Having done this the 'View/Edit in Google Map' button becomes available. It is recommended that you always check the location of the radial search on map before continuing. Selecting this button will open the following window:



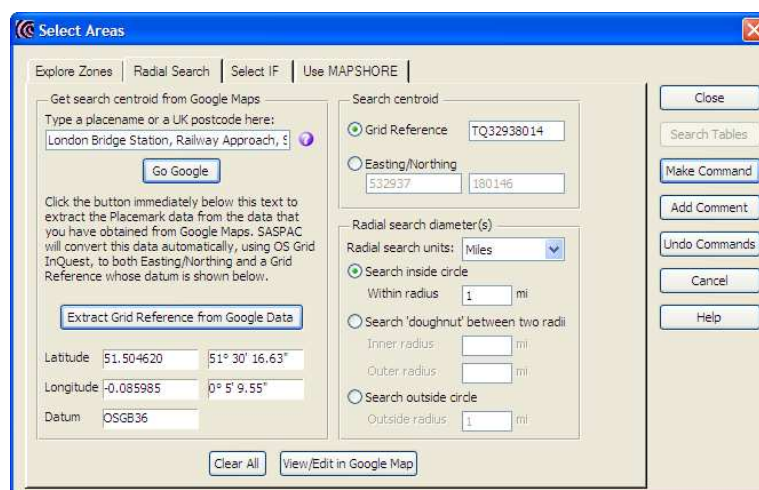
NB. Depending on the PCs internet security settings you may have to allow any blocked content to be displayed using the information toolbar above the web page.

This window correctly shows the radial search area as a circle with a 1 mile radius and a centre point positioned at London Bridge rail station.

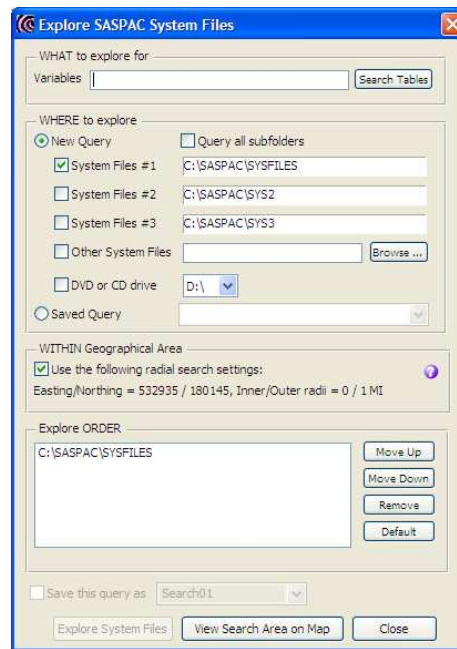
- If necessary, it is possible to alter the position of the placemark and the radius of the circle following the instructions above the map window. We can also zoom in/out and choose to display aerial photography if desired, as shown below.



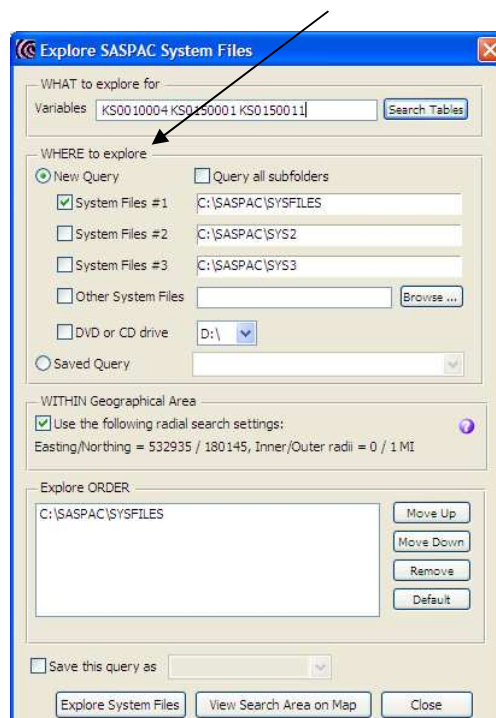
- Now that we are happy with our search parameters we select the 'Save & Close' button, to the right of the map, closing this window and returning to SASPAC. This returns us to the 'Select Areas' window where we can choose to 'Make Command' and save these parameters.



- This returns us to the main task window where we can use the 'Explore' button to search for and select the variables required. To do this we use the 'Explore' and produce the following window:

