THE USE OF GIS AND DOCUMENTARY SOURCES TO MAP, ANALYSE AND UNDERSTAND URBAN AND INDUSTRIAL CHANGE IN 19TH CENTURY DUDLEY

By

ELEANOR JANE RAMSEY

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Institute of Archaeology and Antiquity
College of Arts and Law
University of Birmingham
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ABSTRACT

The 19th century was a time of intense change in Britain, especially in terms of booming population, and industrial output. The urban landscape of the country was particularly affected and Dudley, in the heart of the Black Country, is a good example of an industrial town that underwent severe transformation during this dramatic period.

Due to its urban nature archaeology of this period, however, is a finite and ever decreasing resource. This research aims to utilise documentary sources to enhance our understanding of the changes to the urban and industrial environment, and to fill in gaps in our knowledge of its nature and distribution. This was achieved by identifying appropriate censuses and trade directories, transforming them into a digital resource, identifying the spatial component of the data (streets and suburbs), generating a series of attributes regarding buildings, population and trades, and mapping them in a GIS project.

The research demonstrates that the changes that occurred within the urbanised area of Dudley involved both outward growth and change in character to established streets within the town itself. The research also generated a GIS project for dissemination, to aid in future research of the area and this period.

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1.0 INTRODUCTION

This research focuses on the use of GIS and documentary sources to map, analyse and understand urban and industrial change in 19th century Dudley, an area that saw considerable change throughout this important and dynamic period in history.

Dudley is a town situated in the heart of the Black Country (Figure 1.1). For the purposes of the research, its boundaries were defined by addresses in the census returns and trade directories that had been recorded as Dudley, rather than any official boundary (Figure 1.2). Both streets and suburbs were included in the research (Figure 1.3). While historic mapping can be used to illustrate the origin and growth of the town, the current project seeks to use documentary sources to enhance the understanding of the evolution of the industrial and urban landscape. In 'Recycled Landscape: The Legacy of 250 Years in the Black Country' Paul Quigley suggests that "*the term 'Black Country' describes not only a geographic feature but also a period in history. This period is, in broad terms, the phase before the late 19th century*" (Quigley 2010, p 11). However, as the landscape continued to evolve after this period, much of the original landscape is lost to us now. It is, however, possible to use documentary sources to enhance our understanding of the landscape, interpret the changes that were occurring, and aid in the reconstruction of the history of this significant period.

Dudley was chosen to study for a number of reasons. While the town has a unique and important history of its own dating back to the medieval period, it is also quite typical in many ways of all the industrial towns in the 19th century Black Country as a whole. This means that any successful methodologies developed could theoretically be applied to towns elsewhere in the region, and indeed other industrial areas within Britain as a whole. The size

of Dudley was also an important factor. Due to the nature of the research, a town or area was needed that was geographically its own place during the 19th century, which was substantial enough for the trade directories and census to list people by street (as opposed to smaller towns and areas which only listed by area), and not so large (such as Wolverhampton or Birmingham) as to make it impossible to input all the data.

While many documentary sources are available, the census and trade directories were used to gather data about population and industry. Historic mapping was used as a backdrop for the study, which shows, with provisos, that there is value in using documentary sources for urban landscape reconstruction. The bias in the sources such as the trade directories not providing a full list of trades and industries, and the fact that the census, by definition, only records population and therefore cannot be used to reconstruct much of the extractive and agricultural landscape, needs to be taken into consideration.

However, the research can clearly demonstrate that this data, when mapped in GIS can show in much more detail for certain areas, the evolution of the industrial and urban landscape of Dudley in the 19th century.

Figure 1.1 – Location map

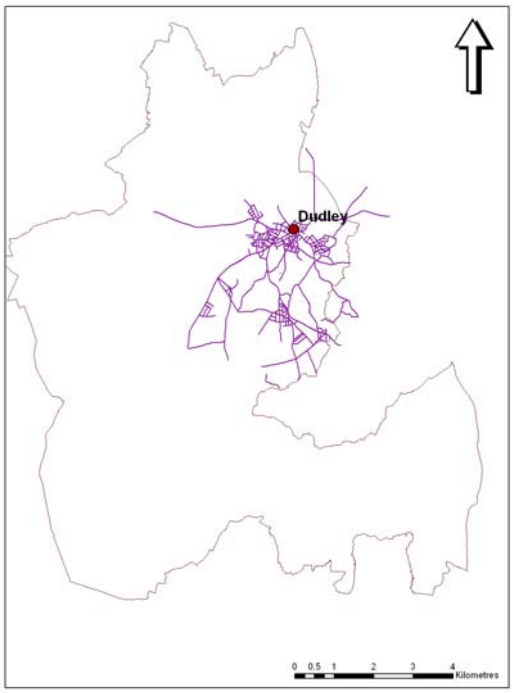


Figure 1.2 – Dudley Metropolitan Borough boundary, with streets included in the GIS

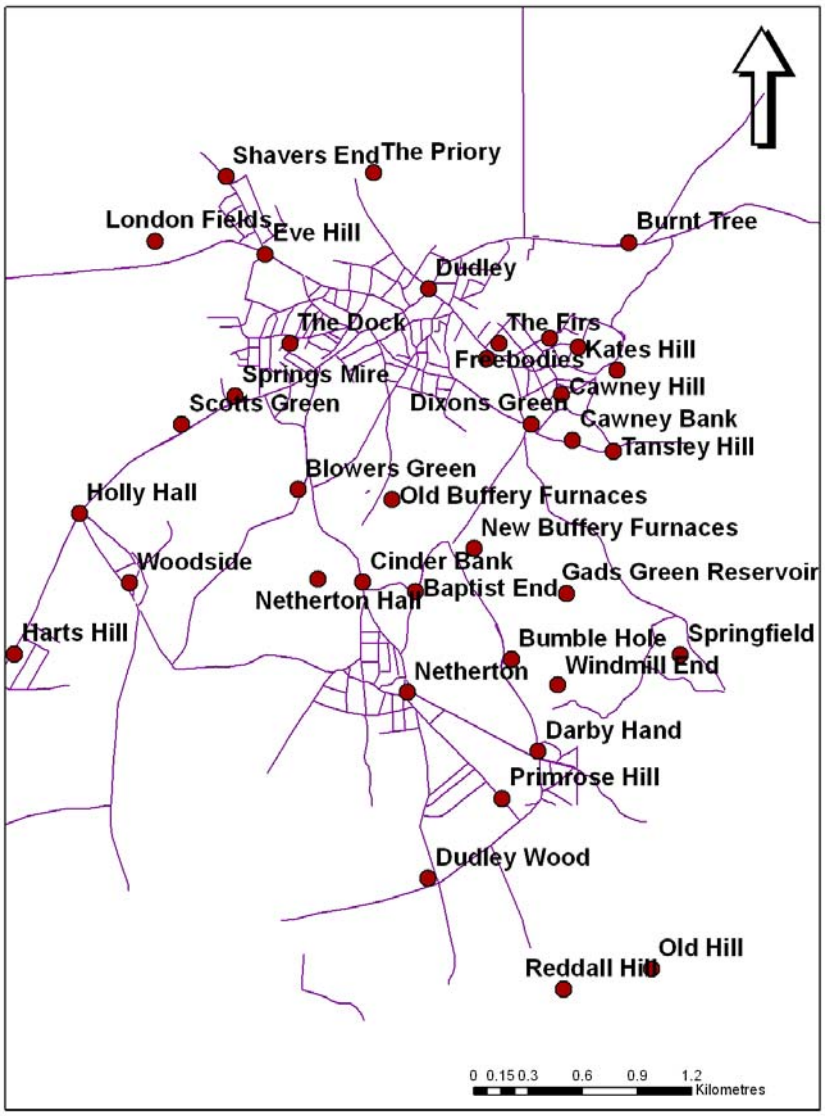


Figure 1.3 - Streets and Suburbs

1.1 Background

1.1.1 The history of Dudley

Although the modern town of Dudley originated as a planned medieval settlement, there is a certain amount of evidence to suggest that there was an Anglo-Saxon settlement that preceded the later town. Place name evidence suggests that the name Dudley itself refers to a personal name '*Dudda*' and the term *'leah'* that refers to a woodland clearing or estate (DMBC 2004, 14).

The 17th century saw dramatic change in the town, though the main streets and side streets probably changed little during this period. As well as building along the main thoroughfares, settlements were established at Eve Hill, Town End, Wadams Hall and Dixons Green (Roper 1965, 15). A good deal of enclosure had taken place around the town by c1660 and this continued. Views of the town at the time are of a number of handsome town houses, and new buildings were likely to have been in stone as much as timber, and there is less evidence for building of brick (Roper 1965, 16).

Of the industry in the town, nailmaking remained dominant, having been well established in the previous century, and there is documentary evidence of the prevalence of mining, though little is known of this industry (Roper 1965, 13). The introduction of the blast furnace into the West Midlands in the 16th century was responsible for dramatic changes in the iron trade, though as these were largely dependent on water for power, they were not common in Dudley itself. Pig iron, however, was more common in the area, needing charcoal (Roper 1965, 12).

Further changes occurred in the 18th century, with a growth in population and diversification of industries, with Dudley growing into an important commercial centre. The exploitation of local natural resources continued to occur and much of the housing stock was rebuilt in brick (Roper 1968, 6).

Pearson and Rollason's directory of 1781 gives an overview of the occupations and industries of the inhabitants of the town, butchers, grocers, chandlers, curriers, maltsters, cordwainers and mercers predominate, though ironmongers, whitesmiths, lock manufacturers and glassmakers, as well as professions including attorneys and surgeons are also listed. Trades were concentrated in the High Street and Market Place (Davies and Hyde 1970, 3) though names also appear under Hampton Street (?Wolverhampton Street), New Street and Hall Street. A number of industries dominated the town, including limestone working, basalt quarrying, mining, iron production, nail making, anvil and vice manufacture, fender fireiron and bedstead manufacture and glass making (Tyler and Ramsey 2008).

However, even until the later years of the 18th century, the town remained relatively small and well defined, maintaining a local significance as a market centre. Courts map of 1785 gives some indication of the extent of the developed area, though there is likely to have been some small-scale industrial activity in 'Church Field', south of King Street (ibid.).

An improvement Act of 1791 notes that Dudley at this time did not have paved lighted or watched streets, that there were other obstructions and nuisances, and that there was no proper water supply (Roper 1968, 22). Attempts were made to improve these situations, and

Dudley gained a system of street public lighting, street signs and house numbers, and an early attempt to provide a town water supply was made (Roper 1968, 25). However, these were not enough to prevent the town from suffering dramatically as a result of unsanitary conditions and over crowding, which resulted in the devastation of typhus and cholera epidemics in the early 19th century (DMBC 2004, 32).

It was in the early 19th century when the town witnessed an unprecedented increase in both the population and the industrial output of the town, with the population growing over 400 percent in just over half a century, from 10,000 in 1801 to 45000 in 1861 (Davis and Hyde 1970, 19). This makes it one of the most exciting landscapes and periods to study, as these dramatic changes were important on a local, national, and international level. As well as redevelopment within the town core the urban area spread outwards. In particular, to the south of King Street the informal industrial area solidified into an intensively developed mixture of brick terraces and courts of housing, mixed with light industries producing a wide range of metal items. Development was undertaken without regulation or plan and the building stock often had no adequate sanitation, drainage or water supply. Davies and Hyde quote The Inspector of Health, Mr. William Lee, who reported in 1852 that;

'In many parts of Dudley the houses may be seen grouped together regardless of plan, almost all available space being covered either by the dwellings themselves or by blocks and rows of nail shops, in such a manner as to render proper ventilation impossible. The majority of the yards are dirty, neglected and unpaved,'

Such overcrowding and unsanitary conditions provided ideal breeding grounds for disease, and cholera and typhus were rife. Lee concluded that;

'In no other part of England and Wales is the work of human extermination effected in so short a time as in the area surrounding Dudley... So far as the duration of life, therefore, is concerned, Dudley is the most unhealthy place in the country' (Quoted in Davies and Hyde 1970, 23).

From the 19th century onwards, the historic mapping illustrates in some detail the urban development of the town. By the time of the Ordnance Survey 1st Edition both expansion and intensification had occurred. Within the town core, however, the long curving burgage plot boundaries continued to be respected by later development. The industrial suburbs had also continued to develop and expand, and by the end of the 19th century had joined with the town itself (DBMC 2004, 34).

1.2.2 History and evaluation of the sources

Trade Directories

The origins of both Trade Directories and the Census lie in the preceding centuries, though it is in the 19th century that they came into their own. The earliest Trade Directories were published at the end of the 17th century, though they gained popularity and became more widespread in the 18th century. They evolved in tandem with the growth of trade and commerce, originally enumerating the merchants and traders in London, with James Sketchley's Birmingham directory being the first provincial directory published. By the end of the 18th century directories covered both towns and counties, and from this period 67 survive (Shaw 1982).

The directories developed and grew in number during the 19th century, and evolved into what are known as General Trade Directories, of which around 8000 survive. While the earlier directories merely listed traders and their addresses (though some listed by name), additional information was included in later directories such as classified lists and additional information about postal systems, municipal buildings, lists of private residents and the history and topography of towns and regions included in the publication. Additional information also included transport information, and many directories published maps and advertisements (ibid.). Publishing Trade Directories was a commercial concern, which in some ways strengthens their viability as a resource, and in some ways introduces bias in what was recorded. Many of the early Trade Directories were associated with registry offices, and later the Post Office, with the employees of these establishments sidelining in directory publishing (ibid.).

Trade Directories have been used by both local historians and historic geographers in many different types of research, with assessments, bibliographies and research papers published. In many instances, the data from the trade directories was combined or compared with other sources such as the Census enumeration books, or rate books (such as Lewis and Lloyd-Jones 1987; Wilde 1976; Page 1974; Crompton 1998; Raven 2001). However, while earlier assessments identified potential areas of bias or inaccuracy, comparison with other data sources is problematic in itself. Essentially, the trade directory lists the business address of employers, whereas the census lists the residential address of employees. For smaller trades and industries that operate out of the place of residence, there should, theoretically, be concordance, however studies have shown that smaller, locally based industries are under represented (Duggan 1975). Studies that have compared the two sources have a tendency to conclude that the trade directories are unreliable comparing matched entries between the two, however it should be taken into consideration that they are actually two

entirely disparate datasets. More recent research has focused on ensuring inter-compatibility of directories by concentrating the data collection on established regional directories for instance, and uses other sources of data as additional information rather than a comparison (Raven 1997).

The trade directories, perhaps naturally, do not record the employment/profession of every individual, instead only recording those that have a certain level of 'importance'. As such, previous assessments that compare number of entries between trade directories and census data have concluded that there are significant omissions from the trade directories. The trade directories were a commercial venture, and the aim of the trade directory was not to produce comprehensive and systematic lists of the employment/professions for all individuals. Indeed, it would not be commercially viable to do so, or desirable. It is for this reason that Raven suggests that Trade Directories may be more accurate than the census (Raven 1997). It has also been pointed out that a persons 'importance' and probability of being included in the trade directory was as dependent on where in the town that person was based as to what the profession that person was engaged in. Again, with comparison with census data, some trades are recorded far more comprehensively than others, and areas central to the town are recorded more comprehensively than side streets and suburbs (Page 1974). The trade directories, therefore, cannot be viewed as a comprehensive dataset showing the distribution of all occupations.

It should be noted that alternative datasets concerning the trades and industries of towns and regions are essentially unavailable. Despite requirements for the census enumerators to note whether an individual employed others, and the numbers, this requirement was only fulfilled on a piecemeal basis (Crompton 1998). Similarly, the recording of an individual's

profession was also less than accurate on the census. The rate books as well, only focus on particular types of data, and for properties over a certain value, leaving working class areas systematically under-represented in these records (Raven 1997).

As such, the information in trade directories, despite inherent bias and inaccuracies, has great strength and value when researching subjects such as industry, trade and retail, but it should be accepted, does not have the same value when researching socio-demographic subjects. In particular, Gareth Shaw has published many papers concerning trade directories including a series of papers in Local History, The Local Historian and The Urban History Yearbook (Shaw 1978, Shaw 1984, Shaw 1994, Shaw and Coles 1994, Shaw and Alexander 1994), covering elements of the history, typology, contents, spatial and temporal coverage, reliability and use of Trade Directories, and in 1982 he published 'British Directories as Sources in Historical Geography' in the Historical Geography Research Series (Shaw 1982).

The Census

In contrast to the records created in the Trade Directories, created as a commercial venture and inclusion of which was of direct benefit to an individual, there was notable opposition to the idea of a national population census. The Vision of Britain Through Time website has the following quote from Mr Thornton in 1753, member for the City of York who did not believe;

'that there was any set of men, or, indeed, any individual of the human species so presumptuous and so abandoned as to make the proposal we have just heard… I hold this project to be totally subversive of the last remains of English liberty…. The new Bill will direct the imposition of new taxes, and indeed, the addition of a very few words will make it the

most effectual engine of rapacity and oppression that was ever used against an injured people… Moreover, an annual register of our people will acquaint our enemies abroad with our weakness'.

http://www.visionofbritain.org.uk/text/chap_page.jsp?t_id=Cen_Guide&c_id=2

One of the main arguments was that it would record and broadcast the countries weaknesses, especially the capacity to mobilise adequate military forces, though this concern eventually gave way to the greater fear that the population was increasing more rapidly than the means of subsistence. However, the original bill was supported by the Government, and after the Population Act of 1800 was passed that the first national population census was conducted. This was in 1801, followed by others at regular intervals of 10 years (ibid.).

The objectives of the census were to accurately record data on persons, houses and occupations, and to compare the increase or decrease of these data with subsequent years. Several questions were asked, with the responsibility for obtaining the answers divided between 'The Overseer of the Poor or Other Substantial Householder' and the rector, vicar, curate, or other ministry of a particular area (ibid.).

Although changes were implemented for the 1811, 1821 and 1831 censuses, the methodology was essentially the same. Large scale methodological change occurred after 1840, when the responsibility for the census was given to the Registrar General. The method first devised for the 1841 census has not been substantially altered since (ibid.).

In order to ensure accuracy of the data collected, avoiding omissions or double counting, it was decided that the census should be conducted at the same time, everywhere, and preferably within a timescale of one day. The registration districts identified for the earlier censuses were subdivided into Enumeration Districts, and were limited in size by the number of houses they contained, or the distance between them in sparsely populated areas. 35,000 enumerators were required to cover the whole of England and Wales. The schedules were delivered to every householder a few days before the appointed day, ordering them to complete the forms with financial penalties for non-compliance. The complete form recorded who was sleeping in the house on the night of the census, and were collected the day after, after which the enumerator transferred the answers to their own schedule (ibid.).

As well as these changes to the methodology, more extensive information was recorded, this time at an individual level. The data was then collected centrally, and published in 3 volumes. However, despite the intention to ensure uniformity and conformity in the data, it was still not always possible. In particular, problems recording the number of households in each building and who exactly was the head of house, were not well resolved. This mainly was because of the inherently complex nature of living arrangements, and very few instances actually being as simple as one family, one head of household, one building etc (ibid.).

The recording of occupations, too, was less than standard. Firstly, as there was no need to categorise the occupations, anything could be written down, and even the same occupation could be recorded in a number of ways with individuals with multiple occupations or skills being invariably more complicated. Secondly, the occupations of individuals were recorded

(as they themselves saw it) even if they were unemployed, doing something else or retired, so it is not necessarily a record of the current employment of the person (Raven 1997).

Historic Mapping

The base mapping used was the Ordnance Survey 1st Edition 1:2500 edition (Figure 1.4), which was downloaded pre-rectified from Edina Digimap. This map series was considered the most appropriate to use as base mapping, despite it being later than the period under investigation due primarily to its accuracy and the fact that it was already rectified. This allowed the rectification of earlier maps in relation to this map.

A series of earlier historic maps were then also imported into the GIS and rectified. The earliest map was from 1776. This map only shows Dudley as an empty block, although it does show the field systems around the town during the 18th century, the pattern of which had significant influence on the development of the later town (Figure 1.5). The next two maps are of a similar date, Treasure's map of 1835 (Figure 1.6) and an anonymous map of 1836 (Figure 1.7). The former is quite stylised, but does name many of the streets within the town centre, which was useful in tracking street name changes. The latter map covered a wider area, and while streets are not named as consistently as on Treasures map, it does annotate many of the suburbs and areas that ringed the town. This map was particularly useful for this reason, as these suburbs and areas changed names and merged with each other, and some names and areas were not mentioned in any other sources. Richards map of 1865 was also rectified, and again, useful in tracking street names and illustrating the expansion of the town (Figure 1.8).

Ordnance Survey 1st Edition

Figure 1.4: Ordnance Survey 1st Edition

Figure 1.5: Courts map of Dudley 1785

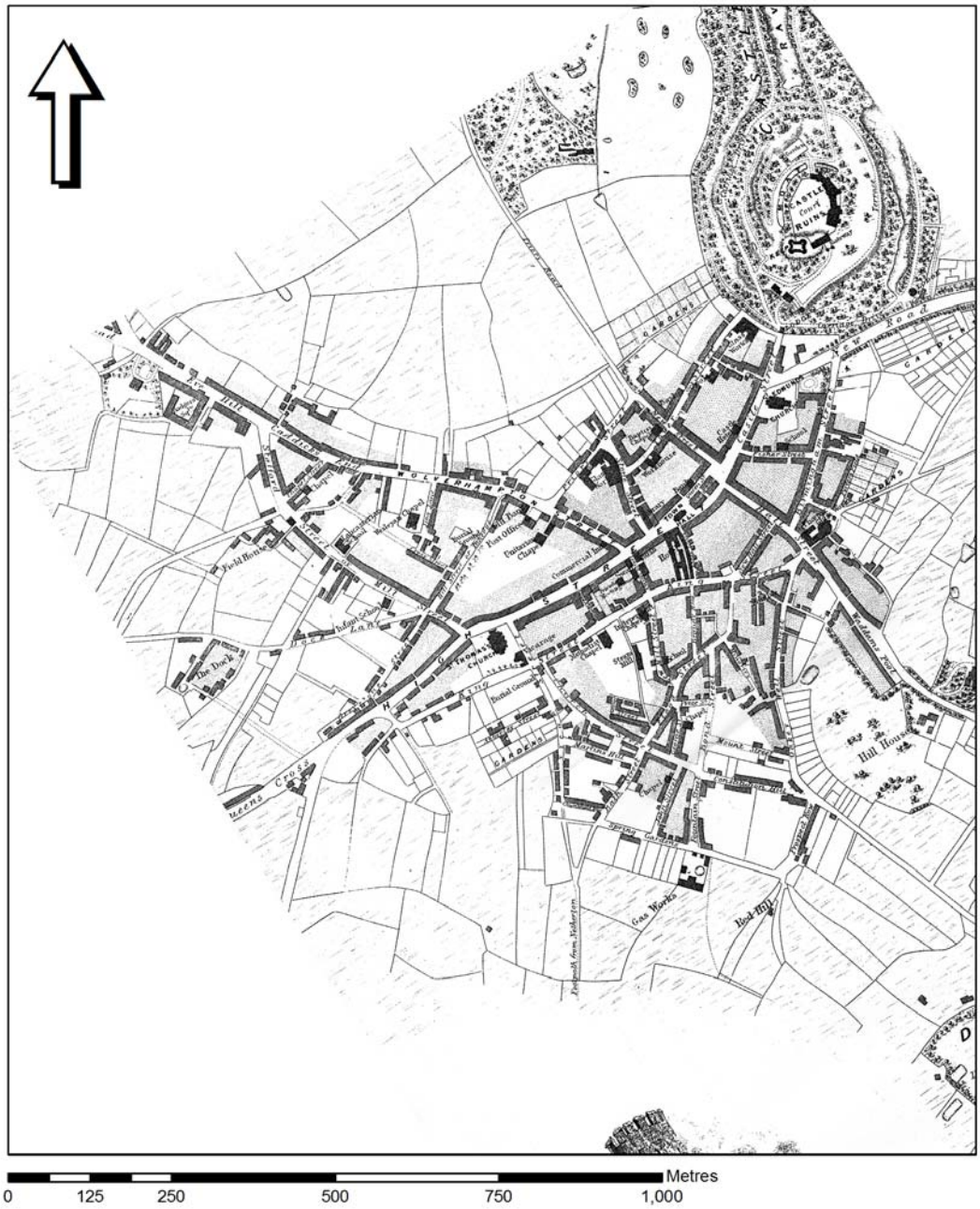


Figure 1.6: Treasures map of Dudley 1835

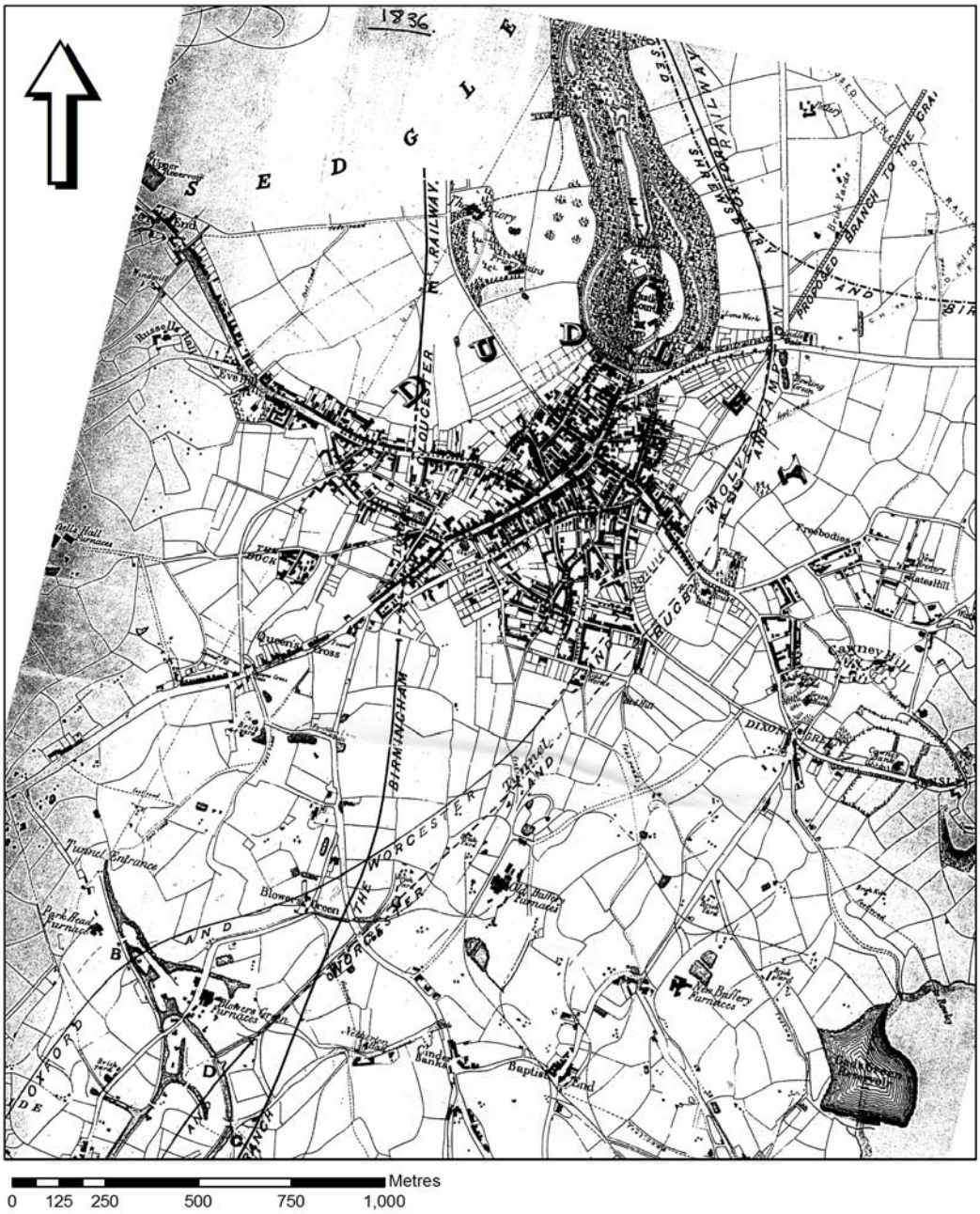


Figure 1.7: Map of Dudley 1836

Figure 1.8: Richards map of Dudley 1865

1.2.3 Significance of the research

The 19th century was a time of enormous change, both physically and socially, and especially within industrial and urban areas. It has long been identified that the archaeological remains of this period are vulnerable, especially in urban areas due to redevelopment. They are, however, a fragile and finite archaeological resource, representing a period of dramatic change, and while the relative importance of individual sites is perhaps only of local or national importance, the period and place of the Black Country as a whole during this period, is of international importance. The significance of the remains of this defining period is increasingly acknowledged.

While documentation of this period is quite extensive, both through records and maps, the majority of previous research using these resources is directed at individual people or individual industries. Likewise, while the use of GIS in historical and archaeological research is now well founded, most recent or current studies use larger areas and summarise data at a scale too great to be of use for detailed analysis of smaller areas.

The use of GIS in heritage management is ever increasing, with several initiatives such as Historic landscape characterisation, National mapping program, and HERs and SMRs helping those in the industry to protect and research the archaeological and historical resource. The HERs are based on recording and identifying the value of a particular asset, while HLCs aim to generate a valueless assessment of the landscape as a whole. The attractiveness of GIS, is understandable, as is the desire to create ever larger and more complex datasets. This current research explores the potential for documentary sources to be utilised as part of a

wider data gathering initiative, both in its own right, and to see how it can be integrated into a wider framework of GIS based heritage data.

While the Regional Research Framework for the West Midlands (http://www.arch-ant.bham.ac.uk/research/fieldwork_research_themes/projects/wmrrfa/sem7.htm) is unfortunately yet to be published, and the papers within the later Post-medieval period seminar for the Black Country, Staffordshire and Industry have yet to be written, the aims of the seminar itself highlighted several aims for the research framework in the region during this period. As well as general overall aims, there were some period specific aims that were considered, several of which can be related to the current research.

