The East Midlands in 2010: The Spatial Economy of the East Midlands

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8. The Spatial Economy of the East Midlands

8.1 Introduction

This chapter of The East Midlands in 2010 provides an analysis of the spatial economy of the East Midlands. Unlike other chapters of The East Midlands in 2010, this chapter is less reliant on an analysis of a range of official statistics. In order to provide, in more qualitative terms, a greater understanding of the spatial structure of the East Midlands, it reviews and brings together findings from a number of pieces of existing research. It examines the role that places play and the linkages that exist between places, both inter- and intra-regionally. The role that places play is more than a function of their size and this section provides an assessment of agglomeration economies that exist in the region and the economic flows that can be measured through data on commuting flows and patterns of retail and leisure travel. On the basis of this evidence an assessment can be made on whether or not the East Midlands can be considered a polycentric region and, more broadly, of spatial patterns of economic activity.

Previous sections of The East Midlands in 2010 have highlighted clear differences between places within the East Midlands on a range of indicators- economic, social and environmental. These differences can be summarised in broad terms as:

- The Lincolnshire coast: this area experiences very low levels of economic activity and high levels of deprivation. There is a growing and ageing population but transport links are poor and access to services can be a problem;

- The Coalfields area: although more urban in nature than the Lincolnshire coast, it shares a number of the same problems. Still undergoing a process of economic transformation, levels of economic and business activity are relatively low. However, it is better connected than the coast, with opportunities to travel into Sheffield and Nottingham relatively easily;

- The urban centres: the major urban centres in the region – Derby, Leicester, Lincoln, Northampton and Nottingham – are key drivers of the regional economy. They are well connected both within and without the region. However there is a notable difference in the characteristics of people who live and work in these areas. Residents tend to live in more deprived areas and have lower levels of skills and earnings than those who travel to these places to work; and

- The rural areas in the centre and south of the region: these tend to be more affluent with relatively high levels of economic and business activity, including high rates of business start-up. Many people in these areas have high levels of skills and earnings but work elsewhere. Although generally affluent, there are pockets of deprivation and people who live and work in these areas may have a lower standard of living.

This chapter of The East Midlands in 2010 will assess the structure of the regional economy and begin to explain why these differences exist across the region. It draws on work commissioned by *emda* from the University of Lincoln, Newcastle University and Experian[1].

[1] A Atherton and A Johnston, University of Lincoln, Mapping the Structure of Regional Economies, 2006.

The second section assesses the structure of the East Midlands economy in terms of the functional roles that places in the region play. It finds that there are a number of key centres in the region (Derby, Leicester, Nottingham and Northampton), and a number of smaller centres that act as service centres for larger rural hinterlands (such as Buxton, Market Harborough, Grantham and Wellingborough).

The third section assesses the nature of flows of economic activity in the region, measured by commuting, retail and leisure flows. Levels of commuting are significant and have been increasing over time. It shows that more people commute out of the East Midlands than commute into the region. It clearly shows the influence of major centres just across the East Midlands border, such as Sheffield, Milton Keynes and Peterborough. Within the region the key commuting destinations are the larger urban areas, which also tend to attract retail and leisure spend from elsewhere.

The fourth section assesses whether or not the East Midlands can be considered a polycentric region, and more broadly of spatial patterns of economic activity. Interest in the concept of polycentricity has been driven by recent policy focus on the role of cities, their hinterlands and whether or not these overlap. Whether or not a region can be considered polycentric or monocentric has important implications for development policy. It sets out a number of criterion that are commonly used to define such a region and suggest that while, in terms of descriptive statistics the East Midlands may appear to be polycentric and meets a number of these criteria, overall it is not a functional polycentric region in these terms.

A Atherton and L Price, University of Lincoln, Secondary Centres of Economic Activity in the East Midlands, 2009.
M Coombes, D Charles, S Raybould and C Wymer, Newcastle University, City Regions and Polycentrictiy: the East Midlands Urban Network, 2005.
Experian, *Commuting*, Retail and Lesiure Flows in the East Midlands, 2007.

8.2 The structure of the East Midlands economy

There are a number of theories of how economies are structured that are captured by the idea that the location of a business is determined by the costs of transportation of inputs and outputs from the production process. These give rise to agglomeration effects and flow effects.

8.2.1 Agglomeration and flow effects

Atherton and Johnston (2006)[2] define agglomeration effects as the benefits that businesses enjoy from being located close to each other and within settlements with concentrations of customers and employees. On this basis it is expected that large urban areas will dominate regional economies. Three types of agglomeration effect have been identified:

- Internal returns to scale (firm specific economies) – capital and labour can concentrate in an area as a result of the activities of a single firm at a specific location;

- Economies of localisation (industry specific economies) – businesses in the same or closely related sectors that locate together can benefit from the local provision of specialist services and a specialist pool of labour; and

- Economies of urbanisation (city specific economies) – these accrue to businesses (in different sectors) from location in urban areas. These include a greater variety of local services and larger pools of customers and labour.

Agglomeration economies tend to be self-reinforcing as dense areas of economic activity attract further businesses and labour. This 'stickiness' suggests that over time activity will concentrate in urban areas. In addition this also suggests that disparities between areas that benefit from agglomeration economies and those that do not will increase over time.

However, there are limits to agglomeration. At a certain point the concentration of economic activity in a particular location will generate costs and loss of agglomeration benefits. These costs arise from:

- The cost of land increases as more businesses seek to locate in a particular location. At some point these costs may rise so that businesses are effectively paying to benefit from agglomeration economies. Despite this a business may not choose to relocate if it still benefits from proximity to customers and labour; and

- Congestion and increases in the cost of transport can also increase until they outweigh the benefits of agglomeration.

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[2] A Atherton and A Johnston, University of Lincoln, Mapping the Structure of Regional Economies, 2006.

The Transport and Infrastructure chapter shows how land prices are higher in the region's larger centres, along with an estimate of the costs associated with congestion.

Natural resources can also work against agglomeration and can lead to dispersed patterns of economic activity. For example mineral extraction is site specific and logistics businesses tend to locate in areas away from city centres that have access to the wider transport infrastructure.

Transport infrastructure and the costs of transportation will determine the scale of flow effects in a regional economy. Flows of goods and labour along these channels will also determine the pattern of regional economic activity. Where infrastructure is extensive and the costs of transportation are relatively low, it might be expected that flows of economic activity within and between regions will be higher than where this is not the case.

This theoretical approach suggests that regional economies will be made up of a number of larger settlements as there are limits to the benefits that can be derived from agglomeration economies, and that there will be smaller settlements that generate agglomeration economies through the location of large employers and infrastructure.

This framework has been applied by Atherton and Johnston (2006)[3] and Atherton and Price (2009)[4] in their analyses of the structure of the East Midlands economy. The remainder of this section will outline the findings of this work, beginning with an assessment of larger centres in the region followed by an assessment of smaller secondary centres.

The starting point is an assessment of business density (as measured by the number of businesses per square kilometre) and population density (as measured by the number of people of working age). High business and population densities will suggest agglomeration economies whilst the opposite may point toward low agglomeration economies. Flow effects are measured by the quality of road and rail links.

8.2.2 Larger settlements in the East Midlands

In their work on larger settlements in the region, Atherton and Johnston (2006)[5] suggest a matrix for categorising settlements on the basis of business and workforce density and potential agglomeration economies. This is shown in Table 1.

[3] A Atherton and A Johnston, University of Lincoln, Mapping the Structure of Regional Economies, 2006.
[4] A Atherton and L Price, University of Lincoln, Secondary Centres of Economic Activity in the East Midlands, 2009.
[5] A Atherton and A Johnston, University of Lincoln, Mapping the Structure of Regional Economies, 2006.

