Application of Geography Information System for Spatial Analysis of Unemployment in Sheffield city

Pakiza Aziz Saied

Geography Department, Faculty of Languages and Humanities, School of Humanities, University of Sulaimani

E-mail: pakizasaied@gmail.com

Abstract:

Unemployment is concerned as a serious social problem, many studies carried out the causes of Unemployment and the effect of this phenomenon on society by using Geography information system (GIS). This study is necessary to identify level of Unemployed in Sheffield city, also illustrate main barriers in front of employed, in order to assist planning sectors for good future local plan to decrease Unemployment rate. GIS is a power full tool to specify direction of economy in all areas. In this study GIS tools such as ArcMap10 and MapInfo10 were used for detecting and representing data on maps; the criteria that were used for the study includes; number of Unemployment, employment, marital status, Health situation of population, qualification, age, student rate, and retired people.

Introduction:

Recently, Unemployment is one of the social phenomenon's facing the world. There has been an increasing in population all over the world, and one of the most significant require of population is employment. As result, the level of Unemployment has been increasing. Unemployment can be concern as a measure of health economic, it occurs when people who is active economically failed to find work. Unemployment can be classified into several types. According to Eckstein, (2009) unemployment has different kinds including, seasonal, frictional, structural, cyclical, and induced unemployment. There is several variation factors influence Unemployment, such as, age, health, qualification, gender, and same time different geographic area has various rate of unemployment. According to Marston, (2012) different areas should have balance in payment and job opportunity, in order to decreasing unemployment. Unemployment and health have positive relationship. Dooley et al, (1996) state that unemployment may lead to physical and psychological problems, meanwhile health disorder may cause less opportunity to work. However, unemployment has effect on people behaviour socially and individually. Greenberg, (2011) argued that jobless people may get psychological problems such as anxiety and depression as result this people may drinking a lot for reducing there stress that may cause family problems and bad social communication. Studies show rise of unemployment has impact of increasing level of crime. Raphael and Ebmer, (not given) report that when rate of unemployment was decreasing in the period between (1992- 1996) there was great falling in all kinds of crime. There were differences in the rate of unemployment between

different genders from areas to another area. Zolnik, (2010) reported that in U.S females more likely to be unemployed than males, at the same time in Spain males more likely to be jobless. In addition, Geographical information systems (GIS) have great roles in the field of special analysis and relationship between different aspects. Accordingto Anselin, (1992) GIS is a basic tool used for explained correlation of special analysis and different categories. The aim of this study is to identify the rate of unemployment in Sheffield by using GIS technique and attempt to explain effect of different variables on unemployment.

Aim of this paper:
Unemployment is one of the main social problems as it may have a great effect of personal life and society. This study, attempt to select Unemployment rate in Sheffield city by using GIS technique, and clarify criteria that has effect of Unemployment.

Literature review
GIS is great method for analysing data about any field especially human Geography fields. Unemployment has effect on society and this phenomenon need to defined and organized in order to reduce it is impact in both society and individual. For this aim there are many studies carried out to select and explain different variables that has effect on unemployment in special area by using GIS technique for special analysis. a studies was carried out in south Africa by Smith (year) the study utilized GIS technique and statistic method to clarify effect of some factors on unemployment, to achieve that the research collect information about different aspect, such as poverty, income and other socio-economic factors; also try to describe rising of unemployment in period of time in special area, the findings show that as a global increasing unemployment same in south Africa and describe the factors that has effect on unemployment such as lower level of education and other different factors.

Marcelli, and Giordano (2006) they carrying out study about accessibility to One -Stop career centres in Southern California, which is offer employment for different group of people. the study use GIS approach to identify the location of the centre, level of assistant in the centre for getting jobs, and effect of area in relation of population and unemployment; the research observe that accessibility have two dimension social and geographical, the study achieve that the location for the centre is serve unemployment people, because jobless people concentrate around the centre, which made accessibility easier for the centre. The result show location and facility of get at able are assist to reduce geographical barriers such as transportation, and social barriers including, gender, and age. Another study in Finland by Rusanen, et al (2000) the study using GIS approach to analysis spatial differences in the rate of unemployment in specific period of time (1989-1996) also between rural and urban areas, furthermore, the study aimed to identify unemployment rate according to gender between (1993-1995). The result display problem areas with high number of unemployment in order to help planners to solve problems according to the level of accuracy of the study. Utilizing GIS technique in human geography has effect on authority's decision in any field for each area.

