



**AQMeN (Applied Quantitative Methods Network)**

**Collaborative Small Grants Scheme**

**END OF AWARD REPORT**

**Title of project**

Workshop Series in Advanced Quantitative Methods for census flow  
data analysis

**Name of grant holder**

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## The project

### Overview

Migration and commuting are two most important types of geographical mobility, their volumes and patterns are of considerable importance to researchers from multiple disciplines in social sciences as well as to policy makers dealing with economic growth, labour market, housing provision and sustainable transport.

Although the census flow data is produced at considerable costs and efforts by the National Records of Scotland (NRS) and the Office for National Statistics (ONS) the census flow data has been severely under-used. This is largely due to the fact that migration and commuting data are large and complex which presents researchers academic and non-academic alike with considerable analytical challenges.

With the imminent release of 2011 census flow data, we organised training workshops in introducing the structure of census flow data, concepts, measures and quantitative methods in analysing the census flow data.

The workshop was designed to be relevant to people who work in government agencies, charities or other public sectors, as well as staff and students from university departments and research centres. The event was intended to be engaging and informative. There would be lectures and demonstrations, a number of group activities, as well as worked examples. Statistical ability was not essential. Participants were encouraged to bring along examples of questions to be addressed through use of flow data, and would be helped to design analyses to suit their needs.

### Activities

This project involved three phases:

Phase 1: Training programme design (1 month: 1<sup>st</sup> September 2013-31 September 2013)

We conducted literature review and programme design. We collected books and papers on flow data analysis and explored what was best for this workshop considering that the participants were likely to be from diverse backgrounds with or without any knowledge of census flow data and analysis methods. We decided that the workshop would be at an introductory level covering data access, structure, basic measures, hands-on session. We would also provide one session for more complicated statistical methods for flow data modelling.

Phase 2: data analysis and preparation of teaching materials (3 month: 1<sup>st</sup> October 2013-31 December 2013)

Due to a delay in release of 2011 census flow data in the UK, we had to use the 2001 census flow data in the workshop as examples of demonstrating the analysis methods. However, we incorporated an introduction to the 2011 mode of transport data in the training, covering questions on mode of transport, comparison with England, changes since 2001, which was well received in the evaluation. For the basic measures introduction we used 2001 inter-ward migration and commuting to study data in Edinburgh, while for the hands-on session and modelling session we used 2001 inter-council migration data.

In addition, we contacted Dr Oliver Duke-Williams at University College of London who advised ONS on census flow data to get an update on the plans and scheduling of the release of 2011 census flow data through the CIDER portal.

We changed the original plan for the two workshops in that one targeted academics and the other targeted non-academics. Instead, we decided that both workshops were open to academics and non-academics, thus bringing them together and promoting networking and knowledge exchanges between them. Daniela Ene from NRS also joined the team at this stage.

Phase 3: training events (January 2014)

We organised two workshops, one in Edinburgh on 15<sup>th</sup> January 2014, and one in Glasgow on 22<sup>nd</sup> January 2014. This was different from the plan in our application where we intended to organise both workshops at Edinburgh. Our intention was that by having one in Glasgow we might boost the attendance and increase our influence.

## **A. Project beneficiaries**

The two workshops targeted both academics and non-academics.

Both workshops were fully booked well ahead of the schedule. The Edinburgh course was attended by 17 delegates, 7 of whom were academics and the remaining 10 non academics. The Glasgow course was attended by 19 delegates, 9 of whom were academics and the remaining 10 non academics. Overall non academics came from institutions such as Police Scotland, Scottish Government and various local councils.

The delegates rated themselves as either 'complete beginner' (21%) or 'very little experience' (55%), 'quite experienced' (21%) and 'very experienced' 4% in regards to using Census Flow Data Analysis prior to attending the event. However, those who came to the Glasgow course were more experienced users as all of 'quite experienced' and 'very experienced' users were from this event. In contrast, users who came to the Edinburgh course had very little experience or were complete beginners.

## **B. Project impact**

After the training, participants were sent an email asking them to evaluate the workshop through the online questionnaire designed by AQMeN. The questionnaire included sections on structure and content, knowledge and understanding, event organisation, and an overall assessment. In total 24 delegates completed the questionnaires with an equal number between the Edinburgh and the Glasgow event.

### *Content and structure*

For the content and structure, the workshop was well received, with 67% of the delegates stating that it met their expectations and the 17% that it exceeded their expectations. However, among delegates who came to the Glasgow course, 33% reported that it did not meet expectations.

When asked to rate the content of the sessions, this was very positive with delegates to the Edinburgh rating each session as at least satisfactory, but the majority rating each session as either good or very good. In contrast the feedback from the Glasgow course was mixed, two delegates

(17%) rating 'Discussion on uses of flow data' as poor while other sessions were all rated satisfactory and above.

Overall the most popular sessions were 'Census 2011 data on travel and migration' and 'Flow data access and basic measures' with both receiving a majority vote of 'very good', almost identical from participants to both events. The least popular session was voted as 'Modelling Flow data' from the Edinburgh event delegates which was rated satisfactory (25%), good (42%) and very good (33%). In contrast, the least popular session selected by the Glasgow participants was 'Discussion on uses of flow data', which was rated very poor (17%), satisfactory (17%), good (33%) and very good (33%).