Aim (i) of the seminar noted the abundance of documentary evidence for the period, and suggested it was necessary to consider how best this material can be used to enhance the archaeological record, and vice versa, additionally noting whether resources are best devoted to excavating sites which are well documented. The current research addresses this issue directly with respect to some of these documented sources, and will go some way to answering this question.

Other points of particular interest included the response to the opening up of overseas markets, the impact of the transport revolution, the effect of technical developments in a range of regional industries and the continuity and survival of domestic industries and small urban workshops, the people and the impact of industrial development on them and their communities, urban growth including the systematic laying out of terraced housing, and the effect of greater availability and consumption of material goods has on post-1750 artefact assemblages. Whilst the current research does not focus on these topics, the nature of the

data collected, so long as it is disseminated fully, could in many ways be used in future research regarding these questions.

Another relevant aim noted by the West Midlands Regional Research Framework seminar was that of the importance of addressing both change and continuity. It notes that the period sees greater social, industrial and landscape change than ever before, but highlights the importance of recognising evidence for continuity and to appreciate the need to also study the mundane. By researching the presence of, nature of and strength of change within the study area, it will also be possible to identify continuity throughout the period.

Previous research using Trade Directories and GIS has proven its value in analysing spatial and temporal changes within industries. Raven and Hooley (2005) for instance conducted extensive research looking at urban and industrial change for towns in the Midlands, which included the relative distributions of industries, growth of industries over time and increase of specialisations within the towns (Raven and Hooley 2005). Knowles and Healey (2006) used industry specific trade directories along with approximately 50 other sources to create a comprehensive GIS project involving mapping sites associated with the iron industry. In the case of the research by Raven and Hooley (and with much other research that uses trade directories), the data was aggregated at a 'town' level, and it is hoped that the current research can complement this by developing a methodology that utilises the spatial component of the trade directory data at a finer 'street' level. Likewise, while trade directories and GIS in mapping the distribution and change of specific industries has been successfully used (Knowles and Healey), it was hoped that by creating a comprehensive, rather than selective, database for all industries, individual industries can be analysed in context.

1.3 Aim

The aim of the research was to conduct a spatial analysis of Dudley using GIS and documentary sources to fill in gaps in our understanding of urban and industrial change within the area during the mid-19th century. The period is known to be one of dynamic change, especially within urban areas. The map sequence for Dudley shows this change in terms of outward growth, however, changes within the already built environment are less visible from the mapping sequence. It should be noted, however, that by using roads as the spatial component, only a part of the overall industrial landscape is analysed.

Previous research and data sources are available to researchers, the most obvious of which are the HER, the BCHLC (Quigley 2009), the map sequence, and reports and research conducted on specific areas, sites, or buildings in advance of construction work. The research aims not only to fill in gaps in our understanding of change, but to create and disseminate a dataset that can be used for future research, on a site specific, industry specific and landscape scale.

The question of how the landscape has changed during this period can be addressed in part by analysing the BCHLC and the map sequence, however there are gaps in this understanding in both datasets. The map sequence amply demonstrates change in terms of outward growth, however, the stylistic approach to illustrating buildings in some maps makes identifying changes in detail problematic. Ropers map from the 1850s is detailed and accurate enough to be compared with the Ordnance Survey 1st edition of the 1890s but there is a large amount of change that occurred between the two dates, Ropers map is limited in its coverage, and while good for comparing smaller areas against each other, identifying and quantifying broader areas of change is difficult. Digitising the buildings visible

on both maps might be worth doing later, especially to assess the veracity of the results produced by the current research.

The BCHLC is another comprehensive, valueless map, which can and has been used to identify areas of changes in landuse. However, the nature of this dataset means that blocks of land have been identified, and detailed information regarding each block is sometimes lacking.

The current research aims to use documentary sources to identify changes in elements of the landscape that are not identifiable from the map sequence or BCHLC, in order to produce a series of maps showing changes on a broader scale, but also more detailed changes which can be analysed in context.

There are several elements lacking on the currently available datasets. For instance, smaller industry and other professions such as dealing do not show on the mapping, and while it might be noted that an area has small scale industry within it, the precise nature of this industry can only be gained from the documentary sources. There are also changes in the built environment between years not covered by the mapping, which may be visible in the documentary sources. Then there are changes to the population itself, with changes in population density being an important part of the nature and character of any changes occurring.

By creating a whole dataset that can be used in a variety of ways, several aims of the West Midlands Regional Research Framework can be addressed. Like the BCHLC, the dataset is holistic and essentially valueless (bias in the trade directories aside), and can be used to map both the exceptional and the mundane.

While later trade directories do have house numbers, these change quite often, and tracking people or industries down to a specific building number would be time consuming, if possible at all. The same is true for the census. However, much of the data, especially for Dudley town itself, is recorded at street level.

By cleaning and standardising the database, different levels of detail can be mapped. Each entry (or as many as possible) was identified at street and suburb level, and there are different levels in the trades themselves, with broad categories, simple categories, and specific categories. This way, both the exceptional and the mundane can be mapped side by side. While querying the databases themselves can give an understanding of the data, by mapping it spatially gives an additional level of analysis, and also helps in the dissemination and ease of access of the data. It highlights broader spatial patterns within the changes that text-based queries on their own would not show.

The aim was also to generate a resource that could be used to facilitate and enhance future research, on specific buildings or areas in advance of development, on particular industries, or for broader landscape analysis.

1.4 Objectives

The objectives of the research were therefore:

1) To identify as many streets and suburbs as possible that were existing at this time and digitise them as polyline and point shapefiles

2) To identify appropriate trade directories and censuses, and transform the data within them into a proper database structure that can be queried in a variety of ways
3) To query the data in such a way as to generate numeric values that can be joined and related to the streets and suburbs digitised
4) To map the generated attributes, to identify previously unknown characteristics, and to identify changes in those characteristics.
5) To demonstrate how these results enhance and contextualise previous research and data sources
6) To disseminate the information via a GIS project

It was hoped that by achieving these objectives it would be possible to map not only the growth and change in numeric values of trades and population, but by using the whole dataset, to identify and map changes in the composition of trades, and density of population, as both are elements of the character of an area, that are not particularly visible on the map resources.

2.0 METHODS

In order to achieve objective 1, and digitise as many streets and suburbs as possible, the OS 1st edition was downloaded from Edina Digimap and used to rectify other historic mapping against this. The OS maps were used in the first instance to digitise streets, then cross referencing was undertaken with other maps and streets and suburbs listed on the databases to ensure as much concordance as possible.

A central line was created for each street identified, and given the attributes Street Name and Suburb. Where street names had changed, the latest name was used for the attribute. A point shapefile was created for the suburbs, denoting the approximate centre point of each individually named 'place'. Where these names changed over time, the latest name was used. In some cases, a suburb or place was subsumed by a neighbouring one. In some they denote little more than a large factory complex, and some fell out of use due without replacement habitation. This is looked at in more detail later.

Not all streets on the maps were able to be named, and not all addresses in the documentary sources were able to be mapped. Where there was correlation, however, the shapefiles and tables could be joined in ArcGIS using the unique streets and suburb names, giving each street and suburb a series of attributes regarding number of houses, individuals and trades present in each recorded year.

In order to achieve objective 2, the data from the Census enumerations and the trade directories was inputted into two databases, one for each resource.

Although individuals are recorded in the Census enumerations, only summary data was inputted into a database. This was calculated by identifying which enumeration pages (Figure 2.1) for each address related to the corresponding page numbers on the summary sheet (Figure 2.2) and manually counting the totals.

The initial census database contained the following fields –

- Census date
- Census number
- Sheet number
- Address (street/suburb) name
- Houses inhabited
- Houses uninhabited
- Males
- Females

Buildings were counted rather than households, as the identification and recording of households was not necessarily consistent between areas or years (see below). The data was cleaned and standardised with the final database containing additional fields:

- Revised Street Name
- Suburb

Cross checking between the two databases ensured that the Revised Street and Revised Suburb fields were consistent between the two.

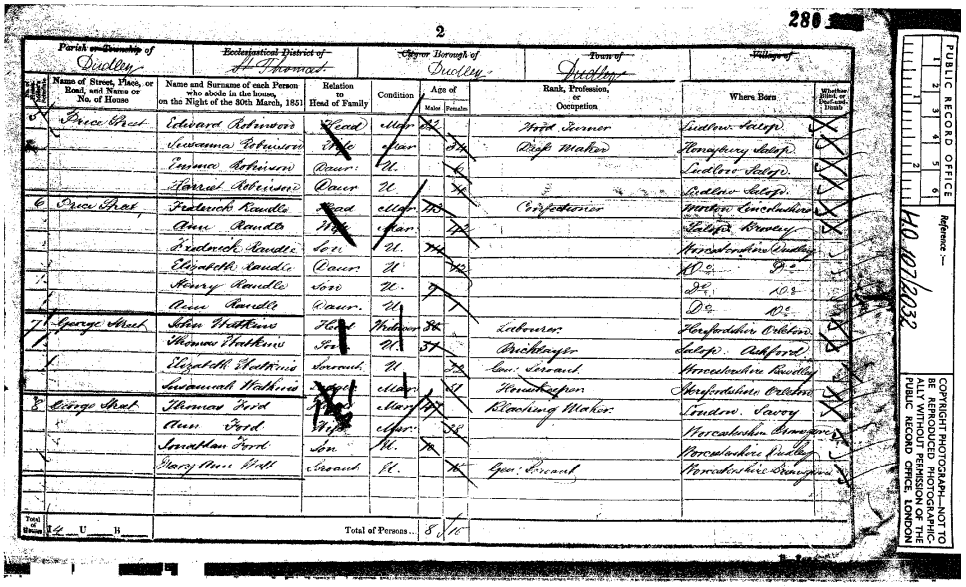


Figure 2.1 - Sample enumeration page from Census

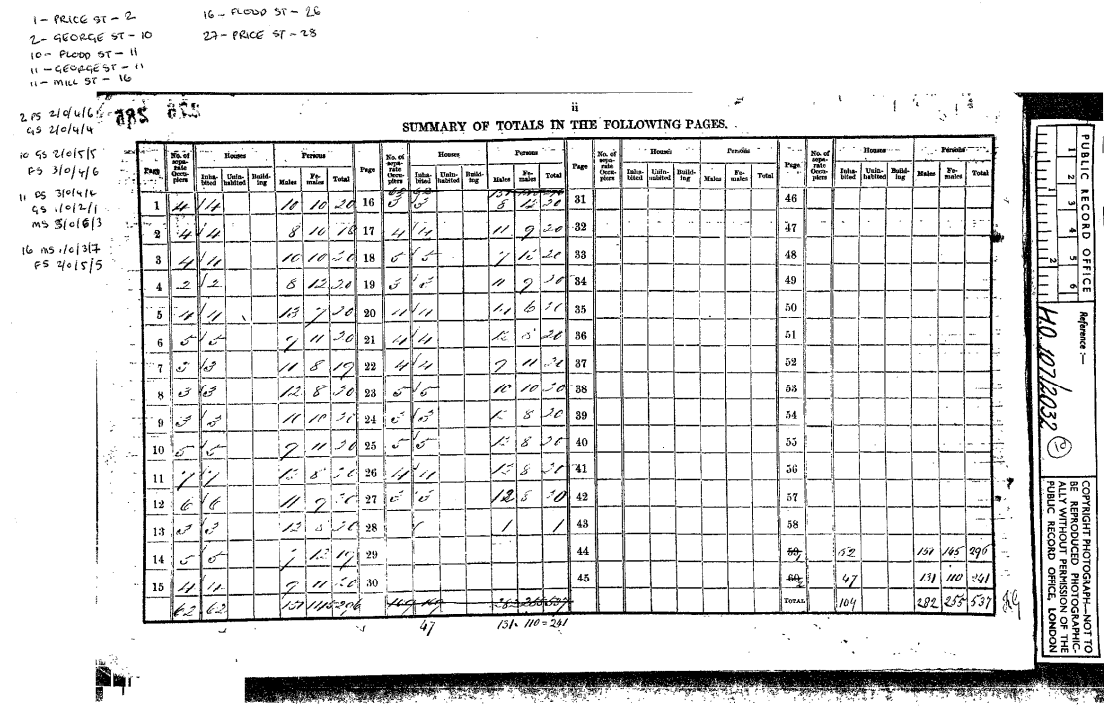


Figure 2.2 - Sample summary page from census

The Trade Directories chosen for the analysis were ones that were available online at www.historicaldirectories.org (Figure 2.3). Additionally the Pigot Smith directory of 1860 was inputted, though this was not available online, in order to ensure a relatively even temporal distribution of the datasets. The assessment of this resource identified that two of the Trade Directories potentially possessed unacceptable levels of inaccuracies and bias, and so further analysis was not conducted on this data. (See Table 2.1)

The initial trade directory database contained the following fields –

- Directory date
- Directory name
- Title
- First Name
- Surname
- Trade or occupation name
- Address (number or name)
- Address (street)
- Address (suburb)

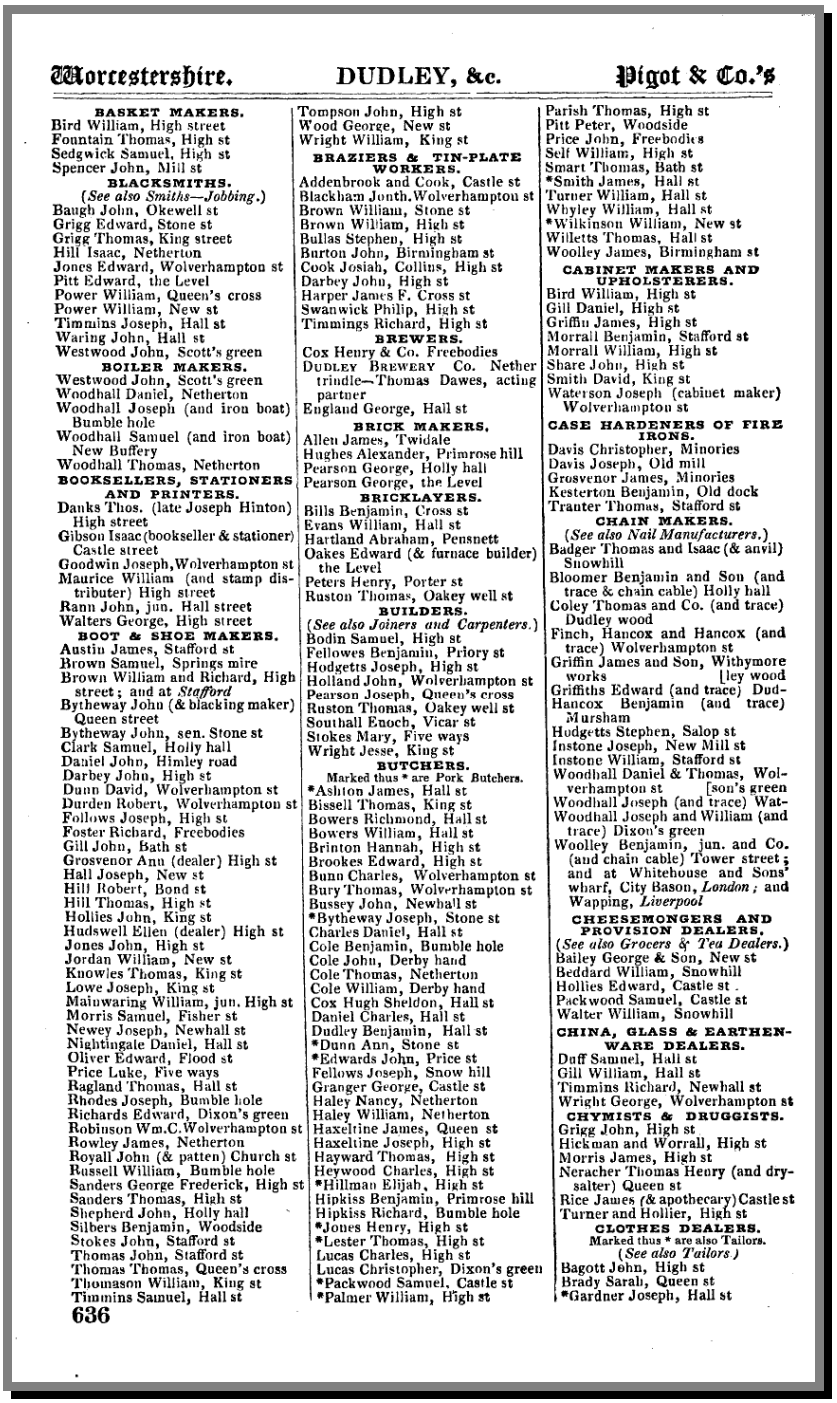
Where multiple names were recorded in the directory as one entry, such as Addenbrook and Cook, or Bloomer, Benjamin and Son, these were treated as one entry. The reasoning behind this decision was that the 'industry present in street' was the key data, not the person or persons. Recording a trade twice, due to multiple names, would skew the number of industries recorded for each street. Moreover, research has shown that multiple names are not necessarily indicative of the size of the business (Raven 2001).

Where the same person or business was listed at two separate addresses, the entry was duplicated for each address for similar reasons.

The data was then standardised. Spelling errors and variations on street name were corrected, and where it was possible to identify streets that had changed name over time, the latest name was used to ensure that the data could be compared year by year. Much of the original data was listed as either street or suburb. Where it was possible from the mapping to identify a street in a particular suburb, the suburb was added to the Revised Suburb field. In the instances where a named street occurred in both Dudley proper and a suburb, it was assumed that it was in Dudley.

The trades and occupations were then classified using the Booth-Armstrong industrial classification system, developed by Charles Booth at the end of the 19th century and published by W. A. Armstrong in 1972 (Armstrong 1972). The classification system for occupations comprises a hierarchical approach, by which 10 broader categories are further subdivided. A list of the categories is given in Appendix 1. The final database contained additional fields:

- Revised Street
- Revised Suburb
- New Trade Name
- Simple category (D, MF etc)
- New category (D1, D2 etc)



Worcestershire. DUDLEY, &c. Pigot & Co.'s

BASKET MAKERS.
Bird William, High street
Fountain Thomas, High st
Sedgwick Samuel, High st
Spencer John, Mill st

BLACKSMITHS.
(*See also Smiths—Jobbing.*)
Baugh John, Okewell st
Grigg Edward, Stone st
Grigg Thomas, King street
Hill Isaac, Netherton
Jones Edward, Wolverhampton st
Pitt Edward, the Level
Power William, Queen's cross
Power William, New st
Timmins Joseph, Hall st
Waring John, Hall st
Westwood John, Scott's green

BOILER MAKERS.
Westwood John, Scott's green
Woodhall Daniel, Netherton
Woodhall Joseph (and iron boat) Bumble hole
Woodhall Samuel (and iron boat) New Buffery
Woodhall Thomas, Netherton

BOOKSELLERS, STATIONERS AND PRINTERS.
Danks Thos. (late Joseph Hinton) High street
Gibson Isaac (bookseller & stationer) Castle street
Goodwin Joseph, Wolverhampton st
Maurice William (and stamp distributer) High street
Rann John, jun. Hall street
Walters George, High street

BOOT & SHOE MAKERS.
Austin James, Stafford st
Brown Samuel, Springs mire
Brown William and Richard, High street; and at *Stafford*
Bytheway John (& blacking maker) Queen street
Bytheway John, sen. Stone st
Clark Samuel, Holly hall
Daniel John, Himley road
Darbey John, High st
Dunn David, Wolverhampton st
Durden Robert, Wolverhampton st
Follows Joseph, High st
Foster Richard, Freebodies
Gill John, Bath st
Grosvenor Ann (dealer) High st
Hall Joseph, New st
Hill Robert, Bond st
Hill Thomas, High st
Hollies John, King st
Hudswell Ellen (dealer) High st
Jones John, High st
Jordan William, New st
Knowles Thomas, King st
Lowe Joseph, King st
Mainwaring William, jun. High st
Morris Samuel, Fisher st
Newey Joseph, Newhall st
Nightingale Daniel, Hall st
Oliver Edward, Flood st
Price Luke, Five ways
Ragland Thomas, Hall st
Rhodes Joseph, Bumble hole
Richards Edward, Dixon's green
Robinson Wm. C. Wolverhampton st
Rowley James, Netherton
Royall John (& patten) Church st
Russell William, Bumble hole
Sanders George Frederick, High st
Sanders Thomas, High st
Shepherd John, Holly hall
Silbers Benjamin, Woodside
Stokes John, Stafford st
Thomas John, Stafford st
Thomas Thomas, Queen's cross
Thomason William, King st
Timmins Samuel, Hall st
Tompson John, High st
Wood George, New st
Wright William, King st

BRAZIERS & TIN-PLATE WORKERS.
Addenbrook and Cook, Castle st
Blackham Jonth. Wolverhampton st
Brown William, Stone st
Brown William, High st
Bullas Stephen, High st
Burton John, Birmingham st
Cook Josiah, Collins, High st
Darbey John, High st
Harper James F. Cross st
Swanwick Philip, High st
Timmings Richard, High st

BREWERS.
Cox Henry & Co. Freebodies
Dudley Brewery Co. Nether trindle—Thomas Dawes, acting partner
England George, Hall st

BRICK MAKERS.
Allen James, Twidale
Hughes Alexander, Primrose hill
Pearson George, Holly hall
Pearson George, the Level

BRICKLAYERS.
Bills Benjamin, Cross st
Evans William, Hall st
Hartland Abraham, Pensnett
Oakes Edward (& furnace builder) the Level
Peters Henry, Porter st
Ruston Thomas, Oakey well st

BUILDERS.
(*See also Joiners and Carpenters.*)
Bodin Samuel, High st
Fellowes Benjamin, Priory st
Hodgetts Joseph, High st
Holland John, Wolverhampton st
Pearson Joseph, Queen's cross
Ruston Thomas, Oakey well st
Southall Enoch, Vicar st
Stokes Mary, Five ways
Wright Jesse, King st

BUTCHERS.
Marked thus * are Pork Butchers.
*Ashton James, Hall st
Bissell Thomas, King st
Bowers Richmond, Hall st
Bowers William, Hall st
Brinton Hannah, High st
Brookes Edward, High st
Bunn Charles, Wolverhampton st
Bury Thomas, Wolverhampton st
Bussey John, Newhall st
*Bytheway Joseph, Stone st
Charles Daniel, Hall st
Cole Benjamin, Bumble hole
Cole John, Derby hand
Cole Thomas, Netherton
Cole William, Derby hand
Cox Hugh Sheldon, Hall st
Daniel Charles, Hall st
Dudley Benjamin, Hall st
*Dunn Ann, Stone st
*Edwards John, Price st
Fellows Joseph, Snow hill
Granger George, Castle st
Haley Nancy, Netherton
Haley William, Netherton
Haxeltine James, Queen st
Haxeltine Joseph, High st
Hayward Thomas, High st
Heywood Charles, High st
*Hillman Elijah, High st
Hipkiss Benjamin, Primrose hill
Hipkiss Richard, Bumble hole
*Jones Henry, High st
*Lester Thomas, High st
Lucas Charles, High st
Lucas Christopher, Dixon's green
*Packwood Samuel, Castle st
*Palmer William, High st
Parish Thomas, High st
Pitt Peter, Woodside
Price John, Freebodies
Self William, High st
Smart Thomas, Bath st
*Smith James, Hall st
Turner William, Hall st
Whyley William, Hall st
*Wilkinson William, New st
Willetts Thomas, Hall st
Woolley James, Birmingham st

CABINET MAKERS AND UPHOLSTERERS.
Bird William, High st
Gill Daniel, High st
Griffin James, High st
Morrall Benjamin, Stafford st
Morrall William, High st
Share John, High st
Smith David, King st
Waterson Joseph (cabinet maker) Wolverhampton st

CASE HARDENERS OF FIRE IRONS.
Davis Christopher, Minories
Davis Joseph, Old mill
Grosvenor James, Minories
Kesterton Benjamin, Old dock
Tranter Thomas, Stafford st

CHAIN MAKERS.
(*See also Nail Manufacturers.*)
Badger Thomas and Isaac (& anvil) Snowhill
Bloomer Benjamin and Son (and trace & chain cable) Holly hall
Coley Thomas and Co. (and trace) Dudley wood
Finch, Hancox and Hancox (and trace) Wolverhampton st
Griffin James and Son, Withymore works [ley wood
Griffiths Edward (and trace) Dud-
Hancox Benjamin (and trace) Mursham
Hodgetts Stephen, Salop st
Instone Joseph, New Mill st
Instone William, Stafford st
Woodhall Daniel & Thomas, Wolverhampton st [son's green
Woodhall Joseph (and trace) Wat-
Woodhall Joseph and William (and trace) Dixon's green
Woolley Benjamin, jun. and Co. (and chain cable) Tower street; and at Whitehouse and Sons' wharf, City Bason, *London*; and Wapping, *Liverpool*

CHEESEMONGERS AND PROVISION DEALERS.
(*See also Grocers & Tea Dealers.*)
Bailey George & Son, New st
Beddard William, Snowhill
Hollies Edward, Castle st
Packwood Samuel, Castle st
Walter William, Snowhill

CHINA, GLASS & EARTHENWARE DEALERS.
Duff Samuel, Hall st
Gill William, Hall st
Timmins Richard, Newhall st
Wright George, Wolverhampton st

CHYMISTS & DRUGGISTS.
Grigg John, High st
Hickman and Worrall, High st
Morris James, High st
Neracher Thomas Henry (and dry-salter) Queen st
Rice James (& apothecary) Castle st
Turner and Hollier, High st

CLOTHES DEALERS.
Marked thus * are also Tailors.
(*See also Tailors.*)
Bagott John, High st
Brady Sarah, Queen st
*Gardner Joseph, Hall st

Figure 2.3 – Sample page from a trade directory

2.1 - Trade directories included in initial data entry exercise

Date	Publisher	Area covered	Total Entries	Listed by	No of Streets listed	No of Trade categories	Additional Info	Comments
1828	Pigot	Regional, many counties included	520	Trade	37	91	General description; Post office deliveries, from where and how often; population in 1821 and est. 1828; coaches – who, from where to where, and when; carriers ditto; water conveyors (canal)	
1835	Pigot	Regional, many counties included	1108	Trade	80	121	General description; post office deliveries, from where and how often; population in 1812, 1821 and 1831 (from census); academies and schools, banks etc; coaches; omnibus; carriers; conveyors (canal)	
1839	Robson	Birmingham (with Wolves, Dudley and Coventry) and Sheffield	744	Trade (though alphabetical list of names also listed)	46	144	Post Office; posting house; bankers; fire and life assurance agents; publish establishments; schools; coaches; carriers; canal conveyance;	At first glance, this directory looks potentially unreliable. Compared with the number of entries in the more reliable Pigot directories it does not seem to have enough. However, it also lists far fewer streets, and in relative terms, actually lists more trades per

								street than the others, both in count and numbers of categories. For inter-directory comparison it should be disregarded, but for relationships with 1841 census data it might actually be better than the others.
1842	Pigot	Regional	1145	Trade	115	130	Railway timetables and fares; general description; Post office; academies and schools; banks; coaches and omnibuses; carriers; conveyance by canal	
1851	Slater	Birmingham, Worcester and the Potteries	1767	Trade	123	144	Post Office; academies and schools; public buildings inc. Places of worship, poor law union, registrars, county court, firestation, police station etc; dispensary; railway; carriers (by rail); conveyance (water);	
1855	Billings	Worcs	817	Trade (also by name)	80	56	Places of worship; schools; public institutions, buildings, offices etc; post office; population tables from 1851 census (including males females marital status, blind deaf and dumb and workhouse); no. of attendants at churches; no.	This directory has very anomalous entries compared to the others. As a less well known publisher, the list data is potentially less reliable, and so should not be used in the research. However, the additional information may be useful!

							of attendants at schools	
1860	Pigot							
1876	Post Office	Worcs	1595	Name (trade lists are for whole county)	142	480	General description; population total 1861 and 1871 (from census); official establishments, local institutions etc; councillors, magistrates, insurance agents etc; schools; newspapers; places of worship; railways; carriers	Of the 480 different trades listed, 344 are singular entries, suggesting that listing by name gave the compilers more scope to put variations in, and include multiple trades etc.

To achieve objective 3 the data in the two databases was then cross-tabulated at the Revised Street and Revised suburb level to give a numeric value (count) of various attributes at these levels. Further attributes were calculated from these such as ratios between the counts, and changes between the values for each consecutive year of the sources. A full list of attributes generated is given in Appendix 2 and discussed further below.

In order to map the data, the new attribute databases were then joined to the shapefiles using the 'Revised Street' and 'Revised Suburb' fields. A series of maps was then produced that symbolised these attributes, and which were analysed, specifically to look for spatial components of character and changes in that character through time. A selection of these maps is discussed in the results.

These results were also then compared to an example of known data to achieve objective 5, which was to demonstrate how the results can enhance and contextualise previous research and sources of data. A particular street was used as an example, in order to demonstrate how the results can be used to enhance currently available datasets.

To achieve objective 6, a GIS project was created in ArcPublisher, in order to disseminate all of the maps generated during the research, not only those used as examples in the results section. The full results of the GIS project are presented in Appendix 3 and as a digital appendix on CD.

3.0 RESULTS

3.1 Analysis of data sources (raw data)

3.1.1 Mapping

Streets visible and named on the 1st Edition Ordnance Survey maps were digitised in the GIS as a polyline shapefile. Where possible, these were crosschecked with the earlier mapping. Side streets and back alleys that could not be named were not digitised, as without a name they would not be able to be linked with the documentary sources database. This introduces immediately inaccuracies in the dataset. While these unnamed streets could be included at a suburb level by their location, it was decided to omit them due to it being possible that they did not have a named address, and that documentary sources of the area would relate to the main streets in the vicinity. A total of 237 streets were digitised using the Ordnance Survey 1st Edition. 142 of these correlated with addresses in the trade directories, and 204 correlated with the census data. Of the others, it is likely that they were constructed after 1876 (the latest date for the documentary sources used).