Table 1: Typology of larger settlements

Labour attractors	Regional agglomerations
- Likely to have in-flows of labour as business densities are greater than workforce densities - High business densities suggest a local concentration with partial or localised agglomeration economies.	- Critical mass in terms of above average business and workforce densities - Ke y regional settlements - Major concentrations of activity that attract labour and other inputs.
Low agglomeration effects	**Labour providers**
- Below average business and workforce densities indicate lack of critical mass - Unlikely to have significant agglomeration effects, may have partial effects - May be important for sub-regional and local economies.	- Lower business densities with high workforce densities are likely to lead to outflows of labour - Less likely to have agglomeration economies but still important to the regional economy.

Three sets of analyses were undertaken by Atherton and Johnston (2006)[6]. The first compared business densities with workforce densities in order to test for an overall indication of agglomeration economies. These analyses made use of data from the Annual Business Inquiry and the 2001 Census of Population. The analysis shows that:

- Nottingham, Leicester and Northampton (the three settlements with the largest business populations) have business and workforce densities that are above the regional averages. These densities, alongside a critical mass of businesses and labour, clearly suggest agglomeration economies;

- Derby, along with Nottingham, Leicester and Northampton, is one of the four settlements in the region that are significant in terms of agglomeration economies. However, along with Kettering, it has above average workforce densities and business densities that are close to the average. This suggests that there may be an out-flow of labour (in 2001 there were over 22,000 out-commuters from Derby and around 38,000 in-commuters);

- Lincoln, Chesterfield and Grantham have business and workforce densities that are just below the regional averages. This suggests the existence of partial agglomeration effects in these settlements; and

- There are four settlements in the region that have relatively high business densities but workforce densities that are below the regional average. This suggests local economies with the potential for agglomeration economies. Loughborough and Wellingborough are both well connected to transport infrastructure, providing for inflows of labour. Louth and Boston are more remote and likely to act as service centres for wider rural hinterlands.

[6] A Atherton and A Johnston, University of Lincoln, Mapping the Structure of Regional Economies, 2006.

Mansfield has very low business and workforce densities and is considered in the work on secondary centres by Atherton and Price (2009). This is highlighted in the next section.

The second analysis tested for the presence of large employer effects. These occur when there are large businesses but low business and workforce densities and can work against the development of agglomeration economies. This analysis suggests that these effects are present in just one location in the region – Corby – which has the highest average business size in the region but a low business density. The analysis also suggests that:

- The four major settlements in the region (Derby, Leicester, Northampton and Nottingham) have high business densities and average employment per business. This suggests that there continue to be benefits from agglomeration in these areas and that agglomeration effects are self-reinforcing; and

- Loughborough, Wellingborough, Boston and Louth all have above average business densities and below average business sizes, suggesting that they function as 'local small business economies' and have the potential to further benefit from agglomeration economies.

The final analysis assesses flow effects by examining the availability of economically active people, per square kilometre, in a given settlement. This provides an indication of local labour market conditions. This analysis shows that:

- There is no clear relationship between business density and the number of economically active people per square kilometre – it is possible that high densities of businesses can exists without a concentration of economically active people around them; and

- The four settlements with the highest business densities have the lowest number of economically active people per square kilometre.

One implication of this is that greater competition for labour where agglomeration economies exist will attract labour from other areas.

Table 2: Typology of large settlements in the East Midlands

Labour attractors • Wellingborough • Loughborough • Boston • Louth	**Regional agglomerations** • Nottingham • Leicester • Northampton • Derby
Low agglomeration effects • Lincoln • Chesterfield • Daventry • Hinckley • Corby	**Labour providers** • Mansfield

On the basis of these analyses, the following conclusions can be drawn about the structure of the East Midlands economy, which are summarised in Table 2. First of all, there are four major centres in the region that benefit from agglomeration economies – Nottingham, Leicester, Northampton and Derby. Secondly, there are a number of settlements that exhibit some agglomeration but not on a regional scale (such as Lincoln and Chesterfield) and some that exhibit low agglomeration economies (such as Daventry, Hinckley and Corby). Mansfield is not likely to generate agglomeration economies and, though shown as a labour provider may come somewhere between the two categorisations in the lower half of Table 2. Finally, there are a number of settlements that act as attractors of labour and these include Wellingborough, Loughborough, Boston and Louth.

8.2.3 Secondary centres in the East Midlands

Following on from the 2006 study, Atherton and Price (2009)[7] extended the work to look at smaller centres in the region. Termed 'secondary centres', these were defined as "urban settlements that are smaller than a principal urban area, but still significant as a centre of economic activity".

A total of 98 settlements were included in this analysis, with a small degree of overlap with the study of large centres described above. They ranged from Chesterfield, with a population of over 70,000, to Wainfleet, with a population of just under 2,000. Of these 26 were in Derbyshire, 19 in Leicestershire, 20 in Lincolnshire, 11 in Northamptonshire, 20 in Nottinghamshire and two in Rutland.

As in the study of larger centres, a number of analyses were carried out using data on business density, population density, workforce density and connectivity. The results of these analyses are summarised by county (for the purposes of the analysis Rutland was combined with Lincolnshire). The results point towards a categorisation of secondary centres in the East Midlands:

- Sub-regional centres: these are larger centres with a diverse economic base and can be considered to be the key secondary centres in the East Midlands. They are likely to generate agglomeration economies;

- Manufacturing/transition economies: these centres tend to have greater concentrations of traditional industries and still have a relatively large manufacturing centre. Agglomeration effects are likely to be low in these centres, although there may be some large employer effects;

- Strong local economies: these are small centres with higher concentrations of businesses serving a wider hinterland. They are likely to generate localised agglomeration effects that can, to a degree, have sub-regional and some regional significance;

[7] A Atherton and L Price, University of Lincoln, Secondary Centres of Economic Activity in the East Midlands, 2009.

- Healthy town economies: these centres serve their towns and a small surrounding area in which cases they generate some localised agglomeration effects;

- Dependent/commuter centres: these are well connected centres with high numbers in employment but with fewer local employment sites and services. They are unlikely to generate agglomeration economies; and

- Centres without critical mass: these are centres in remote rural or former mining areas with insufficient numbers of businesses or population to generate agglomeration effects.

Derbyshire

Chesterfield is the largest town in Derbyshire and the analysis shows that this has a higher business than population density. It is also reasonably connected. The closest large urban centre is Sheffield in South Yorkshire, and the M1 and Midland Mainline provide good connections. Chesterfield also serves as an important sub-regional service centre for settlements in the Peak District to the west and for areas such as Staveley and Dronfield to the north and east.

With the exception of Chesterfield, secondary centres in Derbyshire tend to be less well connected than in other areas of the region. A number of these centres do have high levels of business and population density, which suggests the presence of a number of relatively strong local economies. Settlements with these characteristics fall into two groups.

Settlements such as Long Eaton, Belper and Ilkeston demonstrate the potential for agglomeration economies with their high business and population densities. They are also likely to benefit from their proximity and connectivity to Derby and Nottingham. These settlements may be considered functional parts of these city economies given their proximate location to them and apparent levels of economic integration.

There is a group of settlements that are more remote from larger urban centres and are less well connected, but still demonstrate the potential for agglomeration economies. This group includes Buxton, Matlock, Chapel-en-le-Frith and Wirksworth. These settlements tend to be self contained but do serve wider rural hinterlands and benefit from tourism in the Peak District National Park.

There are also settlements that have low business densities. Some of these, such as Staveley, Dronfield, Shirebrook, Clowne and Swadlincote, have high population densities and act as commuter settlements for larger urban areas. However there are some that also have low population densities. These areas include Bolsover, South Normanton, Alfreton and Clay Cross. These areas are former mining areas that are going through a period of industrial restructuring. This, combined with a low level of critical mass suggests limited potential for agglomeration economies.