When asked how well did the examples used help with their understanding of what was being taught, (34%) said it helped very well, (59%) quite well and (8%) not very well. Delegates were positive about the knowledge and enthusiasm of the tutors; however some felt the level was slightly too advanced. However, experienced delegates from Glasgow commented that the course was 'useful' but 'I did not learn a lot'. Some hoped that the course had more on the principles and concepts, less time on practicals while others suggested that the course should have more examples.

### *Knowledge and Understanding*

On a scale of 1-5 where 1 is not at all and 5 is a great deal, all but one delegate who came to the Edinburgh course felt their knowledge of Census Flow Data Analysis had improved by attending this course by scoring 3 or above. For the delegates to the Glasgow course, the majority of delegates (67%) felt their knowledge of Census Flow Data Analysis had improved by attending this course by scoring 3 or above, with the remaining 33% scoring 2 out of 5.

From participants to both events 100% of delegates who completed the survey felt that they had gained a better understanding of Census Flow Data Analysis (46% a lot and 54% a little), and 100% thought that after attending they would use Census Flow Data Analysis to some extent in the future in the following ways. Again delegates who came to the Edinburgh course rated more highly than delegates who came to the Glasgow course (67% felt that they had gain a lot in better understanding of census flow data from Edinburgh delegates vs 25% from Glasgow delegates).

### *Event Organisation*

Delegates were also asked to rate overall the different aspects of the course including venue, catering, online booking process and accuracy of the advertising of the event. Overall each area was rated as at least good but the majority rated each area as very good. This is similar from feedback from participants of both the Edinburgh course and Glasgow course apart from advertising where some Glasgow participants did not rate at 'good' or 'very good'.

When asked to describe what they most enjoyed about the course, feedback was varied but overall the Edinburgh participants expressed that it was a fun and interesting course with knowledgeable tutors while the Glasgow delegates expressed it was a good opportunity to network.

When asked what they enjoyed least about the course, again the feedback was also varied but delegates to the Edinburgh seemed to feel the last section being too technical. However, some delegates to the Glasgow course expressed that the content too basic, and others finding it too advanced.

## *Overall*

By and large the majority of the delegates who completed the survey rated the workshop overall as very good (48%) or good (49%). Finally, the majority (74%) stated they would be likely to recommend this event to a colleague.

The 8% who rated the event as poor equated to only one individual. Their reasons for rating the event as such were that they felt the structure of the event and materials provided were poor and felt the course should be more focused on dataset and analysis on changes over time.

In conclusion the two workshops were well received and have made marked impacts on participants who gained better understanding on the census flow data and the quantitative methods. In addition the majority of participants expressed that they had more confidence in analysing the census flow data in future after the workshop.

## **C. Collaborative components**

This is a collaborative project between academics and non-academics. Zhiqiang Feng is a Senior Lecturer in the University of St Andrews. He has over ten years of experiences in the census flow data analysis and particularly has contributed to flow data estimation and research in the ESRC funded Census Interaction Data Service (CIDs). Cecilia Macintyre is director of the census quality assurance department of National Records of Scotland. She has many years of experiences in census data production and migration forecasting.

Dr. Feng was responsible for the overall training programme design, organisation, and preparing and teaching flow data analysis. Ms Macintyre was responsible for training programme design, preparing and teaching census flow data: table specifications and structures. Daniela Ene who works at the Census Unit from NRS also joined the team contributing to the session on analysis of 2011 mode of transport data.

## **D. Knowledge exchange value of the project**

The workshop series were properly prepared and delivered according to the plan. This is a collaborative project between academics and non-academics, which targeted both academics and non-academics.

Among collaborators who were respectively from higher education institution and government agency we met regularly discussing the design of the workshop, structure of census flow data, access to flow data and how to analyse the flow matrix. The activities helped in improving collaborators' understanding of the census data and the methods and laid ground for future collaborations.

The workshops were knowledge exchange events. The objectives were to promote the knowledge of census flow data and quantitative methods used for its analysis. The audience who attended were both academics and non-academics. Out of total 36 delegates 66% came from government agencies, or local council authorities and 44% from higher education institutions.

The predominantly majority of delegates have expressed their favourite assessment on the workshop, no matter contents, understanding, and organisation. It is very satisfactory that 100% of

delegates have expressed that the workshop was useful and they intended to use the census flow data in their own research in the future. The workshop was successful in that it brought academics and non-academics together for networking, which was particularly appreciated by the delegates.

In the workshops we also took this opportunity to talk to delegates and discussed with them what their future plans were in terms of using the census flow data. Quite a few delegates expressed their intention of keeping in touch with the instructors and would like to be informed of further workshops.

## **E. Attached documents and resources**

The teaching materials have been uploaded onto AQMeN website for the delegates and people who are interested in census flow data analysis to access. Here is the link:

<https://www.aqmen.ac.uk/CensusFlowData2014Slides>

Workshop Programme at Edinburgh is attached (The Glasgow programme is identical).