Suburbs and areas including Dudley itself (hereinafter included in Suburbs) were also digitised from the mapping as a point shapefile. All suburbs and areas were included that could be identified from the mapping, although there was not total correlation between the mapping and the documentary sources. That is, many additional places were annotated on the maps, but not necessarily included as official places within the census data (the comprehensive dataset). It would have been possible, perhaps, to reclassify the census data in terms of the overall suburb dataset by location. However, it was deemed easier to keep the census data as it was, and only use the suburb shapefile where there was already

correlation. It was also noted that many of the suburbs and areas were identified from the 1836 mapping, and it is highly possible that many of the smaller areas would have been in the consciousness subsumed into larger neighbouring areas, also changing names at times.

Field Name	Type	Description
NEWSUBNAME	Text	Name of suburb/ or Dudley JOIN FIELD
Acc1828	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1835	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1841	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1851	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1855	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1860	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1861	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1871	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1876	Number	Sum of the length of all streets allocated to this suburb by this date

Table3.1: List of initial attributes of the suburb shapefile

The problems in identifying addresses and areas threw up many questions before the actual analysis began. The initial patterns suggest that (from the mapping at least), in the 1836 period, many of the areas surrounding Dudley had their own names for places. However, by the 1841 census, where standardisation of addresses must have come about due to the methodology employed by the enumerators, far fewer of these place names are actually used. It is unclear from the research whether this was just in official terms, or whether these changes took place in the real landscape as well.

Once the streets and suburbs had been digitised, the shapefiles were initially given a set of attributes, including a joining field which was used to append the data from the databases.

The street shapefile was digitised as a line. The attribute fields initially created for this shapefile were StreetName, which was used as the join field to the database tables. Other fields were also calculated.

Field Name	Type	Description
streetName	Text	Name of street JOIN FIELD
FirstDate	Number	Date that the street is first mentioned in the documentary sources
SubName	Text	Name of suburb that the street is allocated to
SLength	Number	Length in metres of the street

Table 3.2: List of initial attributes for the street shapefile

An attribute field 'first date' was created using all the available datasets to identify the first time each street appeared on either the mapping or documentary sources. This allowed immediately the expansion of the urban areas within the Dudley area to be mapped by date (see below). Each street in the GIS was allocated to a suburb (based on proximity and correlation with the documentary sources), and had a street length calculated for it. This data was exported back into an access database, and allowed the accumulative growth overall, and of each suburb in terms of street length and year to be calculated.

In some ways this data is erroneous, due to discrepancies between the digitised streets and the documentary sources, and should be used as a guide rather than absolute data.

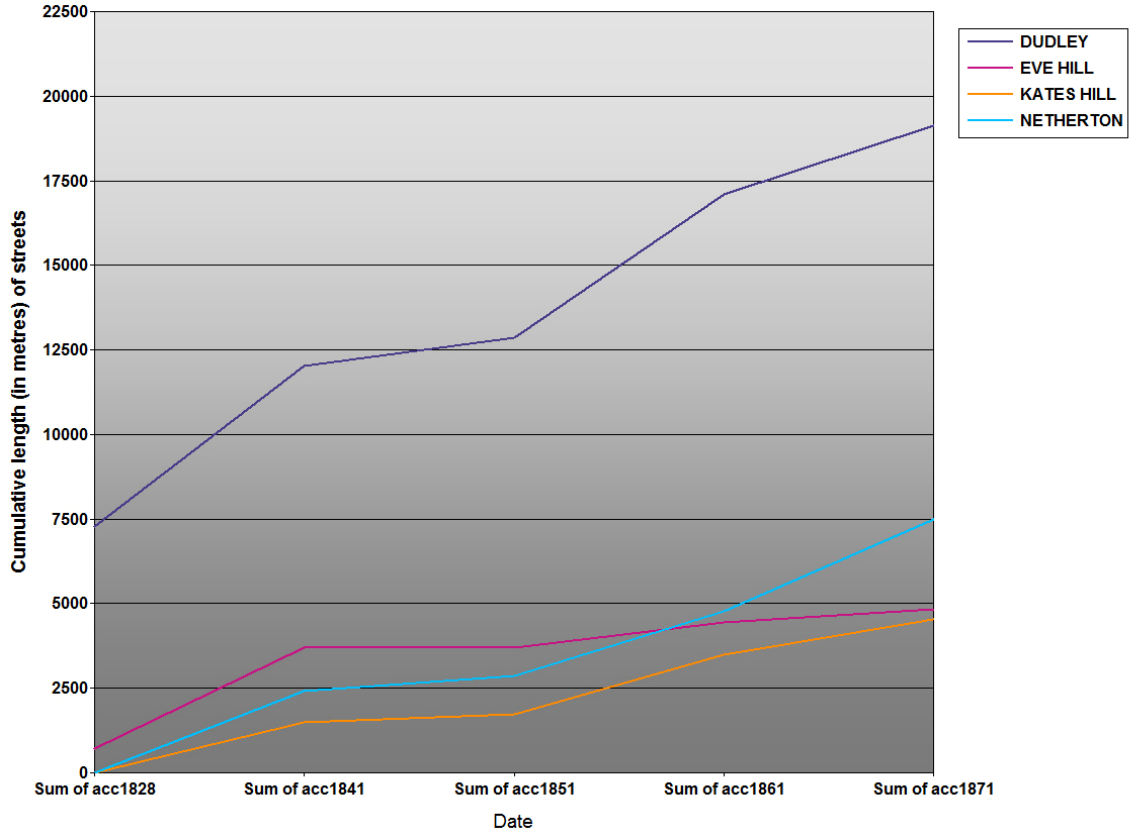


Figure 3.1: Graph showing growth of Dudley and selected suburbs by accumulative street length

The data illustrates the expansion of the urban area, showing that while the expansion in terms of occupied street length occurred, its rate and location show variation within the datasets.

3.1.2 Census data

The data from the census enumeration books was also standardised. The street names were cleaned up and amended to their latest version where applicable, and suburbs were allocated dependant on either their recorded suburb in the census, or their proximity to a suburb centre where it was not specified (Figure 3.2). The former source took precedent.

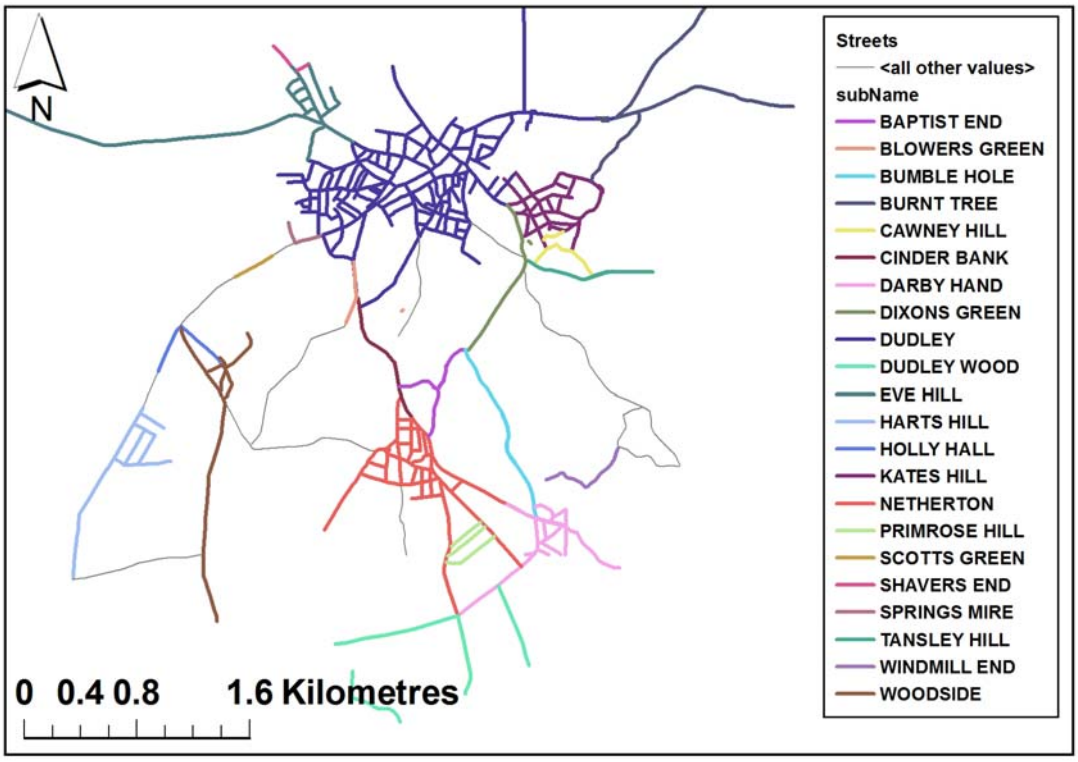


Figure 3.2: Streets as allocated to suburbs

Not all streets recorded on the census were identifiable on the mapping, or able to be standardised. Due to the way that the census was actually taken, it was possible to identify some streets from their proximity to other streets, as sets of streets were recorded in blocks (for example Figure 3.3). However, some addresses were not able to be identified at all, at either suburb or street level. While there was an assumed proximal association within each enumeration district, a proximal association was not assumed between the enumeration

districts, as that would depend on the compilation methodology of the enumeration sheets. Some streets in the census, therefore, remained unidentifiable.

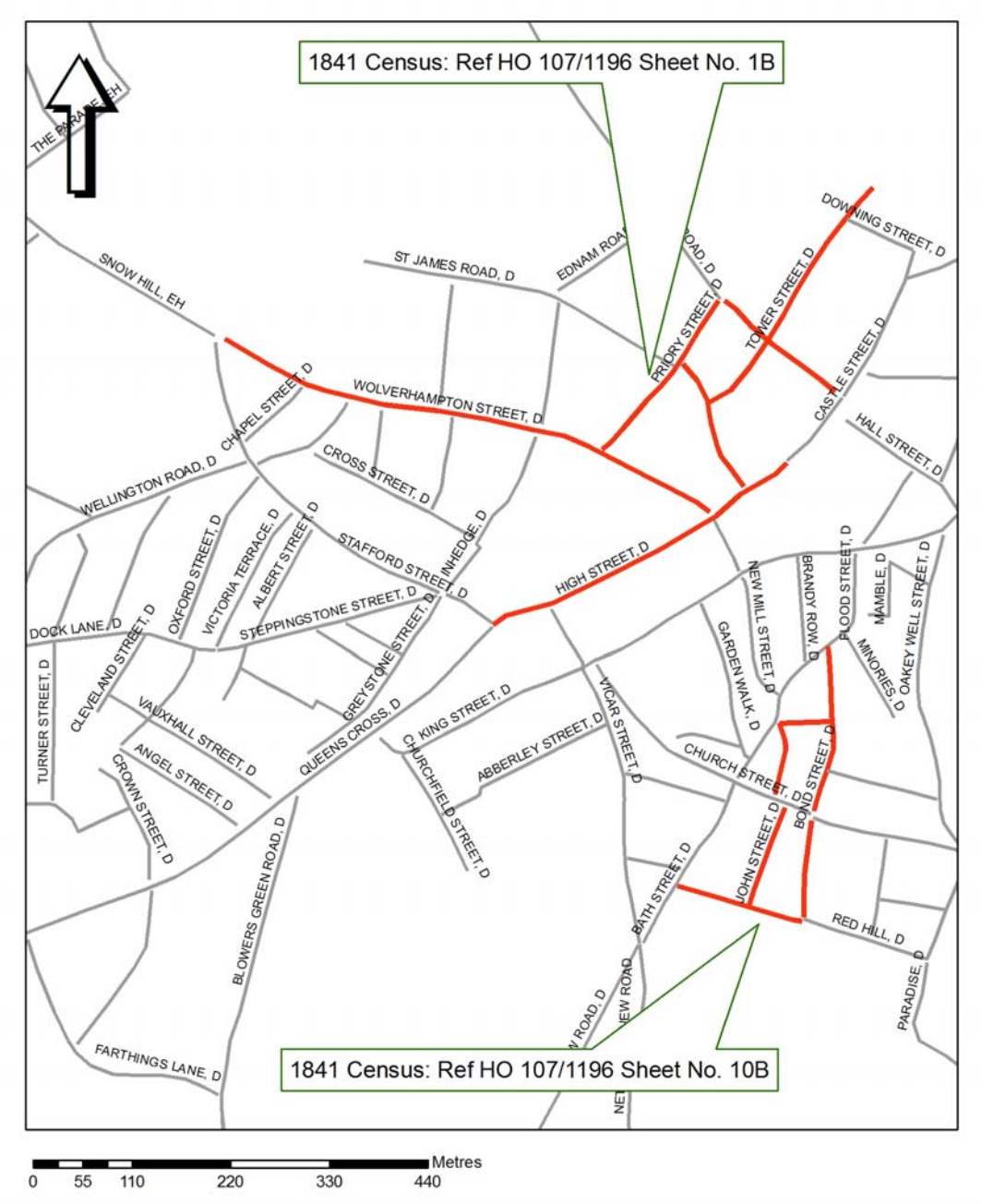


Figure 3.3: Examples of census enumeration blocks

Once the streets and suburbs had been standardised, a total of 202 streets were found to be able to be correlated to the GIS shapefiles. Not all the data could be assigned to streets or suburbs, and some of the data could only be assigned at a suburb level (Figure 3.4). Within Dudley itself, most of the data was recorded at street level (Figure 3.5), however this varied widely within the suburbs, with Eve Hill and Kate's Hill being recorded in detail (Figure 3.6), and Dixons Green and Netherton being recorded in less detail (Figure 3.7). This has important implications for the analysis, and when considering the mapping produced from the data, it needs to be remembered that potentially not all the data was mapped.

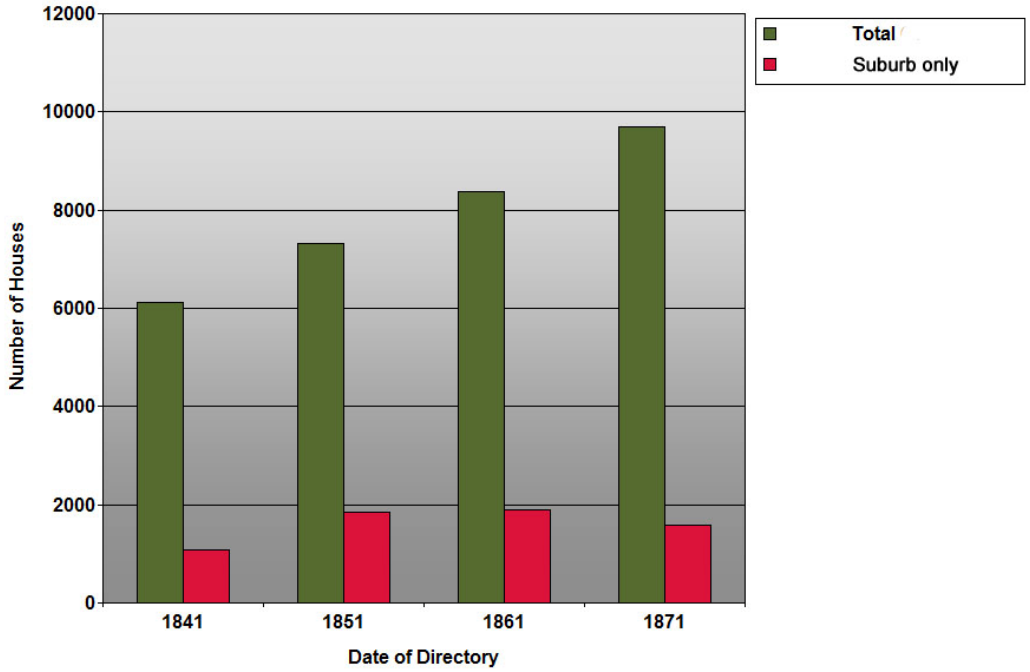


Figure 3.4: Overall data compared to data recorded at suburb level only

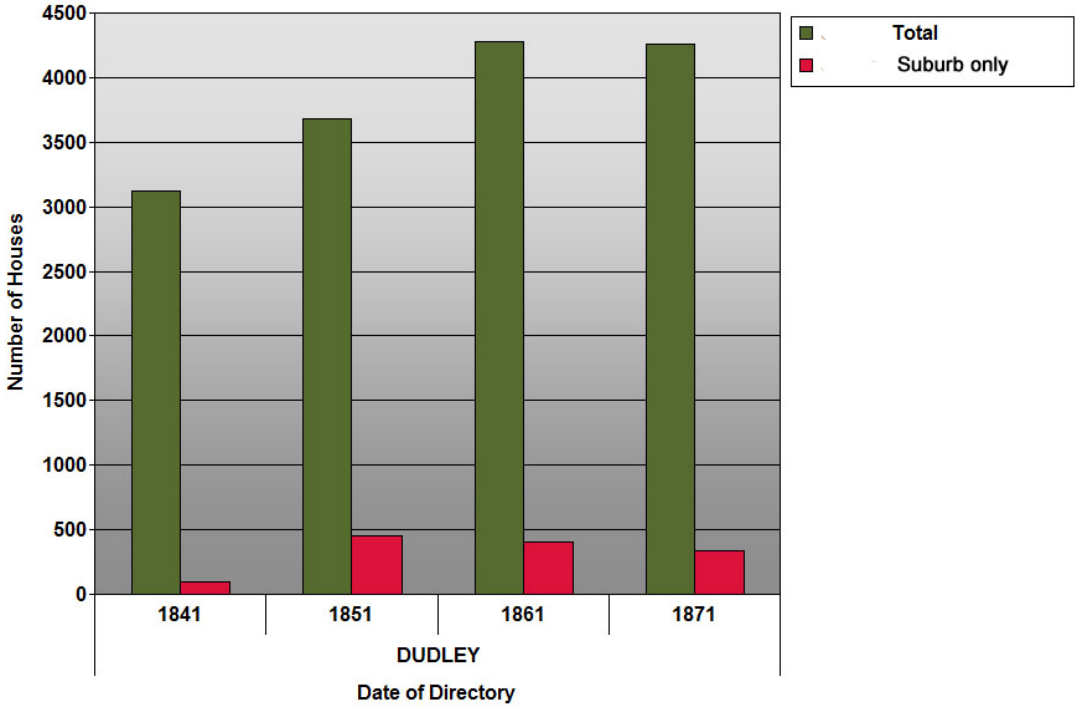


Figure 3.5: Overall data for Dudley compared to data recorded at suburb level only

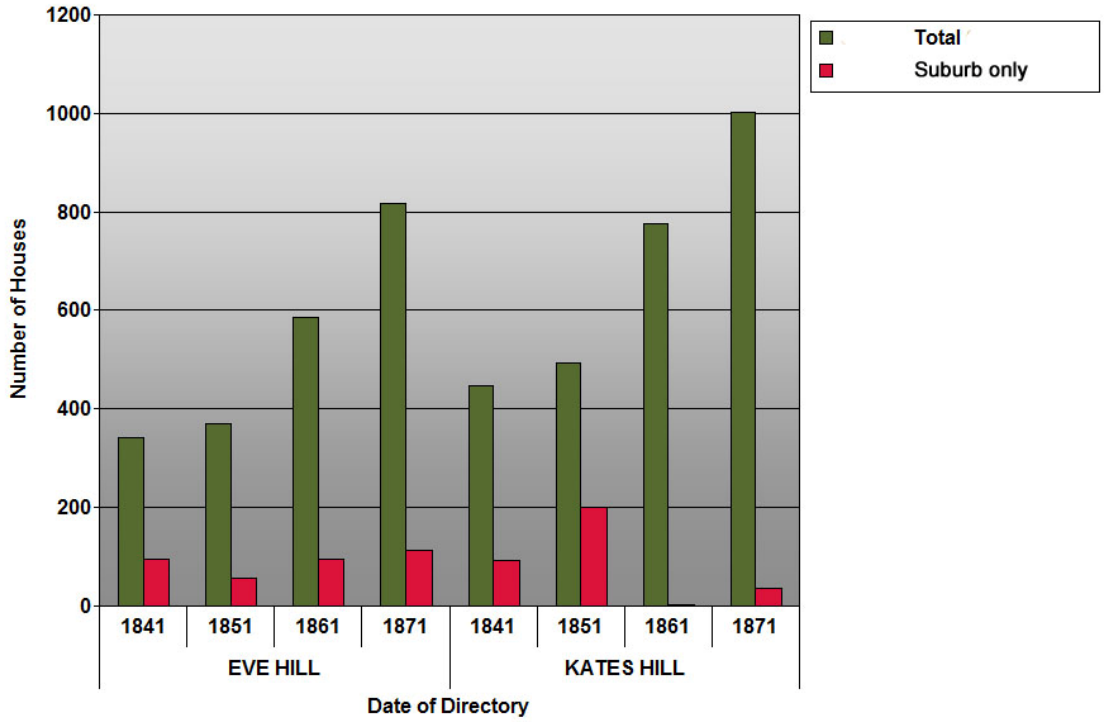


Figure 3.6: Overall data for Eve Hill and Kates Hill compared with data recorded at suburb level only

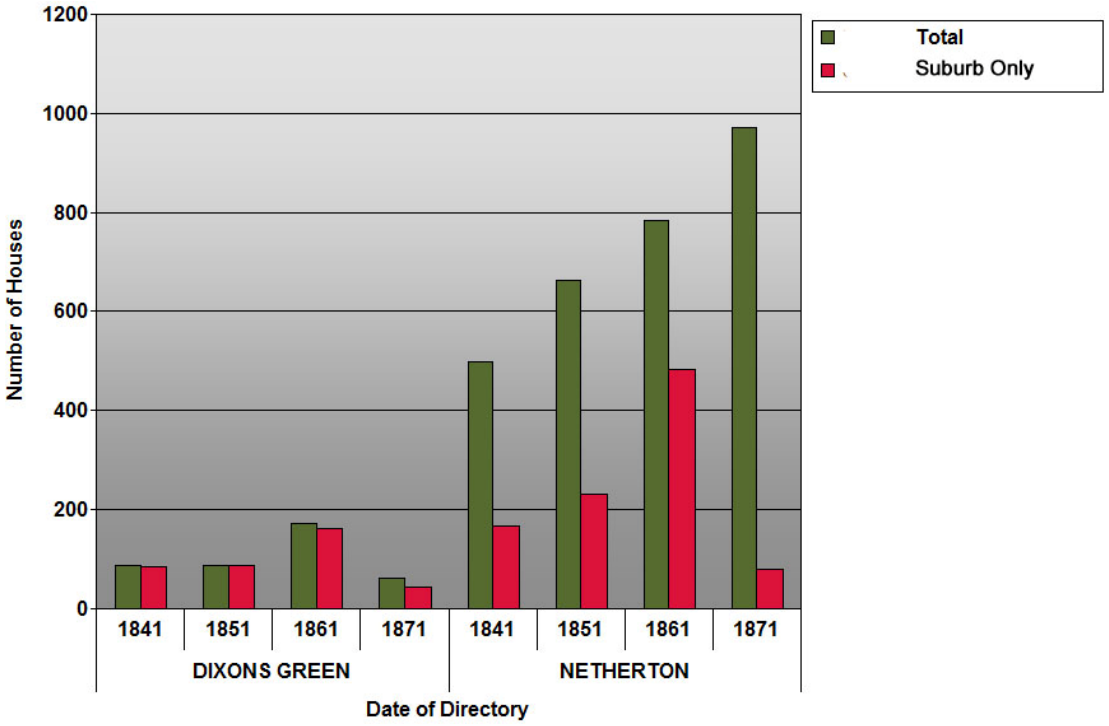


Figure 3.7: Overall data for Dixons Green and Netherton compared with data recorded at suburb level only

3.1.3 Trade directories

Not all the data initially inputted into the trade directory database was suitable for the purposes of the research. Several of the trade directories were deemed unsuitable due to their unreliability and potential inaccuracies. The trade directories that were used, while still having potential problems, were deemed appropriate for comparison with each other. Additionally, entries listing Nobility, Gentry and Clergy were found only to be included in some of the directories, and as such, these were also omitted from the research.

The data from the other directories was standardised, in terms of street address and trade name. At a street level, changes in street name were identified and standardised to the latest street name (as identified from the mapping). Inaccuracies in the original data entry (user error) were also identified and corrected as far as possible, such as suburb name in the street fields etc.

The trade names were standardised using a sequence of procedures. Firstly, the original trade name was standardised to an appropriate grouping. As some of the directories classified by trade, this was used as base groupings as they were already partly standardised using groupings deemed appropriate at the time. Where the directories were classified alphabetically by surname, the range of trades (thus allowing a free-range description of trades) was larger. These were re-named as far as possible into the determined groups.

The individual trade names were then classified further using the Booth-Armstrong classification system (Armstrong 1972). This created fields of simple category and revised category, as described in the methodology. While the majority of entries had a single name,

single trade, and single address several had multiple names, multiple trades and multiple addresses.

- Multiple names were left as they were.
- Multiple trades were classified to the most appropriate single trade (in some cases a difficult choice was made between two, thus introducing error into the dataset)
- Multiple addresses were duplicated.

These methods were chosen to ensure that each street had the appropriate trades listed for it.

After the standardisation of the dataset, it was decided to remove the Nobility, Gentry and Clergy classification from the counts of occupation and industries. Although exploring the distribution of this group was interesting and relevant, the group was not included in all the directories, and so could not necessarily be compared on a year by year basis. For this reason, the category was mapped separately.

After the removal of inappropriate trade directories and the EN category, the trade directory database was left with 6804 individual entries. A small amount of the data was still unusable. Some of the entries did not have addresses listed at either street or suburb level. Some had streets listed that were not identifiable from the mapping (539 entries), and some were not identifiable at suburb level (289). The decision was made not to allocate these to Dudley (at a suburb level). Also, there was a small number of individual trades that were not easily allocated to the Booth-Armstrong classification system. The decision was made not to

attempt to integrate these, to ensure that the data left was directly comparable to the BA system, and thus comparable to other research using this classification system.

It was identified early on that Netherton was recorded as a place in its own right on the trade directories after 1851. As only the data assigned to Dudley had been originally inputted, this meant that analysis for Netherton and the suburbs in this area could only be conducted up to 1851.

Table 3.3 and Figure 3.8 shows that in the overall area the number of trades increases dramatically between 1828 and 1835, less so between 1835 and 1842, and again there is a large increase between 1842 and 1851. The reduction in trades listed between 1851 and 1860 is in part due to the listing of Netherton as a separate place, incorporating other suburbs or areas in its vicinity. However, there is a general decrease in trades listed between these years which is likely due to changes in methodology in the 1860 directory, and a smaller increase again between 1860 and 1876, than in previous years. Figure 3.9 shows the trend in selected other suburbs.