Table 3 shows how settlements in Derbyshire fit into the typology outlined above.

Table 3: Secondary centres in Derbyshire

Sub-regional centres	Buxton, Belper, Chesterfield, Ilkeston, Long Eaton
Manufacturing/transition economies	Alfreton, Clay Cross
Strong local economies	Ashbourne, Bakewell, Whaley Bridge
Healthy town economies	Chapel-en-le-Frith, Eckington, Matlock, Melbourne, New Mills, Ripley, Wirksworth
Dependent/commuter centres	Dronfield, Heanor, Staveley, Swadlincote
Centres without critical mass	Bolsover, Clowne, Shirebrook, South Normanton/Pinxton

Source: Secondary Centres of Economic Activity in the East Midlands, A Atherton and L Price, University of Lincoln, 2009.

Overall Derbyshire has a number of centres with high business and population, suggesting strong local economies. There is something of an east-west divide, with settlements in the west tending to serve wider rural hinterlands and those in the east closely linked to, if not becoming part of, the economies of Nottingham and Derby. Despite some good links, centres in the county tend to be less well connected than elsewhere in the region.

Leicestershire

The two largest secondary centres in Leicestershire are Loughborough and Hinckley. Hinckley has business and population densities that are above average. It is also well connected to Leicester and, in the West Midlands, Coventry. It is likely that Hinckley serves as both a commuter settlement and as a centre of activity in its own right. On the other hand, Loughborough has a relatively low business density and high population density, suggesting that it is more of a commuter settlement, particularly for Leicester and Nottingham (in 2001 over 10,000 people commuted from Charnwood, the district in which Loughborough is located, into Leicester)[8].

Other secondary centres in Leicestershire tend to be better connected when compared to other counties. Lutterworth, Sileby, Market Bosworth, Ashby, Castle Donington and Market Harborough have higher business than population densities. In the case of Lutterworth this may be because of the presence of the Magna Park logistics centre, while for Castle Donington this is because of its proximity to East Midlands Airport and the presence of airport related businesses. These settlements demonstrate the potential for agglomeration economies and are likely to act as service centres for wider hinterlands.

Melton Mowbray, Shepshed, Mountsorrel, Earl Shilton and Ibstock have much higher population than business densities. This group of settlements are less likely to generate agglomeration economies and fulfil a commuter settlement role.

A final group of settlements may lack critical mass and be unlikely to generate agglomeration economies. Barrow upon Soar, Quordon, Markfield and Coalville all have relatively low business and population densities.

[8] Experian, Commuting, Retail and Leisure Flows in the East Midlands, 2007.

Table 4 shows how secondary centres in Leicestershire fit into the typology outlined at the beginning of this sub-section.

Table 4: Secondary centres in Leicestershire

Sub-regional centres	Hinckley, Market Harborough
Manufacturing/transition economies	Coalville
Strong local economies	Ashby de la Zouch, Castle Donington, Enderby, Kidworth Harcourt, Lutterworth, Market Bosworth
Healthy town economies	Sileby
Dependent/commuter centres	Earl Shilton, Ibstock, Loughborough, Melton Mowbray, Mountsorrel, Shepshed
Centres without critical mass	Barrow upon Soar, Markfield, Quorndon

Source: Secondary Centres of Economic Activity in the East Midlands, A Atherton and L Price, University of Lincoln, 2009.

Overall centres in Leicestershire tend to be well connected and have high levels of labour market participation. Despite having a number of strong economies, many centres play a commuter settlement role, with some, such as Market Harborough and Loughborough, within commuting distance of London.

Lincolnshire and Rutland

The majority of centres in Lincolnshire and Rutland have lower than average business and population densities. However, there are three centres where these densities are above average – Sleaford, Stamford and Uppingham. These centres are also located in the south and west of the area, which has better connectivity than elsewhere. These centres are likely to act as sub-regional centres, with some out-commuting.

There are a number of settlements that have higher business than population densities, suggesting that they act as centres for wider hinterlands. These include Grantham (the largest economy outside of Lincoln), Skegness, Louth and Oakham. Grantham aside, which is well connected to London, these settlements are more remote from key centres of population. Skegness, in addition to serving a wider hinterland, is also a centre for tourism.

There is only one settlement that has below average business density and above average population density, suggesting a commuter settlement role. This is Market Deeping, which is in close proximity to Peterborough.

The final group of settlements are those with below average business and population densities. Size of settlement suggests two sub-groups. The first is smaller settlements that may indicate a lack of critical mass for agglomeration effects to occur, and these include Spilsby, Wainfleet, Alford and Caistor. The second, larger sub-group includes Gainsborough, Boston and Spalding. In the case of Boston and Spalding this may be the result of the presence of a small number of large businesses, while industrial decline and re-structuring may account for this in Gainsborough.

Table 5 shows how secondary centres in Lincolnshire and Rutland fit into the typology outlined at the beginning of this sub-section.

Table 5: Secondary centres in Lincolnshire and Rutland

Sub-regional centres	Grantham
Manufacturing/transition economies	Boston, Gainsborough, Spalding
Strong local economies	Louth, Market Rasen, Oakham, Skegness, Sleaford
Healthy town economies	Stamford, Uppingham
Dependent/commuter centres	Market Deeping
Centres without critical mass	Alford, Bourne, Caistor, Crowland, Holbeach, Horncastle, Long Sutton, Mablethorpe/Sutton, Spilsby, Wainfleet

Source: Secondary Centres of Economic Activity in the East Midlands, A Atherton and L Price, University of Lincoln, 2009.

Overall, settlements in Lincolnshire and Rutland are less well connected than elsewhere in the East Midlands. Connectivity seems to matter as those areas with the lowest business and population densities are more remote. Chapter 7 of The East Midlands in 2010, Economic Inclusion and Deprivation, highlights the more deprived nature of these areas. This is particularly the case in the north and east of Lincolnshire. Settlements tend to be more self-contained and there are fewer commuter settlements than elsewhere.

Northamptonshire

The largest settlement in Northamptonshire, outside of Northampton, is Wellingborough. This, along with Towcester and Brackley, has above average business and population densities. This suggests that these settlements are relatively strong economies that demonstrate agglomeration effects. Part of the success of Towcester and Brackley is attributed to the presence of the motorsports industry and its supply chain, along with proximity to Milton Keynes and the South East.

Many of the centres in Northamptonshire have below average levels of business density combined with above average levels of population density. This suggests that settlements in Northamptonshire are commuter settlements, with out-flows to Northampton, Milton Keynes and London in particular. This includes larger settlements such as Kettering and Rushden, and smaller towns such as Rothwell, Desborough, Irthlingborough and Raunds.

Corby and Daventry, two of the larger settlements in Northamptonshire, have below average business and population densities. This is partly historical – both were subject to significant expansion in the 1960s, in the low density style of development of that time. However both have gone through a period of industrial re-structuring and both are home to a number of large firms that dominate their economies.

Table 6 shows how secondary centres in Northamptonshire fit into the typology outlined at the beginning of this sub-section.

Table 6: Secondary centres in Northamptonshire

Sub-regional centres	Wellingborough
Manufacturing/transition economies	Corby, Daventry
Strong local economies	
Healthy town economies	Brackley, Towcester
Dependent/commuter centres	Desborough, Irthlingborough, Kettering, Raunds, Rothwell, Rushden/Higham Ferrers
Centres without critical mass	Oundle

Source: Secondary Centres of Economic Activity in the East Midlands, A Atherton and L Price, University of Lincoln, 2009

Overall, settlements in Northamptonshire experience the highest levels of labour market participation and connectivity in the region, but business densities are relatively low. This suggests the presence of a number of commuter settlements, with significant outflows to Milton Keynes and London. There are just a small number of centres that act as the focal point for services and employment.

