Urban Big Data Centre

Call for Expressions of Interest

Data available through the UBDC February 2016

integrated Multimedia City Data (iMCD) Project: Glasgow Household Survey Data

The UBDC's iMCD Project has gathered a unique and exciting collection of data looking at urban life in Glasgow. We are now able to offer access to the initial data from the iMCD Household Survey, in anonymised form.

The Survey has a unique combination of questions covering detailed information about each household and their attitudes and behaviours to transport, education, computer and mobile phone usage, and sustainability. These data would be of interest to planners, researchers or individuals wanting to gain a better understanding of these topics and their interactions.

Background on iMCD Household Survey

The iMCD Household Survey interviewed a representative sample of adults in the Glasgow and Clyde Valley Planning area between April and November 2015. This area includes the following local authorities: Glasgow; North Lanarkshire; South Lanarkshire; Inverclyde; Renfrewshire; East Renfrewshire; East Dunbartonshire and West Dunbartonshire.

As well as basic demographic data, the survey has a significant number of questions on education, transport, srustainability, and ICT usage. It also contains questions on civic and cultural activities, and neighbourhood belonging and satisfaction. The survey would be of use for anyone wanting to get detailed information in these areas. Details of the questions can be found in the iMCD Survey Technical Report.

Some variables have been removed or have had responses grouped to ensure anonymity of respondents, and there is no geographic or locational information. However, in the near future, a further version of the dataset will be made available with additional geographic information, and more detailed information about individuals and households.

The iMCD project has a number of other datasets that will be available in the future but also linked to the survey data. More information on this can be found on the iMCD project page.

How to access the UBDC's iMCD Survey data

The data (available in SPSS and CSV formats) is available through a simple process of registration and agreement to licensing terms. If you would like to use the data please submit an [Expression of Interest](#) and we can arrange access to these data.

Spatial Urban Data System (SUDS) Urban Indicators

The UBDC is in the process of developing a database of small-area urban indicators. Called Spatial Urban Data System (SUDS), the programme aspires to create small-area estimates of a wide variety of economic, social, built environment and physical indicators in UK urban areas. The SUDS programme will allow researchers to map, analyse and otherwise examine spatial variations in economic performance, social equity and wellbeing, and to conduct research and formulate policy solutions surrounding sustainable and effective communities. This work is ongoing, so the collection will continue to grow over the lifetime of UBDC.

We have used the framework of the ISO Standard 37120:2014 "Sustainable development of communities -- Indicators for city services and quality of life", and the work being spearheaded by the Research Data Alliance's Urban Data Interest Group and others. The ISO 37120 standardised indicators outlines key measurements to evaluate service delivery and quality of life, and are designed to help cities assess performance and measure progress over time to improve the quality of life.

We have started creating the UBDC Urban Indicators on Output Area level for 14 built-up areas in the United Kingdom, based on the ISO 37120. Table 1 below lists examples of the SUDS indicators with descriptions and links to the visualisations of particular indicators.

Table 1: Examples of small area urban indicators from SUDS programme

Indicator	Link to the example	Spatial resolution
Percentage of persons in full-employment (%)	http://gis.ubdc.ac.uk:8080/geoexplorer/viewer/#maps/7	Output Areas for 13 built-up areas: Bristol, Birmingham, Cardiff, Leeds, Liverpool, London, Manchester, Nottingham, Sheffield, Southampton-Portsmouth, Glasgow, Edinburgh, Belfast
Unemployed: Aged 16-24 years (%)	http://gis.ubdc.ac.uk:8080/geoexplorer/viewer/#maps/8	Output Areas for 14 built-up areas: Bristol, Birmingham, Cardiff, Leeds, Liverpool, London, Manchester, Nottingham, Sheffield, Southampton-Portsmouth, Glasgow, Edinburgh, Belfast
Unemployment rate - all economically active and inactive (%)	http://gis.ubdc.ac.uk:8080/geoexplorer/viewer/#maps/9	Output Areas for 14 built-up areas: Bristol, Birmingham, Cardiff, Leeds, Liverpool, London, Manchester, Nottingham, Sheffield, Southampton-Portsmouth, Glasgow, Edinburgh, Belfast
Unemployment rate-all economically active only (%)	http://gis.ubdc.ac.uk:8080/geoexplorer/viewer/#maps/10	Output Areas for 14 built-up areas: Bristol, Birmingham, Cardiff, Leeds, Liverpool, London, Manchester, Nottingham, Sheffield, Southampton-Portsmouth, Glasgow, Edinburgh, Belfast
Public Greenspace	http://gis.ubdc.ac.uk:8080/geoexplorer/viewer/#maps/11	Output Areas for 14 built-up areas: Bristol, Birmingham, Cardiff, Leeds, Liverpool, London, Manchester, Nottingham, Sheffield, Southampton-Portsmouth, Glasgow, Edinburgh, Belfast
Job Accessibility Indicators (experimental)	http://ubdc.ac.uk/media/1325/birmingham-accessibility-map.pdf	Output Areas for 14 built-up areas: Bristol, Birmingham, Cardiff, Leeds, Liverpool, London, Manchester, Nottingham, Sheffield, Southampton-Portsmouth, Glasgow, Edinburgh, Belfast

