

Module 8

Use of Double Geography datasets within SASPAC

Introduction

The standard Census datasets (e.g. KS, QS, LC, DC) are geographically one-dimensional. That is to say each item of information is related to a single area. That is why they are occasionally referred to as 'single geography datasets'.

On the other hand, the 'origin-destination' datasets supplied by the ONS are geographically two-dimensional – each item of data is linked to two areas.

There are four origin-destination (O-D) datasets in 2011. In each case data are linked to two geographies (an origin and a destination):

Data Set	Geography 1	Geography 2
Travel to work	Usual residence	Address of place of employment
Migration	Usual residence	Address one year ago
Second Homes	Usual residence	Second home address
Students Residence	Usual residence	Term-time address one year ago

Note: Either geography 1 or geography 2 can act as the origin or destination.

Double Geography in SASPAC

In order to access and output O-D data in SASPAC there are a number of double geography windows. These windows are very similar to the windows used in basic operations but with a few minor modifications in their appearance and the choices that are offered to the user.

The migration, second homes and student residence data will all be available as United Kingdom datasets while only some workplace tables will be UK-wide. Other workplace tables will be provided as England & Wales only tables and Scotland only tables. This is because in Scotland the question relating to place of work was extended to cover place of study as well. The two relevant questions in each of the areas was as follows:

E&W

Q40. In your main job, what is the address of your workplace?

Scotland

Q11. What address do you travel to for your main job or course of study (including school)?

2011 Naming

As with standard outputs each table in the O-D dataset has a unique name. The table names in the 2011 O-D dataset are complex because they provide information about the data contained in each table. Table names include:

- A dataset identifier
- A data type identifier
- A table number
- A country identifier
- Migration tables include an additional population base identifier

The list below shows each of the four O-D datasets, their formal name and the letter used to identify them.

Dataset	Formal Name	Identifier
Travel to work	Special Workplace Statistics (SWS)	W
Migration	Special Migration Statistics (SMS)	M
Second Homes	Special Resident Statistics (SRS)	R
Students Residence	Special Student Statistics (SSS)	S

The dataset identifier listed above is the first letter in the table name.

The second letter of the table name denotes the type of data to be found in the table. Origin destination data are of three types:

Data Type	Formal Name	Identifier
Flow	Count of people moving from one place to another	F
Univariate	Number of people moving with a particular characteristic	U
Multivariate	Number of people moving with two or more characteristics	M

Next, the tables have a two digit table number. This is followed by a country identifier (EW or UK).

For example, table **MF01UK** is a Special Migration Statistics table which provides flow data for the UK.

In some cases where two tables provide similar data they are given the same table number and the difference is denoted by a letter inserted before the country identifier. In SASPAC these letters are placed after the country identifier.

ONS example	SASPAC example
MM05AUK	MM05UKa
MM05BUK	MM05UKb

Both of these are migration tables providing multivariate data for the UK, specifically NS-SeC of migrants by sex. Table A provides detailed NS-SeC information while table B provides grouped NS-SeC information.

Finally the migration (SMS) tables have an identifier to show which population base is being used. This is because some data are published for All Usual residents (all) and some are published for residents whose address was previously outside the UK (non UK). Again these two types are denoted slightly differently in ONS and SASPAC outputs.

ONS example	SASPAC example
MM03UK_non_UK	MM03UKi
MM03UK_all	MM03UK

In the SASPAC outputs the all usual resident tables have no identifier as this is the standard population base. The non-UK tables are denoted by a lower case 'i' which stands for 'international'.

2011 Code Examples

Table Name	Dataset ID	Data Type ID	Table No.	Country ID
WU07EW (WU07EW)	W = Travel to Work	U = Univariate	07 = Table 7	EW = England & Wales
RM11AEW (RM11EWa)	R = Second Residence	M = Multivariate	11A = Table 11A	EW = England & Wales
SF02UK (SF02UK)	S = Students	F = Flow	02 = Table 2	UK = United Kingdom
MM01BUK_non_UK (MM01UKbi)	M = Migration	M = Multivariate	01B = Table 1B	UK = United Kingdom

*SASPAC table names are shown in brackets

2001 Naming

In 2001 the tables were released under three generic titles:

Matrices of journeys to work (Areas of residence in England, Wales, and NI)

Within SASPAC these tables are given the table identifier code SWS. There are 14 tables (plus one Northern Ireland variation). Seven of these – numbered SWS101 to SWS107 – are available at local authority district level; six – numbered SWS201 to SWS206 – are available at ward level; and one – numbered SWS301 – is available at Output Area level.

Matrices of journeys to place of work or place of study (Areas of residence in Scotland)

Within SASPAC these tables are given the table identifier code TVS. There are 14 tables. Seven of these – numbered TVS101 to TVS107 – are available at local authority district level; six – numbered TVS201 to TVS206 – are available at ward and postcode sector level; and one – numbered TVS301 – is available at Output Area level.

Matrices of migration moves

Within SASPAC these tables are given the table identifier code SMS. There are 16 tables (plus one Northern Ireland variation). Ten of these – numbered SMS101 to SMS110 – are available at local authority district level; five – numbered SMS201 to SMS205 – are available at ward level (and postcode sector level in Scotland); and one – numbered SMS301 – is available at Output Area level.