Unemployment Policy in the United Kingdom:

Economy is concerned as a health of society, Unemployment is a phenomenon that has effect on society and individually, also increasing unemployment may cause rising of crime and suicide. (Danneruther, 2011) reported quarter of young people when asked complains of unemployment and thinking of suicide. It is argued that unemployment rate is dramatically Increasing globally. According to Bell and Blanch flower (2010) unemployment is dramatically increased between youth so far there are nearly one million young people without job in the UK. The UK government attempt to decrease unemployment rate or reduce influence of it in society. Economy watch (2010) report that the government putted macro-economic stabilization policy to supply unemployed people money till development of economy.

UK government announced policies aimed decreasing unemployment for young people, but the government encourage youth to develop their skills in order to getting job easier. Shaheen (2009) reported that government embodied projects for instant new deal for young people, also advice youth to improve their skills in sciences, technology, engineering, and mathematics, because this due to decreasing the rate of unemployment among young people. According to HM treasury and Department of trade and industry (2003) active labour market policies attempt to assist unemployed people how have barriers to work including disable people , lone parent and long term unemployment to benefit from work opportunities. People who became disabling should get financial support. According to Duff, and Ferguson (2007) employers who became disable their training and payment should be lasting.

Study site:

 Sheffield city is one of the metropolitan boroughs located in south York shire in the United Kingdom, situated in intersection of 53° 23' N latitude and 1° 47' W longitude. Figure (1) is show the map of Sheffield with 29 wards. The climate of Sheffield is mostly temperate. According to census data 2001 population in Sheffield was (513234) inhabited.

Figure 1: Map of Sheffield city

Methodology:

The Methodology in this study focus on using GIS technique for collecting and analysing data, the results were shown on maps. Software was used in this study such as, ArcMap10 and MapInfo10, while Microsoft word 2010 was used. Hardware is other elements, which include Computer and printer. The require data, which is reliable to the study collected from secondary sources from different organizations including; UK census of population at: www.census.ac.uk/CASWEB. Boundary data sets were used to get Sheffield map at: www.edina.ac.uk/ukborder. Also different relevant sources for the study were used for example Journal article and electronic text books and other published subject which was reliable for this study.

Data Collection:

The percentage of Unemployment in Sheffield for each ward acquires form Casweb using 2001 census data. The number of population in Sheffield, percentages of Unemployment, employment, people who never- work, qualification, age, health, student, and retired were downloaded from

Casweb using 2001 census data. Edina UKborder was used to download Sheffield Map, which is containing 29 wards.

Results of the study:

The percentage of Unemployed people is high in the middle and east of the city. It represented in red and orange colours, and low in North West and small areas in the east. It represented in dark Green and Green colours
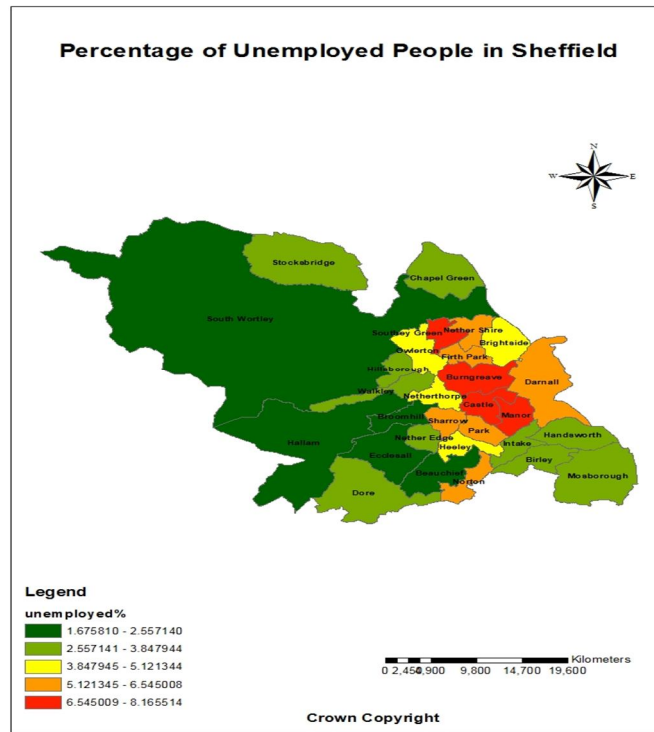