Nottinghamshire

As in Leicestershire, secondary centres in Nottinghamshire tend to be well connected but have low business densities. Just two centres, Newark and Bingham, have above average population and business densities. These two settlements are located in the east of Nottinghamshire, which is more sparsely populated. This suggests that these two centres are relatively self contained and act as sub-regional centres for wider hinterlands.

There are a number of settlements that have higher business than population densities and may attract labour. These include Tuxford, Retford, and Southwell. The high business density in Tuxford is the result of the location of two business parks nearby. Retford and Southwell are market towns that act as service centres for a number of surrounding villages.

Cotgrave, Mansfield Woodhouse, Eastwood and Hucknall all have higher population densities than business densities. They are all located close to, and reasonably well connected to, Nottingham. This suggests that these settlements are commuter areas that rely on the larger city for services and employment opportunities.

Mansfield is one of the larger centres in Nottinghamshire but, along with Worksop and Sutton in Ashfield, has below average business and population densities. Economic activity rates are also relatively low in Mansfield and levels of ill health are relatively high. This suggests that Mansfield is still re-structuring following the decline of mining and is also dependent on Nottingham for employment opportunities.

Table 7 shows how secondary centres in Nottinghamshire fit into the typology outlined at the beginning of this sub-section.

Table 7: Secondary centres in Nottinghamshire

Sub-regional centres	Newark
Manufacturing/transition economies	Mansfield, Sutton in Ashfield, Worksop
Strong local economies	Retford, Ruddington, Southwell, Tuxford
Healthy town economies	Bingham
Dependent/commuter centres	Boughton/Ollerton, Clifton, Cotgrave, Eastwood, Hucknall, Kirkby in Ashfield, Mansfield Woodhouse
Centres without critical mass	Keyworth, Kimberley, Radcliffe on Trent, Selston/Underwood/Brimley

Source: Secondary Centres of Economic Activity in the East Midlands, A Atherton and L Price, University of Lincoln, 2009.

Overall centres in Nottinghamshire are characterised by low levels of business density and low levels of activity. In the north and west of the county this is because of the industrial and mining heritage and the influence of Nottingham. In the east of the county there are a number of self contained, sub-regional centres that are well connected.

Key Points: The structure of the East Midlands economy

- Regional agglomerations of activity are to be found in Derby, Leicester, Northampton and Nottingham. Lincoln and Chesterfield exhibit some agglomeration effects but not on a regional scale.
- There is something of an east-west divide in Derbyshire, with settlements in the west tending to serve wider rural hinterlands and those in the east closely linked to the economies of Nottingham and Derby.
- Centres in Leicestershire tend to be well connected and have high levels of labour market participation. Many centres play a commuter settlement role, with some, such as Market Harborough and Loughborough, within commuting distance of London.
- Settlements in Lincolnshire and Rutland are less well connected than elsewhere in the East Midlands. This is particularly the case in the north and east of Lincolnshire. Settlements tend to be more self-contained and there are fewer commuter settlements than elsewhere.
- Settlements in Northamptonshire experience the highest levels of labour market participation and connectivity in the region. There are a number of commuter settlements, with significant outflows to Milton Keynes and London. There are just a small number of centres that act as the focal point for services and employment.
- Settlements in Nottinghamshire are characterised by low levels of business density and low levels of activity. In the north and west of the county this is because of the influence of Nottingham. In the east of the county there are a number of self contained, sub-regional centres that are well connected.

8.3 Flows of activity in the East Midlands

The previous section summarised an analysis of the structure of the East Midlands economy. This analysis highlighted the functional roles that centres in the region play. There are a small number of key regional centres that act as service and employment providers (Derby, Leicester, Northampton and Nottingham). There are many smaller centres that play a number of roles – some as smaller service centres in their own right and some as commuter settlements for the larger centres in the region.

This section will build on that analysis by providing an assessment of measurable flows in order to build a more dynamic assessment of the regional economy. Data is available that makes it possible to assess commuter flows (both within and without the region) and flows of people associated with retail and leisure activities.

8.3.1 Commuting patterns

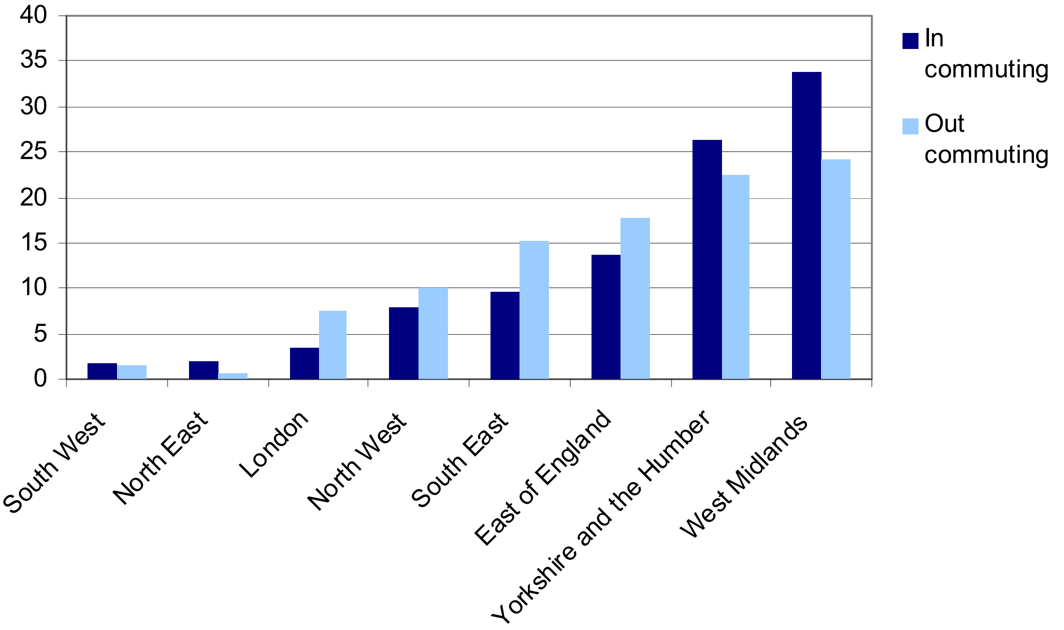
The most detailed data on commuting patterns remains that from the 2001 Census of Population, but it is possible, in some instances, to provide more up to data analysis from the Labour Force Survey. It should be noted that this data and analysis is for administrative rather than functional areas.

The East Midlands experiences significant amounts of in and out commuting, a function of its central location and the transport infrastructure. Overall the region is a net exporter of workers, and this has been increasing over time. In 1991 a total of 61,000 more workers commuted out of the region than commuted in. By 2001 this figure had increased to around 93,000. Data from the Labour Force Survey suggest that this trend has continued, with net out-commuting of over 100,000 in 2006.

Chart 1 shows that, as might be expected, the four regions that surround the East Midlands are the most popular sources of, and destinations for, commuting. The West Midlands, Yorkshire and the Humber, the East of England and the South East account for almost 80% of out-commuting from, and 83.5% of in-commuting to, the East Midlands. The West Midlands alone accounts for over a third of in commuters and almost a quarter of out commuters.

It is also clear from Chart 1 that these headline numbers disguise quite different patterns. The East Midlands attracts workers from the West Midlands and Yorkshire and the Humber, but there is a net out-flow to the South East and the East of England.