Trade Directories - COUNT OF ENTRIES BY YEAR							
	Total	**1828**	**1835**	**1842**	**1851**	**1860**	**1876**
TOTAL ENTRIES	6804	512	1049	1133	1662	1185	1263
BAPTIST END	6		3	2	1		
BLOWERS GREEN	7		1			5	1
BUMBLE HOLE	52		15	13	24		
BURNT TREE	18	3	2	3	5	2	3
CAWNEY HILL	21		6	1	5	8	1
CINDER BANK	7		1	4	2		
CRADLEY HEATH	2				2		
DARBY HAND	115		18	44	52		1
DIXONS GREEN	106	10	20	21	29	12	14
DUDLEY	4894	461	736	816	1061	866	954
DUDLEY WOOD	36		8	4	18		6
EVE HILL	339	22	48	60	87	71	51
HARTS HILL	95			12	34	28	21
HOLLY HALL	90	1	13	18	28	11	19
KATES HILL	301		19	24	59	90	109
LONDON FIELDS	2					1	1
NETHERTON	190	3	48	44	94	1	
PRIMROSE HILL	23		6	6	11		
SCOTTS GREEN	13		4	3	5	1	
SEDGLEY	1	1					
SHAVERS END	18	1	5	5		7	
SPRINGS MIRE	19		4	6		9	
TANSLEY HILL	3					1	2
WINDMILL END	13		1	2	10		
WOODSIDE	115		8	11	33	24	39

Table 3.3: Count of entries by year for individual suburbs

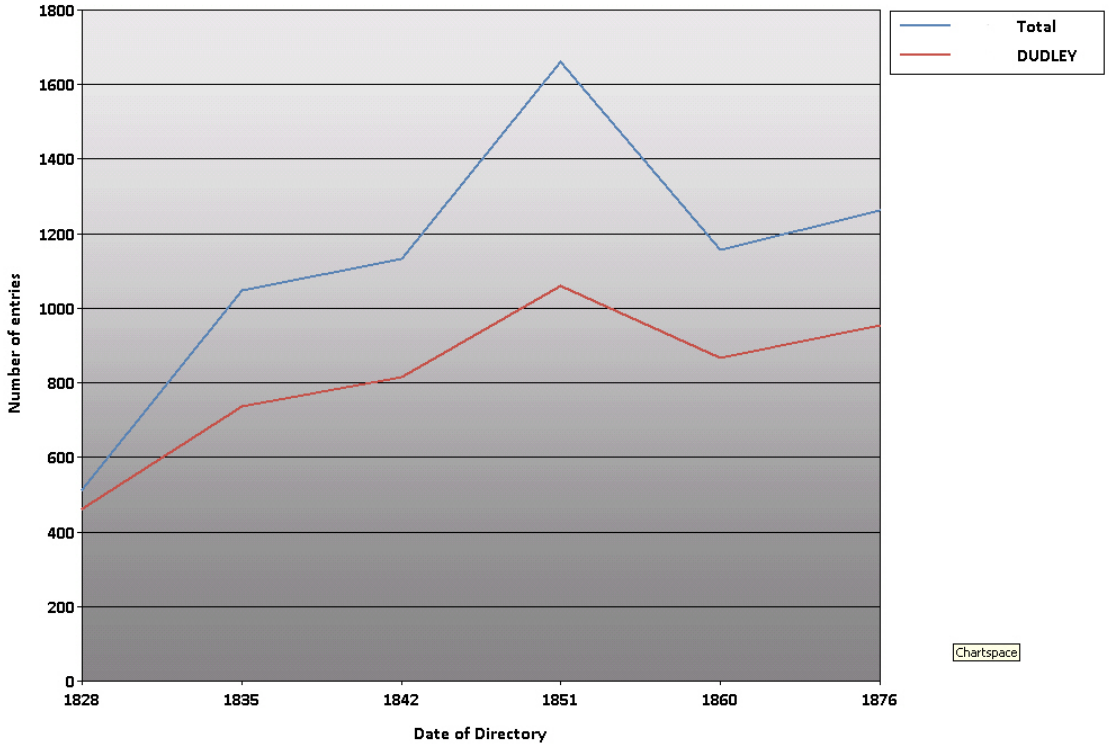


Figure 3.8: Graph showing overall numbers of entries for each trade directory compared with the numbers for Dudley itself

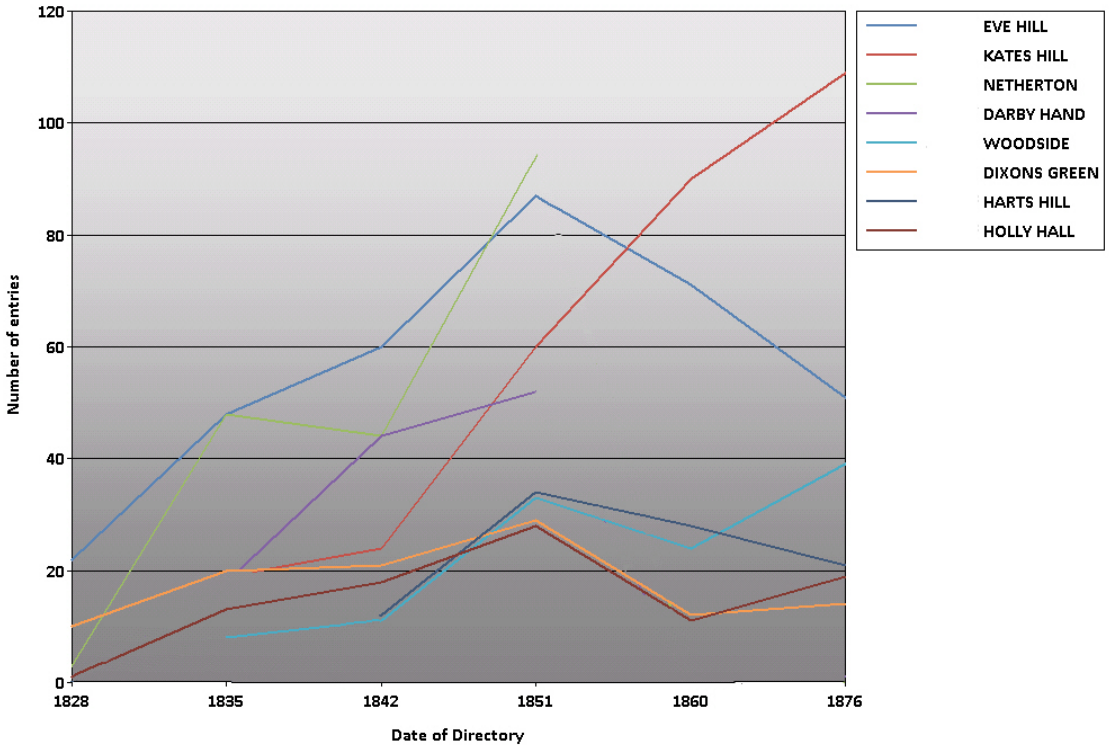


Figure 3.9: Graph showing overall numbers of trade directory entries by year for selected suburbs

Not all the data on the Trade Directories was recorded at street level, and this changed throughout the area and through time. As can be seen from Figure 3.10, the majority of entries were recorded at street level, however, most of these were from Dudley itself (3.11). The suburbs varied widely in whether the entries were recorded at street level or not (Table 3.4). Eve Hill also has most of its entries allocated to a street, and Kate's Hill varies (Figure 3.12). Suburbs such as Dixon's Green and Netherton, on the other hand, are almost entirely recorded at suburb level only (Figure 3.13).

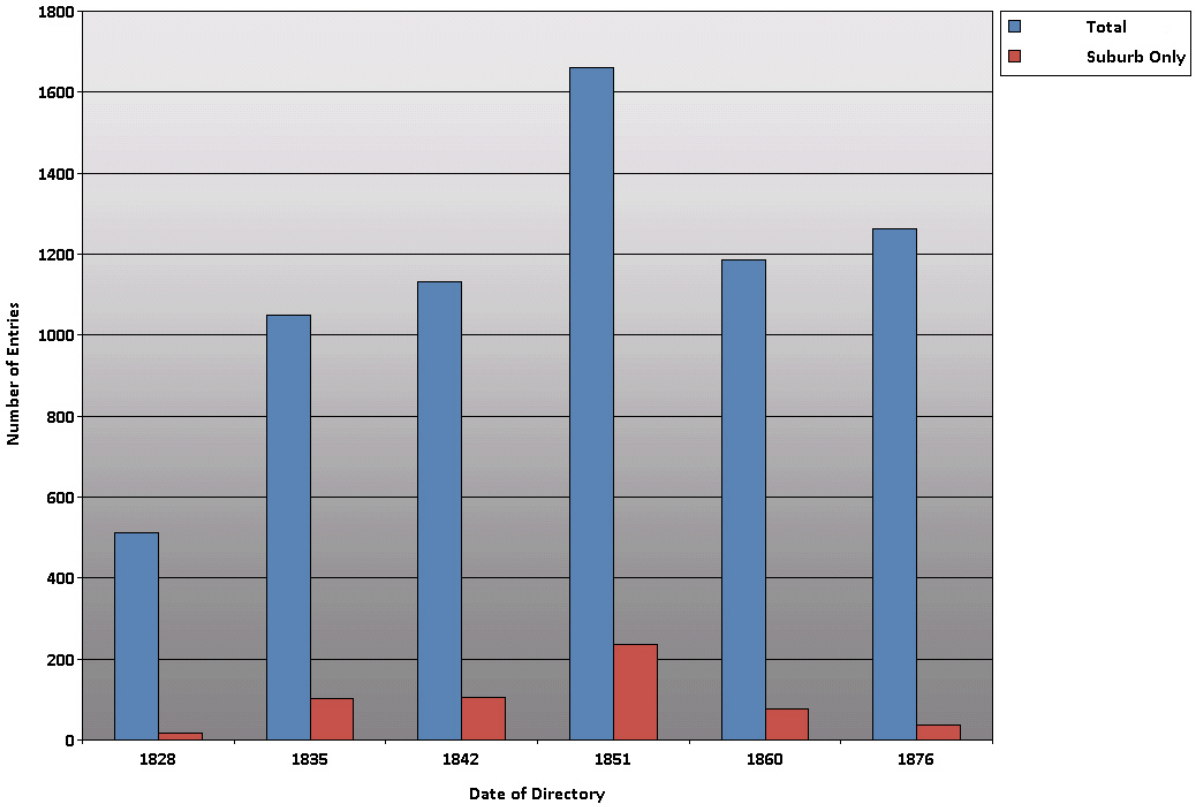


Figure 3.10: Overall number of entries compared to entries recorded at suburb level only

Suburb	Total 1828	Suburb only 1828
BURNT TREE	3	
DIXONS GREEN	10	10
DUDLEY	461	1
EVE HILL	22	2
HOLLY HALL	1	
NETHERTON	3	3
SEDGLEY	1	1
SHAVERS END	1	
BURNT TREE	3	
DIXONS GREEN	10	10
DUDLEY	461	1
EVE HILL	22	2
HOLLY HALL	1	
NETHERTON	3	3
SEDGLEY	1	1
SHAVERS END	1	

Suburb	Total 1835	Suburb only 1835
BAPTIST END	3	
BLOWERS GREEN	1	
BUMBLE HOLE	15	
BURNT TREE	2	1
CAWNEY HILL	6	
CINDER BANK	1	1
DARBY HAND	18	2
DIXONS GREEN	20	20
DUDLEY	736	5
DUDLEY WOOD	8	
EVE HILL	48	
HOLLY HALL	13	7
KATES HILL	19	4
NETHERTON	48	48
PRIMROSE HILL	6	6
SCOTTS GREEN	4	
SHAVERS END	5	1
SPRINGS MIRE	4	
WINDMILL END	1	
WOODSIDE	8	8

Suburb	Total 1842	Suburb only 1842
BAPTIST END	2	
BUMBLE HOLE	13	
BURNT TREE	3	3
CAWNEY HILL	1	
CINDER BANK	4	
DARBY HAND	44	7
DIXONS GREEN	21	21
DUDLEY	816	11
DUDLEY WOOD	4	
EVE HILL	60	
HARTS HILL	12	

Suburb	Total 1851	Suburb only 1851
BAPTIST END	1	
BUMBLE HOLE	24	
BURNT TREE	5	4
CAWNEY HILL	5	
CINDER BANK	2	
CRADLEY HEATH	2	2
DARBY HAND	52	20
DIXONS GREEN	29	29
DUDLEY	1061	3
DUDLEY WOOD	18	
EVE HILL	87	4

HOLLY HALL	18	1	HARTS HILL	34	1
KATES HILL	24	5	HOLLY HALL	28	
NETHERTON	44	44	KATES HILL	59	43
PRIMROSE HILL	6	6	KATES KILL	1	
SCOTTS GREEN	3		NETHERTON	94	89
SHAVERS END	5		PRIMROSE HILL	11	11
SPRINGS MIRE	6		SCOTTS GREEN	5	
WINDMILL END	2	1	WINDMILL END	10	
WOODSIDE	11	7	WOODSIDE	33	31
Suburb	Total 1860	Suburb only 1860	Suburb	Total 1876	Suburb only 1876
BLOWERS GREEN	5		BLOWERS GREEN	1	
BURNT TREE	2		BURNT TREE	3	1
CAWNEY HILL	8		CAWNEY HILL	1	
DIXONS GREEN	12	12	DARBY HAND	1	1
DUDLEY	890	6	DIXONS GREEN	14	14
EVE HILL	72	4	DUDLEY	956	
HARTS HILL	28		DUDLEY WOOD	6	
HOLLY HALL	11		EVE HILL	51	1
KATES HILL	91	31	HARTS HILL	21	
LONDON FIELDS	1	1	HOLLY HALL	19	
NETHERTON	1	1	KATES HILL	109	7
SCOTTS GREEN	1		LONDON FIELDS	1	1
SHAVERS END	7		TANSLEY HILL	2	1
SPRINGS MIRE	9		WOODSIDE	39	12
TANSLEY HILL	1				
WOODSIDE	24	23			

Table 3.4: List of suburbs by year showing total number of entries and entries recorded at suburb level only

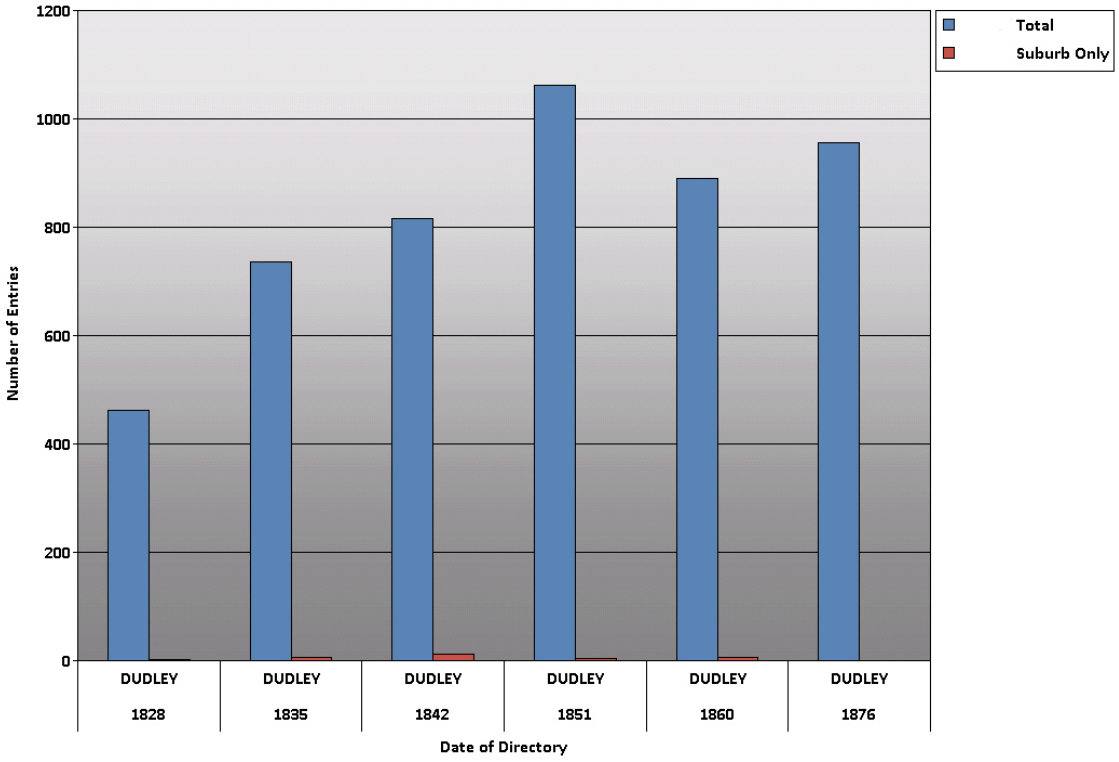


Figure 3.11: Overall number of entries in Dudley compared to entries recorded at suburb level only

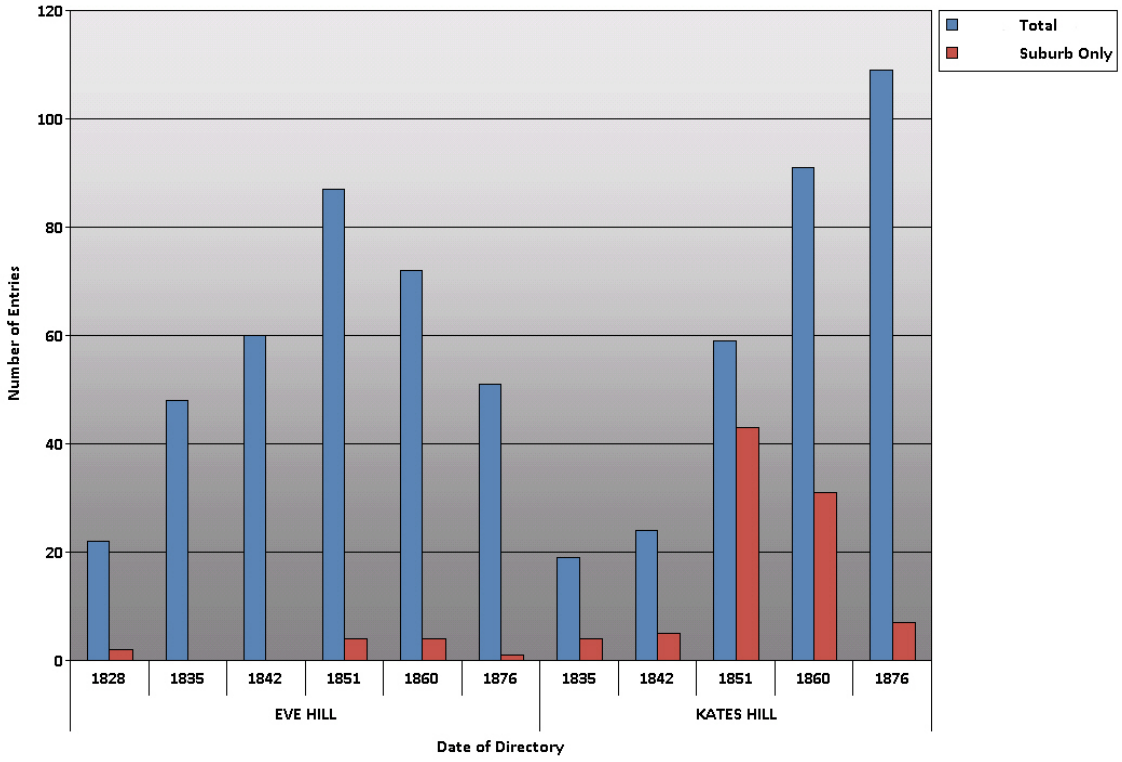


Figure 3.12: Overall number of entries in Eve Hill and Kates Hill compared to entries recorded at suburb level only

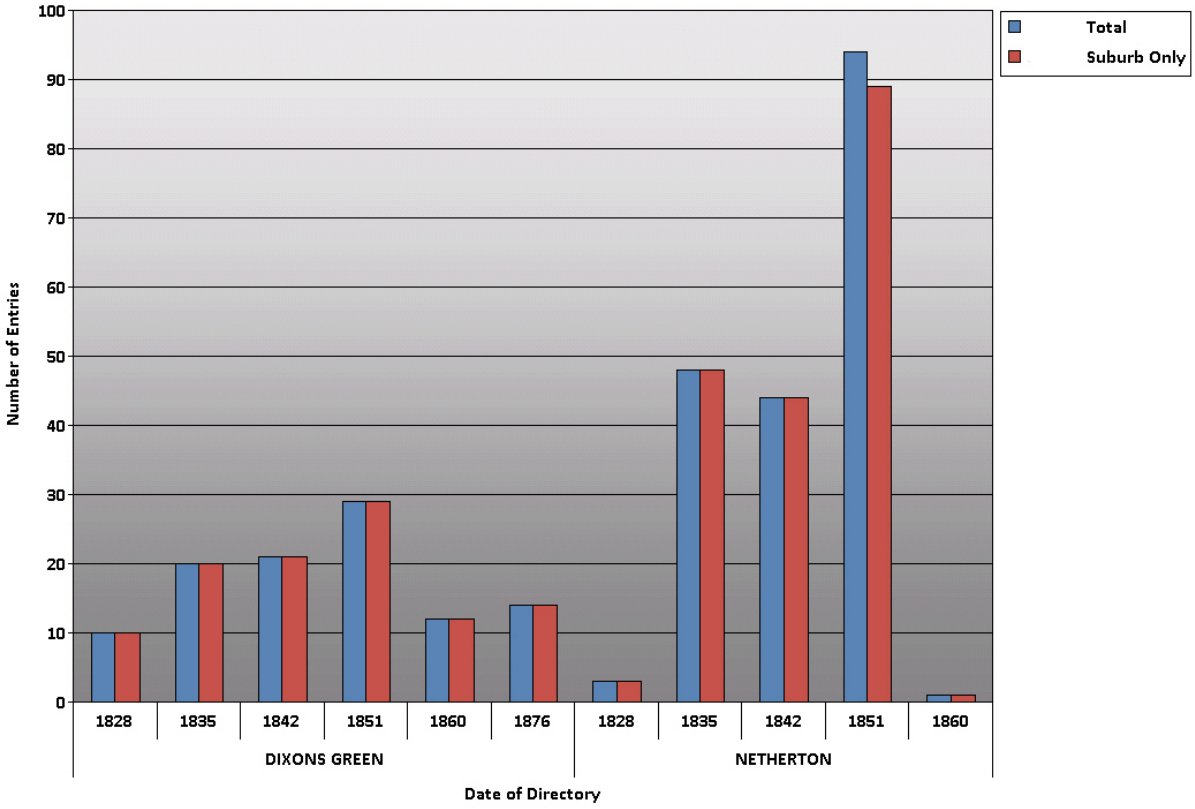


Figure 3.13: Overall number of entries in Dixons Green and Netherton compared to entries recorded at suburb level only

3.2 Statistical analysis of the data (attributes)

From the data a total of 735 attributes were generated and joined to the GIS shapefiles (Appendix 2). Not all these attributes were analysed, or visualised in the final GIS project (Appendix 3). They are, however, all present within the attribute tables of the street and suburb shapefile, which is hoped to be disseminated to aid future research (see below).

The attributes were generated for both suburb and street level, with the hope of identifying broader patterns within the landscape at suburb level, and then being able to analyse these in more detail in a street level.

The attributes can be divided into 4 different categories;

- Counts for street and suburb in individual years
- Ratios for street and suburb in individual years
- Change counts for street and suburb in consecutive years
- Change ratios for street and suburb in consecutive years

3.2.1 Counts

From the data a number of count values were calculated at both suburb and street level. It was hoped that broader trends would be visible in the data at suburb level, and that a better understanding of the trends would be visible by mapping at a street level.

The counts included those at a basic level, buildings, population, number of trade entries, and range of trade categories. Counts of individual occupations and industries at simple category and new category were also calculated, as were counts of specific selected occupations within the MF4 category itself. The data can be shown in table and graph form to illustrate trends within the datasets.

suburb	1841	1851	1861	1871
BAPTIST END	53	54	63	88
BLOWERS GREEN	12	11	25	19
BUMBLE HOLE	64	56		72
BURNT TREE	5	6	5	4
CAWNEY HILL	61	137	175	138
CINDER BANK	56	73	65	68
DARBY HAND	249	206	45	253
DIXONS GREEN	88	87	171	62
DUDLEY	3125	3681	4280	4258
DUDLEY WOOD	195	218		282
EVE HILL	341	371	587	818
HARTS HILL	90	124	192	324
HOLLY HALL	137	159	70	132
KATES HILL	447	493	775	1001
LONDON FIELDS			25	37
NETHERTON	498	663	784	971
PRIMROSE HILL	200	218		294
SCOTTS GREEN	24	20	16	
SHAVERS END	11	54	106	
SPRINGS MIRE	69	69	71	45
TANSLEY HILL	3			
WINDMILL END	40	102		74
WOODSIDE	295	349	413	76

Table 3.5: Growth of Dudley and Suburbs – Number of buildings

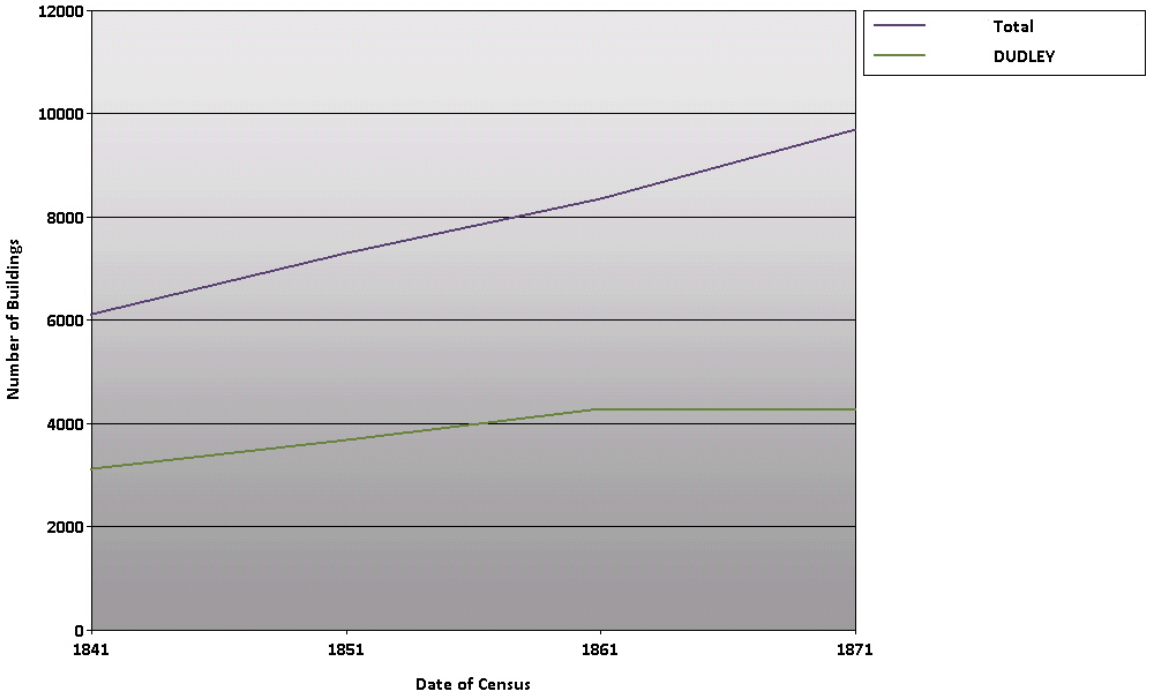


Figure 3.14: Overall growth of the wider Dudley area in terms of buildings recorded on the census, compared with the growth of Dudley itself

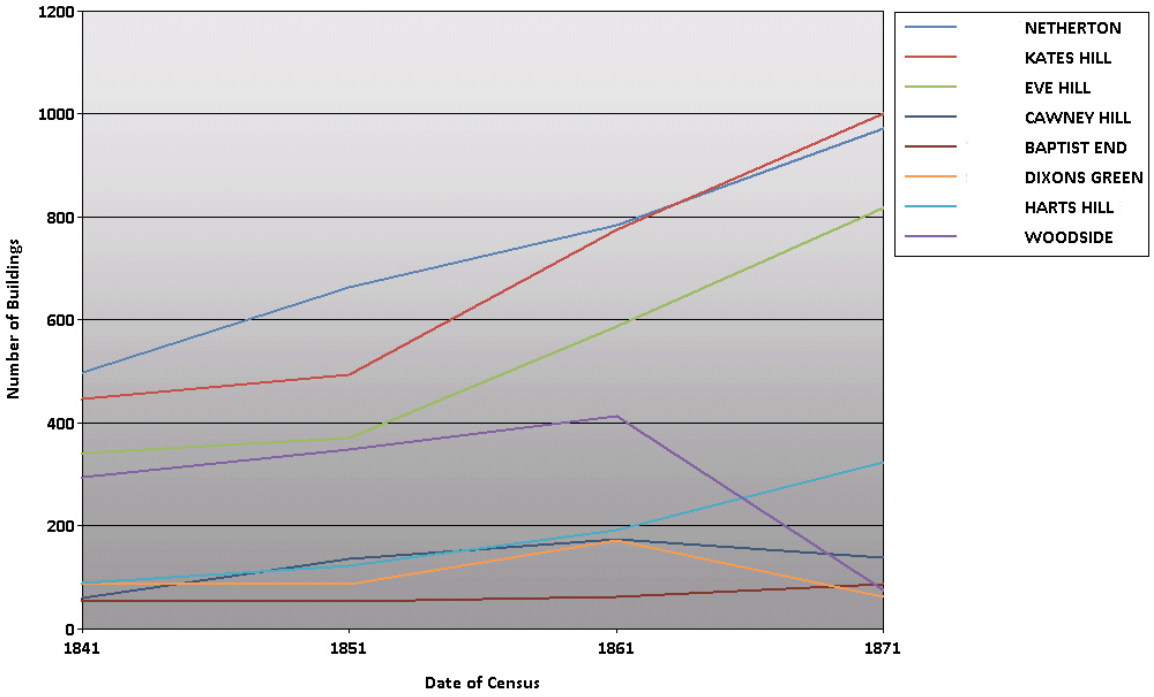


Figure 3.15: Growth of selected suburbs in terms of buildings recorded on the census

While Table 3.5 and Figure 3.14 shows that the growth overall of the area recorded as Dudley and environs on the census is linear, in terms of buildings, Dudley itself (Figure 3.14) and the surrounding suburbs (Figure 3.15) do not follow the same pattern. The breakdown of the individual suburbs shows that Darby Hand, Primrose Hill and Dudley Wood are omitted from the 1861 census (Table 3.5). It is perhaps unlikely that these suburbs ceased to exist at this date, only to re-appear by the time of the 1871 census, nor does it appear that these addresses for these years are incorporated into other suburbs, as there is no corresponding increase in nearby suburbs such as Netherton. Also, the street names occur on both the 1851 and 1871 censuses, so it is therefore more likely that either the dataset used was incomplete, or the original data was not recorded properly, or incorporated for that year into an adjacent area. Therefore, the graph showing overall growth should perhaps have a higher value in 1861.