If data users are interested, we can give them access to the data so they can either download tables (CSV) or GIS shapefiles with the data associated with it. We are also developing a process for access to a web-based GIS solution so that users can map and visualise the data using our web services.

Strava Metro Data: Cycling data covering Glasgow

UBDC has Strava Metro cycling data covering the Glasgow area for 2013-2014 available at no cost for researchers. We will also be collecting the following 2 years' worth of data to the beginning of 2017. A full description of the data is available in the [Strava Metro Comprehensive User Guide](#).

Strava is a service for cyclists to log their activity, with data submitted either using a smartphone app, or by uploading GPS data through the Strava website. The company is the pre-eminent service for cyclists in particular.

The level of detail provided allows the data to be used in a variety of ways by a wide variety of researchers. The data has the potential, in conjunction with other datasets, to provide new and exciting opportunities for research into active travel, sustainable travel and public health.

Background on Strava Metro data

Good quality data on cycling use in the UK is not available elsewhere. At best data on cycling usage in most cities is estimated from survey data or from limited cordon counts. Strava has thousands of users in the Glasgow Clyde Valley planning area, with a sizable proportion of commuting journeys represented in their data. As Strava data is highly correlated with overall cycling usage, the data allows users to estimate cycling usage across the Glasgow Clyde Valley Planning area. Strava provide the data in three formats and we are making all of these available:

Strava Metro - Streets

This is the core data service. It is defined as a minute-by-minute reflection of all cycling activity over the Glasgow Clyde Valley region for a four year period at the street level.

Strava Metro - Origin Destination (OD)

This builds off of the Streets data service by reporting the starting and ending polygons of activities. these data are reported by the minute and covers beyond the street network to get polygons of users starting outside of the Glasgow Clyde Valley area.

Strava Metro - Nodes

Intersections are a key piece of any street network. The Node data service is designed to focus on these intersections and report primarily use and wait duration.

In the future the UBDC intends to purchase similar Strava data covering all of Scotland for the use of researchers.

LiDAR Data: High resolution image data of the Earth's surface

UBDC has acquired LiDAR data covering Glasgow in 2003 for researchers to use. The coverage area is shown in the map: [2003 LiDAR Data in Glasgow](#).

We have two examples of use of this data (see below), and more coming: our iMCD project is combining it with satellite images of Glasgow to compare Glasgow's urban terrain over time - 3D models related to this work are in the pipeline.

Background on LiDAR data and its uses

LiDAR — Light Detection and Ranging — is a remote sensing method used to examine the surface of the Earth. LiDAR data is extremely accurate 3D data generated from sensors on the ground or on airplanes.

There are various applications that may use LiDAR data to improve management of different processes or areas such as:

- A Digital Elevation Model (DEM) is used to plan parks and tourism area. This highly accurate land surface model helps to find the best area to construct a playground, plant trees or plan walking paths;

- A surface model created from LiDAR could be used as a graphical value to maps. DEM is added underneath all layers, showing a 3D view of the land.

- LiDAR data can be added to aerial photography to show a 3D view, which makes easier to plan roads, buildings, bridges and rivers.

These accurate models have uses for local government planners who need detailed structural plans of the city. LiDAR is also regularly used by archaeologists, computer scientists, and civil engineering companies.

Previous use of UBDC's LiDAR data

Here are a couple of examples of UBDC projects, both involving Glasgow School of Art (GSA), that have already used this data:

- GSA map of Glasgow - The GSA used initial GPS data from the iMCD project, in addition to LiDAR data, to illustrate movement patterns of men and women in Glasgow City Centre over the course of the week. Using this data, GSA Digital Design team created the data visualisation video: [Datascape – Movement Patterns in Scotland's Largest City](#)

- GSA / University of Glasgow Western Infirmary Site Project - after successfully using the LiDAR data to help with the above visualisation, the Glasgow School of Art visualisation team used the same data to assist them with creating an internal planning resource for Glasgow University in its development of the Western Infirmary site. They are currently using it to create visual models of the current landscape, and the planned new campus development at the Western Infirmary site.

