

## Mapping Mash-ups Practical

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The files required for this practical can be downloaded from  
[www.casa.ucl.ac.uk/pablo/downloads/Mashup\\_practical.zip](http://www.casa.ucl.ac.uk/pablo/downloads/Mashup_practical.zip)

### 1) Creating your own thematic maps on top of Google Maps

This section shows you how to publish your own thematic maps on the web showing Google Maps as a backdrop to your data.

This section requires the *Gmap Creator* software from UCL Centre for Advanced Spatial Analysis (CASA). This practical assumes that this software has already been installed in the computer you are working at. In future sessions each user will need to download and install a copy of the software following this process:

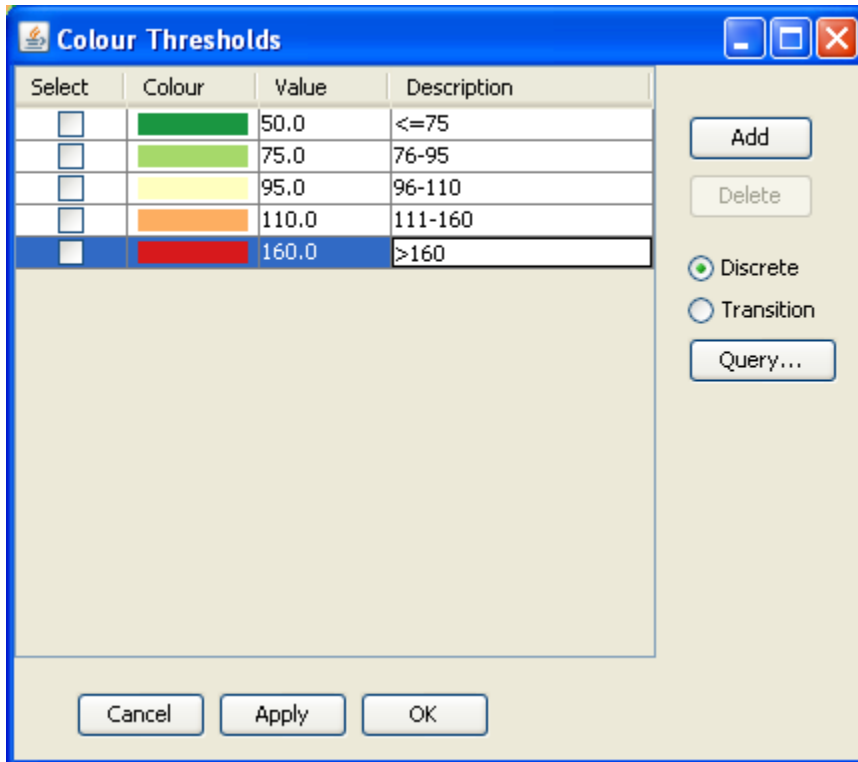
*These four steps are for future reference only, you do not need to perform them for this practical*

- Go to the Gmap Creator software webpage at CASA  
<http://www.casa.ucl.ac.uk/software/gmapcreator.asp>
- In order to download a copy you will first need to complete the Maptube user registration process, which will not take more than 3 minutes to complete. Go to the following URL and click on “create new account”  
<http://www.maptube.org/login.aspx>
- Once registered, log into the Maptube website ([www.maptube.org](http://www.maptube.org)) and click on “**Download the GMapCreator Software**”
- Install the Gmap Creator software. A new program folder will be created in your list of programs.
- Make sure you also install the Java Advanced Imaging plugin (JAI), by clicking on the Install JAI option available under the Gmap Creator program folder

*Continue the practical here*

- Open Gmap Creator
- Select a shapefile containing your data to be mapped. In this case we will use the following file of Lower Super Output Areas (LSOA) in London:  
\*\practical\_files\LSOAs\_SHP\Lon\_LSOAs\_region.shp
- Select the variable to be mapped termed “NO\_GOOD\_INDEX”. This variable represents an index value on the Census 2001 people whose health was self-rated as “not good”. The index represents a Location Quotient between the percentage of all people in a LSOA whose health is “not good”, compared to the same percentage for the whole of London (8.28%). Those areas with a percentage equal to the average of London have an index value of 100, while those areas above that average percentage have index values over 100 and those below the average indices of under 100.