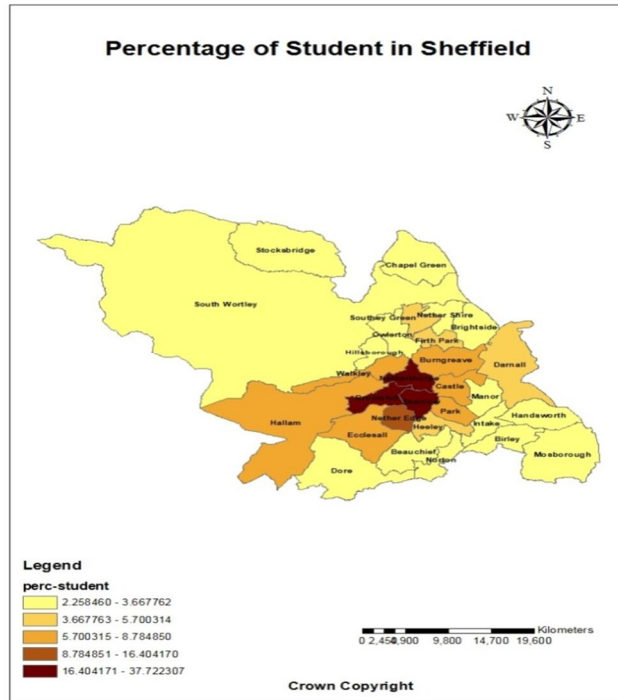Figure 2: percentage of unemployed people in Sheffield

.

Figure 3: percentage of student in Sheffield

The percentage of student is high in the middle part of city (Brown and orange colour areas), and low in other parts of the city (Yellow colour areas).
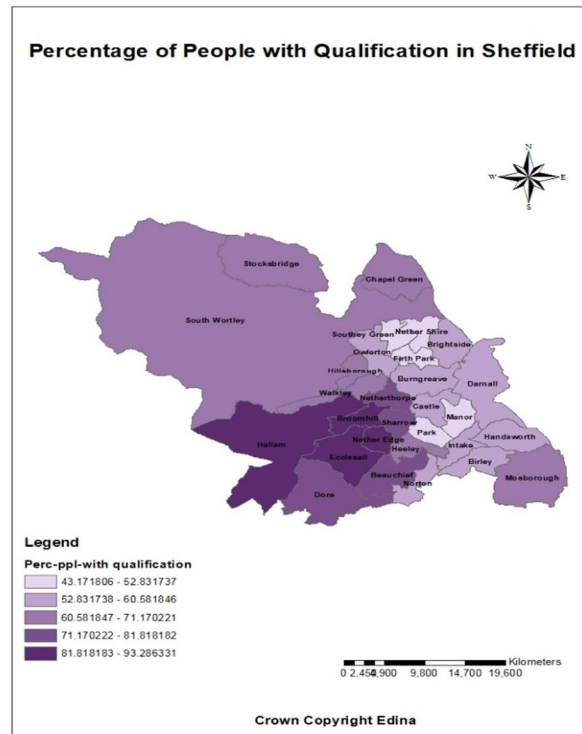
Figure 3: percentage of Retired People

The map shows that the high level of retired people is located in western and southern part of the city (Dark Green and Green colour), while the level is low around the city centre (Red colour).

Figure 4: People with Qualification

Percentage of people with qualification is high in the middle of city centre toward the northern part (dark Purple and purple colours) and low level is located in small a parts around eastern part of city centre (light Purple colour).
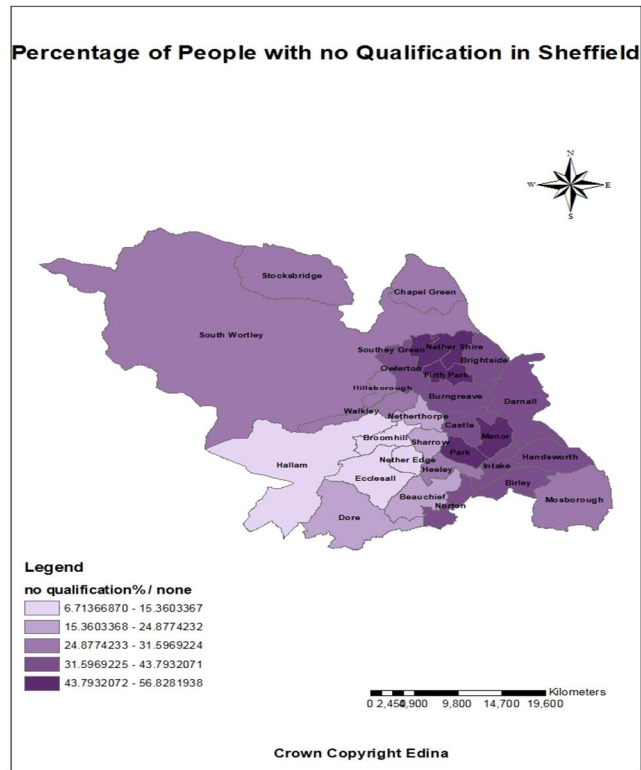
Figure 5: people with no