Number of Flows

Following the 2011 Census there are some 181,400 Output Areas, and over 8,570 wards in England & Wales. The resulting matrices of area to area moves for each of these levels have the potential to be very large. For example if there was a flow from every OA to every OA within England & Wales that would constitute a total of 32.9 billion flows. Obviously this is not possible as this number vastly exceeds the resident population. Therefore not all the combinations of origin zone and destination zone will actually produce a flow.

2011 Disclosure Control

In 2011 the ONS preferred method for disclosure control has been to edit table layouts to avoid the release of disclosive material. The advantage of this method is that the data that are released are of a much higher quality than was the case under the 2001 SCAM method (see below).

The downside to the method is that many tables and variables have been dropped from the proposed outputs because they were deemed disclosive. Origin-destination data by its nature tends to deal in small counts and so this approach means that many of the O-D products proposed by ONS have not met the disclosure control standard, particularly at smaller geographies.

ONS has taken the decision to make only a small proportion of the O-D data from the 2011 Census publically available. The more sensitive datasets must be accessed through one of two secure channels:

1. Safeguarded

The user must apply to ONS to gain 'secure user status'. Once granted the user will have access to more detailed outputs. The tables will be downloadable from the UK Data Service and accessible through SASPAC.

2. VML (secure)

The ONS Virtual Media Laboratory (VML) is a secure system accessible only at ONS offices. Users can either apply to use the VML or request data from ONS. This level of security is reserved for the most disclosive data.

2001 Disclosure Control

In 2001 the Small Cell Adjustment Method (SCAM) applied by ONS to data was intended to remove the potential for disclosure. Under this method small counts of 1 or 2 were adjusted to 0 or 3. Totals were then calculated using the adjusted data.

The difficulty with this method is that for multivariate flow tables the counts are often very small and so a great number of the cells need to be adjusted. This makes the datasets unreliable; particularly at lower geographies and as a result using OAs as building blocks to higher geographies is not advised.

2011 Release Schedule

There are 178 origin-destination tables scheduled for release for the 2011 Census. The table below shows how they are distributed between the four table sets and two levels of geography (EW and UK). Also shown is the predicted level of access.

Where a table is split between two levels of access larger geographies such as local authority will be accessed via the lower security level while the higher security level will be needed for more spatially specific/smaller outputs.

Table set	Public	Safe-guarded	Secure	Part safe part secure	Part public part safe	Total
SMS EW	3	13	12	2		30
SWS EW	3	12	12	3		30
SSS EW	1	2	2			5
SRS EW	6	11	11	1	6	35
SMS UK	3	18	26	6	5	58
SWS UK	3	9	9	3		24
SSS UK		4	4	1	3	12
Total	3	69	76	16	14	194

The first release of origin-destination data took the form of a small set of public tables published on 25 July 2014. For the most part these tables provided data at Local Authority or Merged Local Authority level. Some workplace (SWS) tables were available for MOSA geography.

Smaller geographies are more likely to be included in the safeguarded or secure outputs due to their more detailed nature. The next release is likely to be early September and will include the first safeguarded tables, some down to output area level.

The following release is tentatively scheduled for November and will incorporate safeguarded and secure data for all available geographies.

Example

For areas of origin in England & Wales, extract the total numbers of persons, males and females travelling to work within the MSOAs in the London borough of Enfield, and map the output in SASPAC

Working with Origin-Destination Data in SASPAC

Before using output O-D data in SASPAC there are some preparatory steps that it is recommended are taken. These steps make these large datasets more manageable and the outputs more meaningful.

- Step 1: Filter the flows to exclude any that are not relevant
- Step 2: Rezone areas to produce asymmetric flows

Filtering Flows

As indicated, the datasets supplied by the Census Offices, and made available to SASPAC users as System Files cover areas across the whole of the UK (or parts as applicable). This means that there will be flows on the files that users will have no interest in, and which will not be relevant.

Flows therefore fall into one of four categories:

- a. Flows within an area of interest
- b. Flows into an area of interest from the rest of the country
- c. Flows from an area of interest to the rest of the country
- d. Flows totally external to the area of interest

This is depicted schematically here:

	Destination within area of interest	Destination outside area of interest
Origins within area of interest	Flows within area of interest A	Flows from area of interest to the rest of the country B
Origins outside area of interest	Flows into the area of interest from the rest of the country C	Flows wholly external to the area of interest D

Most users will only be interested in the shaded area within this diagram, and therefore the first requirement will be to reduce the dataset by removing the unshaded area (i.e. filtering the data).

The area of interest (A) – in this example the borough of Enfield – is termed the Core Area. The two blocks shown as B and C are referred to as the Tails of the Dataset.