Not all of the buildings were recorded at street level in the census (a similar pattern is seen in the trade directories), and on occasion streets appear to come and go from the census. Netherton is an example of this, where Cradley Road only appears in the 1861 census, with 502 houses, but is not on any of the other surveys. It is perhaps likely that these houses represent those missing from the census from Darby Hand, Primrose Hill and Dudley Wood. These houses were not included within the Netherton suburb for this date. It is also likely that the now Cradley Road is mis-identified as the Cradley Road in the 1861 census.

suburb	1841	1851	1861	1871
BAPTIST END	256	303	296	358
BLOWERS GREEN	59	70	114	68
BUMBLE HOLE	303	299		371
BURNT TREE	21	43	26	19
CAWNEY HILL	314	696	754	587
CINDER BANK	320	391	331	323
DARBY HAND	1367	1131	218	1364
DIXONS GREEN	415	443	845	282
DUDLEY	15594	19018	20003	17873
DUDLEY WOOD	1073	1258		1391
EVE HILL	1731	1903	2538	3431
HARTS HILL	437	358	927	1501
HOLLY HALL	699	806	359	531
KATES HILL	2145	2472	3324	4303
LONDON FIELDS			106	174
NETHERTON	2500	3306	3818	4589
PRIMROSE HILL	989	1146		1484
SCOTTS GREEN	113	120	98	
SHAVERS END	73	309	480	
SPRINGS MIRE	353	354	407	192
TANSLEY HILL	25			
WINDMILL END	217	539		388
WOODSIDE	1618	1869	2133	354

Table 3.6: Growth of Dudley and the Suburbs – Population

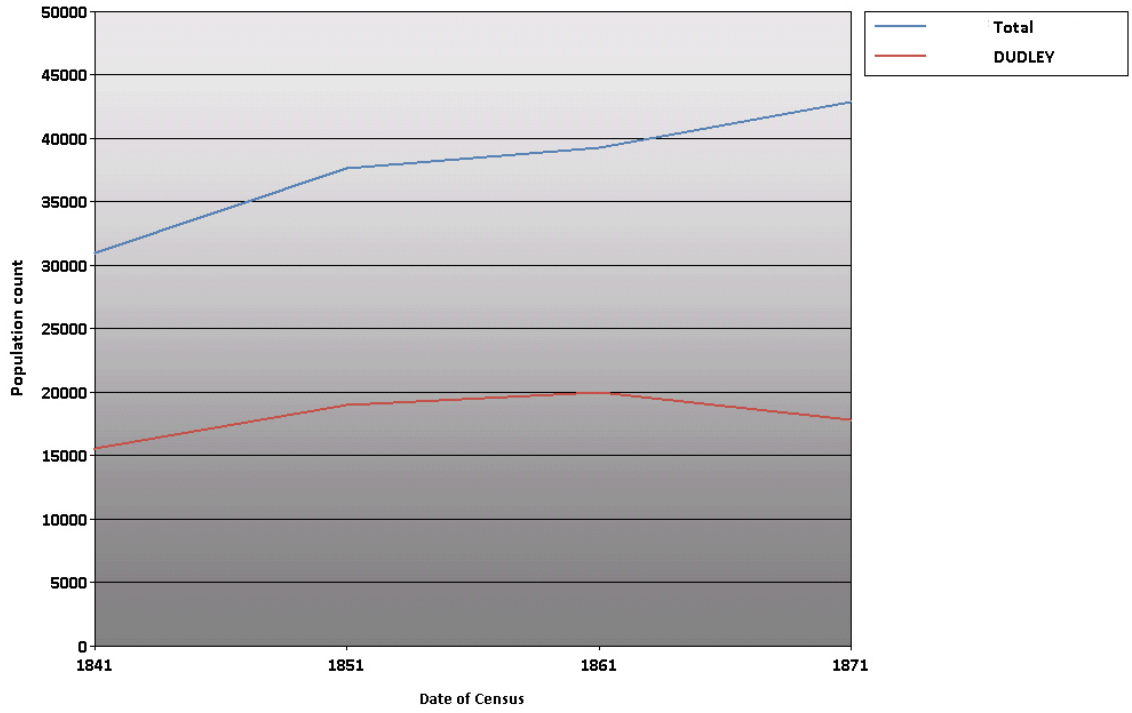


Figure 3.16: Overall growth of the wider Dudley area in terms of population recorded on the census, compared with the growth of Dudley itself

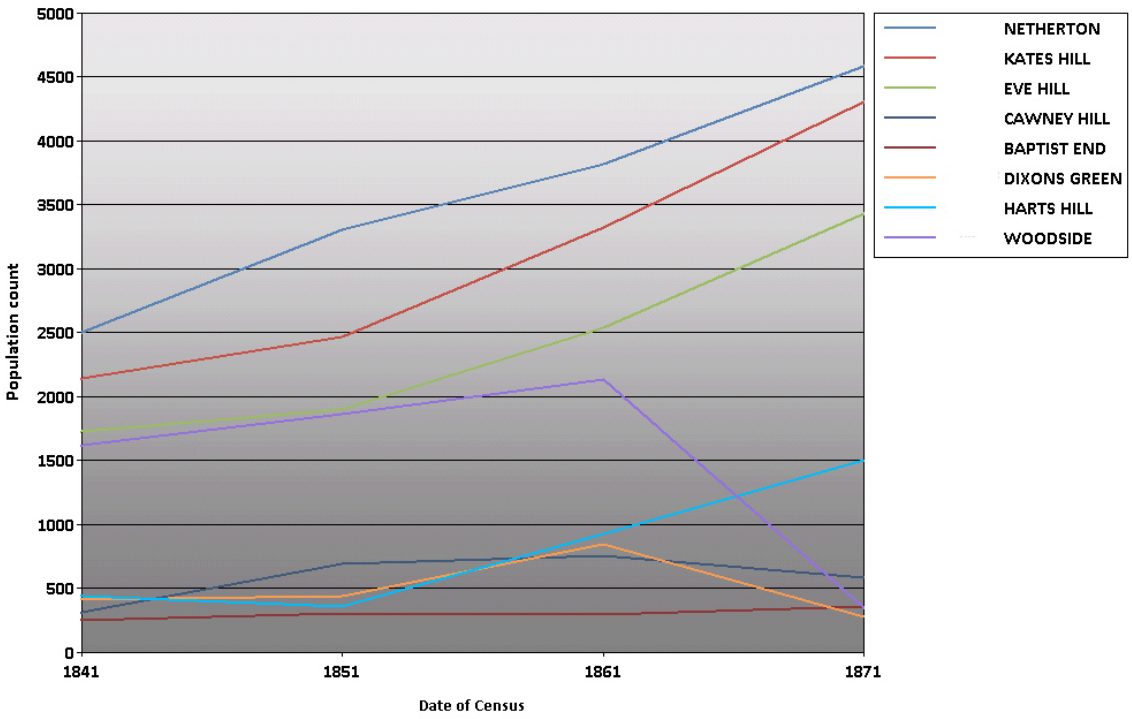


Figure 3.17: Growth of selected suburbs in terms of population recorded on the census

While there is a linear overall growth in the number of buildings (Figure 3.14), the growth of the population is slightly different. For Dudley there is a less steep increase in numbers of people until 1861, with a drop in population in 1871 (Figure 3.16). Comparisons of Figures 3.14 and 3.16 show that the growth of Dudley differs in terms of buildings and population, where in the growth of the suburbs the two are much more similar (Figures 3.15 and 3.17).

The overall count of entries within the trade directories has been discussed above. In terms of trade directory categories Table 3.7 and Figure 3.18 further show the break down of the most common Simple Trade Category, illustrating that in overall terms, dealing and manufacturing show a similar pattern to the general trend identified in Figure 3.8. Figures 3.19 and 3.20 illustrate how this overall pattern varies in the suburbs.

Simple Category by Date							
simpleCAT	**Total Of ID**	**1828**	**1835**	**1842**	**1851**	**1860**	**1876**
D	3654	208	520	575	914	678	759
MF	2257	236	421	417	528	324	331
B	365	33	55	69	108	50	50
PP	264	23	31	41	48	58	63
DS	89	7	10	14	24	19	15
M	72	1	4	5	18	24	20
AG	46	2	3	9	10	11	11
T	30		5	3	9	8	5
IS	16	2			3	6	5
S	10					6	4
PO	1					1	

Table 3.7: Simple categories by date

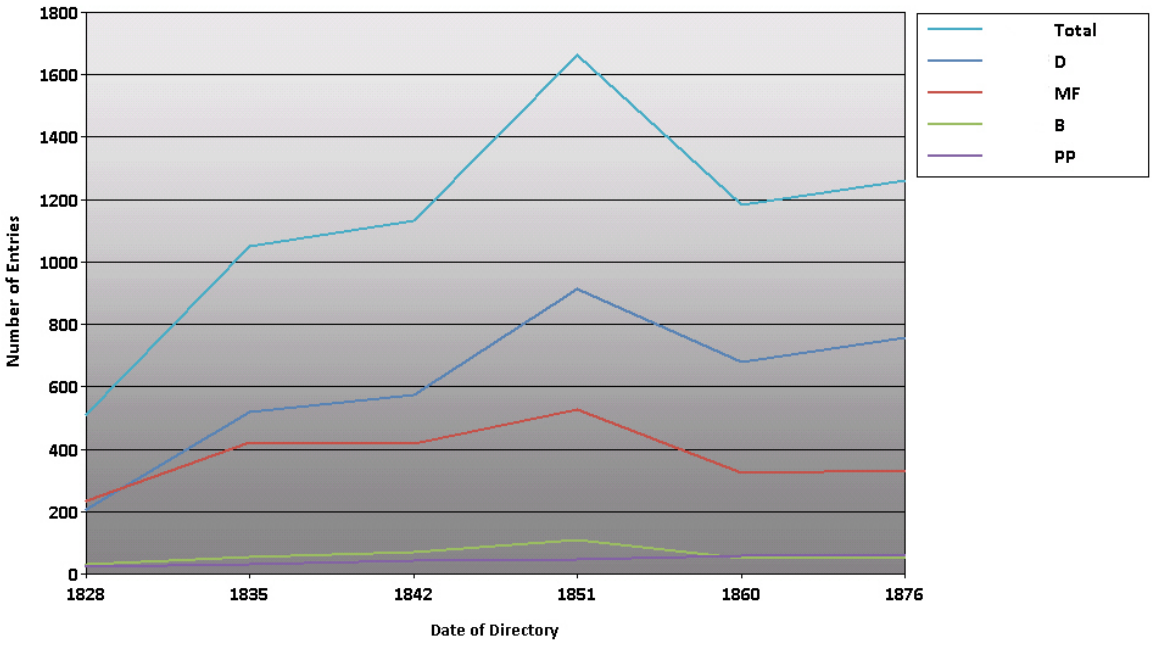


Figure 3.18: Selected simple trade directory categories by date

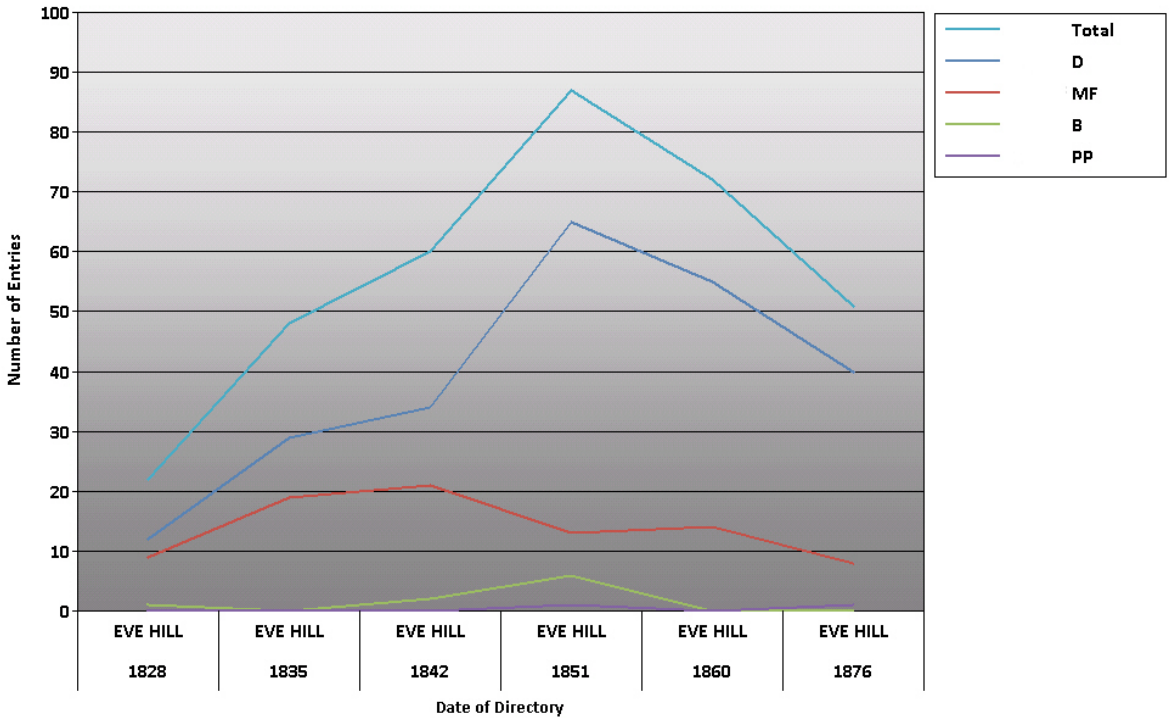


Figure 3.19: Selected simple trade categories by date for Eve Hill

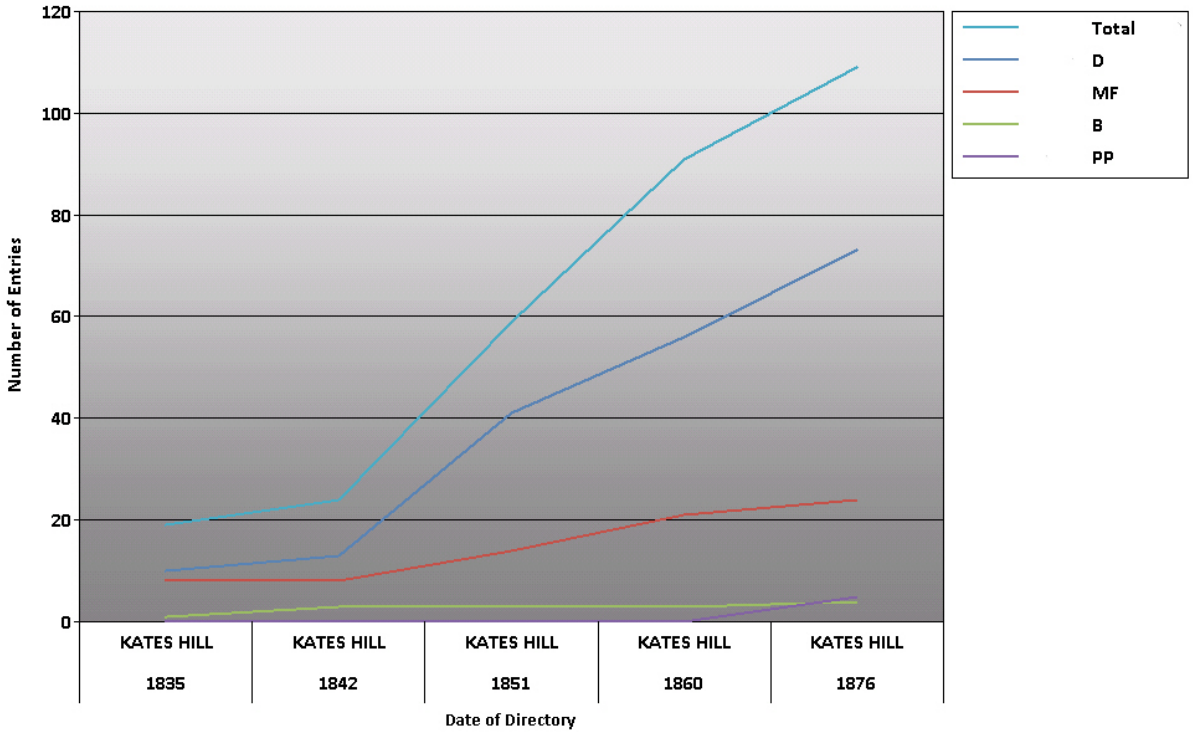


Figure 3.20: Selected simple trade categories by date for Kates Hill

While counts were made of simple trade categories for both suburbs and streets, the data was further analysed at street level to identify the number of new trade categories present within each street, in an attempt to determine and map diversity of trades within the area (Table 3.8 and Figure 3.21). The data shows that while there is growth in diversity along some streets, others show a relatively stable number of revised categories throughout the time period.

RevStreet	1828	1835	1842	1851	1860	1876
BATH STREET, D	1	7	6	6	5	5
BIRMINGHAM STREET, D	4	8	6	7	5	7
BOND STREET, D	3	4	9	15	10	10
CASTLE STREET, D	18	21	21	24	17	20
CHURCH STREET, D	5	5	6	8	7	7
CONSTITUTION HILL, D	1	4	4	5	7	6
FLOOD STREET, D	10	10	7	11	11	10
HALL STREET, D	21	21	20	20	16	23
HIGH STREET, D	31	30	31	29	28	30
HOLLY HALL, HH	1	2	8	9	8	9
KING STREET, D	22	20	20	26	26	20
MARKET PLACE, D	8	9	10	11	11	2
MINORIES, D	2	3	4	4	2	3
NEW HALL STREET, D	7	5	7	11	7	11
NEW MILL STREET, D	6	10	9	11	7	6
NEW STREET, D	13	9	17	15	15	12
OAKEY WELL STREET, D	3	7	7	8	8	5
OLD MILL STREET, D	2	4	5	6	3	5
PORTERS FIELD, D	1	3	4	7	8	4
PRICE STREET, D	1	1	1	4	3	3
PRIORY STREET, D	3	7	6	10	12	12
QUEENS CROSS, D	5	9	12	12	19	20
SALOP STREET, EH	4	6	7	14	9	12
STAFFORD STREET, D	1	6	11	16	16	14
STONE STREET, D	7	8	11	17	10	12
TOWER STREET, D	5	10	13	11	14	8
VICAR STREET, D	4	8	4	10	3	8
WOLVERHAMPTON STREET, D	18	23	26	23	30	28

Table 3.8: Number of new trade categories (revised categories) for selected streets by date

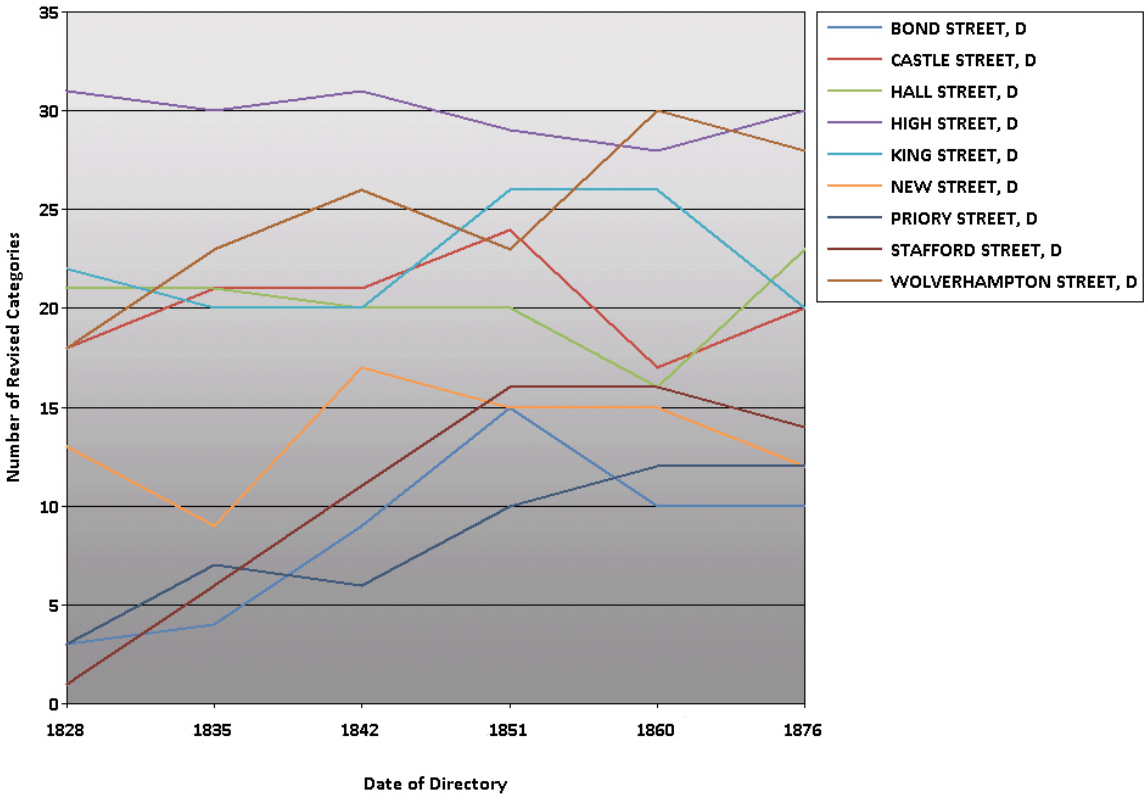


Figure 3.21: Number of new trade categories (revised categories) for selected streets by date

As well as mapping the count and range of trades present within the trade directories, the individual categories themselves can be separated and mapped. The most common simple categories are MF (manufacturing) and D (dealing), and within these, some categories are far more prevalent than others. The most common categories dominate the data, and are perhaps unsurprisingly, iron working, food and dress, necessary commodities for any industrial region (Figures 3.22 and 3.23). However, it is also possible to map the count and distribution of less common categories throughout the area.

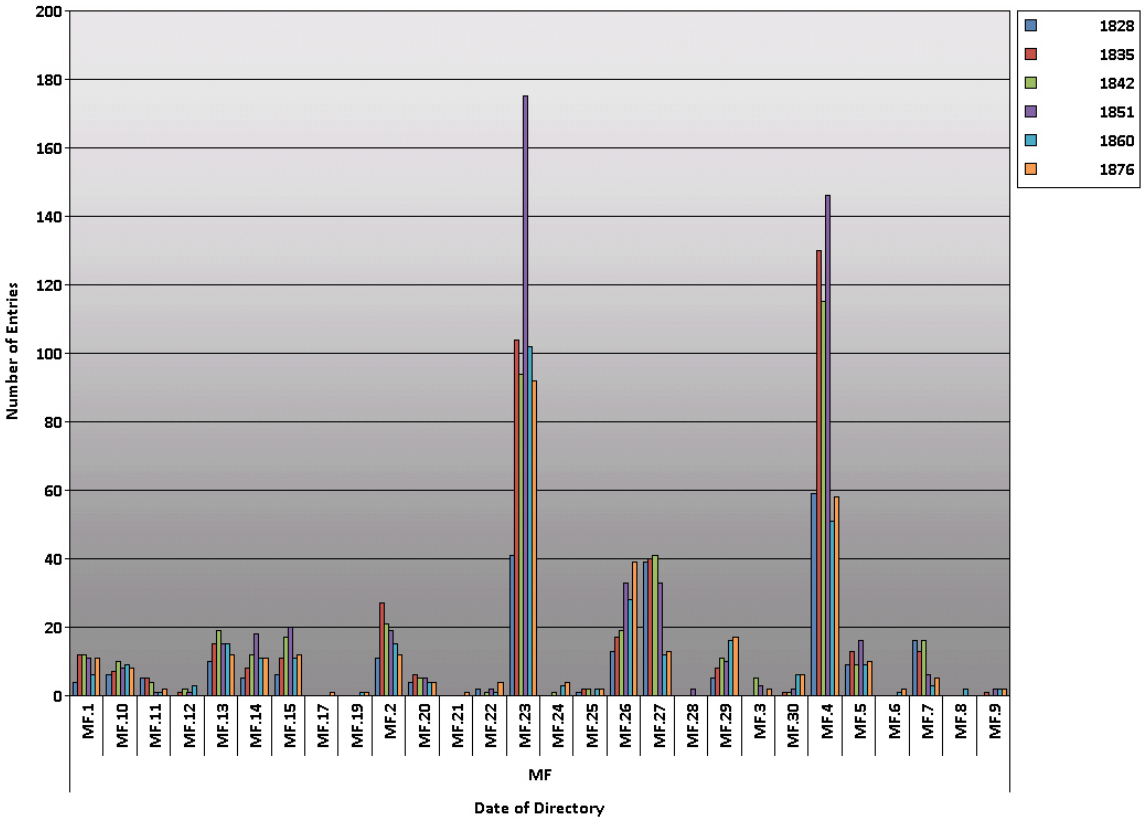


Figure 3.22: Count of entries for individual manufacturing categories by date

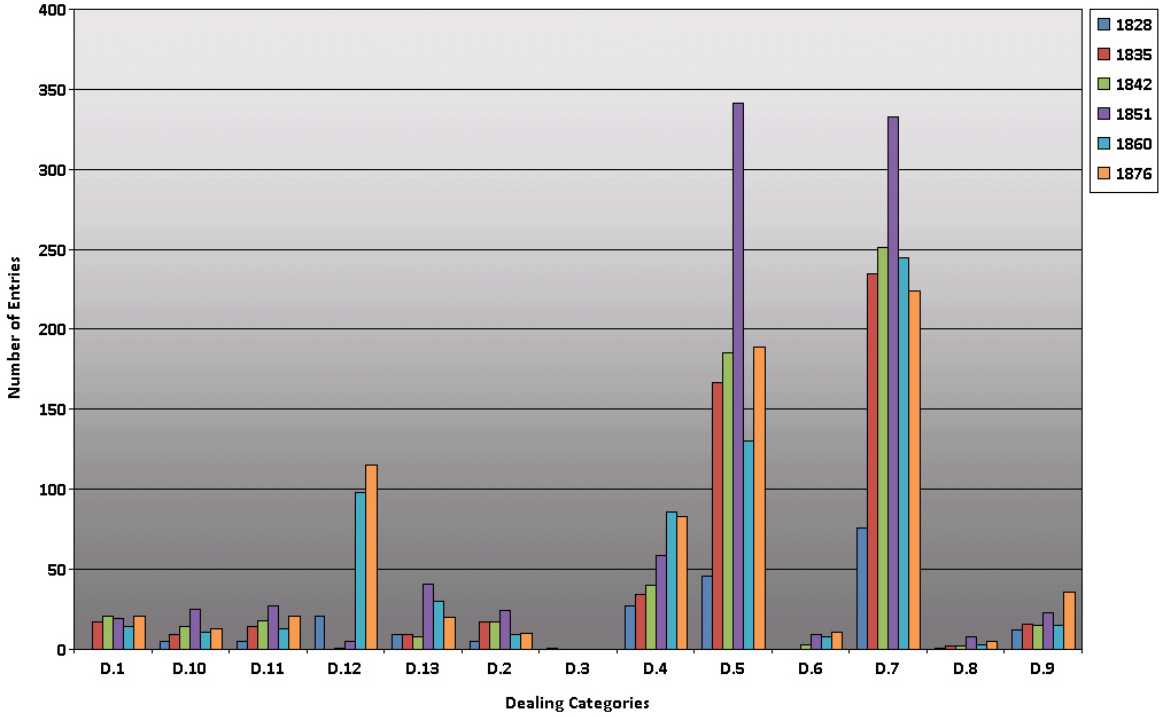


Figure 3.23: Count of entries for individual dealing categories by date

Figure 3.22 for instance, shows the overall numbers of entries within the Manufacturing category. MF 4 and 23 (iron and dress) are the most common, with 26 and 27 (baking and drink preparation) also having significant numbers. MF2, representing the manufacture of tools shows a decline overall between the years, while MF 29, representing watches, instruments and toys, shows a small but steady increase. The pattern of distribution through time varies between the suburbs (for instance Figure 3.24 and 3.25). Figure 3.23 shows the overall number of entries within the Dealing category, and Figures 3.26, 3.27 and 3.28 illustrate how these numbers can vary for Dudley, Eve Hill and Kates Hill.

Within MF4, the most common types of industry are shown in Figure 3.29. This data is only shown up to 1851, as changes in number between 1851 and 1860 are likely to be due to changes in recording methodology. However, it can be seen that while between 1828 and 1835 there is an increase in all branches of ironworking manufacturing, after this date, some types decrease while others continue to increase. 'Chain, anchor, trace and nail manufacturing' in particular, experiences a particular decline in numbers recorded. It should be noted, once again, that it is possible that this is due to bias in the records. While nail manufacturing was one of the mainstay industries of this area, it is possible that the decline in records represents a decline in perceived importance of the industry of the record collectors, rather than a decline in the industry itself. However, without additional cross-referencing to alternate data sources, neither hypothesis can be proved conclusively.