Chart 1: Share of in and out commuting by region 2001 (%)

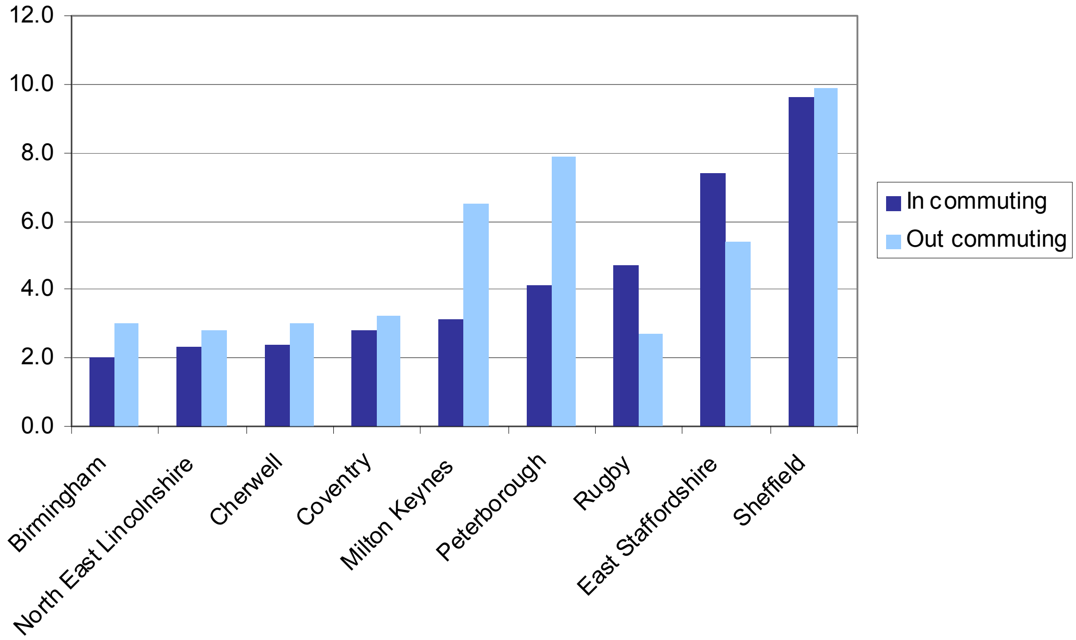


Source: Commuting Flows in the East Midlands, Experian, 2007.

Data is available from the 2001 Census that shows the districts outside the region that people commute to and from. Sheffield accounted for 9.9% of commuter outflows from the region (almost 20,000 people). Just under 8% commuted to Peterborough, 6.5% to Milton Keynes and 5.4% to East Staffordshire. Around 3% of out commuting was accounted for by Birmingham, Coventry, Rugby, Cherwell and North East Lincolnshire.

Sheffield is also the source of the largest number of commuters into the region, accounting for 9.6% of the total of all inflows into the region (around 10,000 people). East Staffordshire (7.4%) and Nuneaton & Bedworth (4.8%) are the second and third largest sources of commuting into the region. Nuneaton & Bedworth is not shown in the chart because of the very low level of out-commuting from the East Midlands to that district.

Chart 2: Share of in and out commuting by district 2001(%)



Source: Commuting Flows in the East Midlands, Experian, 2007.

This brief analysis highlights the linkages between the East Midlands and the West Midlands and Yorkshire and the Humber in particular. There are significant two way flows of workers between the region and Sheffield and East Staffordshire.

The 2001 Census allows for an assessment of net commuting and outflows and inflows at district level within the East Midlands. As the largest urban areas in the region, Nottingham, Leicester, Derby, Northampton and Lincoln all experience net in-commuting. The scale of net in-commuting varies significantly though. There is net in-commuting of over 70,000 in Nottingham, 43,000 in Leicester but between 10,000 and 15,000 in Derby, Northampton and Lincoln. Net out-commuting is highest in South Northamptonshire (-13,800), Broxtowe (-16,000), Rushcliffe (-16,100), North East Derbyshire (-17,100) and Gedling (-21,300). This reflects the structure and roles of these places, and the secondary centres located there, that were identified in the previous section.

These net commuting numbers mask significant flows between districts. There are around 590,000 commuters within the East Midlands who live and work in a different district in the region. Table 8 shows the highest proportion of employment accounted for by in commuters by district in the East Midlands. In 15 of the region's districts, commuters account for a third or more of employment. The table shows that:

- Nottingham experiences the highest levels of in-commuting both in absolute terms, and as a proportion of employment in the city. Although the flows are much smaller in-commuting accounts for more than half of total employment in Blaby and Oadby & Wigston;

- While there are 66,500 commuters into Leicester, this accounts for a smaller proportion of employment in the city, at 43%; and

- In Broxtowe, Bolsover, Lincoln, Ashfield, Rushcliffe and Gedling, commuter in-flows account for more than 40% of total employment.

Table 8: In commuting by district 2001

District	Total employment	Commuter inflows	%
Nottingham	172,300	93,300	54
Blaby	41,100	21,100	51
Oadby and Wigston	19,000	9,600	50
Broxtowe 3	5,300	16,100	46
Leicester 154	,700	66,500	43
Bolsover	21,800	9,300	43
Lincoln 4	7,300	20,200	43
Ashfield	44,600	18,600	42
Rushcliffe	35,900	14,600	41
Gedling	33,000	13,100	40
North West Leicestershire	45,000	17,000	38
Mansfield 3	6,500	13,500	37
Amber Valley	49,100	17,000	35
Wellingborough	33,400	11,500	35
Erewash	39,800	13,600	34

Source: Commuting Flows in the East Midlands, Experian, 2007

Table 9 shows the 15 districts with the highest levels of out-commuting, and the proportion of the resident population that this accounts for. None of the region's major urban areas appear in this list. However, nearly all of these districts border one of these urban areas. The relative scale of out-commuting is larger than the in-commuting reported in Table 8. The key points to note are:

- In Oadby & Wigston commuter outflows are equivalent to two thirds of the resident population of the district. This proportion is only slightly lower in Broxtowe, North East Derbyshire and Gedling. North East Derbyshire is notable as the only district in the table not to share a border with Nottingham, Leicester, Derby, Northampton and Lincoln. In Gedling, for example, around 70% of these outflows are people who travel to work in Nottingham; and

- Even at the lower end of this list, commute outflows are equivalent to around half of the total resident population.

Table 9: Out commuting by district 2001

District	Total residents	Commuter outflows	%
Oadby and Wigston	26,700	17,500	66
Broxtowe 51	,300	32,900	64
North East Derbyshire	44,500	28,500	64
Gedling	54,400	34,800	64
Blaby	47,100	29,100	62
Bolsover	29,400	18,100	62
South Derbyshire	40,000	24,400	61
Rushcliffe	52,100	31,500	60
South Northamptonshire	42,100	24,200	58
East Northamptonshire	38,400	20,000	52
Erewash	52,500	27,000	51
Harborough 39	,800	20,300	51
Ashfield	49,000	24,200	49
Daventry	36,900	17,600	48
West Lindsey	35,500	16,700	47

Source: Commuting Flows in the East Midlands, Experian, 2007.