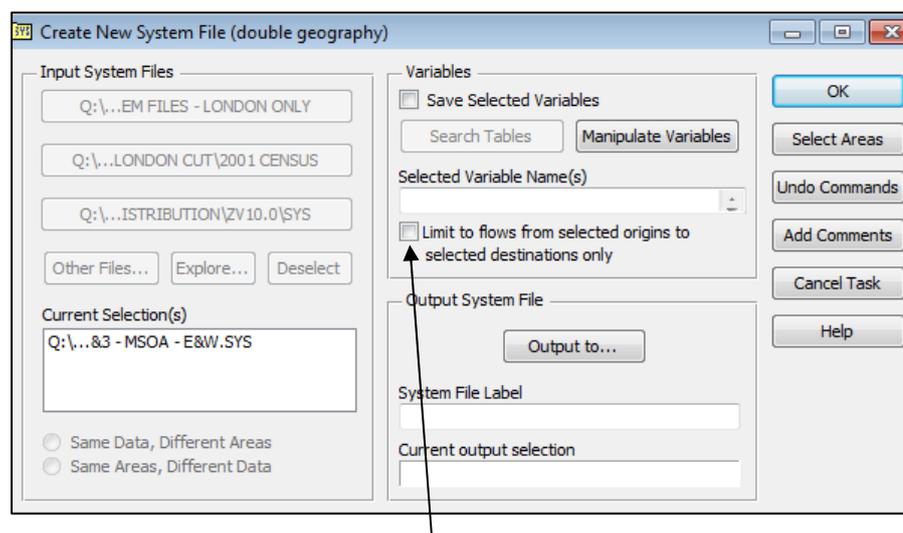
Exercise A: Filter Data

Create a sub-set of origin/destination data for zones in to out of and within the area of interest (Core Area).

For this exercise the Core Area is the London Borough of Enfield. We have been asked for travel to work data and so we will create Special Workplace Statistics Tables at MSOA level.

The requirement is to create a new System File containing only data related to a core area, and so the New System File task window is accessed through use of the File/New Task/Create New System File option.

Select the appropriate Input System File (2011 CENSUS SWS WU01&2&3 - MSOA - E&W.SYS) in the usual way.



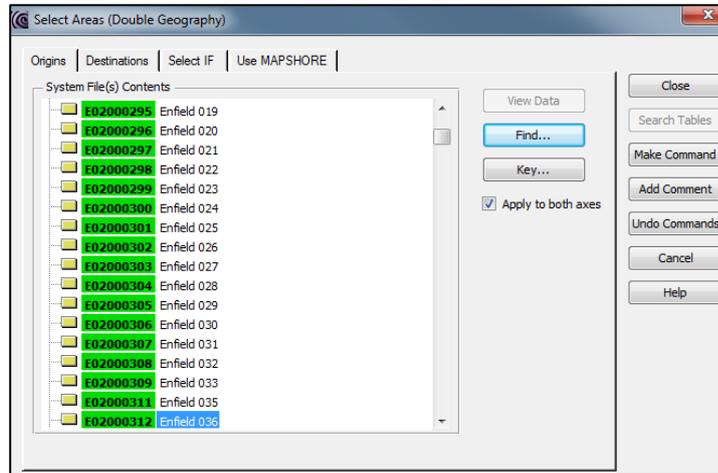
Once an origin/destination dataset is selected, the task window changes slightly in that there is an additional tick-box now available as shown in this image.

This tick box allows the user to restrict the outputs to only flows within the core area; all flows with an external component (B & C) will be excluded. In this task we are interested in all flows which have some relationship with the core area so we leave this box un-ticked to ensure we have flows A, B and C from the diagram.

Above this tick-box under the 'Variables' header it is possible to input selected variables to be saved, leaving this blank will automatically save all variables in the original system file.

The selection of the core area zones may now be made in the usual way through the 'Select Areas' command button.

As a double geography file has been selected, the Select Areas window has tabs titled 'Origins' and 'Destinations'.

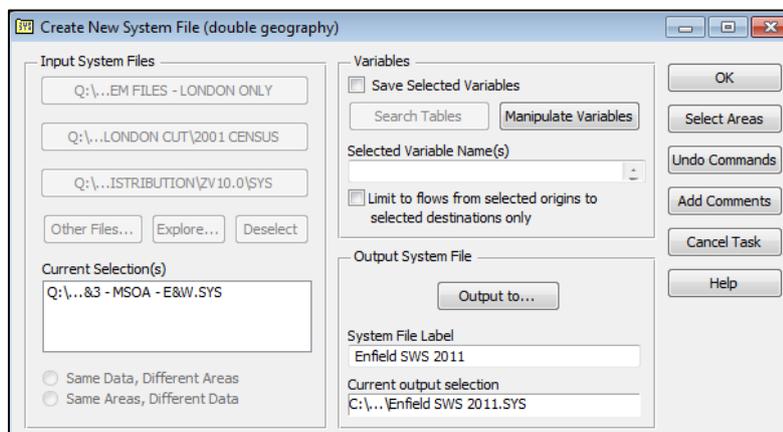


Use the find button to locate the first MSOA in Enfield. The zone is selected by left-clicking and choosing 'include'. Subsequent zones are selected by left-clicking. Once Enfield MSOAs 1-36 have been selected the final zone (MSOA 37) can be found by using the find button again.

As the core area is to be symmetrical, that is the areas of origin within it are identical to the areas of destination, then the process of area selection may be simplified by clicking the 'Apply to both axes' tick-box. If the origins and destinations are different then separate selections can be made.

Once the zones within the core area have been identified, click the 'Make Command' command button and close the window.

The final stage is to allocate an appropriate name (Enfield SWS 2011) and label in the required locations in the task window.



Once this is done, click OK give the command an appropriate file name.

When the command is run a new system file containing only the flows relevant to the core area is created.