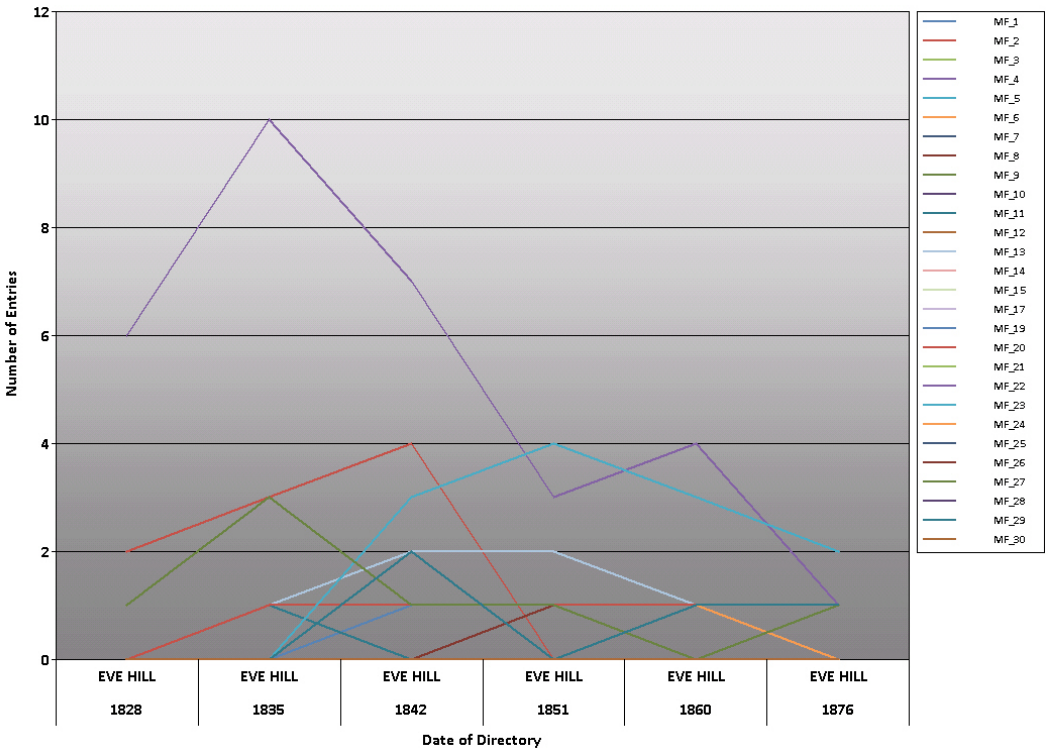


Figure 3.24: Count of manufacturing categories by date in Eve Hill

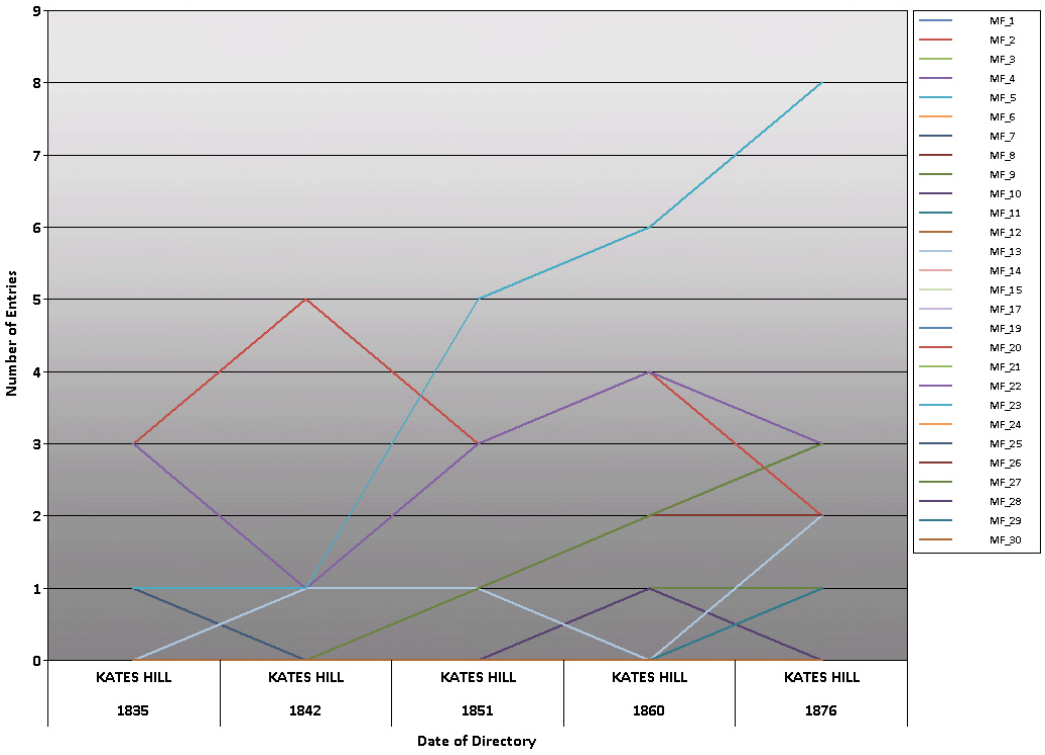


Figure 3.25: Count of manufacturing categories by date in Kates Hill

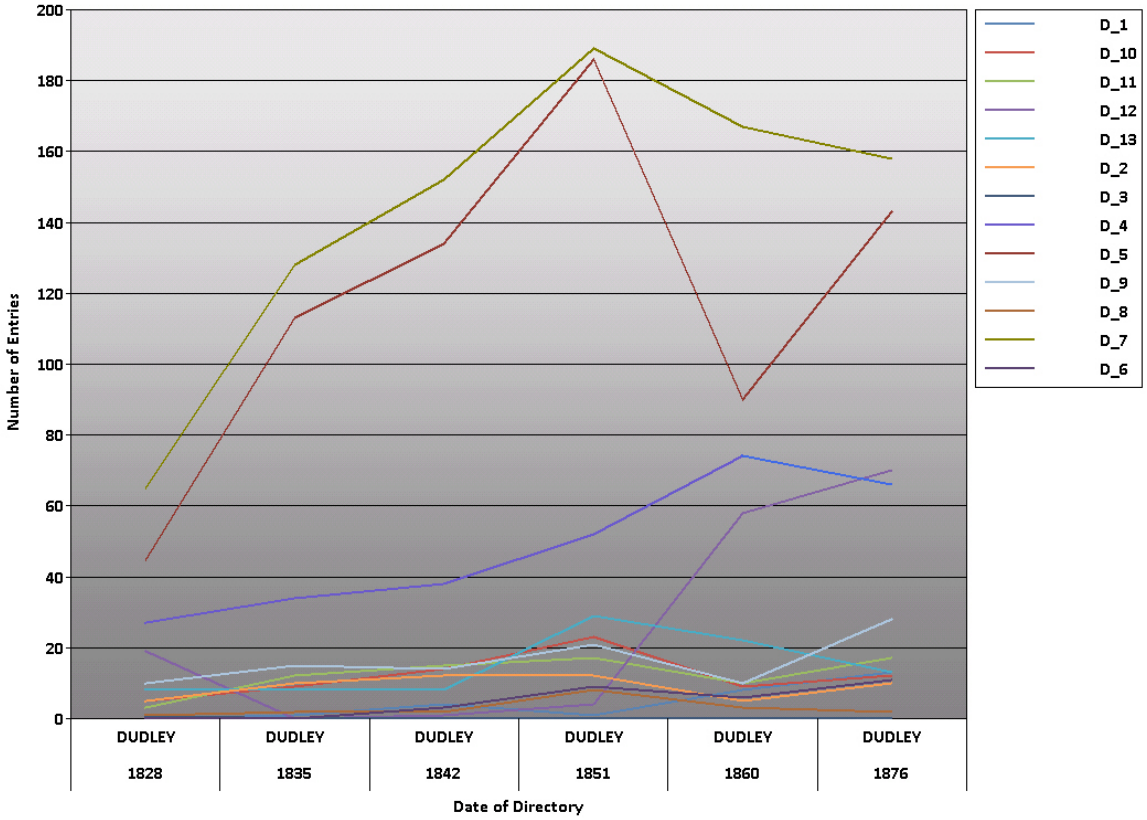


Figure 3.26: Count of individual dealing categories by date in Dudley

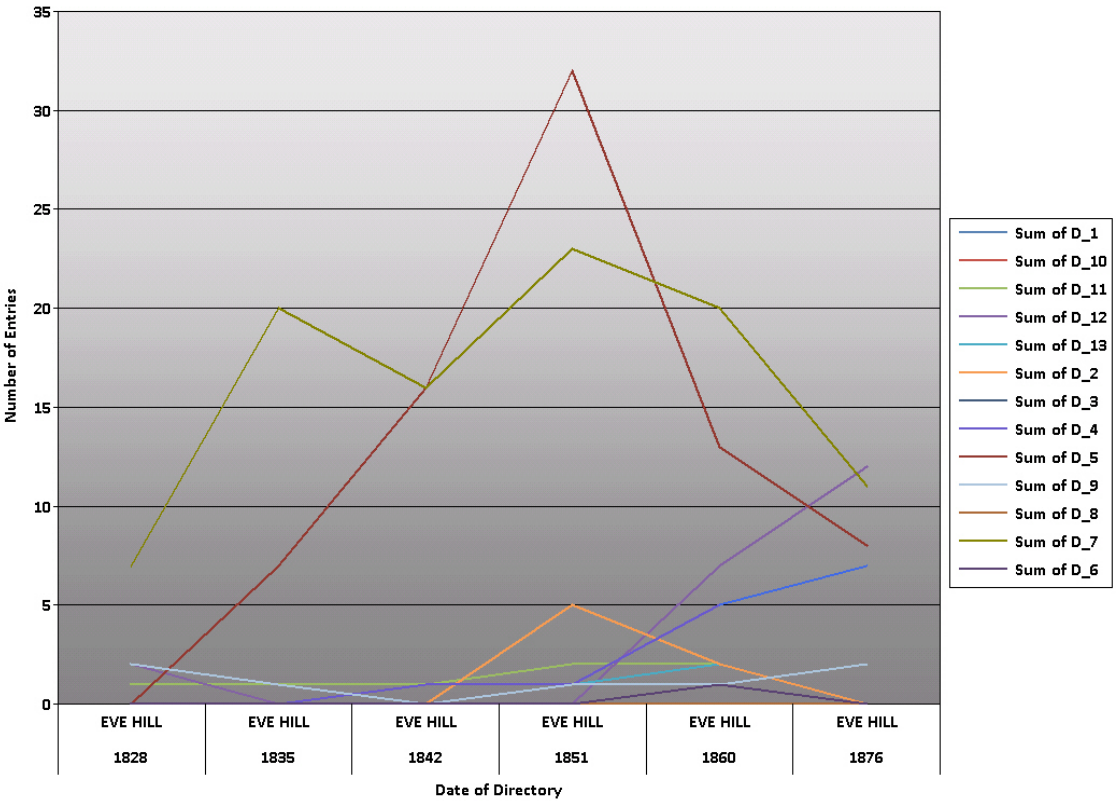


Figure 3.27: Count of individual dealing categories by date in Eve Hill

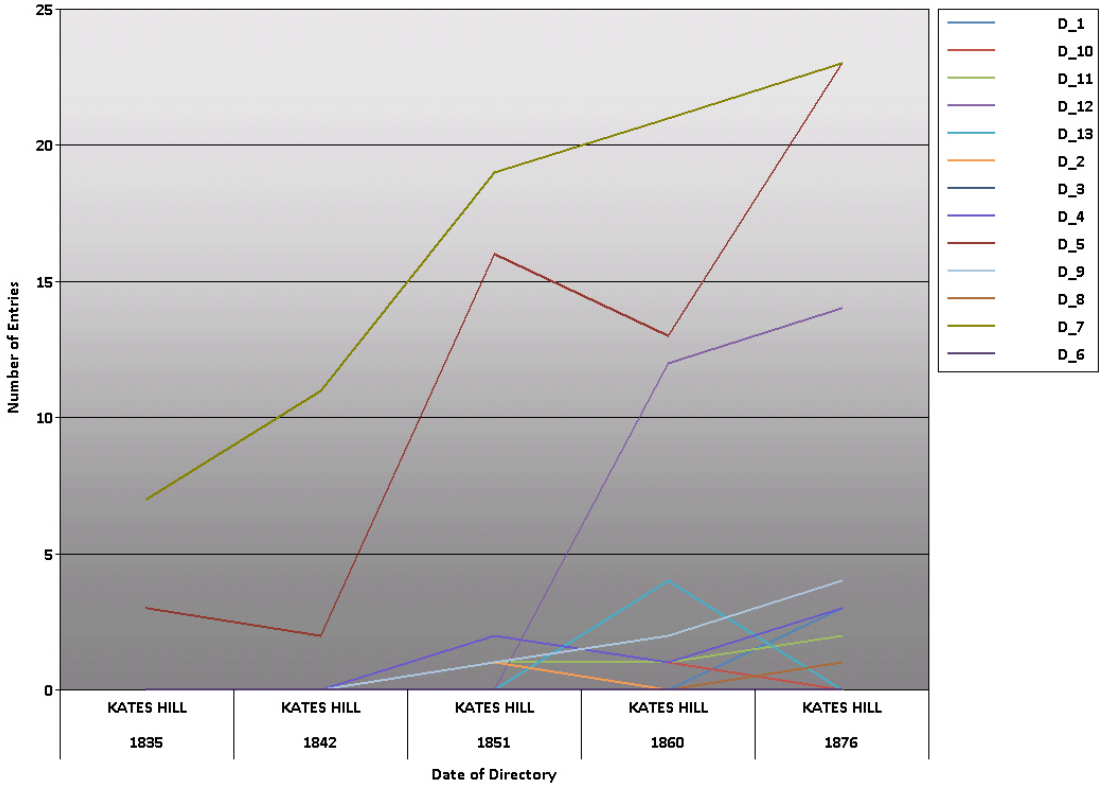


Figure 3.28: Count of individual dealing categories by date in Kates Hill

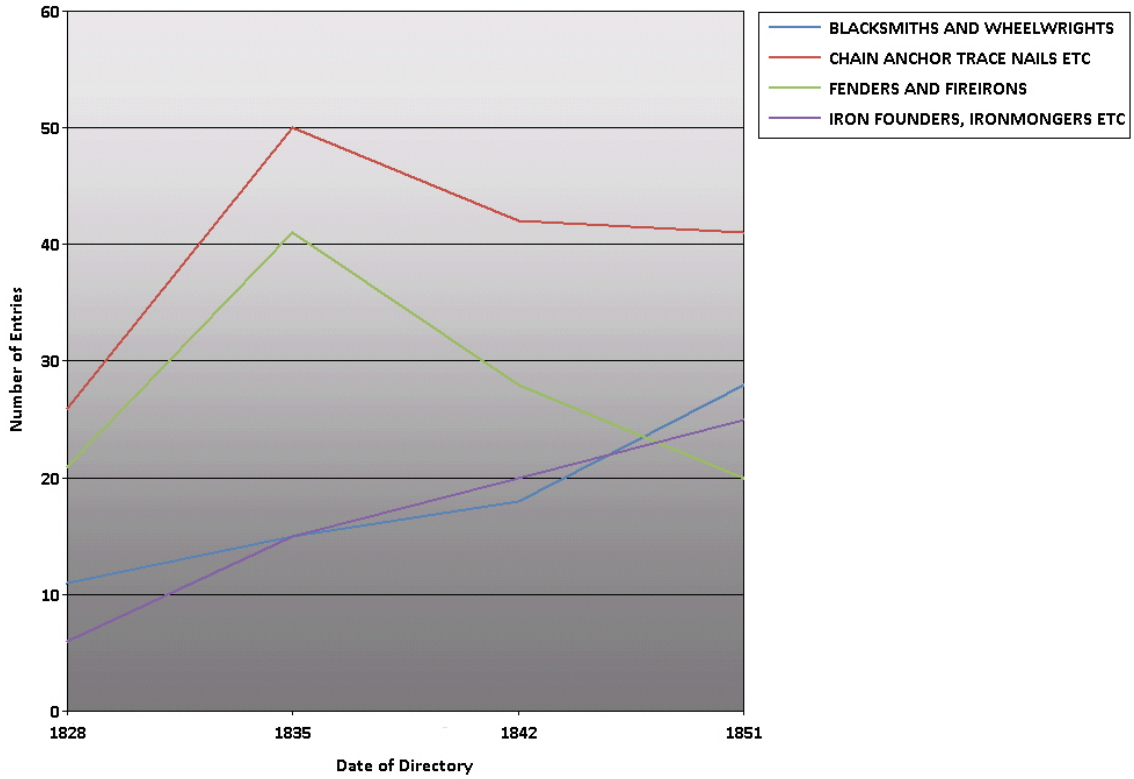


Figure 3.29: Count of most common occupations within the MF4 (ironworking) category by date.

3.2.2 Ratios

It was determined that while the tables of simple counts could be used to symbolise the streets, the count itself was not always appropriate. The number of buildings, people or trades recorded is linked to the length of a street, and anomalies can also occur when the count for an individual street or suburb is very low. Ratios of selected datasets were therefore also calculated to attempt to analyse and visualise the data in a more coherent way.

From the census data, an index of population density was created by comparing the number of buildings to the number of people (Population/Buildings Table 3.9 Figure 3.30). This was designed to identify areas of crowding, as although the number of buildings themselves would give an idea of density, the number of inhabitants per building may be used as an index of wealth. Another index was created to compare the number of buildings to street length (Street Length/Buildings). This particular index is likely to be erroneous for the longer, linking streets where buildings would cluster at particular places along it, but is considered relevant in more built up, established areas.

The growth of the population within Dudley and the surrounding suburbs is, perhaps unsurprisingly, similar but not identical to the growth of the buildings. However, as we can see that the number of people per building differs throughout the years analysed, it stands to reason that there would be changes within each street. Taken overall, the data shows that the ratio of people per building declines over the period in question for all suburbs. However, there is an increase in population per building for some areas between 1841 and 1851, while others decline at a more gentle, and constant rate.

NEWSUBNAME	P_B1841	P_B1851	P_B1861	P_B1871
DUDLEY	4.99	5.171	4.67	4.2
EVE HILL	5.08	5.1231	4.32	4.19
SHAVERS END	6.64	5.72	4.53	0
BURNT TREE	4.2	7.17	5.2	4.75
KATES HILL	4.82	5.01	4.296	4.3
CAWNEY HILL	5.151	5.08	4.317	4.25
DIXONS GREEN	4.72	5.09	4.94	4.55
TANSLEY HILL	8.33	0	0	0
BAPTIST END	4.83	5.61	4.71	4.078
CINDER BANK	5.71	5.36	5.09	4.75
BUMBLE HOLE	4.73	5.34	0	5.15
WINDMILL END	5.42	5.28	0	5.24
DARBY HAND	5.49	5.494	4.84	5.39
NETHERTON	5.02	4.99	4.87	4.737
PRIMROSE HILL	4.94	5.26	0	5.05
WOODSIDE	5.48	5.366	5.16	4.66
HOLLY HALL	5.1	5.07	5.13	4.02
HARTS HILL	4.86	2.89	4.83	4.638
BLOWERS GREEN	4.927	6.36	4.56	3.58
DUDLEY WOOD	5.5	5.77	0	4.93
SPRINGS MIRE	5.12	5.13	5.73	4.27
SCOTTS GREEN	4.71	6	6.12	0
LONDON FIELDS	0	0	4.24	4.70

Table 3.9: Average number of people recorded per building on each census year for each suburb

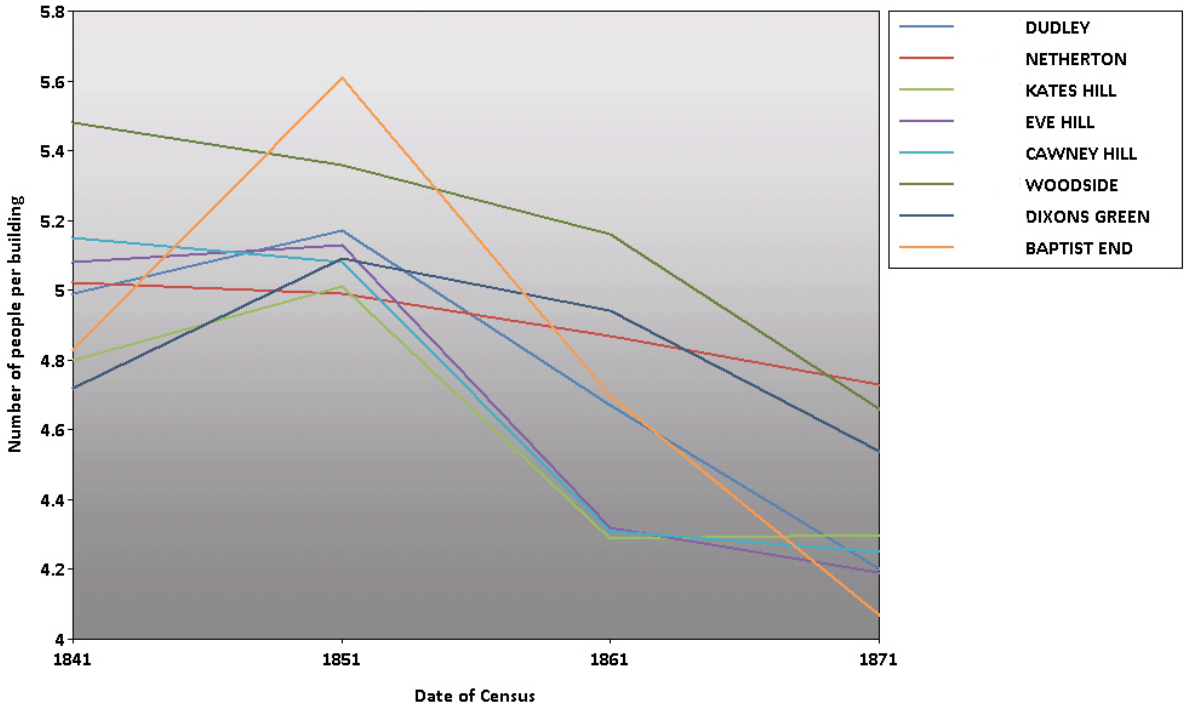


Figure 3.30: Average number of people per building for selected suburbs for each census year

The proportions of simple trade categories represented as a percentage of overall totals were also calculated in an attempt to rectify bias in the counts of the trades. This included the percentage of dealing and manufacturing categories at both suburb and street level.

An idea of the bias in the trade directories, in terms of spatial distribution of entries, can be gained by calculating the ratio of trade directory entries to the results of the census data. Only the 1851 directory and census were of a comparable date, however further research could extrapolate the counts for in-between years. The trade directory data (count per street) was compared with buildings, rather than individuals for the year 1851. This decision was based on the fact that the census data as was inputted into the database did not record the ages of the population (although that data is there in the original dataset). The population count, therefore, does not take into consideration how many people were of

employable age. However, it is more likely (though not necessarily the case), that each building would contain one or more households with someone who was an employer, or employed.

3.2.3 Change

The data can be used to symbolise the shapefiles and enhance the mapping at a particular date, but can also be used to identify change within the suburbs and the streets, by comparing the datasets calculated for each year to one another. That is, by subtracting the population in a particular street in 1841 from the population in the same street in 1851, a measure of how much a particular street has grown or fallen in population between those two years. This again can be used as an attribute to symbolise the mapping. Change was calculated for all values of count and ratio.

As can be seen from the census data, there are issues with the numbers included in the 1851 census. However, at a street level it is easy to identify streets where the numbers are a problem, and only conduct the analysis on those which have consecutive entries. The change values can be calculated as a count, or as a percentage rise or gain of population or buildings. Likewise changes in density by buildings/street length can be calculated giving an indication of physical change and rebuilding in any particular street, but also changes of density of population within each building, which can perhaps be used as an indication of change in social status of a particular street.

This is invaluable data at a street level, as it truly highlights changes in the physical attributes of each street, and as such, visualising these attributes in an overall map can show areas

where the population or buildings are changing in a wider context. While it is recognised that the town and its suburbs grew during the period under investigation, the mapping alone can only show the physical growth outwards. By assigning attributes generated from the documentary sources, the effect and nature of this growth on the already established streets can be analysed, and understand how these were affected by the growth of the town and area in general.

3.3 Discussion of selected mapping

Once the attributes had been calculated, they were used to generate a series of maps showing both the spatial distribution of the attributes generated from the census and trade directories for a particular year, and also the changes in these attributes between years. This is discussed in more detail in Appendix 3, with the digital GIS project included as an ArcReader project.

The primary layers were grouped within the GIS as

- COUNT street (20 layers)
- COUNT suburb (38 layers)
- RATIO street (21 layers)
- RATIO suburb (20 layers)
- CHANGE COUNT street (47 layers)
- CHANGE COUNT suburb (21 layers)
- CHANGE RATIO street (32 layers)
- CHANGE RATIO suburb (32 layers)

An additional grouping was made of layers relating to the Manufacturing category (49 layers), including the count and distribution of selected categories, changes to selected

categories, and the distribution of specific trades within the MF4 (ironworking) category. A smaller grouping mapping the count of residents was also created (4 layers). A sequence of maps was produced showing the growth (by street recorded) of Dudley and the suburbs, and further maps were produced visualising a selection of attributes calculated from the database data.

In general terms it was hoped that counts of buildings and population would help map the relative size of each urbanised area in terms of the built environment and the inhabitants. Likewise, mapping counts of trades, albeit very biased in terms of the original recording, was hoped to give an indication of the size, nature and distribution of particular industries and occupations throughout the area. The range of category count was hoped to map diversity of trades within the landscape at both suburb and street level.

Mapping the ratios was hoped to highlight areas of crowded population and buildings (potentially as an indicator of wealth), and of the character of an area in terms of the occupations of its inhabitants. Mapping attributes such as the percentage of manufacturing was hoped to identify industrial areas within Dudley and the suburbs, as opposed to more residential areas.

Mapping changes to these values of both count and ratio was hoped to identify within the landscape at both suburb and street level areas of growth, decline and character in terms of buildings, population and industry.

The first map available for the map sequence available within the Dudley area is Court's map of 1785, which mainly shows the built up area along and either side of the High Street as a block, and detailed depictions of the field systems surrounding it. The next maps are Treasure's map of 1835 and an anonymous map of 1836. Then there is Richard's map of 1865, before the sequence comes to the Ordnance Survey 1st Edition in the late 19th century.

Date	Type	Name
1785	Map	Court
1828	Directory	
1835	Map	Treasure
1835	Directory	
1836	Map	Anonymous
1841	Census	
1842	Directory	
1851	Census	
1855	Directory	
1860	Directory	
1861	Census	
1865	Map	Richards
1871	Census	
1876	Directory	

Table 3.10: Full list of mapped resources by date

As can be seen on Table 3.10, the documentary evidence has the potential to fill the 30 year gap between 1835 and 1865, and also the gap between 1865 and the time of the Ordnance Survey 1st Edition, as well as to illuminate the map sequence with more detailed data regarding the population and their occupations.

There are, however, discrepancies between the documentary evidence and the mapping. The digitised streets were given an attribute of 1st date, which relates to the first date each one was mentioned in the documentary sources. However, it can be seen when comparing the maps and data of similar ages that this is not always in concordance. There is likely to be

a number of reasons for this. The trade directories, for instance, only record businesses of import, and thus not every street will be recorded. This is especially true for the early suburbs and streets on the outskirts of the main built up areas. Furthermore, the censuses at times only recorded the suburbs as an address, rather than streets names, and also, the street names changed and at times were not able to be placed. However, there are patterns within the documentary record that can enhance our understanding of the growth of the town.

Growth by date

This exercise mapped the occurrence of the streets as they appear in selected documentary sources