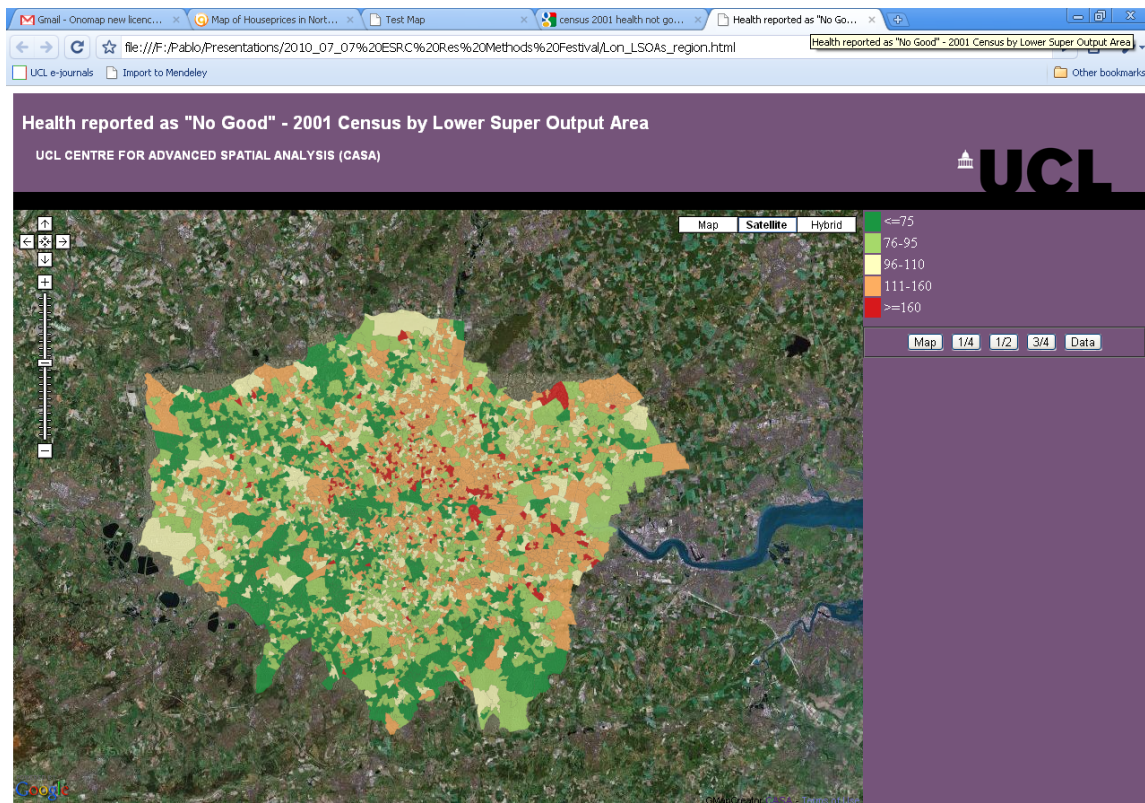
- Click on the rainbow icon (Cols...) and choose an appropriate interval classification scheme for the data. In the example shown below we have chosen five intervals with a divergent colour scheme around the 100 index
- Select a colour ramp for your data. A good guide of optimised colour ramps for thematic maps can be found at ColourBrewer, whose RGB colour codes can be then introduced in Gmap Creator (double click in each colour and select the RGB tab)  
<http://colorbrewer2.org/>



*Example of interval classification and colour selection in Gmap Creator*

- Click on "Apply" then "OK".
- Select the maximum zoom level in the slide bar. This determines the cartographic scale of the final map as well as the level of detail that the final user will be able to visualise, ranging from level "0" a Worldmap to level "20" a building. The level of maximum zoom needs to be set in a trade-off between cartographic detail and cost of resources, since the greater the zoom level the higher number of google maps tiles that Gmap Creator will produce and the longer it will take to process them, store them and serve them. An estimate of the number of tiles for each zoom level is indicated at the bottom of the zoom bar.
- Once you are happy with the way your map looks (ignore the pink background) and the number of tiles/zoom level, click on "Create" button
- You are offered the opportunity to change the directory in which the map will be created. In this example for zoom level 12 we want to save the map in:  
`*\zoom12_tiles\`
- Click "Start" to activate the map rendering process. This will take a while depending on the number of tiles to be generated.