The System File Details display shows the number of flows and the number of origins and destinations. In this case 34,145 flows, 2,880 origins and 2,174 destinations. The file is therefore much more manageable as is also shown by the fact that the original file of 326Mb has been reduced to less than 4.8Mb.

Asymmetric Flows

The file that has just been created will contain MSOA-to-MSOA flows related to the Enfield core area. As such it will contain, for example, flows with origins in MOSAs in the North East region to destinations in Enfield MOSAs. It is however highly probable that the user will not be interested in origins or destinations at such a fine level of detail where the distance involved is very large. In this case, the user will want to create new zones for areas outside the core area.

In this example we will aggregate MOSAs outside Enfield in the following way:

- Within London, South East and East regions MOSAs aggregated to Local Authority
- Elsewhere in England MOSAs aggregate to Regions
- In Wales MOSAs aggregated to country

Within Enfield we will retain the MSOA geography.

Exercise B: Rezone to asymmetric zones

To undertake the rezoning we will use the gazetteer file 'GAZ file for Enfield Core Area.gaz'. This file has been created for this purpose and allocates all external MOSAs to local authorities or regions in the manner outlined above. It has the existing zone (MSOA) in columns 1 to 9, and the new zone (districts/region) in columns 11 to 19, with no scaling factor.

The first stages of the process are the same as for single geography rezoning, and the "File/New Task/Create New Zones.." route is followed, at which stage the system file created in the previous exercise is selected.

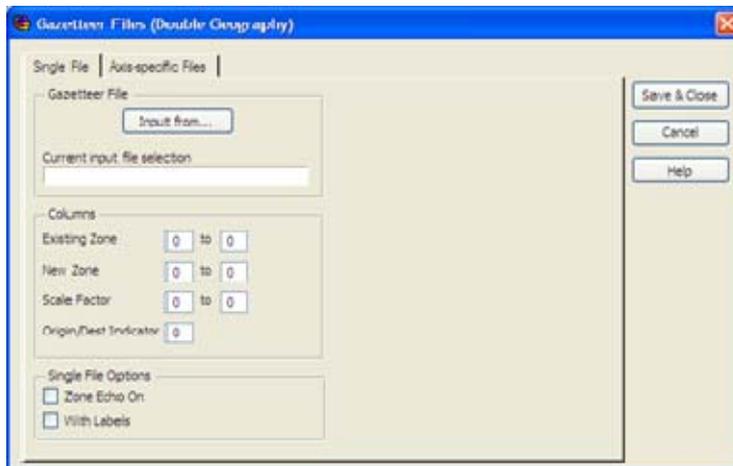
The resultant window differs from the window seen in Module 4b in that this is double geography specific. In the central 'Method' section of the window the user can select what to do with areas on the input system file that are not used in the new zone creation commands.

As we are not considering the Enfield MOSAs in the gazetteer file and we want those to appear as they are in the new system file, the 'Include unused origins and destinations' button is checked.

As we are going to use a gazetteer file, the 'Gazetteer Files' button is used to take us to the next window, which is again different from that seen in Module 4b, as it again caters for double

geography. The main difference is that this window has two tabs which allow for gazetteer files to be chosen either to apply to both axes together or individually. This is shown in the next image.

The appropriate input gazetteer file is selected in the usual manner by use of the 'Input from...' button.



- The existing zone code is in columns 1 to 9,
- the new zone code is in columns 11 to 19
- There is no scaling factor.

These values are entered into the appropriate boxes. In addition, the gazetteer file has a label element, and so the 'With Labels' box must be ticked. For the sake of obtaining a full check on the allocation of zones (MSOAs) in the new zone creation, the 'Zone Echo On' box is also ticked. When this is completed click 'Save & Close'.

Call the new System File [**Enfield SWS LA and Region.SYS**]

Run the task.

A check on the System File details reveals that we now have a file in which there are 7,279 flows with 195 origin zones and 192 destination zones, and the file size has been further reduced from 4.8Mb to 0.5Mb.

Using the origin/destination datasets

Once the national dataset has been tailored to the user's needs as detailed in the previous sections, it may be used in virtually the same way as any other SASPAC System File. The main difference that the user will notice is that, once a double geography system file has been selected, some windows have a slightly different appearance..

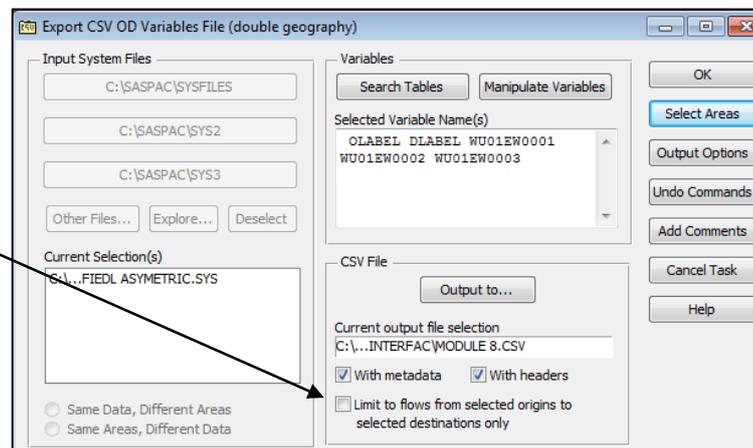
Exercise C: Output Data

Exercise: For areas of origin in England & Wales, extract the total numbers of persons, males and females travelling to work within the London borough of Enfield, and map the output in SASPAC

To start the task go to File > New Task > Export data > CSV file (OD).