Figure 3.31: A

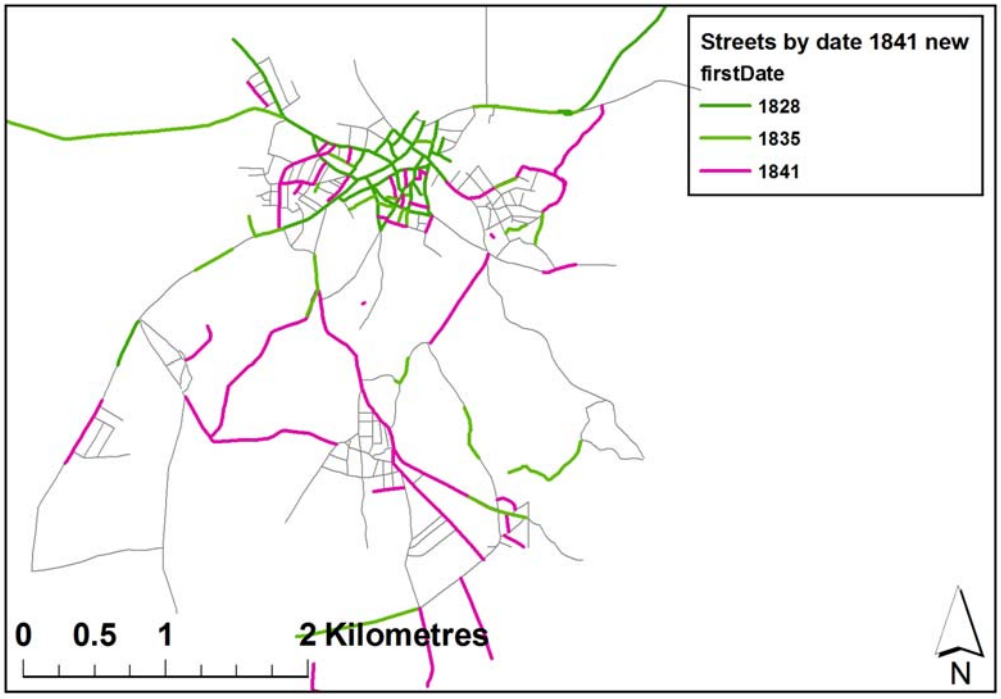


Figure 3.31: B

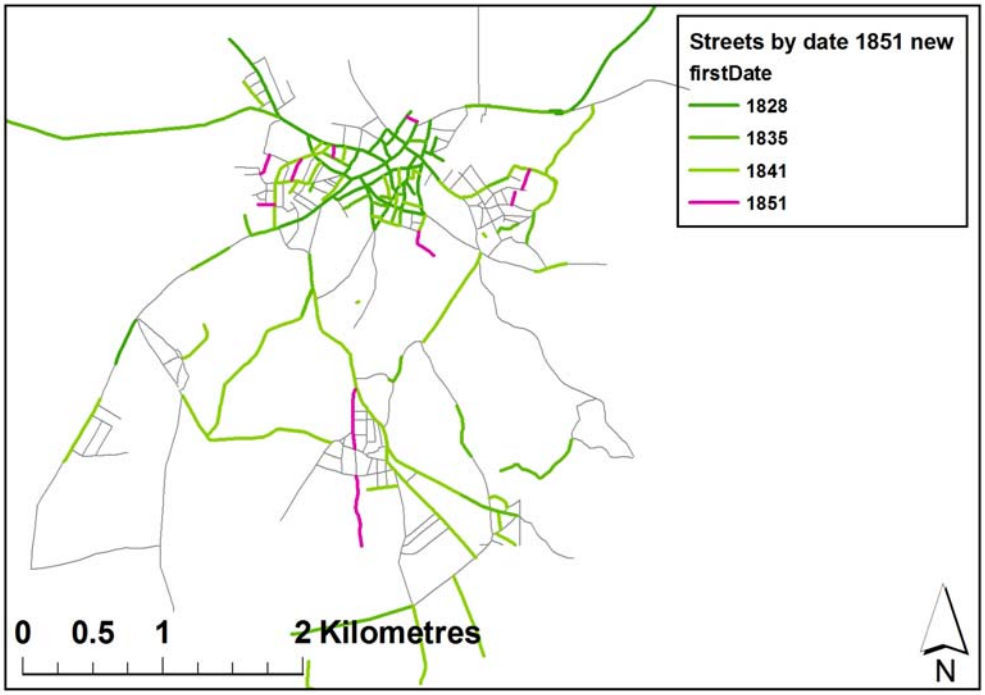


Figure 3.31: C

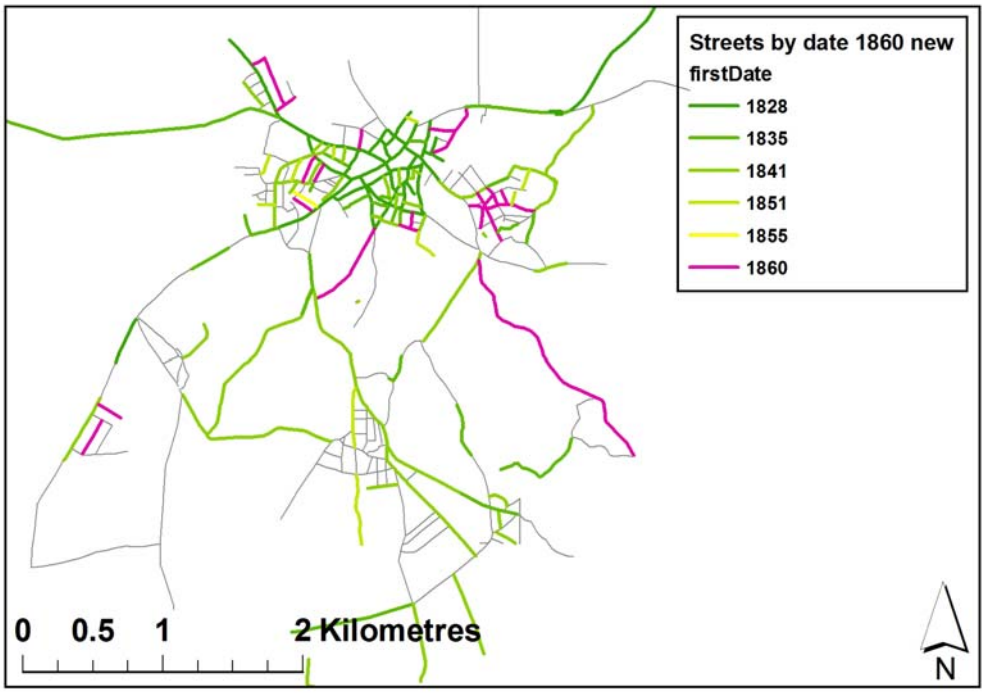


Figure 3.31: D

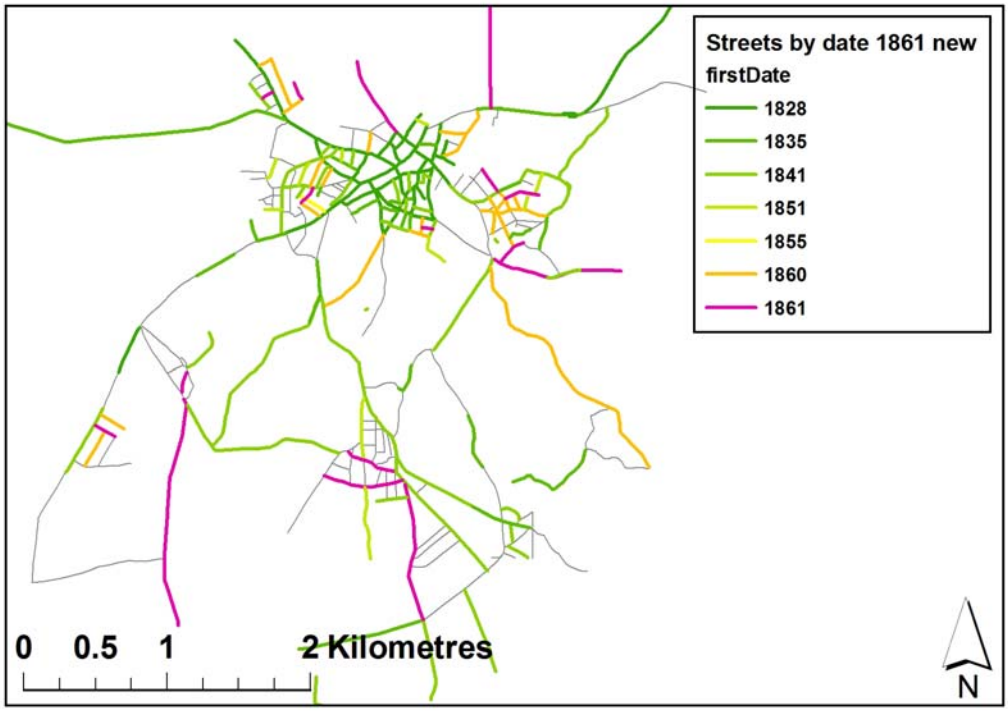


Figure 3.31: E

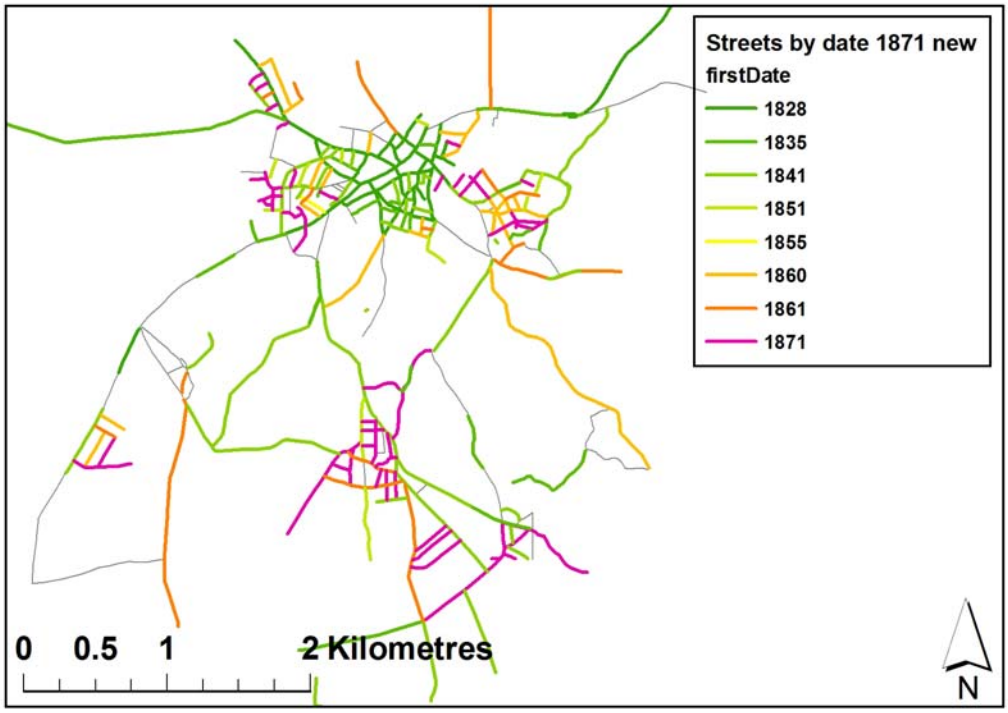


Figure 3.31: F

Figure 3.31 (A-F): Growth of the urbanised areas by street in terms of the first date mentioned on the documentary sources.

The data from the 1828 Trade Directory shows a similar pattern to that depicted on the 1785 map. With the exception of the brewery at Burnt Tree and Holly Hall, and the arterial route leading northwest from the town along Snow Hill, Salop Street and Shavers End, all the inhabited streets mentioned in this source are within the central block of Dudley itself. The town has expanded by this time beyond the strip of the High Street blocked out in the 1785 map, predominantly into the fields to the south, the roads following the main pattern of the previous field system. To the north, Stafford Street has been constructed from Inhedge/Old Hill Street running to Snow Hill.

There is a substantial increase in the roads mentioned in the 1835 trade directory from those mentioned in the directory of 1828, and many of these addresses are outside the Dudley town central area. When mapped on the GIS, many of them appear to be unconnected, and again, predominantly situated in the east and south of the wider area. This possibly shows the beginnings of the growth of the suburbs, with Cawney Hill, Dudley Wood, Freebodies (Kates Hill) and Bumble Hole having 6-15 trades listed, with all other additional streets having 1-4. Cawney Hill and Freebodies are especially noteworthy, as they are geographically within what later becomes known as Kates Hill. Hill Street is also part of Kates Hill.

Within the Dudley area, there is a certain amount of infilling of areas between roads, rather than a large expansion outwards, again predominantly to the south on the outskirts of the town. There is, however, a large discrepancy between the documentary sources and the map evidence. The 1836 map in particular, which covers a much larger area than Treasure's map of 1835, depicts many streets and areas now being occupied, that are not as yet mentioned in the sources. This is particularly the case to the east of the town in the Kates

Hill, Dixons Green, Cawney Hill, Tansley Hill area, and to the south at Netherton. These areas, however, do have entries on the database at suburb level, and it is likely that it was just the case that the address was not recorded in detail for these areas in the 1835 trade directory.

There is far more concordance with the map and census data from 1841, which is perhaps to be expected, as the census is identified as a more consistent and thorough dataset than the trade directories. The GIS mapping suggests that the growth of the Netherton suburbs happened between 1835 and 1841, however the maps illustrate that this is not the case, and Netherton was well established by 1836. Even within the town centre there is the same pattern, many of the digitised roads first listed on the 1841 census were depicted as built up on the earlier map. There are also still roads not listed on this dataset which are evidently inhabited at this time, in the Dixon's Green and Cawney Hill areas, and again, it is likely that the data from these streets was recorded at suburb only level. Woodside is another suburb that is shown to have existed at the time of the mapping, for which data is not recorded at street level, and Darby Hand and Primrose Hill also have roads depicted for which there is no street data.

There are a few additional streets listed on the census of 1851, and mostly these are quite short, and scattered around the central Dudley area with a couple in Kates Hill, and longer roads listed in the Netherton suburb. Still there are many roads, however, that are present on the map that are not listed on the documentary datasets.

There is only one additional street identified on the trade directory of 1855, but substantially more recorded on the trade directory of 1860 and the census of 1861.

The trade directory of 1860 now lists many of the streets in Kate's Hill, as well as additional streets both on the outskirts of Dudley to the east and south, and infilling of land between streets to the west. Some of the new roads are present but unoccupied on the earlier maps, and roads such as Shaw Road and New Rowley Road are also mentioned, and these are not depicted on the 1836 map. The general pattern at this point is an expansion of the main Dudley town area outwards, the central area is likely to have reached maximum occupation at this point, with no further subdivision of blocks of land in the town centre possible. Woodside is still recorded only as a suburb. Eve Hill and Hart's Hill have additional roads running off, and parallel to the main roads in these areas.

There are also many streets without data in Netherton, however, this directory actually recorded Netherton under a separate heading, and so unfortunately data from this year, and subsequent years, was not included in the original dataset.

This omission is partially rectified in the census data from 1861, where three of the streets in the Netherton area now have data allocated to them. There are still, however, many streets here, and in neighbouring Darby Hand that were present on the 1836 map, that do not have data. Given that these streets are present later on, it is unlikely that they ceased to exist between these years, and again, it is a product of the address recording showing up.

There are a few additional roads in the Eve Hill area, and to the north and south of the expanding Kate's Hill suburb. There is a small amount of infilling of blocks of land on the outskirts of the Dudley central area, and two of the main arterial roads leading north are now also mentioned.

Richards map of 1865 covers a similar area to that of the 1836 map, although does not extend as far south and omits much of Netherton. Woodside is shown to be substantially built up at this time, and what is shown of the Netherton area is annotated Sweet Turf, again with streets shown that are not represented on the documentary sources. There are also other roads around the Dudley area, such as to the immediate west of the centre, which appear on this map, but do not have buildings illustrated, suggesting that the expansion in this area was happening at this time, rather than had been done. These streets do not have data recorded for them.

There are substantial changes in the recorded streets between 1861 and 1871, in all areas. The road to the west of Kate's Hill area, Dixon's Green Road is still shown as built up with no documentary evidence associated. There is substantial development to the west of the central Dudley area, many of these streets having been present without buildings on the 1865 map, and additional streets to the south and west of Kate's Hill, merging the two conurbations together. There is infilling of the block of land between Salop Street and St James Terrace at Eve Hill, and additional roads at Hart's Hill, outside the extent of the mapping. There are many roads with data recorded at street level at Netherton and Primrose Hill, however, many of these roads are depicted on the earlier mapping, and so illustrate a change in the method of recording addresses rather than illustrating genuine new development. There are only two new roads listed on the 1876 trade directory that were not recorded on the 1871 census.

The overall pattern of growth, therefore, can be seen to be an initial expansion to the south of Dudley High Street from 1785 to 1828, with expansion to the south, southwest and the

colonisation of scattered areas to the south of the main Dudley area by 1835, including a fair amount of settlement (not recorded on the documentary data) at Netherton and Darby Hand. By 1841 there was infilling between the established roads to the south of the High Street, and expansion to the west. Additional roads were listed on the sources for the suburbs. Far less development seems to have occurred between 1841 and 1851, with only a small number of additional streets listed. By 1860 there is a small amount of new development to the south and east of Dudley centre, and a couple of new streets infilling blocks of land to the west. Harts Hill and Eve Hill see roads constructed parallel to their respective High Streets and more roads are listed in the Kate's Hill suburb, although many of these are depicted already on the maps. The 1861 data predominantly records arterial routes out of the area as a whole, and streets at Netherton which are known to have been already established. By 1871 there is more infilling and expansion at the Eve Hill, Harts Hill and Kate's Hill suburbs, however expansion of the Dudley area is predominantly again to the west. Netherton appears to be fully recorded at address level by this time.

Growth by buildings

The map sequence in Figure 3.32 (A-D) shows how the growth of the urban areas can be populated by buildings, and highlights not only which areas had been developed, but can show how much development had occurred and where. It also highlights anomalous data in the Netherton area that suggests that there had been development here (in terms of buildings), but had possibly not been recorded at a street level.

Change in buildings

The data can be mapped at both suburb and street level to identify changes in the number of buildings in each suburb and street (Figure 3.33). While new streets will obviously have an

increase of buildings along them, changes to the built environment within previously colonised areas can also be identified. While some of these patterns are likely to represent omissions or errors in the original dataset, for instance the discrepancy to the south of Dudley at Netherton etc, it can also potentially highlight areas of redevelopment.

Distribution of buildings by street length

The buildings per street length maps (Figure 3.34 A-D) suggest a pattern of occupation whereby the High Street is densely populated, the streets (especially to the south) in the immediate vicinity are less densely populated, and the streets on the outskirts of the developed area are more densely developed again. Kate's Hill appears to be somewhat different, with the densely developed streets being present in the middle of the developed area, whilst the streets on the outskirts are less so. While there are changes to these, overall the pattern remains roughly the same throughout the century.

Change in street length per buildings

Changes to the length of street per building, such as that in Figure 3.35, can potentially highlight areas of both development and continuity of the built environment. Between 1851 and 1861 it can be seen that there was perhaps quite a good deal of change going on to the south of the High Street, and on the outskirts of the urbanised area to the north-west, where other areas along the High Street itself, and the main roads immediately to the north and south had little development along them in this period.