- When the Gmap Creator finishes the tile generation process, go to the directory that you specified in the previous steps and double click the “html” file that contains the new web mapping version of your thematic map. In this example the file name is: “Lon\_LSOAs\_region.html”
- This will open a “Test Map website” where your thematic map is shown on top of Google Maps, as shown in the following image



*An example of the final map of Heath “No Good” in London overlaid on Google Maps*


- You can then navigate around this map using the typical Google Maps functionality. This map can be published in any website or URL, and it can also be uploaded to the [www.maptube.org](http://www.maptube.org) collection of maps generated with Gmap Creator
- You can also alter the design and layout of this map to personalise the website through standard HTML editing. For example, in the image shown above we have changed the title of the map by replacing the “Test Map” title with a more meaningful description.

## 2) Generating KML maps from point data

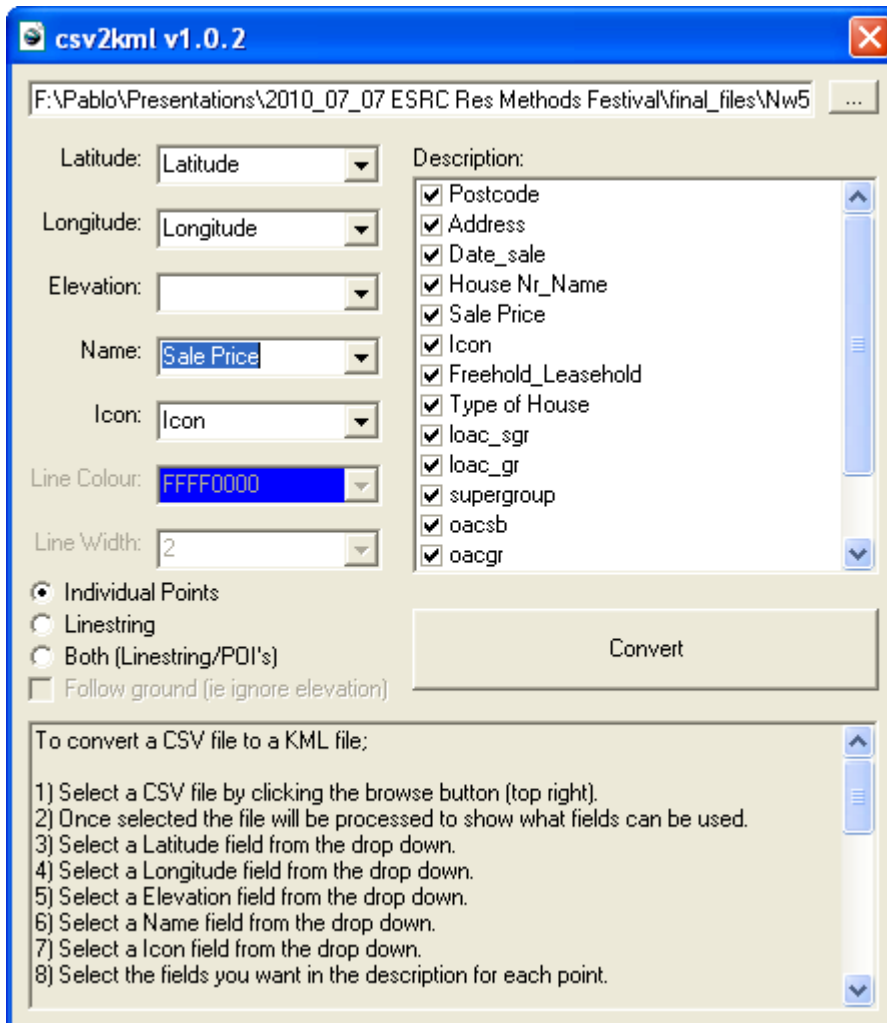
This section will show you how to generate a basic point data map from any list of addresses to which you can attach any attributes. This could be a register of patients, pupils, users or customers for which you have collected data at the individual address level for example. In this case we will use an extract of house price data obtained from the Land Registry website for three postcode zones in North London in 2004-2007. Only a sample of 1522 records is used here for simplicity.