High level of no Qualification People is located in different parts around the eastern part of the city centre (Dark Purple and Purple colour), and low level is located in western part of the city centre (light Purple colour).
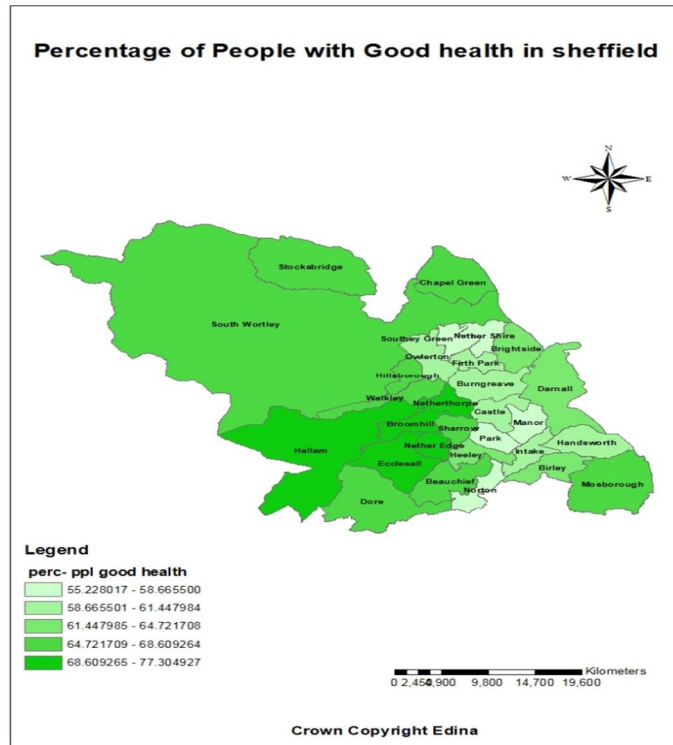
Figure 6: percentage of people Good Health in Sheffield

map shows high level of Good Health people in Sheffield are generally located in the western part of the city specially middle areas (Dark Green and green colour), and low level of Good health located around the city centre (light Green colour).
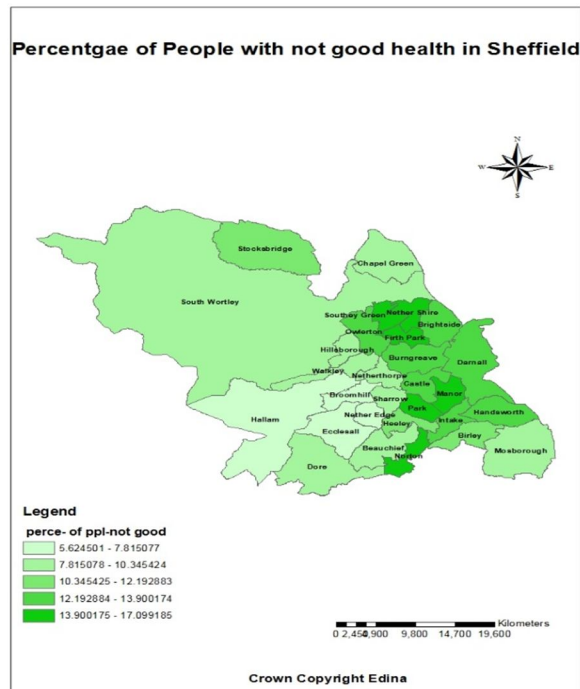
Figure 7: percentage of people with no Good Health

from the map a above the percentage of people with no Good health are high level around the city centre toward the eastern part of the city shown in Dark Green and green colour, and lower in other areas of the city sown in light green.
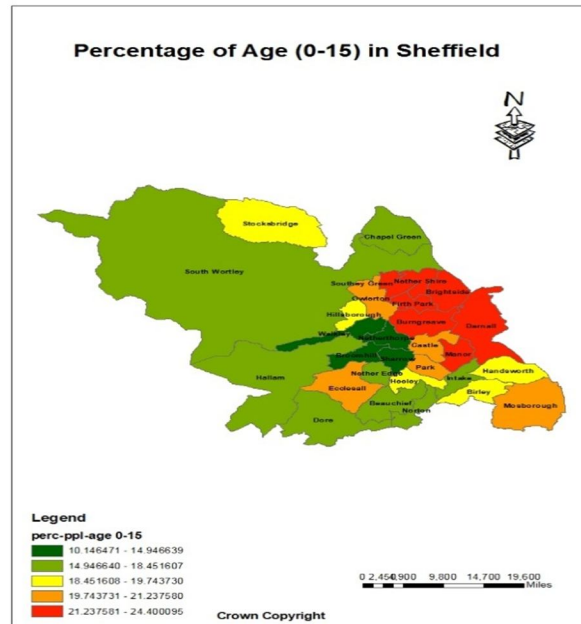
Figure 8: percentage of age 0-15 in Sheffield