Nestoria Data – Glasgow and Paisley Housing Market

The UBDC has obtained agreement from Nestoria on providing a database of their housing advertisements for non-commercial research purposes. An example record is available in **Table 2** below.

This data consists of listing records from the Nestoria website that have been obtained via API from March 2015. The database consists of two datasets: for sale and to rent. The data we can offer covers the area of Glasgow and Paisley (G and PA postcode areas), and consists of variables such as: location (latitude, longitude), price (rent), number of bedrooms, number of bathrooms, keywords, listing agency, links for images from the website, and link to the original listing. The dataset has adverts of over 38,000 individual properties for sale, and a similar number of adverts of properties to rent.

Table 2: Example Nestoria record

Variable	Example from the database
Crawl Time	
summary	Hurry phase two now launched three bed by mctaggart mickel. accom the...
img_url	http://3.l.uk.nestoria.nestimg.com/lis/9/3/0/a43750110d17c123a79e629ad91177efc32ea.2.jpg
thumb_url	http://2.l.uk.nestoria.nestimg.com/lis/9/3/0/a43750110d17c123a79e629ad91177efc32ea.1.jpg
price_currency	GBP

price_high	260000
img_height	120
auction_date	
title	Moor Road, Glasgow, Lanarkshire, G76
thumb_width	60
lister_url	http://rd.nestoria.co.uk/rd?itype=2&l=XVeZoh9rq9shskd914&s=&url=2-ePz73aTBU4LVGFByDI484Ner8aIMqOqnmnO6u50s2qDdmu-ced_G5rGpMAbDMkMIxZIZsli8WefUu6sPU8-oGzVkuh5PhhDYelfWSVFvNe7w2ViqEdrSf0AlbLz8TnY-ugC99lhEwA-iKi4B4mXSWi1g_RLNrJaSvbecndEDb2faiDM3UCvCZ3tuJw8kcgaZArPeSjbTSf6R9iXXsdggnS6-ycrZNBIOK4jLIaUH7cjH1uaTPzVe4a_64eksFBNXMLvns0acXyhul-KP_BuQQ0uWAqV5yEF0_WCx4pgl4WOILXK5YH4EaCg6FueZXMmM1j5Lg8BWn2-OISULfl3XvZ0%3D&v=2
bathroom_number	
longitude	-4.284870148
img_width	160
commission	0
price_formatted	260,000 GBP
car_spaces	0
construction_year	0
updated_in_days	160.5
keywords	Garden, New Build, Kitchen
bedroom_number	3
listing_type	buy
thumb_height	60
lister_name	Slater Hogg & Howison
datasource_name	NetHousePrices
updated_in_days_formatted	over a month ago
guid	g1-TOtADN0gVOD9ETxszMwATN=Q
price_low	260000
location_accuracy	9
price_type	fixed
property_type	house
price	260000
latitude	55.73611832
row_number	1

Accessing Administrative Data through the UBDC

The UBDC offers a secure Controlled Data Service to enable research using potentially sensitive or confidential data. We do not hold this type of data in our collection; rather, we broker access with data owning organisations so that individual researchers can work on specific data for a specific project, while also ensuring that data owners can meet their legal obligations to protect individual privacy. Once the necessary legal agreements and approvals are in place, we arrange transfer of the data and linkage between datasets where required. You can then access an anonymised version of the data through the secure computing facilities.

Local Authority data

As an example of the type of brokerage we can help with, we have made an agreement with Renfrewshire Council to share housing-specific data for a research project around the private rented sector. Some of this data is confidential and requires use of our Controlled Data Service, and has been made available for this one project only. This will generally be the case for this type of highly sensitive administrative data.

If you're a local authority who wishes to be matched with projects that may be of use to you in this way, please get in touch. Likewise, if you're a researcher with an idea and want our help in brokering a data sharing agreement and access to our Controlled Data Service, please send an [Expression of Interest](#).

Open data

We have collected some urban-related data that is openly available for use by anyone. To view this data, please visit our [Open Data Catalogue](#).

To use this openly licensed data on its own you don't need to submit an expression of interest, unless you want to use our computing services it link it with non-open data or create visualisations of it.

If you *do* download any of this data for your own use, we invite you to let us know about it and what you are doing with it. This will help us understand how the data is used and how to improve our data services in future, plus, we can help you publicise your work and increase your own impact and reach. Please let us know if you use this data by emailing ubdc@glasgow.ac.uk.