- The house price data is provided in this practical as an excel spreadsheet in the following file:  
    \*\\practical\_files\\nw5\_n19\_n16\_houseprices\_classified.xls
- This spreadsheet contain a full address and postcode, the sale price and other variables about the sale transaction, type of property and characteristics of the area (Output Area Classification (OAC) codes), as well as the location expressed in latitude and longitude (Google Earth works with unprojected geographical coordinates in decimal degrees and WGS-84 ellipsoid).
- If you need to geocode addresses in the future, this can be done using the UK National Statistics Postcode Directory (at postcode level) <http://www.ons.gov.uk/about-statistics/geography/products/geog-products-postcode/nspd/index.html> or through one of the multiple free geocoding websites available, such as <http://www.batchgeo.com>
- The data in the spreadsheet comes sorted by ascending sale price, but you may decide to sort it by any other variable, such as "Type of House", "Date of Sale", etc.
- The column titled "Icon" shows the name of the type of Google Earth "pushpin" that you will assign to each data point, and this will determine the data classification in your final map. The dataset has already been classified using the following house sale price bands: yellow <200k; green = 200k-275k; red >275k to <400k; purple >400k
- Feel free to assign different icons for different categories of houses sold. For a list of all of the available icons in Google Earth see the appendix at the end of this document. You can assign other icons outside this list but the KML file will need to be edited (seek additional help on the web on how to do this).
- Once you are happy with the way you have classified the house price data, save the spreadsheet as a "CSV" file (File/ Save as /Save as type/ CSV Comma Delimited). Close the file ignoring the error messages.

You have now classified the house price data and selected different icon types that will be shown in the map. The next step is to convert the CSV into Google's standard format for geographic information known as **KML format** (which stands for "Keyhole Markup Language" the creators of Google Earth). We will do this by using a freeware application called "csv2kml" that automatically converts CSV files to KML format.

- The csv2kml converter is already installed in your practical material, but you can also download it from <http://www.tchartdev.com/files/csv2kml.zip>
- Double click on the file named "csv2kml.exe" to start the application
- Select the following specifications:
  - o Click on the button with three dots on the top right hand corner 
  - o Select the location and name of the CSV file where you saved the number of honey brands classification. In this example called:  
    "\*\\practical\_files\\nw5\_n19\_n16\_houseprices\_classified.csv"
  - o Click Open
  - o Select the following settings:
    - Latitude: "Latitude"

- Longitude: "Longitude"
- Elevation: (none)
- Name: "Sale Price" (or it can be any other meaningful field)
- Icon: "Icon"
- Make sure "Individual Points" is selected
- In the "Description" box, you can untick any fields since having too much data will end up cluttering your map icons.



- Click "Convert". This will generate a KML file in the same location where the csv file is stored.
- Open the file "nw5\_n19\_n16\_houseprices\_classified.kml" in Google Earth