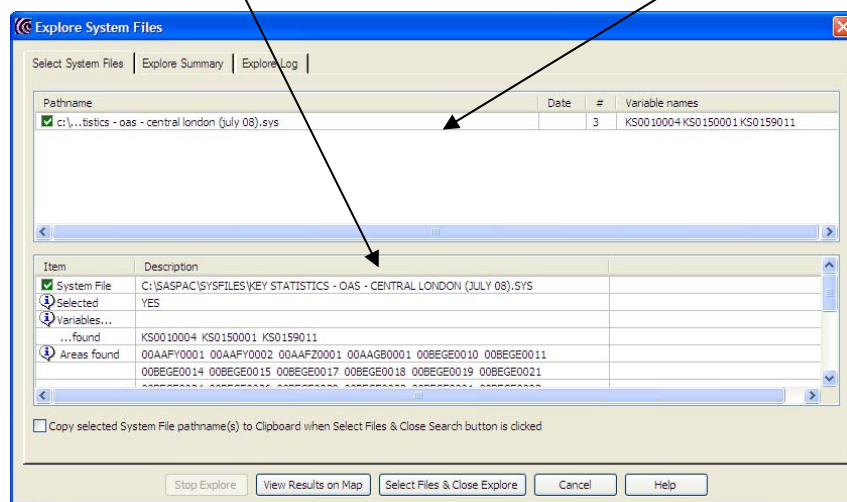


12. The purpose of this window is to help us find the System File(s) that contain the data we are interested in. This may be defined as a series of variables with or without radial search parameters.
13. The variables of interest can be searched for in the usual manner under the 'WHAT to explore for' heading. If the variable codes are known, these can be typed directly into the text box. Alternatively, the 'Search Tables' button can be used to launch the searching 'Select variables' window and select the desired variables.
14. Now that we have defined the variables of interest, we specify where we would like SASPAC to search for this data under the 'WHERE to explore' menu.



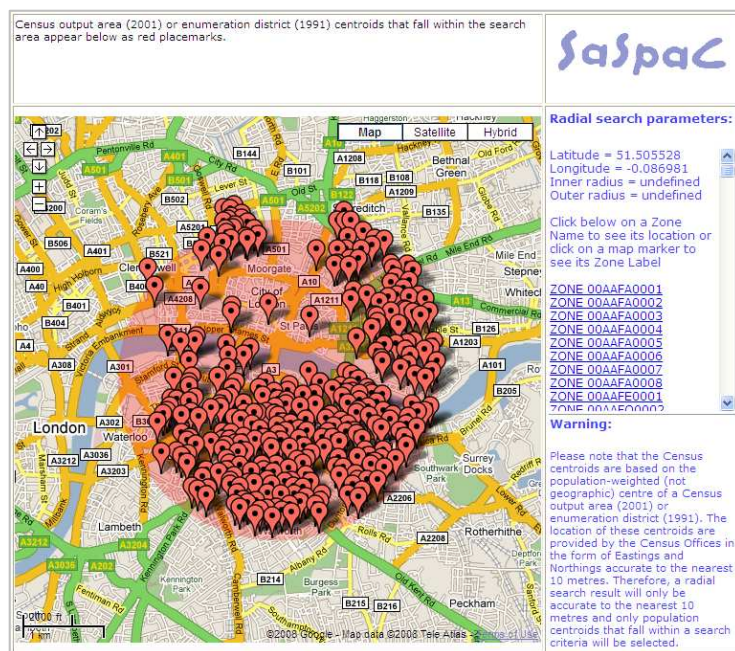
The default locations in this case are the standard System File directories (SYSFILES, SYS2 and SYS3) but it is also possible to 'Browse' to a folder of choice or search a CD/DVD. In this case, the default search location of 'System Files #1' is suitable. Before we run the search, note that because we have already defined radial search settings, the 'WITHIN Geographical Area' box is checked and our parameters are displayed. To run the search we select the 'Explore System Files' button at the bottom of this window.

- After a short wait, the results will appear as a list of System files that contain some or all of the variables requested. To display the details of the files shown left-click the tick box next to the path name and file description is displayed in the window below.



NB. The only datasets to contain Ordnance Survey grid references from the 2001 Census are those at Output Area level. Therefore, when carrying out a radial search task, Output Area data must be used.

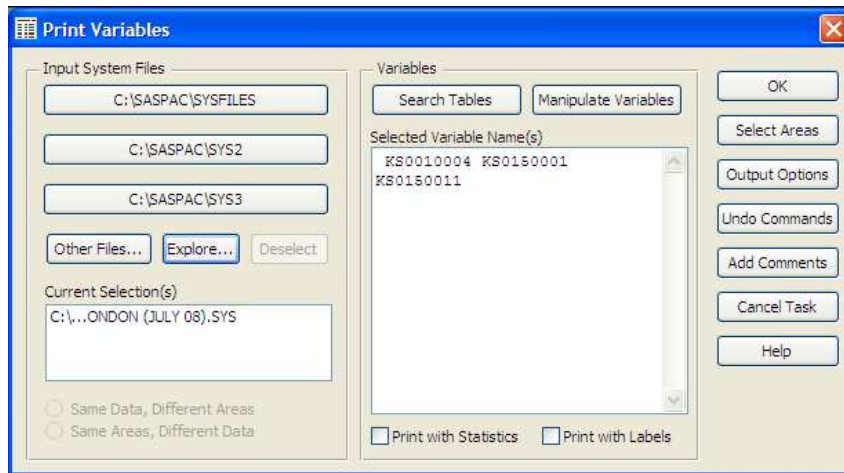
- In this case only one System file should be found to contain all the variables requested and selecting the 'View results on Map' button will visualise these radial search results on a Google Map:



The above map shows a red disc representing a 1 mile circle around London Bridge station. Red placemarks appear at the (population) centres of each Output Area that fall within the search radius. The OA codes are also listed to the right of the map and are dynamically linked to the placemarks, so when the zone ids are selected the associated placemark is identified.