The map shown that high rate of people age between 0-15 is located in eastern part of the city and small part in the west (red and orange colour areas), and low rate of age 0-15 generally located in north, west and south of the city (Green and dark green colour)
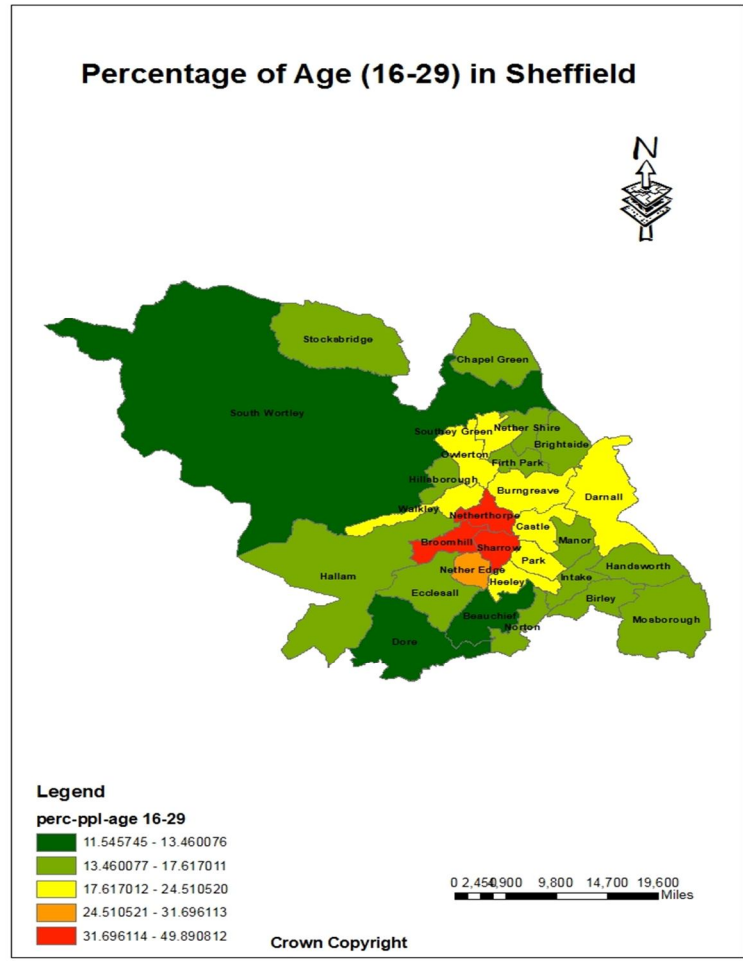
Figure 9: percentage of age between 16-29