This produces a modified CSV task window.

The CSV (OD) window includes a tick box that allows restriction of the analysis to flows wholly within areas of interest.



Select variables

The required variables are selected in the usual way by using the Search Tables button. Note that in the Select Variables window the Table Sets available from the drop-down menu are limited to the O-D datasets only. Select Travel to Work (E&W) and then take all three variables from the first table (WU01EW).

From the Header Variables box select the OLABEL (origin label) and DLABEL (destination label) variables. These work in the same way as the ZLABEL variable does for standard single geography outputs.

Save and Close.

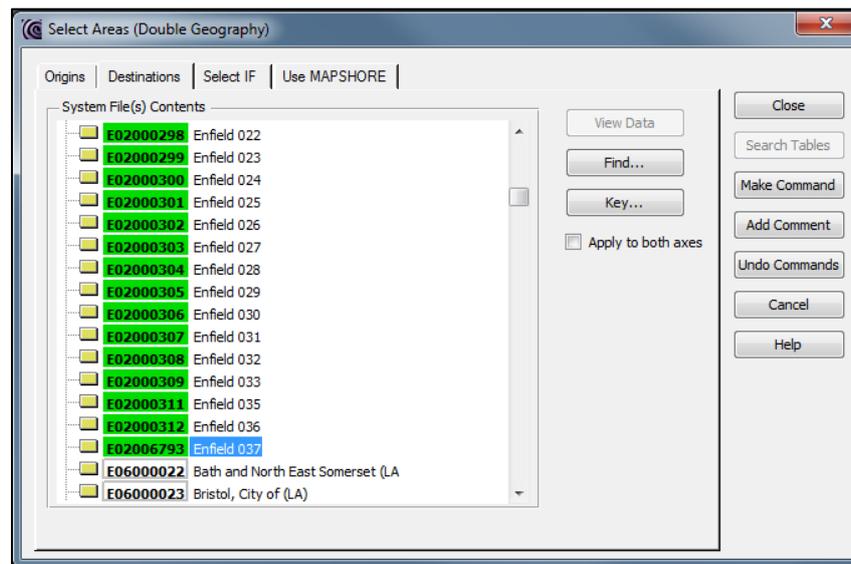
Select geography

When the 'Select Areas' command button is clicked the radial searching is not an option, and in place of the 'Explore Zones' tab, there is a tab each for Origins and Destinations.

We do not want to limit the origin locations in the output file (we have already created a system file that only includes data related to our core area). We therefore don't need to make any selection in the Origins tab.

In the destinations tab we want to limit to just those people commuting to Enfield. Therefore select the MSOAs in Enfield using left click > include.

The 'Apply to both axes' tick box allows users to easily select symmetrical origins and destinations. With this box ticked a selection made in the origin window is applied also to the destination window, and vice versa. In this case we must ensure the box is not selected.



Click 'Make Command' and close the geography selection window.

Input the system file and export CSV

Select the system file that was previously created [**Enfield SWS LA and Region.SYS**].

Note that as soon as a System File is selected, the 'Input System Files' buttons are greyed out. This is because only one input file is allowed with double geography analyses.

Give the output CSV file a name (Module 8.csv) and run the task.

View in Excel

The output can be viewed in Excel in the usual way. For each Origin (MSOA, LA or region) there is a record for the destinations to which residents commute and each record has three variables attached (total, males, females).

Pivot Table

In Excel click Insert and then Pivot Table. Drag 'Olabel' to the Row Labels box and 'Dlabel' to the column labels box. Then drag the first of the three variables to the Values box. If Excel defaults to the Count of this variable rather than the Sum you will need to click on the dropdown box next to the variable and select value field settings. Change to Sum and click OK. This produces a matrix of flows in and out of Enfield.

Exercise D: Mapping

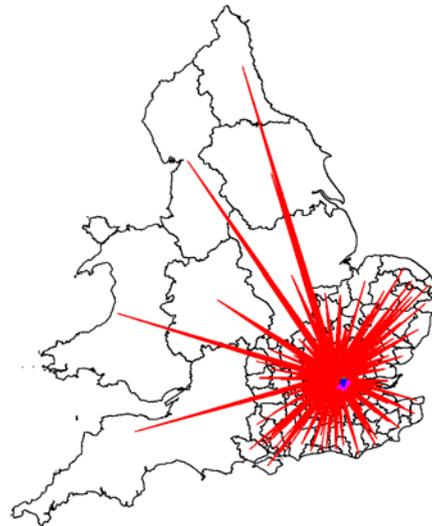
Close Excel and select 'Go Mapping' from the command screen in SASPAC to open Mapshore.

We first open the appropriate boundary file – in this Asymmetric Boundary File.BDY – followed by the CSV file just created. As the CSV is a double geography file, to display the data go to Data>Desire Line Double Geography. Select the first variable (WU01EW0001) when prompted.

The map is filled with arrows showing how many people move from each zone on the system file (districts, regions, MSOAs) to each MSOA within Enfield.

The smallest flows are represented as a red arrow while larger flows are represented by green, blue and violet arrows.