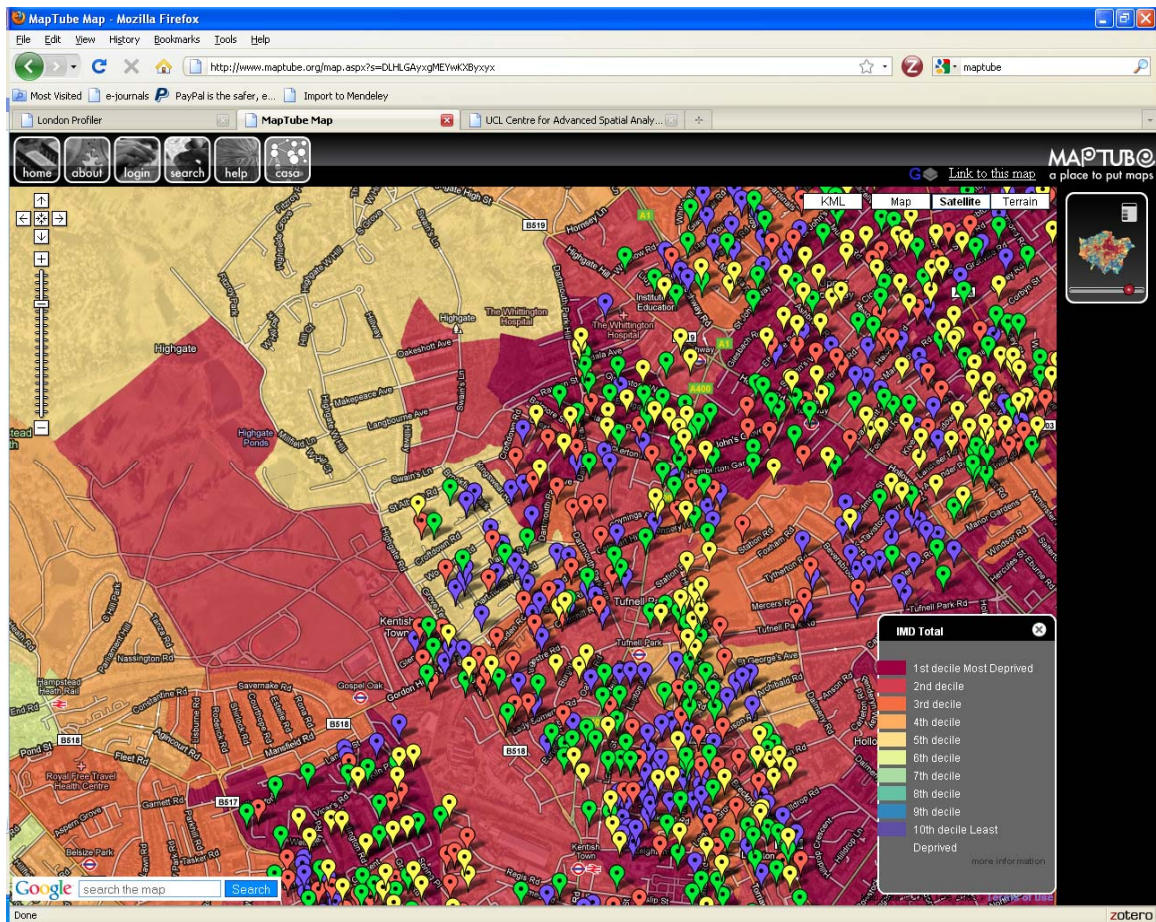
- In the same menu click on “KML” and paste the location of your KML file. For simplicity, in this example I have uploaded the previous KML file to my personal webpage at the following URL that you can cut and paste:

[www.casa.ucl.ac.uk/pablo/kml/nw5\\_n19\\_n16\\_houseprices\\_classified.kml](http://www.casa.ucl.ac.uk/pablo/kml/nw5_n19_n16_houseprices_classified.kml)

- Click “Add” and wait a few seconds. The KML house prices map will appear on top of the IMD deprivation map

- You can now explore the two maps to look for interesting patterns between the two variables.

- This combination of maps can be shared with other people by clicking on the “Link to this map” link at the top right corner of the screen and copying the URL