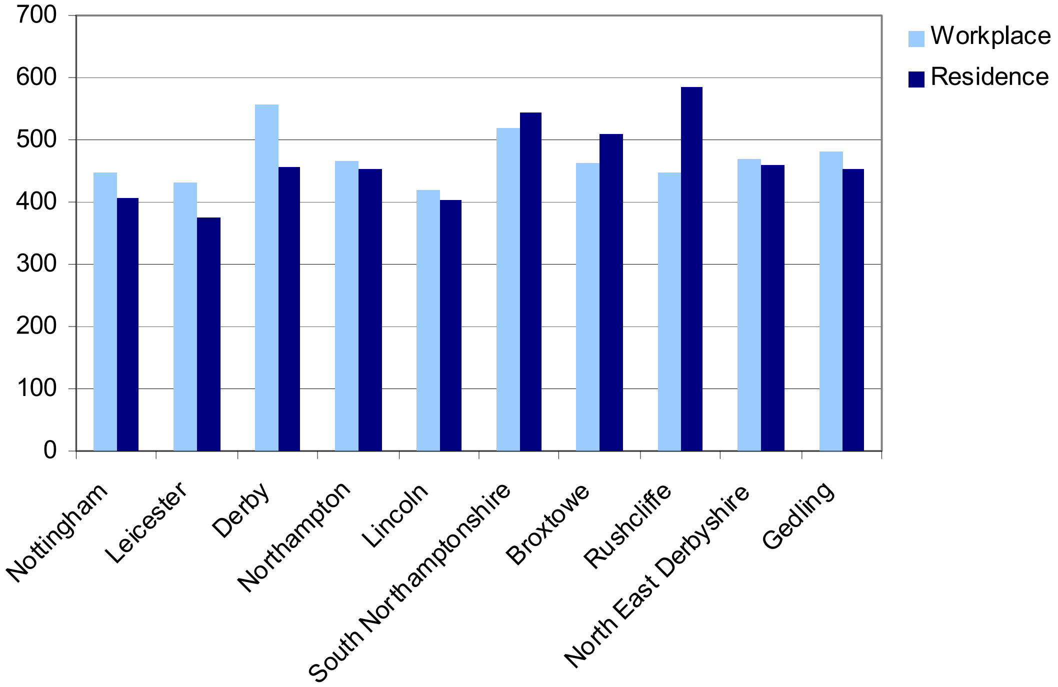
Tables 8 and 9 suggest that, while the scale of commuting is relatively large between the urban centres and surrounding areas, there is very little commuting between them. This reinforces the conclusion of the previous section that they are regional drivers of the economy. There are very few commuters between the three cities and Northampton, and between the three cities the largest flows are to be found between Derby and Nottingham. Around 2,400 commute from Derby to Nottingham and around 1,300 people travel in the opposite direction. Around 500 people travel in each direction between Nottingham and Leicester and the flows between Derby and Leicester are even smaller.

People commute for many reasons, based on decisions about where to live and work. These decisions about where to live and work are influenced by a number of factors.

Employment opportunities are the key driver of commuting activity. Those districts with the largest amounts of net in-commuting identified above are also those with the highest jobs density (number of jobs relative to the working age population). Conversely, those districts with the highest level of net out-commuting tend to have the lowest jobs densities. Future employment opportunities may either reinforce existing commuting patterns or create new patterns. Key commuting destinations such as Northampton, Milton Keynes and Peterborough are, despite the current recession, expected to grow rapidly as part of the Sustainable Communities Plan. On the other hand, new technologies might lead to increased home-working or other flexible working, which would create new commuting patterns.

In addition to the number of employment opportunities, it is also important to consider the quality of employment and the wages offered. People are more likely to commute if employment is available that pays a wage that is higher than what is available locally, and is sufficiently high to compensate for the costs of commuting. The available data offers some support to this. Workplace based earnings are generally higher than residence based earnings in the key commuting destinations such as the three cities and Northampton. In contrast residence based earnings tend to be higher than workplace based earnings in those areas where there is significant out-commuting such as South Northamptonshire, Rushcliffe and Broxtowe. This is shown in Chart 3, which highlights residence and workplace based earnings for those districts with the highest levels of net in and out-commuting.

Chart 3: Workplace and residence based earnings 2008 (£)



Source: Annual Survey of Hours and Earnings, 2008, NOMIS, 7th July 2009.

Population and household growth tends to be higher in those areas that border the key urban areas. For example there has been significant population growth around Northampton in South Northamptonshire and Daventry, and around Lincoln in North Kesteven (see Chapters 1 and 2 for more detail on these trends). Some of this is down to higher skilled and higher earning groups moving from the cities into rural areas, a process known as 'city flight'. Coombes et al (2007) found high levels of migration from Nottingham and Leicester into the surrounding rural areas. They suggest that people move because of the quality of life that is available, with access to leisure and recreational facilities increasingly available in rural areas.[9] These population trends are likely to continue, so that the pattern of commuting from rural areas into the regions larger urban centres will also continue.

Property prices and the housing stock are also key considerations in determining whether a person commutes. Data presented in Chapter 2 shows that housing affordability is most acute in the region's rural areas. The highest ratios of lower quartile house prices to lower quartile earnings are found in Rutland, Daventry, South Northamptonshire and Derbyshire Dales. These are all areas that are within commuting

[9] M Coombes, T Champion, T Brown and S Raybould, Centre for Urban and Regional Development Studies, University of Newcastle Upon Tyne, City Flight Migration Patterns in the East Midlands, 2007.

hotspots, either inside or outside the East Midlands. However, housing affordability is not as acute in the key commuting destinations. Some of the acute problems of affordability are also down to the type of housing that is available. In the cities there are relatively fewer detached houses and more flats and maisonettes. The availability of larger, detached homes is frequently a key influence on the location decisions of higher paid workers, and particularly those with families.

Transport infrastructure and public transport availability are other key determinants of the level of commuting. The Transport and Infrastructure chapter showed that relatively more people use the car to travel to work in the East Midlands, and that relatively more people spend more than an hour travelling to work. The large urban centres are more accessible, with a greater range of options than the more rural areas of the region. As noted above agglomeration diseconomies, such as the cost of congestion, can increase the costs of commuting.

The reasons for commuting set out in the previous paragraphs suggest that a general profile of commuters can be constructed. Data from the 2001 Census suggest that commuters have the following characteristics:

- Gender: commuters are more likely to be male. Around 60% of commuters in the region were male in 2001;

- Age: commuters are more likely to be aged over 30. Those aged over 30 accounted for around 75% of commuters in 2001;

- Occupation: commuters are more likely to be employed as managers and senior officials, in professional occupations and in associate professional and technical occupations. They are less likely to be employed in personal service occupations, elementary occupations and as process, plant and machine operatives;

- Qualifications: commuters are more likely than average to be qualified to NVQ Level 4 or above. They are less likely than average to have an NVQ Level 1 or no qualification; and

- Hours worked: commuters are much more likely to be in full-time employment, a requirement of the need to cover the costs of travel, than those who work part-time.

Key Points: Commuting patterns

- Levels of commuting are significant and have been rising during the last two decades.
- Cross regional border commuting is significant, reflecting the central location of the region. The largest flows are between the East Midlands and Yorkshire and the Humber, the West Midlands, the East of England and the South East.
- Sheffield, Peterborough, Milton Keynes and East Staffordshire are the key destinations and sources of cross regional commuting activity.
- Within the region net in-commuting is highest in Nottingham, Leicester, Derby, Northampton and Lincoln. Net out-commuting is highest from South Northamptonshire, Broxtowe, Rushcliffe, North East Derbyshire and Gedling. Out-commuting tends to be highest from those areas located near to the largest urban centres.
- Commuting flows between the large urban centres in the region are relatively small, with the most significant flows between Derby and Nottingham.
- People commute for many reasons including: employment, earnings, housing availability and affordability, and the availability of transport links.
- Commuters are more likely to be male, aged over 30, employed in higher level occupations and be highly qualified.

8.3.2 Patterns of retail and leisure activity

Information on patterns of retail and leisure activity is less comprehensive than that on commuting flows outlined in the previous section. However proprietary survey data from Experian does provide some coverage of these flows in the region.[10] It should be noted that this data does not include the impact of recent changes to the retail offer within the region such as the opening of the Westfield Centre in Derby. This data is based on two key questions:

- Where do you shop most often for non-food goods like clothes, shoes and jewellery? and
- Which town centre do you normally visit for a 'big night out' (visiting pubs, restaurants or clubs)?