Using the zoom icon in the centre of the shortcut panel draw a box around north London (the area of blue at the focus of the map).



Use of Zoom/Layering

Once zoomed in use the Zoom>Layering>Properties menu to edit the size of the arrows.

This brings up the window shown here, in which the user can set arrow widths, arrow colours, and range values. Setting an arrow width to zero will prevent that range from displaying on a map.

Set the values as shown here click OK and see how that changes the map. To display the legend go to Display > Desireline Key.

Values <=	Arrow Width	Colour
170.00	0	Red
226.67	1	Green
340.00	1	Blue
680.00	2	Violet

Exercise E: Limiting the Flows

In this exercise we will output a new CSV using the same data and system file as previously but this time we will limit the output to solely flows within the area of interest.

The first part of this exercise is identical to the previous exercise.

Select CSV (OD) output from the File > New Task > Export Data menu

Input the 2011 SWS ENFIELD ASYMETRIC System File

Select variable WU01EW0001

Give the CSV a name [module 8 part 2.CSV]

Select Geography

Go to select areas and view data. This time select all MSOAs in Enfield in the Origins window.

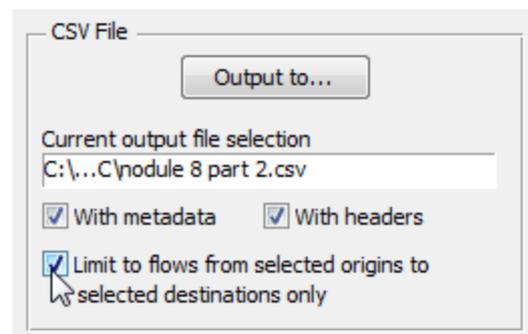
Now make sure you tick the 'Apply to both axes' tick box and choose Make Command. This will apply your geography selection to both the Origins list and the Destinations list. Close the Select Areas window.

Limit Flows

The final step is to tick the 'Limit flows from selected origins to selected destinations' box.

This means that our output will constitute a closed system where the only flows included will be ones from selected origins to selected destinations.

As a result total outflow will equal total inflow (in this case 37,198 journeys).



Output CSV

The task can now be run. View the output in Excel.

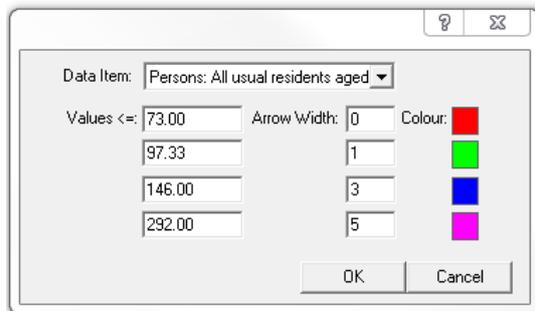
Exercise F: Mapping

Map the Enfield to Enfield flows that were output in the previous task.

Clear the map and input the Enfield MSOA boundary. Load the CSV file [Module 8 part 2.csv] using the Data > Desire Line Double Geography option. Select the WU01EW0001 variable.

This will map all of the MSOA to MSOA flows in Enfield. As previously the map contains a lot of information and working with the options in Zoom > Layering > Properties can assist in making a more useful visualisation.

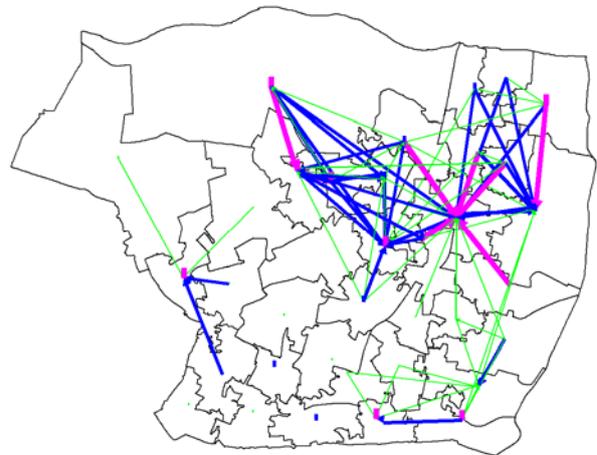
Setting the values as shown below will produce the map shown here.



The dialog box shows the following settings:

Values <=	Arrow Width	Colour
73.00	0	Red
97.33	1	Green
146.00	3	Blue
292.00	5	Magenta

Buttons: OK, Cancel



Additional output facilities available only with Double Geography datasets

In addition to the usual Print Tables and Print Variables options, there are three other Print options that are only available when a double geography dataset has been input. These are:

- Print Summary
- Print Netflow
- Print Matrix

Print Summary

A Print Summary task will print the following for each of the variables selected for output:

- Row Total The total number for the area as an area of origin, i.e. it is the sum of flows from that area of origin to all destinations.
- Column Total The total number for the area as an area of destination, i.e. it is the sum of flows to that area of destination from all origins
- Intra The total number of flows within the area, i.e. the area is the area of origin and destination
- Row Max The value of the largest flow from the area as an area of origin
- Row Count The total number of destinations with an origin in the area, and the number of these with a non-zero value for the selected variable
- Column Max The value of the largest flow to the area as an area of destination
- Column Count The total number of origins with a destination in the area, and the number of these with a non-zero value for the selected variable

Sample output from a Print Summary task is shown below.