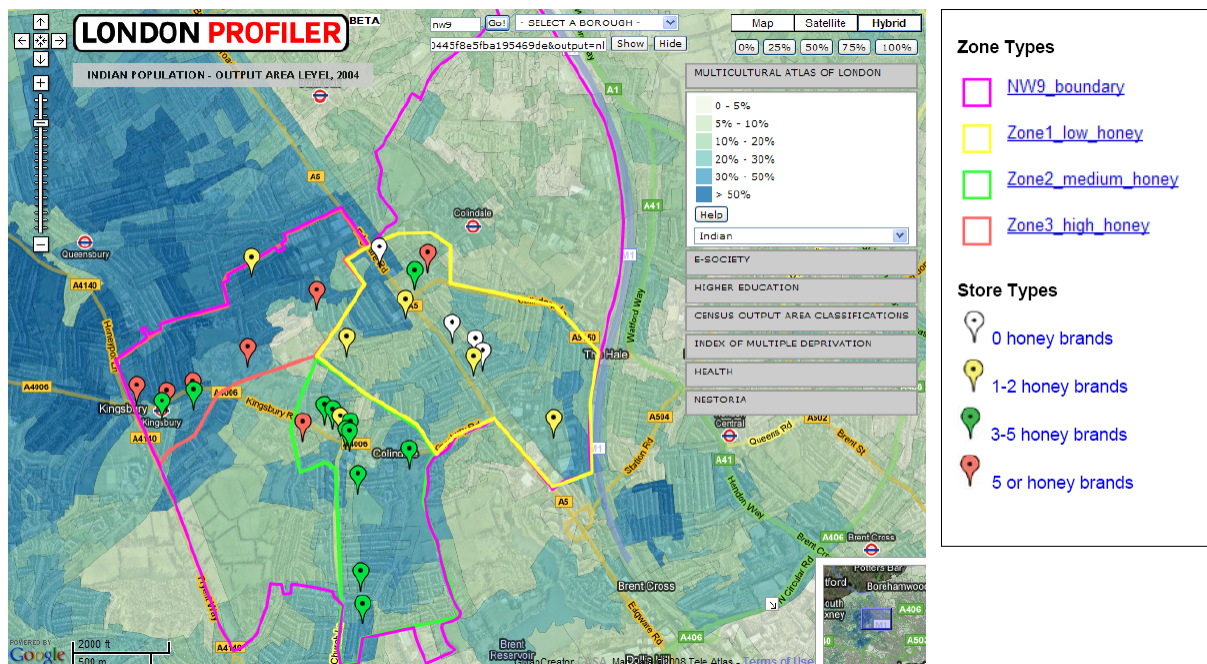
#### 4) Further steps

- You can create more advanced mapping mashups by using the map editing tools available under Google My Maps.

































































































































- Go to <http://maps.google.co.uk>
- In the top right hand corner click "Sign in" to log on to your Google account
- Click on the "My Maps" tab which you can find to the left of the screen next to the "Get Directions" link.
- Start creating your own maps (Create map) and editing them (Edit)

For example you can upload small shapefiles, edit them, digitize your own boundaries, polygons and lines, as well as upload photographs and text. Once a map is ready you can convert the whole map to a single URL that you can then share with others. For example you can insert this URL in websites such as Maptube.org, Londonprofiler.org, or in the future in censusprofiler.org

An example of this type of maps is shown in the following figure:





	1-lv.png		A-lv.png		L-lv.png		W-lv.png		gm-diamond-lv.png		wht-blank-lv.png
	1.png		A.png		L.png		W.png		gm-diamond.png		wht-blank.png
	10-lv.png		B-lv.png		M-lv.png		X-lv.png		gm-square-lv.png		wht-circle-lv.png
	10.png		B.png		M.png		X.png		gm-square.png		wht-circle.png
	2-lv.png		C-lv.png		N-lv.png		Y-lv.png		gm-stars-lv.png		wht-diamond-lv.png
	2.png		C.png		N.png		Y.png		gm-stars.png		wht-diamond.png
	3-lv.png		D-lv.png		O-lv.png		Z-lv.png		purple-circle-lv.png		wht-square-lv.png
	3.png		D.png		O.png		Z.png		purple-circle.png		wht-square.png
	4-lv.png		E-lv.png		P-lv.png		blu-blank-lv.png		purple-diamond-lv.png		wht-stars-lv.png
	4.png		E.png		P.png		blu-blank.png		purple-diamond.png		wht-stars.png
	5-lv.png		F-lv.png		Q-lv.png		blu-circle-lv.png		purple-square-lv.png		y1w-blank-lv.png
	5.png		F.png		Q.png		blu-circle.png		purple-square.png		y1w-blank.png
	6-lv.png		G-lv.png		R-lv.png		blu-diamond-lv.png		purple-stars-lv.png		y1w-circle-lv.png
	6.png		G.png		R.png		blu-diamond.png		purple-stars.png		y1w-circle.png
	7-lv.png		H-lv.png		S-lv.png		blu-square-lv.png		red-circle-lv.png		y1w-diamond-lv.png
	7.png		H.png		S.png		blu-square.png		red-circle.png		y1w-diamond.png
	8-lv.png		I-lv.png		T-lv.png		blu-stars-lv.png		red-diamond-lv.png		y1w-square-lv.png
	8.png		I.png		T.png		blu-stars.png		red-diamond.png		y1w-square.png
	9-lv.png		J-lv.png		U-lv.png		gm-blank-lv.png		red-square-lv.png		y1w-stars-lv.png
	9.png		J.png		U.png		gm-blank.png		red-square.png		y1w-stars.png
			K-lv.png		V-lv.png		gm-circle-lv.png		red-stars-lv.png		
			K.png		V.png		gm-circle.png		red-stars.png		