High rate of people age 16-29 in the city centre (red and orange colour) and low rate of people age between 16 -29 are located in north, west and south of the city (Green and Dark Green colour).
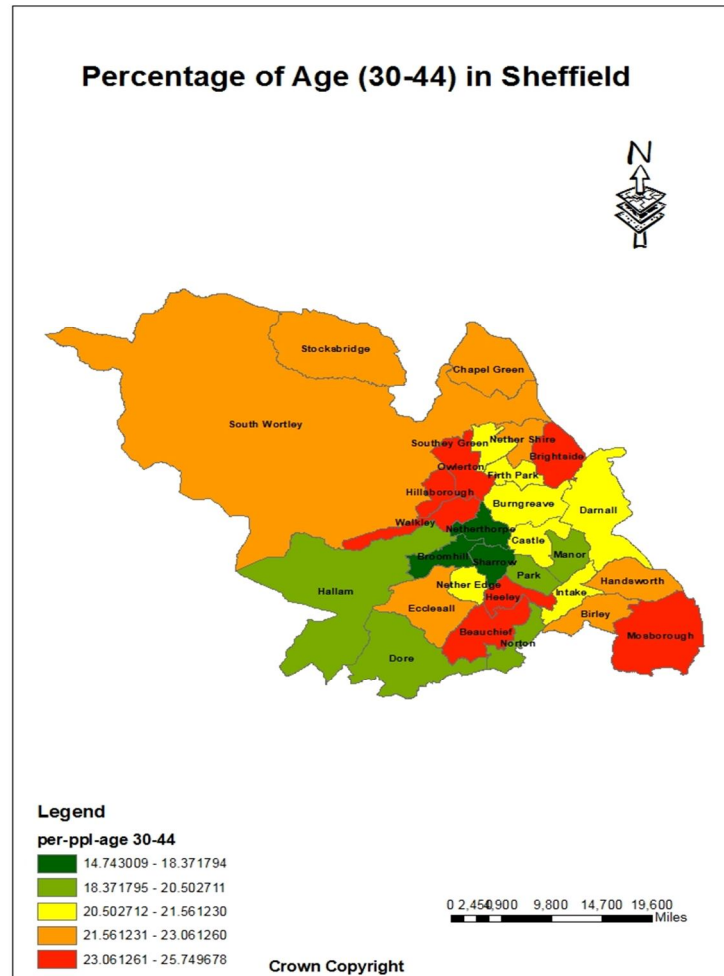
Figure 10: percentage of age 30-44 in Sheffield

This map shown the percentage of people age 30-44, high rate of this group are generally in the north and different parts in the south (red and orange colour), also low rate is located in city centre toward western and north of the city(green and dark green colour).
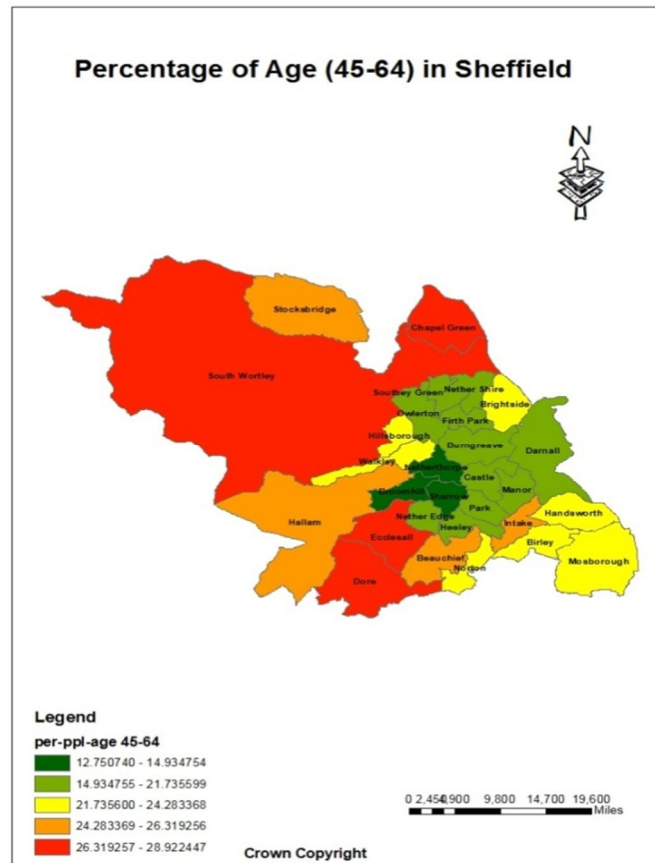
Figure 11: percentages of age between 45-64

Percentages of people with age 45- 64 is higher in north west and south of the city (red and orange colour), while this group of age is low in the city centre toward the eastern part of the city(Green and dark green colour).
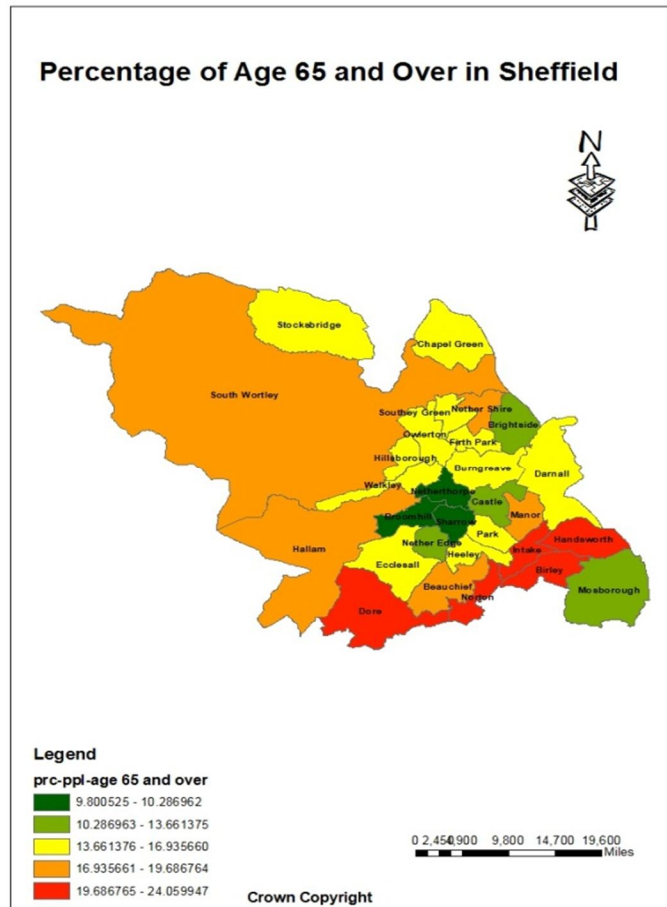
Figure 12: percentage of people age 65 and over