SASPAC CENSUS ANALYSIS PACKAGE						PAGE -		1
Variable:	WU01EW0001			Row	Row	Col	Col	
Area Code	Row-Total	Col-Total	Intra	Max	Count	Max	Count	
E02000277	3164	612	59	453	101/101	177	60/60	
E02000278	3266	701	105	409	98/98	148	57/57	
E02000279	4620	2830	197	488	111/111	904	110/110	
E02000280	4122	2483	192	431	106/106	853	101/101	
E02000281	3942	1490	135	437	108/108	272	65/65	
E02000282	3274	1278	83	343	100/100	289	70/70	
E02000283	3424	1030	79	363	92/92	265	76/76	
E02000284	4221	2675	158	408	105/105	474	85/85	
E02000285	3282	3032	145	317	108/108	684	88/88	
E02000286	4316	5375	269	430	110/110	1267	112/112	
E02000287	3058	2311	93	508	101/101	514	106/106	
E02000288	4186	6049	292	412	111/111	1419	122/122	
E02000289	3075	522	64	351	95/95	64	59/59	
E02000290	2632	6440	125	258	105/105	2048	137/137	
E02000291	4193	3921	177	454	112/112	661	91/91	
E02000292	4516	2711	105	475	108/108	591	102/102	

Print Netflow

A Print Netflow task will print the following for each of the variables selected:

- Out flow** The value for the selected variable of the flow from the first area to the second area i.e. it is the value when the first area listed is considered as the origin, and the second area is considered as the destination
- In flow** The value for the selected variable of the flow to the first area from the second area i.e. it is the value when the first area listed is considered as the destination, and the second area is considered as the origin
- Ratio** The ratio of the Inflow to the Outflow
- Net flow** The difference between the Inflow and the Outflow

Sample output from a Print Netflow task is shown below:

SASPAC CENSUS ANALYSIS PACKAGE					PAGE -	1
Variable:	WU01EW0001	O to D	D to O			
Origin	Destination	Outflow	Inflow	Ratio	NetFlo	
E02000277	E02000277	59	59	1:1	0	
E02000277	E02000278	50	22	1:0.44	28	
E02000277	E02000279	79	21	1:0.27	58	
E02000277	E02000280	56	6	1:0.11	50	
E02000277	E02000281	29	12	1:0.41	17	
E02000277	E02000282	40	12	1:0.30	28	
E02000277	E02000283	31	15	1:0.48	16	
E02000277	E02000284	36	5	1:0.14	31	
E02000277	E02000285	42	3	1:0.07	39	
E02000277	E02000286	51	10	1:0.20	41	
E02000277	E02000287	11	1	1:0.09	10	
E02000277	E02000288	104	11	1:0.11	93	
E02000277	E02000289	5	2	1:0.40	3	
E02000277	E02000290	109	13	1:0.12	96	
E02000277	E02000291	67	5	1:0.07	62	
E02000277	E02000292	51	5	1:0.10	46	
E02000277	E02000293	6	1	1:0.17	5	
E02000277	E02000294	17	7	1:0.41	10	
E02000277	E02000295	8	3	1:0.38	5	
E02000277	E02000296	17	2	1:0.12	15	
E02000277	E02000297	11	2	1:0.18	9	
E02000277	E02000298	7	2	1:0.29	5	

Print Matrix

A Print Matrix task will print the matrix of moves between selected zones for the selected variables, with the areas of origin being the rows, and the areas of destination the columns.

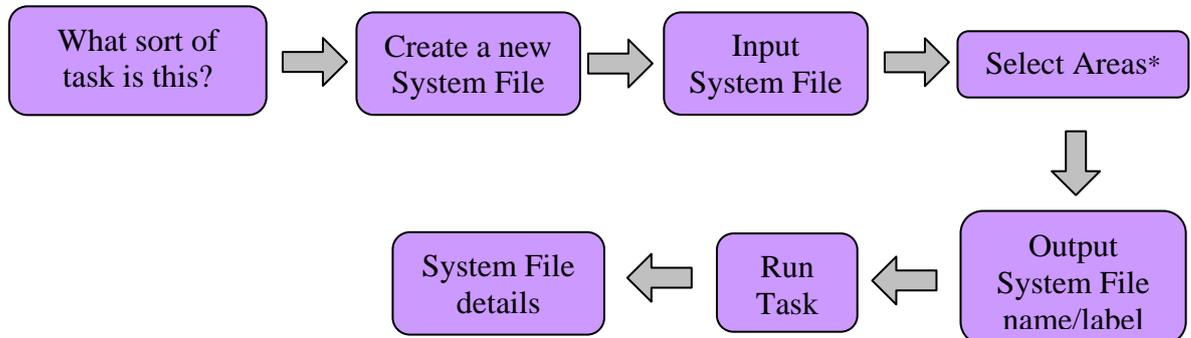
Sample output from a Print Matrix task is shown below:

SASPAC CENSUS ANALYSIS PACKAGE						PAGE -	1
Variable: WU01EW0001							
Origin	Dest	E02000277	E02000278	E02000279	E02000280	E02000281	
E02000277		59	50	79	56	29	
E02000278		22	105	75	61	24	
E02000279		21	22	197	38	32	
E02000280		6	8	18	192	60	
E02000281		12	16	38	95	135	
E02000282		12	39	50	23	41	
E02000283		15	21	64	25	36	
E02000284		5	11	42	75	37	
E02000285		3	13	29	66	74	
E02000286		10	6	30	49	27	
E02000287		1		4	12	9	
E02000288		11	17	43	28	45	
E02000289		2	6	12	30	12	
E02000290		13	16	33	9	28	
E02000291		5	1	25	37	39	
E02000292		5	11	22	44	35	
E02000293		1	5	18	20	24	
E02000294		7	12	45	26	28	
E02000295		3	2	20	10	7	
E02000296		2	6	19	20	5	

Note that the largest values are usually along the diagonal, as they represent the 'within zone' flows.