For retail flows 30 catchments were analysed, based on the volume of responses to the survey. Of these nine are destinations outside the East Midlands but have catchments

[10] Experian's programme of regular lifestyle surveys includes the Where Britain Shops and Big Night Out surveys. This data is based on over 51,000 responses to the Where Britain Shops Survey in the East Midlands in 2004-2005 and 10,000 responses to the Big Night Out survey in the region in 2004.

that extend into the region. Table 10 shows that around 85% of shoppers stay within the region. As with data on commuting, the key flows outside of the region are for shoppers travelling to Yorkshire and the Humber (Sheffield), the East of England (Peterborough), the South East (Milton Keynes) and the West Midlands (Burton on Trent in the district of East Staffordshire). This is similar to the pattern of out-commuting identified above.

Table 10: Shopping destinations outside the East Midlands

Region	% of flows
East Midlands	85.6
Yorkshire and the Humber 5.4	
East of England	3.1
South East	2.2
West Midlands	2.2
North West	1.3
London 0	.1

Source: Retail and Leisure Flows in the East Midlands, Experian, 2007.
Note: figures may not add to 100 due to rounding.

Within the East Midlands the key retail destinations are shown in Table 11. As with cross border retail flows, these are very similar to the key commuter destinations outlined above. The most significant destinations within the region are Nottingham (14.0%) and Leicester (13.0%). It is also significant that Lincoln is ranked so highly as a shopping destination. This highlights the role that it has serving a wider hinterland in a less densely populated party of the region. The table also highlights a number of smaller centres that serve wider hinterlands, as discussed in section 2 of this chapter. These include Kettering, Skegness and Newark.

Table 11: Shopping destinations within the East Midlands

Destination	% of flows
Nottingham	14.0
Leicester	13.0
Lincoln 9.5	
Derby	9.2
Northampton	6.3
Chesterfield	5.6
Mansfield 4.2	
Boston 2.4	
Loughborough	2.2
Kettering	1.8
Skegness 1.3	
Newark	1.1
Worksop	1.0

Source: Retail and Leisure Flows in the East Midlands, Experian, 2007.

The largest retail catchments are to be found in the west of the region. They tend to exhibit significant interaction with each other and are influenced by the major transport infrastructure in that part of the region. On the other hand catchments in the east of the region tend to be smaller and are relatively more self-contained. Catchments are described in terms of primary catchments (which account for 50% of shoppers) and secondary catchments (which account for the next 30% of shoppers). After accounting for 80% of shoppers, catchment areas increase rapidly and become less relevant for retailers. The key catchments in the East Midlands can be described as follows:

- Nottingham's catchment reaches further to the east (as far as Grantham), than the west, as there is a degree of overlap to the west with the Derby catchment;

- Derby's catchment extends as far as Uttoxeter in the West Midlands, Matlock to the north and Coalville to the south. The M1 acts as a boundary to the east;

- Leicester's catchment extends further to the east than the west, again a result of the M1 acting as a barrier to the west of the city. To the north it overlaps with the Loughborough catchment and to the south extends to Hinckley, Lutterworth and Market Harborough;

- For the three cities the primary catchment closely matches the extent of the built up area;

- The Northampton catchment extends into Kettering and Wellingborough to the east and most of Daventry in the west; and

- Lincoln's catchment is relatively large compared to the other centres, partly a function of its greater isolation. The catchment extends further to the south than the north, a function of the A15.

There are some similarities between retail and leisure catchment areas. However, leisure catchment areas tend to be smaller as this activity is more localised in nature. As with retail flows there is some leakage out of the region, and this is shown in Table 12. Almost 91% of leisure trips are within the East Midlands. The next largest share is accounted for by Yorkshire and the Humber, and this is mostly trips to Sheffield.

Table 12: Leisure destinations outside the East Midlands

Region	% of flows
East Midlands	90.7
Yorkshire and the Humber	3.6
East of England	2.0
London 1	.1
West Midlands	1.1

Source: Retail and Leisure Flows in the East Midlands, Experian, 2007.

Table 13 shows the share of leisure trips accounted for by destinations within the East Midlands. The list of destinations is similar to that for retail trips but there are some differences. First, the share of trips into Nottingham and Leicester is greater for leisure than retail. Second, Derby accounts for a greater share of leisure than retail trips. Finally, Northampton and Lincoln account for fewer leisure than retail trips.

Table 13: Leisure destinations within the East Midlands

Destination	% of flows
Leicester	18.0
Nottingham	17.9
Derby	9.6
Lincoln 7.9	
Chesterfield	6.2
Northampton	5.2
Mansfield 5.1	
Boston 1.8	
Kettering	1.5
Stamford 1.4	
Grantham 1	.4
Loughborough	1.3
Skegness 1.2	
Newark	1.0

Source: Retail and Leisure Flows in the East Midlands, Experian, 2007.

Key Points: Patterns of retail and leisure activity

- As with commuting, key destinations for shoppers outside of the region are Yorkshire and the Humber (Sheffield), the East of England (Peterborough), the South East (Milton Keynes) and the West Midlands (Burton on Trent in East Staffordshire).

- Within the East Midlands key retail destinations are Nottingham, Leicester, Lincoln, Derby and Northampton. Centres such as Chesterfield, Buxton, Kettering and Skegness are significant sub-regional retail destinations.

- There are similarities between retail flows and leisure flows. However, leisure trips tend to be more localised with smaller catchments and less leakage outside the region.

- The large urban centres in the region account for a greater share of leisure trips than retail trips. However, there are still a number of significant sub-regional leisure destinations that include Chesterfield, Buxton, Kettering and Skegness.

8.4 Is the East Midlands a polycentric region?

The previous sections of this chapter have identified key centres of activity in the region and the flows between them. They suggest that there is a hierarchy of settlements in the region, with much of the region's economic activity concentrated in Derby, Leicester, Northampton and Nottingham, and more remote areas served by smaller secondary centres. This, and a descriptive analysis of key statistics, might suggest that the East Midlands is a polycentric region. This section assesses the influence of the large urban areas and discusses whether or not the East Midlands can be considered a polycentric region in functional terms.

Many regions in the UK can be considered to be monocentric in that they are dominated by a single urban centre (for example, Birmingham in the West Midlands). In their paper on city regions and polycentricity, Coombes et al (2005)[11] suggest a number of criteria that, if met, would indicate a functioning polycentric region:

- There are at least two principal centres of comparable significance;
- The centres are not part of the same built up area;
- The centres do not duplicate activity and functions; and
- There is substantial interaction between the centres, with a reasonably close balance between the flows in each direction.

The analysis of agglomeration economies set out in the first two sections of this chapter clearly highlighted Derby, Leicester, Northampton, Nottingham and, to a lesser extent, Lincoln as the key centres of economic activity in the region. However, the Demography chapter of The East Midlands in 2010 shows that, among these five key centres, Nottingham and Leicester are appreciably larger than the other three. The Economy and Productivity chapter highlights that the size of the business stock in Nottingham and Leicester is also greater than in Derby, Northampton or Lincoln.

Coombes et al (2005) present an alternative indicator of the urban hierarchy in the region, ranking cities on the basis of retail floorspace. On this ranking Nottingham lags behind the larger core cities of Birmingham and Manchester, but is comparable with Sheffield.

Within the East Midlands, Leicester is more comparable with Nottingham, both being significantly larger than Derby. On this measure of floorspace Derby is more comparable with Northampton and Lincoln, despite the much smaller population in Lincoln. It should be noted that these figures pre-date the opening of the Westfield Centre in Derby. Peterborough and Milton Keynes, which have been highlighted as larger centres outside the region that exert significant influence in the region, are of comparable size to these centres. On this basis, it appears that Nottingham and Leicester fulfil the first of the criteria set out above.