This ,map represent that the percentage of people age over 65 is generally located in the south and different part in the west , north and south east, (red and orange colour) also low rate is located in the city centre and small parts in the east. (Green and dark green colour areas).
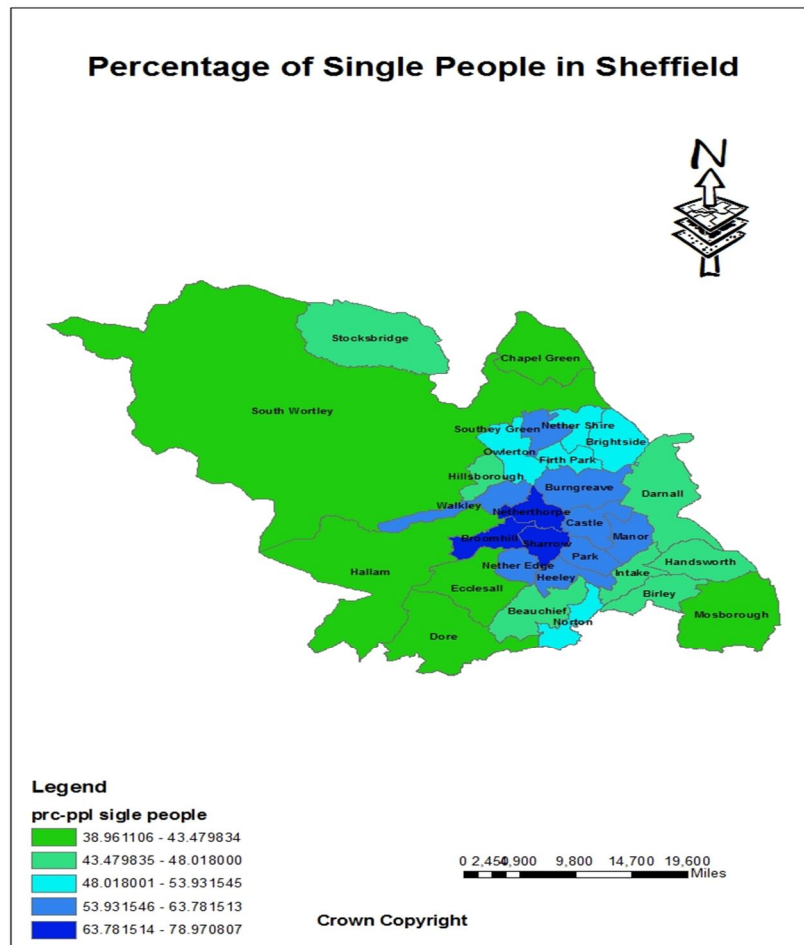
Figure 13: percentage of single people

The percentage of single people high around the city centre, (Dark blue and blue colour), other areas of the city have low rate of single people, (dark green and green areas).

Analysis and discussion:

Answering three main questions is very important for analysing different kind of information. What, where, and how they linked? According to Burrough, (2009) what is it? Where is it? And what is the relationship between them? Are questions that should be answered to obtain analysing data?