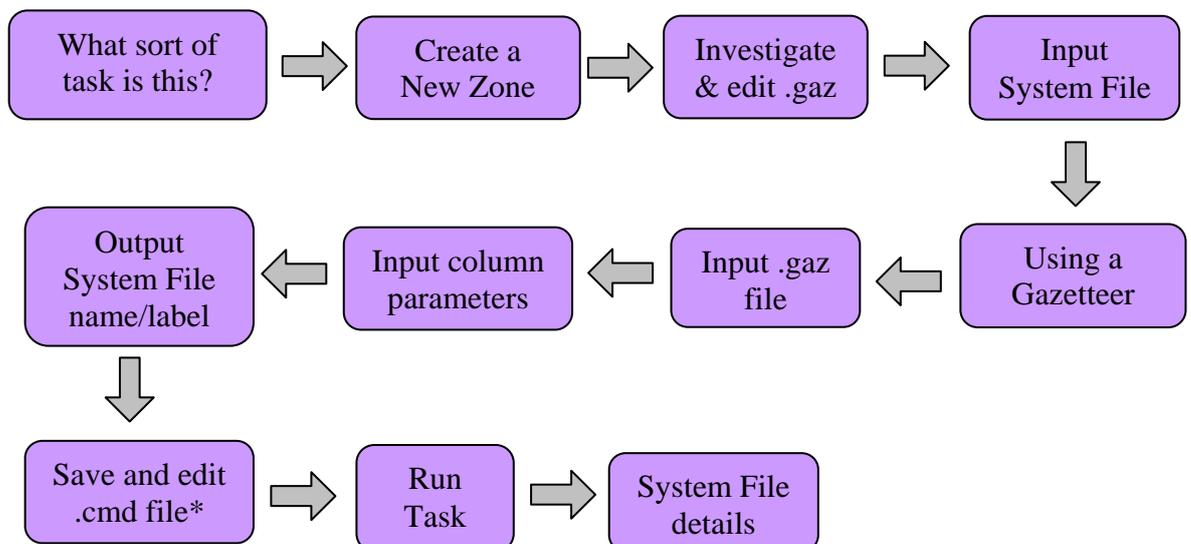
Summary of task sequences

Step 1 – Create a subset of the origin/destination datasets:



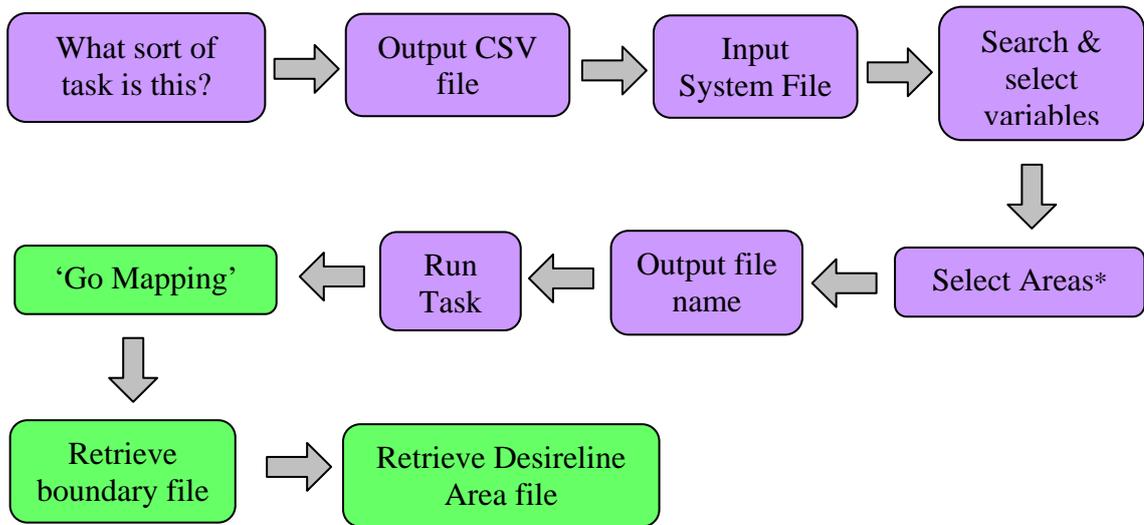
* remember to 'Apply to both Axes' as the selection is symmetrical and 'make command'

Step 2 – Re-zoning areas outside the core area:



* insert double quotes around the .gaz file if there are any blanks in the directory or file name and the command 'Test 71'

Step 3 – Output from rezoned origin/destination file:



* remember to check the 'Apply to both axes' tick box to save making origin/destination selections separately