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[11] M Coombes, D Charles, S Raybould and C Wymer, Newcastle University, *City* Regions and Polycentrictiy: the East Midlands Urban Network, 2005.

The second criterion is clearly met in that Leicester, Nottingham and Northampton are distinct urban areas. However, this is not so clear cut when examining Nottingham and Derby. The built up area of Derby extends eastwards into Erewash, while the built up area of Nottingham extends westwards into Broxtowe and Erewash.

Using commuting data to construct areas of self-containment Coombes et al (2005)[12] make the point that "there is no simple answer in terms of a best map". Looking at large labour market areas, defined as areas that are 85% self-contained (85% of people live and work in these areas) they find that Derby is not combined with Nottingham but is part of a larger area that includes Sheffield.

However, different places fulfil different labour market roles. A second analysis[13] examining areas of self-containment (using the 85% definition) based on commuting flows of professional and managerial workers, suggests a different pattern for Derby. In this analysis Derby is grouped with Nottingham rather than Sheffield.

These two analyses of self-containment suggest that Northampton, Lincoln and Leicester stand alone, dominating large hinterlands. This suggests that, for these areas, the third criterion set out above, that there be no duplication of activity or function, does not hold because each offers services locally that would be available in the other settlements (e.g. a retail offer). The relationship between Derby and Nottingham is more complex, with some suggestion that Nottingham provides labour market opportunities to Derby (as noted above Derby is part of Nottingham's catchment for professional and managerial workers), and that an assessment of the third criterion is not so clear cut in this case.

The previous section highlighted patterns of commuting within and without the East Midlands. The analysis of flows between the large urban centres in the region suggested that they were relatively small, with very little commuting between Nottingham and Leicester. There are larger flows between Nottingham and Derby but flows from Derby into Nottingham are almost twice as large as those in the other direction. Coombes et al (2005)[14] suggest that this does not provide evidence either for or against a polycentric interpretation of the region's structure.

Coombes et al (2005)[15] conclude that the East Midlands can not be considered as a single polycentric region as all four of the criteria that they use are not clearly met, particularly in terms of the duplication of activity and function across a number of centres. The region is not strongly integrated internally, and there are many areas that have greater links with larger centres outside the region. They note that the region is likely to become even less integrated as development in the Milton Keynes South Midlands growth area will further increase the orientation of Northamptonshire to the South East and London.

While they conclude that the region is not polycentric, they do suggest that polycentricity may be a feature of areas within the East Midlands. They highlight the eastern half of

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[12] Ibid, 11.
[13] Idid, 11.
[14] M Coombes, D Charles, S Raybould and C Wymer, Newcastle University, City Regions and Polycentrictiy: the East Midlands Urban Network, 2005.
[15] Ibid, 11.

Northamptonshire as being the most plausible case. This is based on their assessment of the roles of Wellingborough and Kettering, which were also identified by Atherton and Price, and described in the second section of this chapter. They are more cautious in their assessment of the three cities, arguing that Leicester clearly stands alone as a separate sub-region. As far as the relationship between Derby and Nottingham goes, they suggest that in the future, as Nottingham develops further, greater integration may occur and a polycentric sub-region develop, especially if Nottingham's position in the labour market (with its clear comparative advantage in higher level occupations) is consolidated. This assessment of the functionality of the three cities does not negate the policy of those authorities who wish to work together to achieve shared objectives.

Key Points: Is the East Midlands a polycentric region?

- A number of criteria exist that may be indicative of whether a region is polycentric or not. Coombes et al (2005) identify four criteria and argue that they are not clearly met in the case of the East Midlands. On this basis they argue that the East Midlands is not a polycentric region but suggest that polycentricity may be a feature at sub-regional level.
- Within the East Midlands, Nottingham and Leicester have comparable status, both being larger than Derby.
- Derby is more comparable to Northampton and Lincoln.
- Leicester, Northampton and Lincoln stand alone as distinct centres but the relationship between Nottingham and Derby is more complex.

8.5 Conclusions

This chapter has shown that the East Midlands has a complex structure, with no single dominant centre (as in Birmingham in the West Midlands for example). Agglomeration economies occur when there are significant concentrations of businesses and people. They tend to be self-reinforcing as dense areas of economic activity attract yet more businesses and people. This suggests that, over time, economic activity will be concentrated in urban areas. This is often supported by the planning system, which focuses on development of brownfield urban sites before encouraging more peripheral development. However, there are limits to the extent to which this can take place as costs such as congestion and increased land values can drive activity elsewhere.

In their work on large urban settlements in the East Midlands, Atherton and Johnston (2006)[16] suggest that there are a small number of settlements that can be categorised as regional agglomerations. These are Derby, Leicester, Northampton and Nottingham. However, agglomeration economies, and the benefits they bring, can also occur on a smaller scale. An example of this is Lincoln which serves a large rural hinterland.

In a subsequent piece of work Atherton and Price (2009)[17] looked at a number of smaller 'secondary' centres in the East Midlands and examined the role that they play. They found that there are a number of these settlements that act in a similar way to the larger urban areas, providing a service centre function to often large rural hinterlands. These settlements include Chesterfield, Buxton, Market Harborough, Grantham, Wellingborough and Newark. An implication of this finding is that these centres need to develop in an appropriate way, so that they can continue to fulfil this function.

The fact that there are a number of large and small service centres in the East Midlands that draw in people from large hinterlands suggest that commuting and other travel flows are significant and this is borne out in the data. Analysis of commuting flows suggests that commuting flows are significant, both within and without the region. There are significant flows between the East Midlands and Yorkshire and the Humber (Sheffield), the West Midlands (East Staffordshire), the East of England (Peterborough) and the South East (Milton Keynes). This means that the impact of economic development and other interventions will flow across regional borders.

Within the East Midlands, commuting flows are greatest into the larger urban areas, and Nottingham and Leicester in particular. The other side of the coin is that outflows are greatest from those districts that are close to the large cities (for example Broxtowe, Rushcliffe or South Northamptonshire). Those districts have also experienced significant population growth, partly as a result of 'city flight' migration trends.

The data shows that commuting has increased since 1991, with more people travelling further to work. Commuters tend to be more highly skilled and highly paid. This group of workers are likely to be part of a labour market that is regional or even national. As the workforce grows and becomes more highly skilled, commuting is likely to increase.

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[16] A Atherton and A Johnston, University of Lincoln, Mapping the Structure of Regional Economies, 2006.
[17] A Atherton and L Price, University of Lincoln, Secondary Centres of Economic Activity in the East Midlands, 2009.

Although a number of key centres have been identified in the region, and descriptive analysis of data might suggest it, there is little evidence that the region can be considered to be polycentric in strict functional forms. Coombes et al (2005) identify four criteria that define polycentric regions and argue that two of these are not met in the East Midlands. However, they suggest that polycentricity may be a feature of areas within the East Midlands.

The available data on business stock, population and commuting suggest that Nottingham and Leicester stand alone as regional centres, with little interaction between them (for example commuting flows between these two cities are extremely small). Northampton also stands somewhat apart from the rest of the region and this is likely to become even more pronounced in the future as a result of greater linkages with the South East through the Milton Keynes South Midlands growth area.

The most complex relationship among the region's major centres is between Nottingham and Derby. Nottingham attracts twice as many commuters from Derby as it sends. In many ways Derby is closely linked to the South Yorkshire conurbation but in terms of a market for highly skilled workers it is part of the same labour market as Nottingham. As Nottingham is the larger centre and develops further its existing position may be consolidated.