This work conceder about the rate of unemployment in Sheffield, which is concentrate around city centre, meanwhile other parts of the city have lower rate of unemployment, and high rate of single people in the city centre; this may due to high number of student in this area with age between (16-29). The areas of people with no qualification, which located in city centre toward the eastern part of the city, are nearly same areas with concentration of unemployment; also other parts with high qualification are low rate of unemployment, this made due to concentrate people with age (30-44) and 45-64) in these areas. In addition, the percentages of people with not good health around city centre are areas with high rate of unemployment and other areas with good health are low rate of unemployment. The percentage of age between (0-15) is high in the eastern part of the city and small part in the west. The percentage of retired people is high in south and different areas in the west of the city, which the same area with people age (65) and over. Finding of the study explain that city centre and the areas around it has high level of unemployment, at the same time high percentage of people with no qualification, student, single, and not good health are located in this area, which is mean these variables have effect of rate unemployment.

Conclusion:

Increasing rate of unemployment has a great role in national economy, which has impact on society and individual behaviour and may result social problems for instance increasing level of crime and suicide. There are several factors have influence on unemployment such as age, qualification, health, student, retried, and marital status. GIS technique is the most suitable tools to identify the spatial and demographic rate of this issue; also it is helpful for planners to identify the location of the phenomenon and put future planning. The UK government announced different policies to decrease the rate of unemployment. This study had been used various aspect and explain the amount of their effect on unemployment in Sheffield city.

References:

BELL, David, and BLANCHFLOWER, David, (2010). UK Unemployment in the Great recession. National institute Economic Review, not given (214), 1-25.

BURROUGH, P.A. and MCDONNELL, R.A. 1998, *Principles of geographical information systems,* Oxford U.P.

DANNREUTHER, Anna, (2011). Youth Unemployment A policy Briefing. Young Foundation for the Catalyst Consortium. [Online]. Last accessed 02 May 2012 at: http://www.ncvys.org.uk/UserFiles/Catalyst_Briefing_on_Youth_Unemployment.pdf

DOOLEY, D, FIELDING, J, and, LEVI, L, (1996). Health and Unemployment. School of social ecology [online]. Last accessed 05May 2012 at: http://www.ncbi.nlm.nih.gov/pubmed/8724235

Ebmer, Rudolph, and RAPHAEL, Stephen,(not given). Identifying the effect of Unemployment on Crime. [Online]. Last accessed 03 May 2012 at: http://www.cepr.org/press/DP2129.htm

ECKSTEIN, Morgan, (2009). What are the Economic Causes of Unemployment? [Online] last accessed 01 May 2012 at: http://voices.yahoo.com/what-economic-causes-unemployment-2605323.html?cat=3

GREENBERG, Melanie, (2011). Preserving Mental Health During and Unemployment. [Online]. Last accessed 05 May 2012 at: http://www.psychologytoday.com/blog/the-mindful-self-express/201110/preserving-mental-health-during-unemploymentv .

HM Treasury, and Department of Trade and Industry,(2003).A Modern regional policy for the United Kingdom, [online]. Last accessed 02-May 2012 at: http://www.bis.gov.uk/files/file12012.pdf

Marston, S.T. 1985, "Two Views of the Geographic Distribution of Unemployment", *the Quarterly Journal of Economics,* vol. 100, no. 1, pp. 57-79

RUSANEN, Jarmo, MUILU, Toivo, COLPAERT, Alfred, and NAUKKARINEN, Arvo (2001) Finnish socio-economic grid data, GIS and the hidden Geography of Unemployment. Tijdschrift voor Economische en Social Geografie, 92 (2), 139-147.

SHAHEEN, Faiza, (2009) sticking plaster or stepping- stone? Tackling urban youth unemployment.[online]. last accessed 01 May 2012 at: http://www.centreforcities.org/assets/files/09-06-23%20Youth%20unemployment.pdf.

SMITH-Gina (not given) Finding the Jobless: An initial Spatio-Temporal Modelling of Unemployment in South Africa. [Online] last accessed 01 may 2012 at: http://www.geocomputation.org/2005/Weir.pdf

ZOLNIK,Edmund, (2010). The Geographic distribution of U.S. Unemployment by Gender. Economic Development Quarterly, [online]. Last accessed 01-May 2012 at: http://edq.sagepub.com/content/25/1/91.full.pdf

JOASSART-MARCELLI, P. & GIORDANO, A. 2006, "Does local access to employment services reduce unemployment? A GIS analysis of One-Stop Career Centers", *Policy Sciences,* 39 (4), 335-359.

ANSELIN, Luc (1992) Spatial data analysis with GIS: an introduction to application in the social sciences.[online].last accessed, 04 May 2012 at: http://www.ncgia.ucsb.edu/technical-reports/PDF/92-10.pdf

DUFF, A. andFERGUSON, J (2007). Disability and accounting firms: Evidence from the UK. *Critical Perspectives on Accounting,* 18(2), 139-157.