NB. A radial search query includes an Output Area if the population's centre (centroid) is contained within the specified distance. For example, if only 25% of an Output Area is within a search radius but that happens to include the population centre, then that OA, and 100% of its population, is considered to be within that search area. If you would like to carry out more complex zone selections, i.e. zones 'completely' or 'partly within' search areas, we recommend using SASPAC's integrated mapping software - Mapshore.

- Closing this window and returning to SASPAC, allows us to select the System File using the 'Select Files and Close Explore' button. This identifies the selected file in the 'Current Selection(s)' window and after choosing to 'Print with Statistics', the task can be run using the 'OK' button.



- Navigating to the final page in the print file presents the following summary statistics for the data requested:

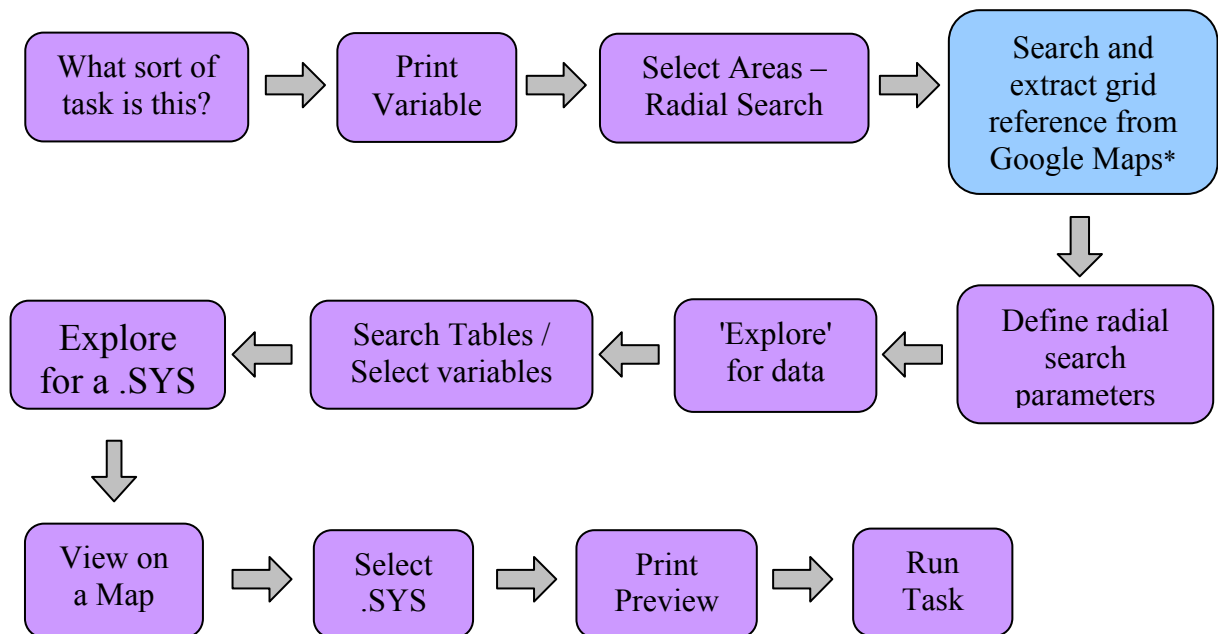
00BGGJ0023	172	115	38
00BGGJ0026	227	108	28
00BGGJ0029	282	88	22
00BGGJ0030	258	187	71
00BGGJ0031	268	147	52
00BGGJ0032	206	119	35
00BGGJ0034	233	181	71
00BGGJ0038	190	144	45
00BGGJ0041	225	170	67
00BGGJ0003	301	108	29
00BGGJ0018	197	123	45
00BGGJ0019	303	133	40
00BGGN0012	342	152	39
00BGGN0015	199	167	50
00BGGN0019	232	182	60
TOTAL	57707	26690	6479
MEAN	276.11	127.70	31.00
STAND. DEV	113.40	44.24	19.49
MAXIMUM	1229	431	130
MINIMUM	106	57	6
MISS. VAL	0	0	0

This demonstrates that of the 57,707 people resident within 1 mile of London bridge rail station, 26,690 (or 46%) are aged between 16 and 74 and in employment and 9,939 (24%) of these travel to work on foot.

19. The command file generated by this sequence is as follows:

```
input system file name = "C:\SASPAC\SYSFILES\KEY /
STATISTICS - OAS - CENTRAL LONDON (JULY 08).SYS"
select if distmle(TQB2868024) le 1
* <<radial =1, 532865, 180245, 1, mi, 1, , >>
print variables with statistics KS0010004
KS0150001 / KS0150011
output print file = c:\saspac\report\Mdul e9. pr n
end
finish
```

Summary of task sequence



* remember to 'Make Command'.