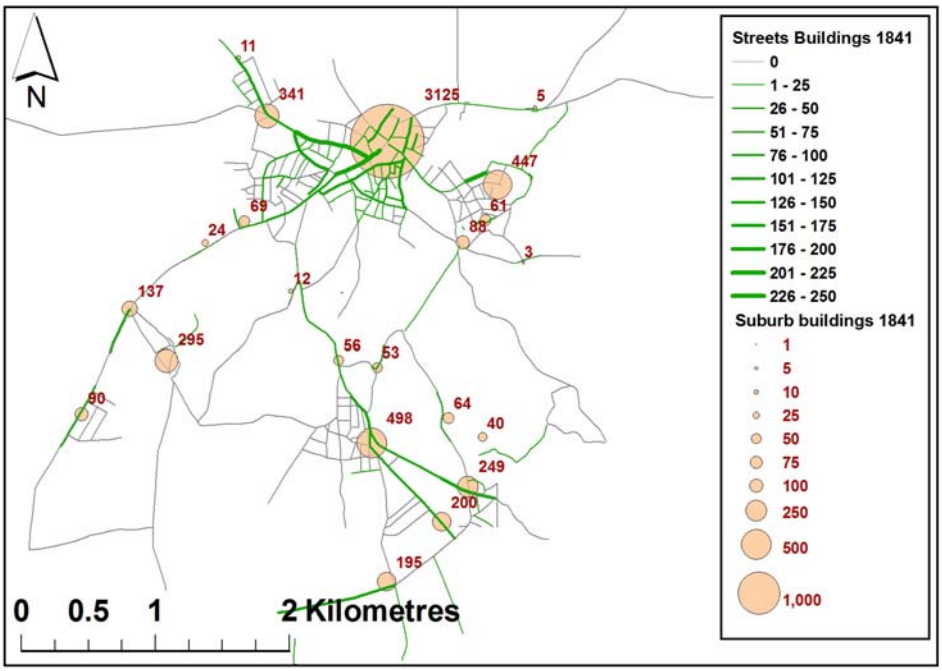


Figure 3.32: A

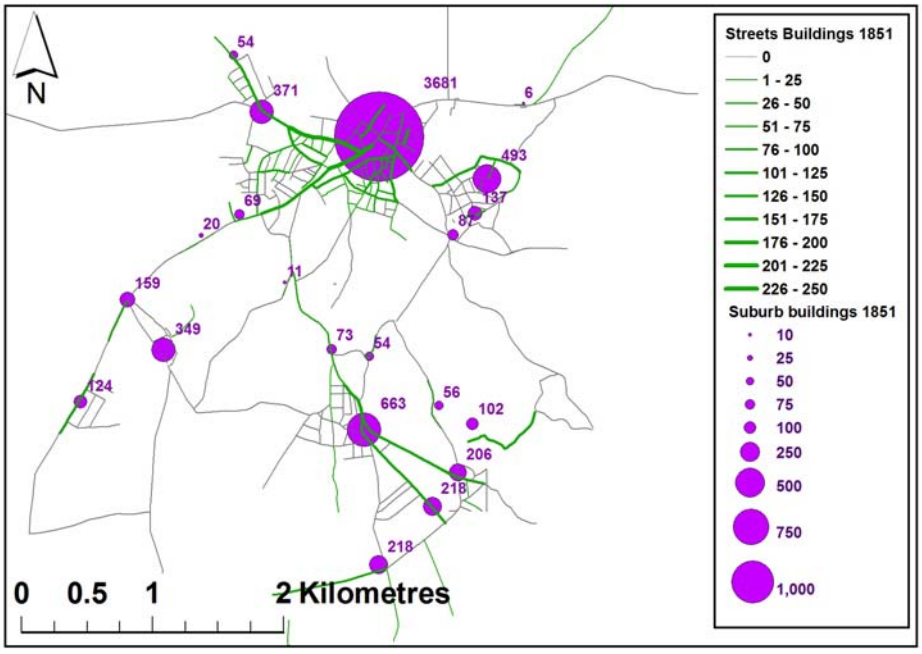


Figure 3.32: B

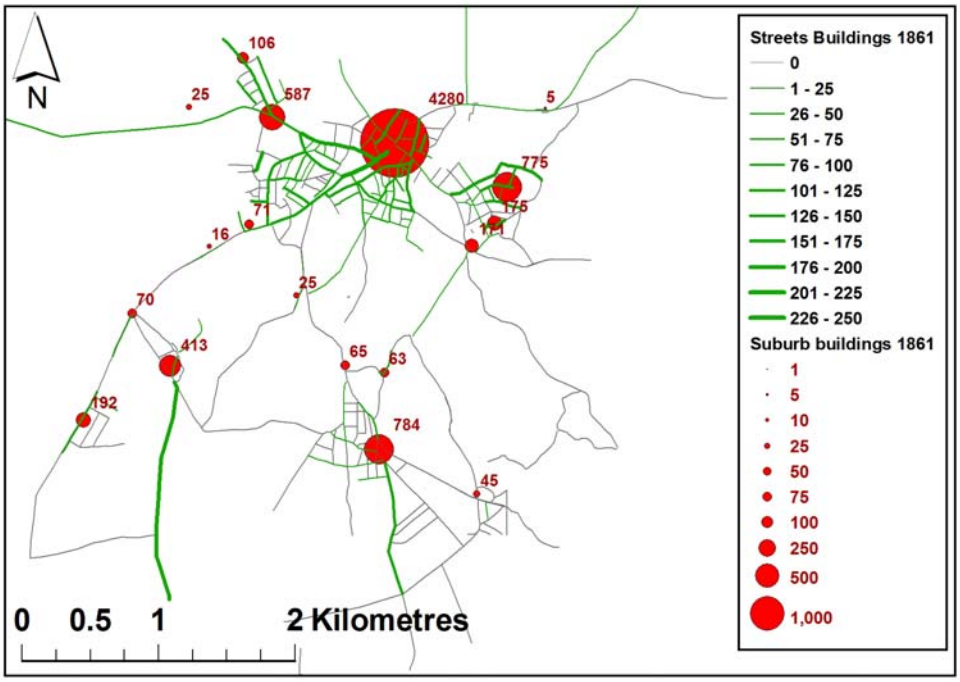


Figure 3.32: C

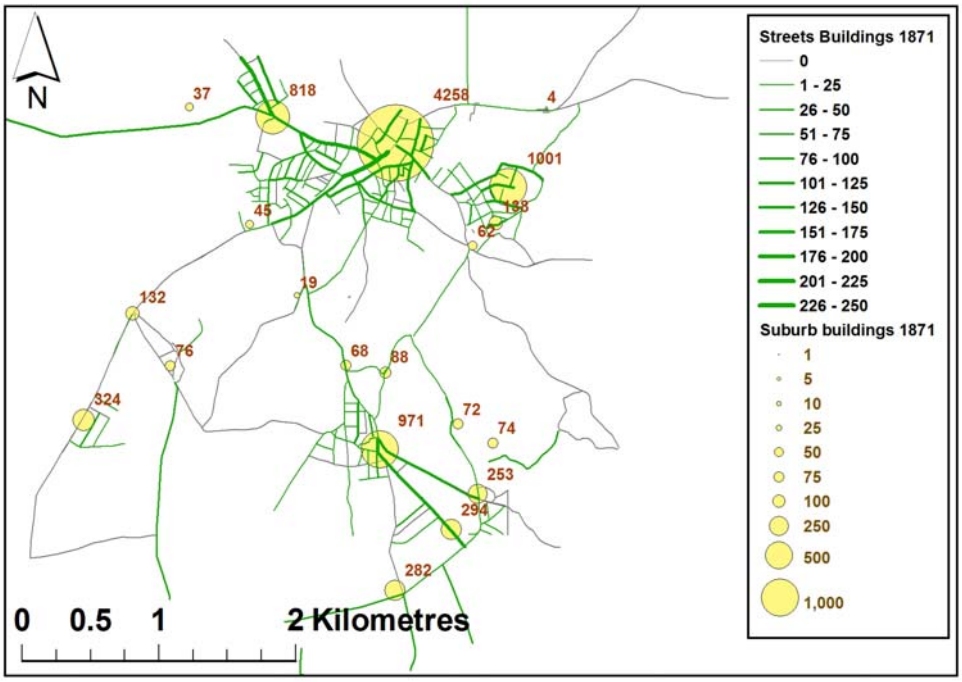


Figure 3.32: D

Figure 3.32 (A-D): Growth of the urban area in terms of number of buildings

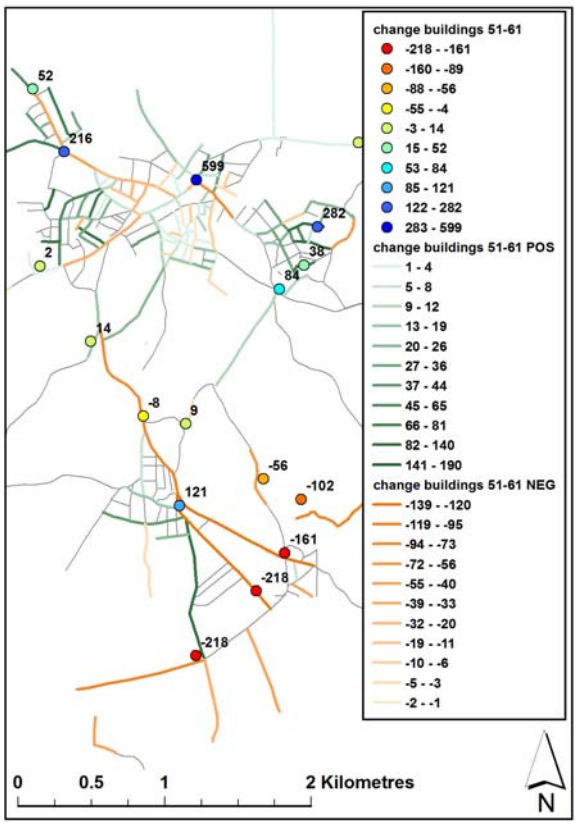


Figure 3.33: A

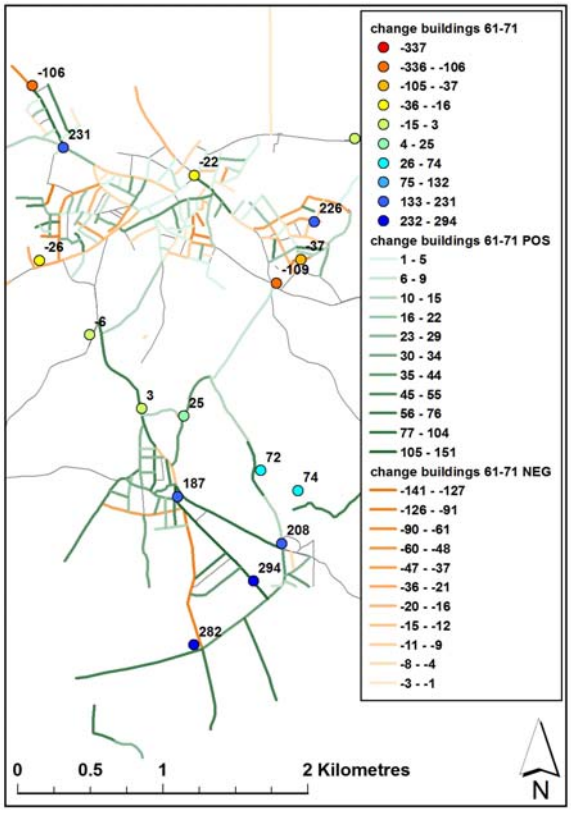


Figure 3.33: B

Figure 3.33: Changes in the number of buildings at a street and suburb level

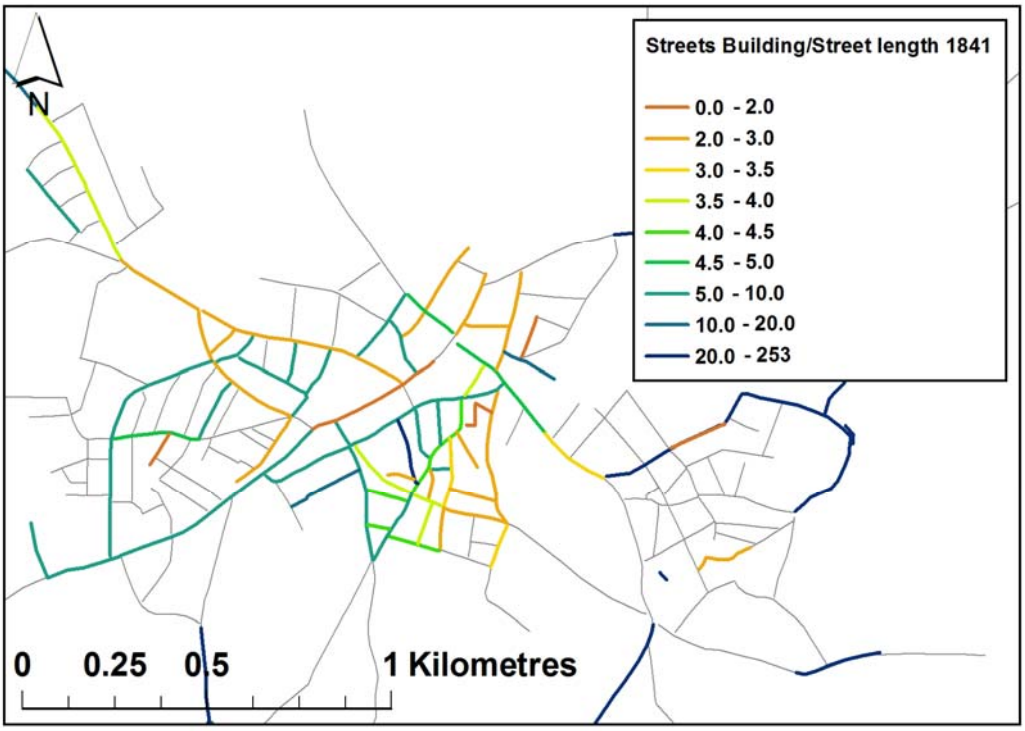


Figure 3.34: A

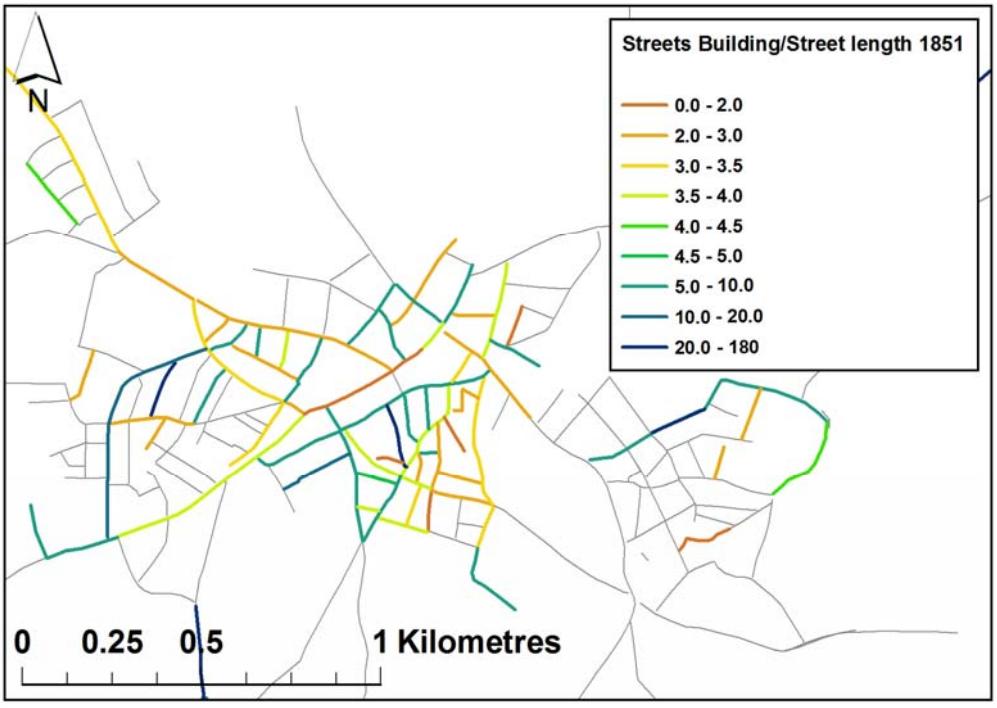


Figure 3.34: B

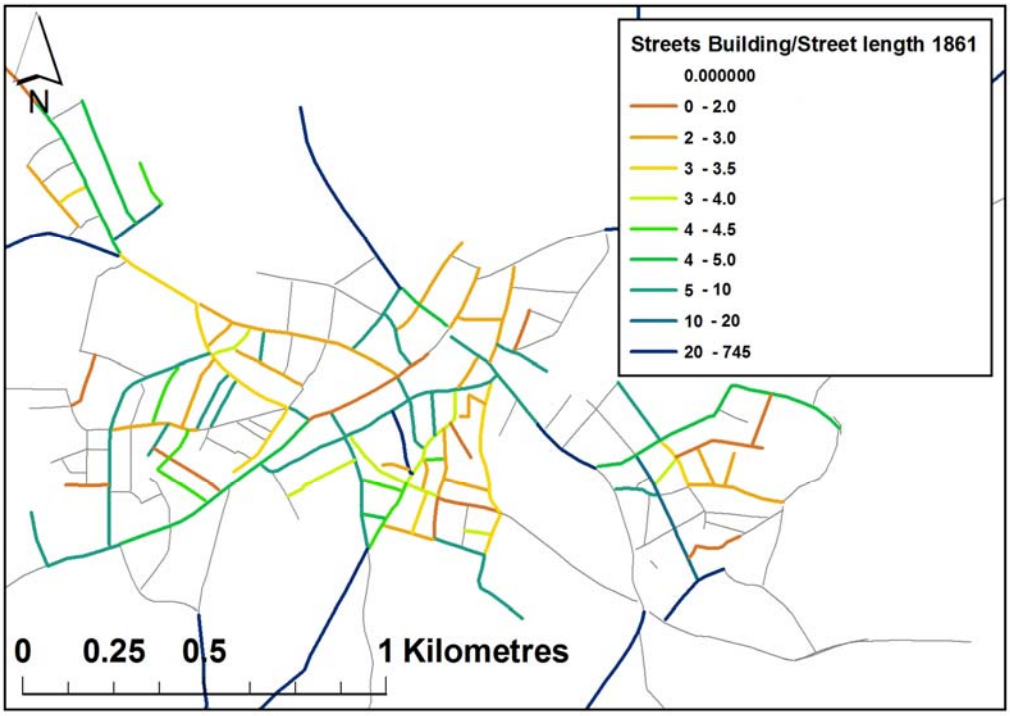


Figure 3.34: C

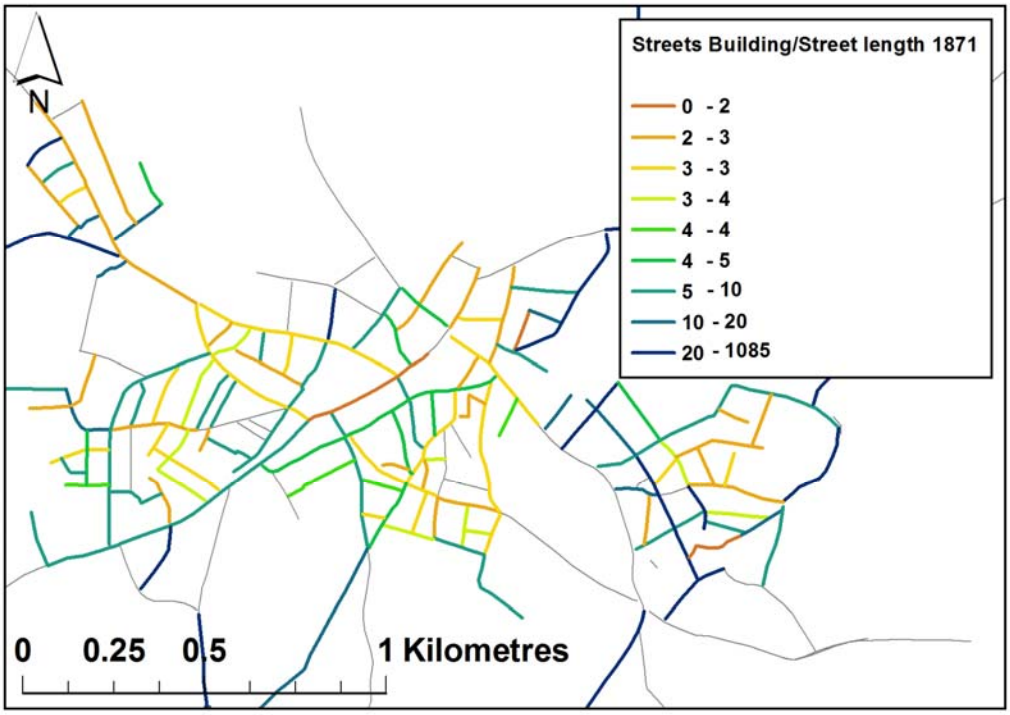


Figure 3.34: D

Figure 3.34 (A-D): Maps showing length of street per building for all census years

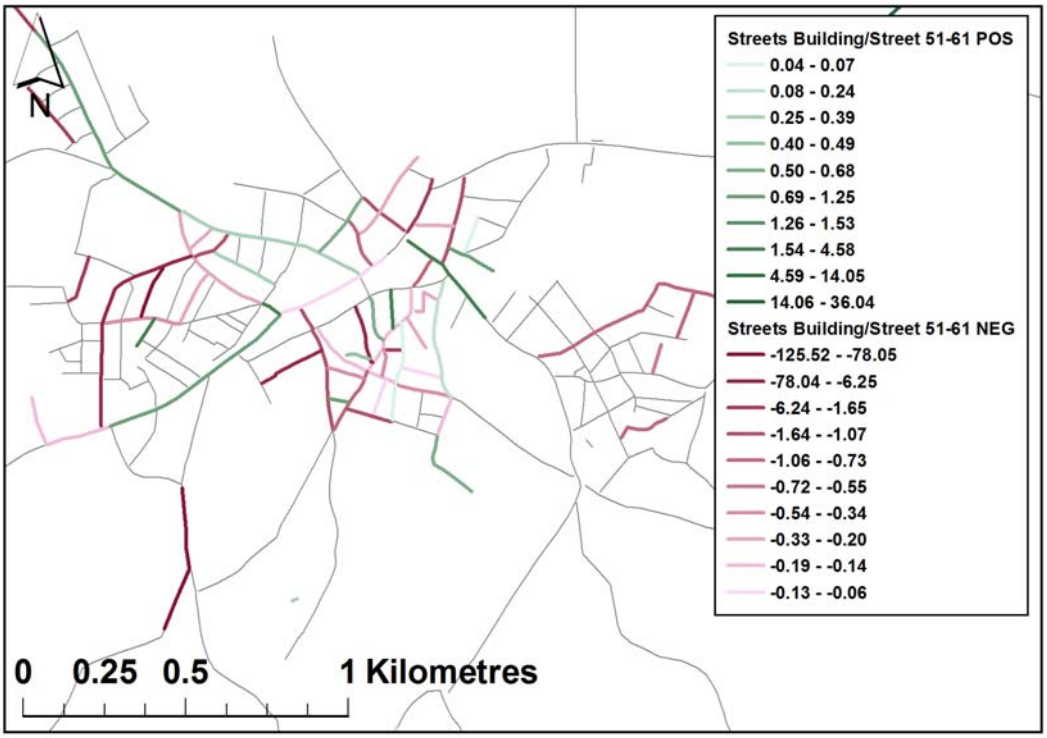


Figure 3.35: Changes to the length of street per building at street level between 1851 and 1861

Population

While the number of population is directly related to the length of the street on which the population lived, patterns are discernable within this data, for instance, high densities of population along the High Street, and the increase in population along Wolverhampton Street (Figure 3.36). Additionally, maps comparing the change in population will nullify the street length factor.

Population by building

Figure 3.37 clearly demonstrates the differences in population density within the urbanised areas of Dudley. Wolverhampton Street, for instance has a very high ratio of people per building in 1841, with the area to the south of the High Street having overall a much lower ratio. By 1871 the distribution of people per street appears much more uniform within the Dudley area, with only a few new roads to the north-east of the town centre illustrating crowding.

Change in population by building

Mapping the pattern seen in Figure 3.30 (Figure 3.38), it can be seen that the increase in population per building within the Dudley town area between 1841 and 1851 is not uniform, while some streets increase, others decrease. There is a possible spatial correlation for the pattern of growth or decline, particularly between 1851 and 1861, where it might be said that the decrease is stronger in the central area of the town along the High Street, and within the streets immediately to the south, whereas an increase in population per building mostly occurs along streets at the outskirts of the developed area.

Comparisons of population change and change in buildings

It can also be seen, by comparing the change in population and change in buildings (Figure 3.39), that the two are not completely related. For instance, there are very few streets that have a decrease in buildings that does not correspond to a decrease in population. However, there are several streets that witness a decrease in population that does not correspond to a decrease in buildings.

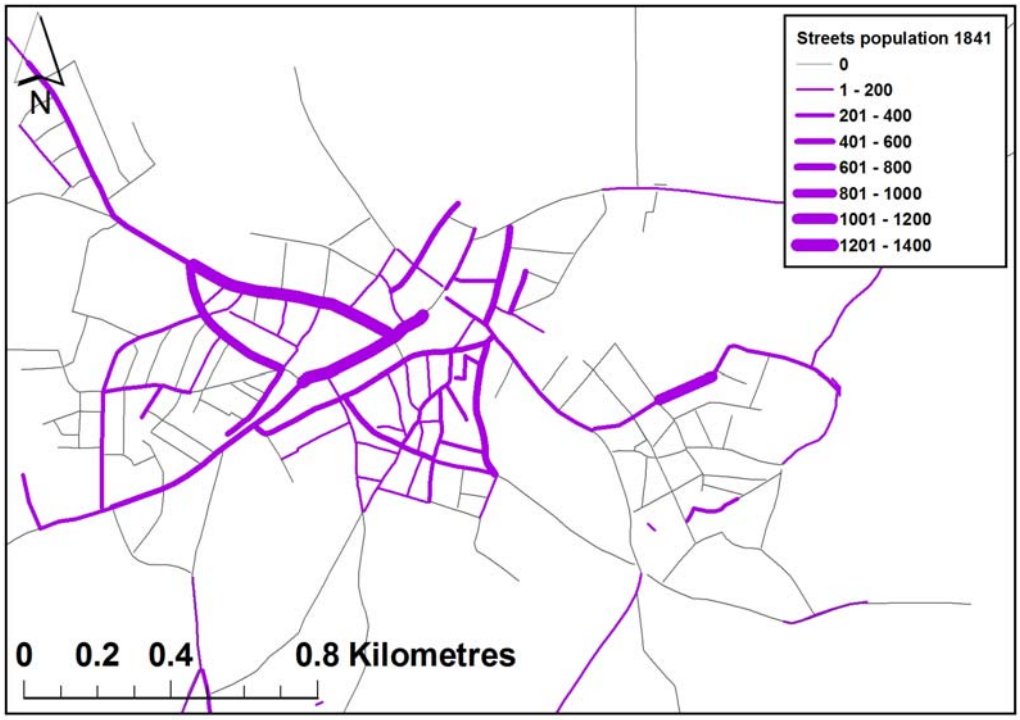


Figure 3.36: A

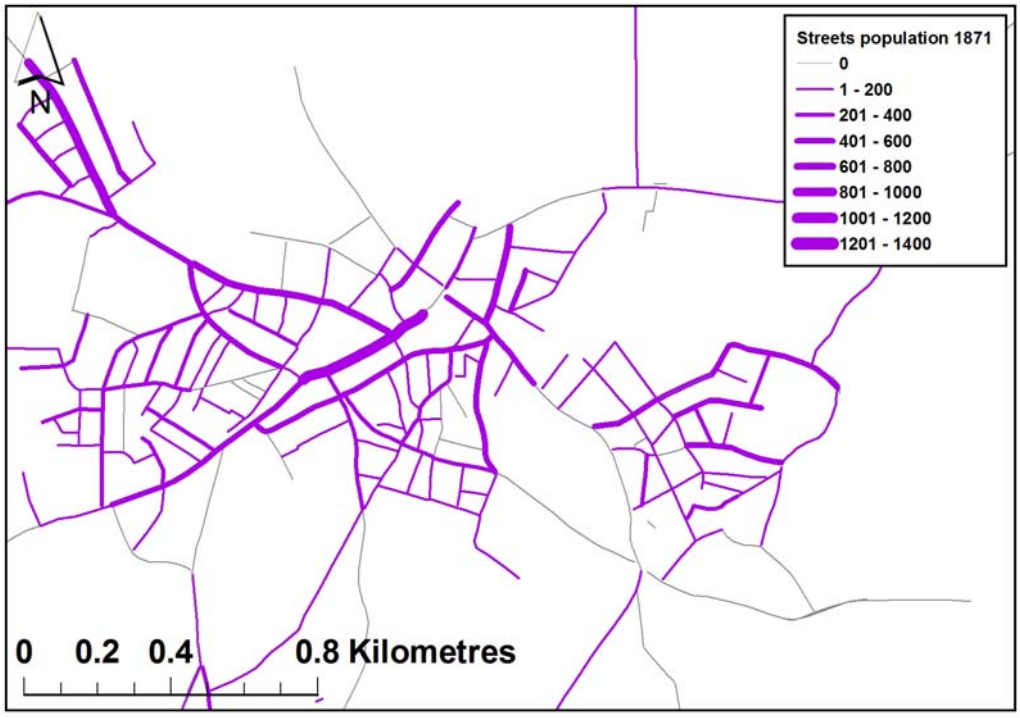


Figure 3.36: B

Figure 3.36 A-B): Distribution of population at street level for selected years

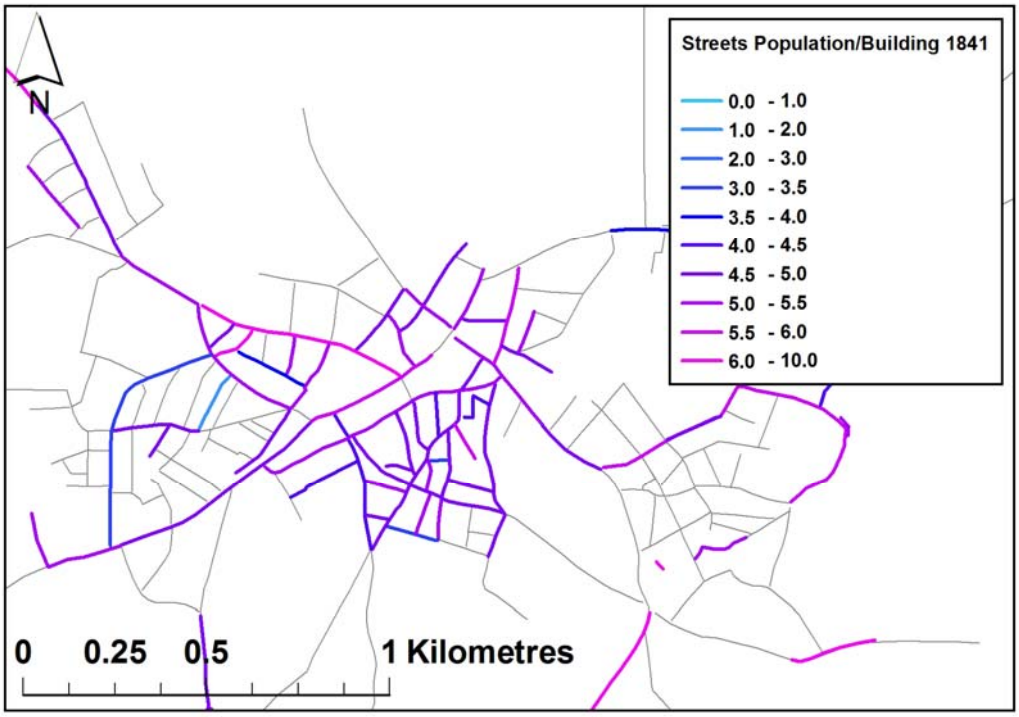


Figure 3.37: A

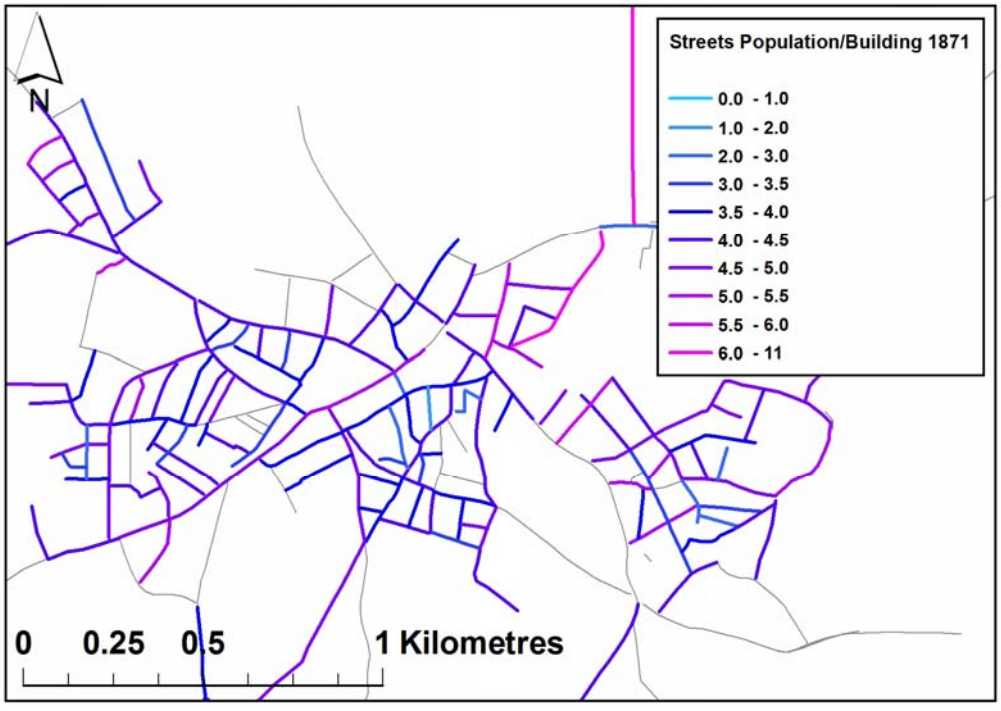


Figure 3.37: B

Figure 3.37 (A-B): Map of population per building for selected years

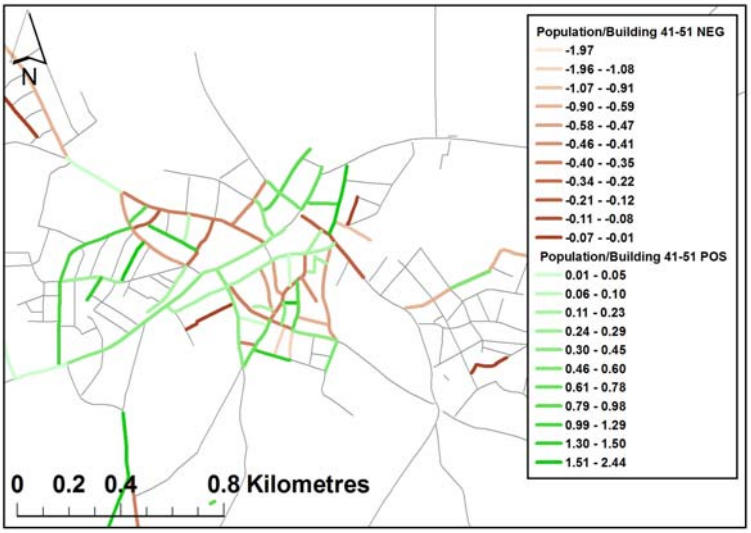


Figure 3.38: A

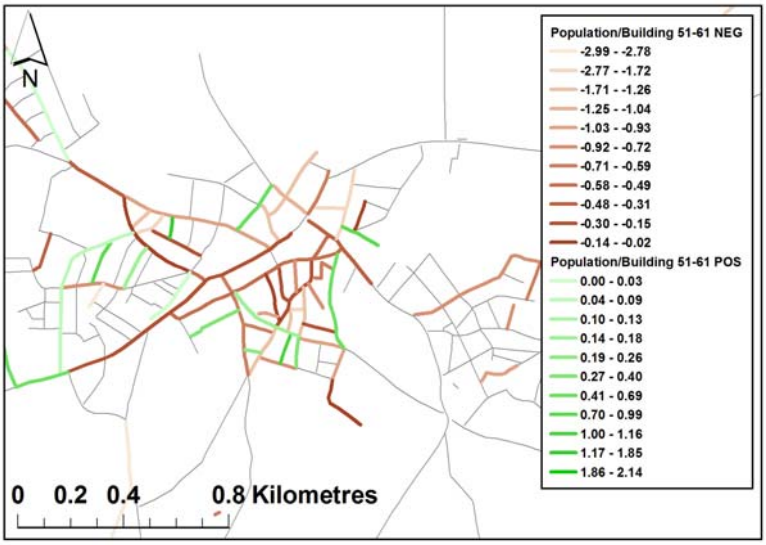


Figure 3.38: B

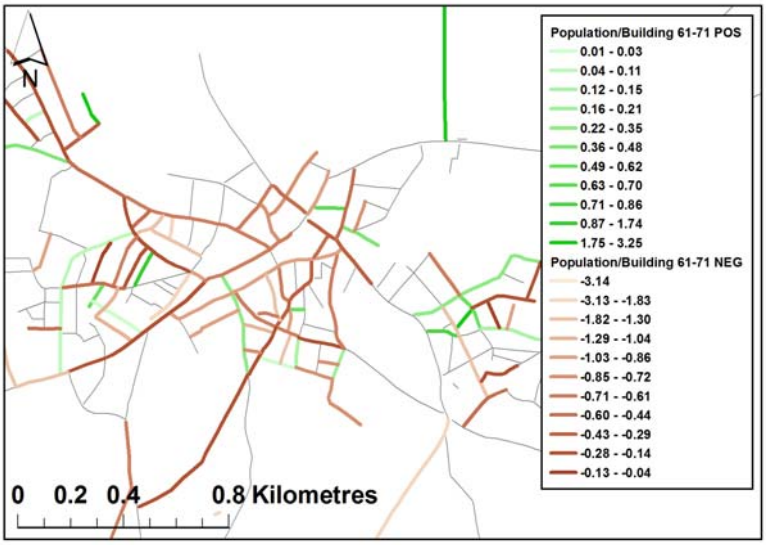


Figure 3.38: C

Figure 3.38 (A-C): Changes to the ratio of population per building between consecutive census years

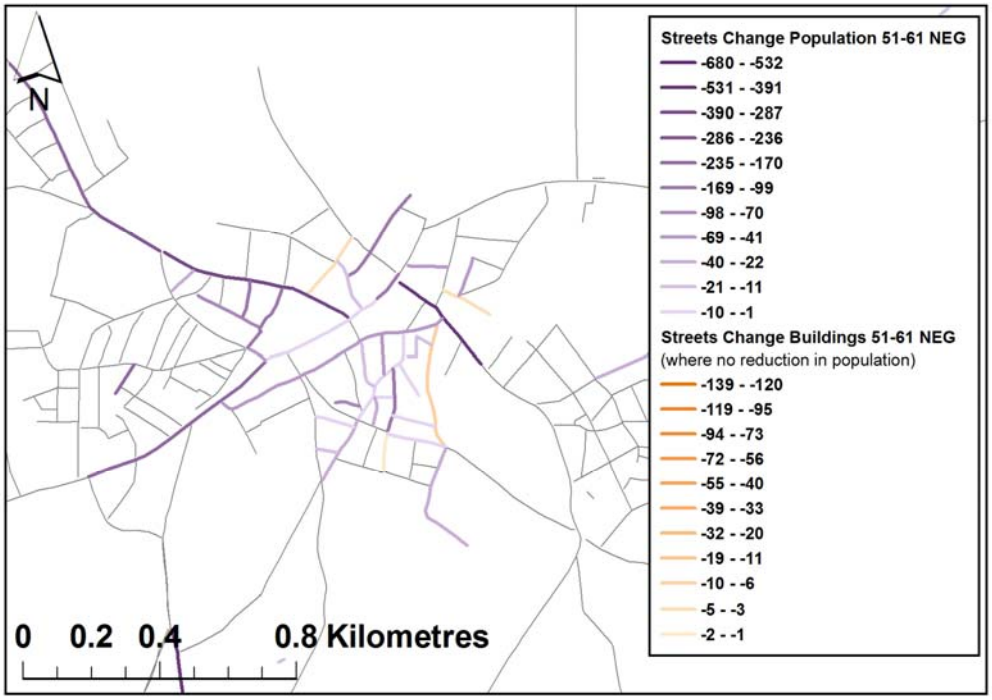


Figure 3.39: A

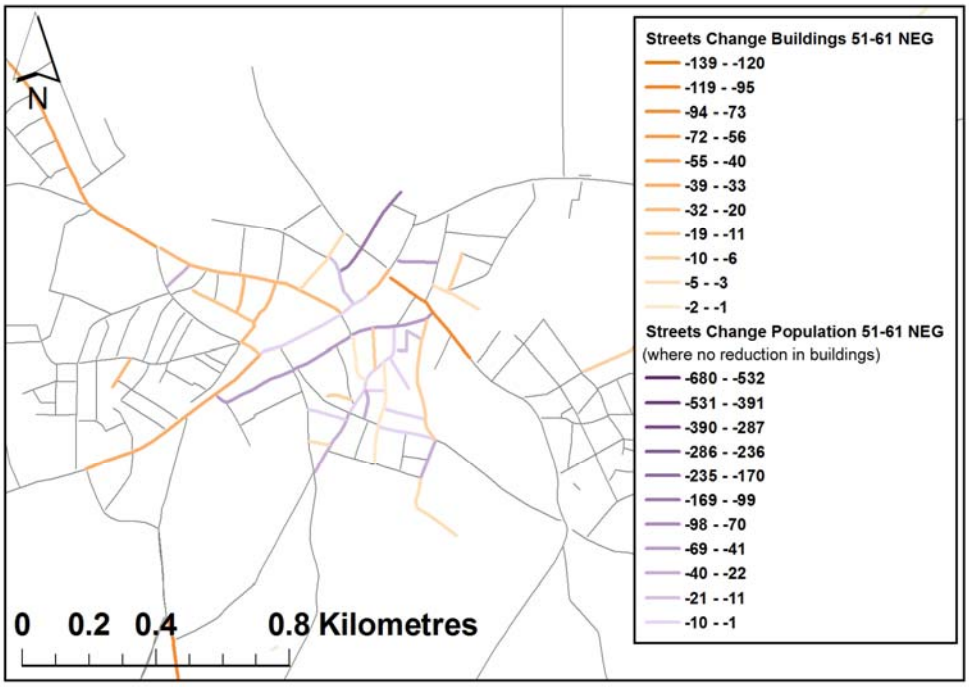


Figure 3.39: B

Figure 3.39 (A-B): Change in population and change in buildings between 1851 and 1861

Distribution and count of trades

Figure 3.40 illustrates the growth of the suburbs in terms of overall trades listed, and the proportions of individual simple trade categories. The number of entries can also be visualised by proportional pie charts, as in figure 3.41, if Dudley is omitted. There is a need to omit Dudley from this map, as proportionally the majority of data is from Dudley and the suburbs cannot be seen if Dudley is included.

Change in distribution and count of trades

Changes to the count of entries on the trade directories can be mapped at both street and suburb level, as in Figure 3.42. This shows that between 1835 and 1842, while there is an overall increase in the number of trades listed, these changes were not uniformly distributed throughout the urbanised area.

Comparisons between trade and population

As can be seen from Figure 3.43, the bias in the Trade Directories identified by previous research is visible within our datasets. By comparing the number of trades listed per person from the 1851 Trade Directory and the 1851 census, it can be seen that in the centre of the Dudley town area, along the High Street, the maximum number of trades per person is registered. Given that the census records all persons, including children, the elderly and others who might not be employed, it might be suggested that a high proportion of all employed adults were listed on this directory for these streets. The general pattern suggests that the further from the main street, the less likely that an individual's trade was listed.

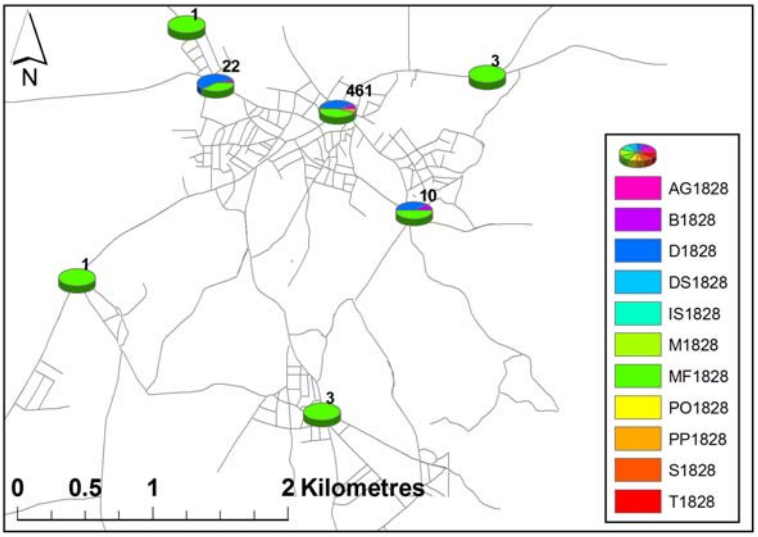


Figure 3.40: A

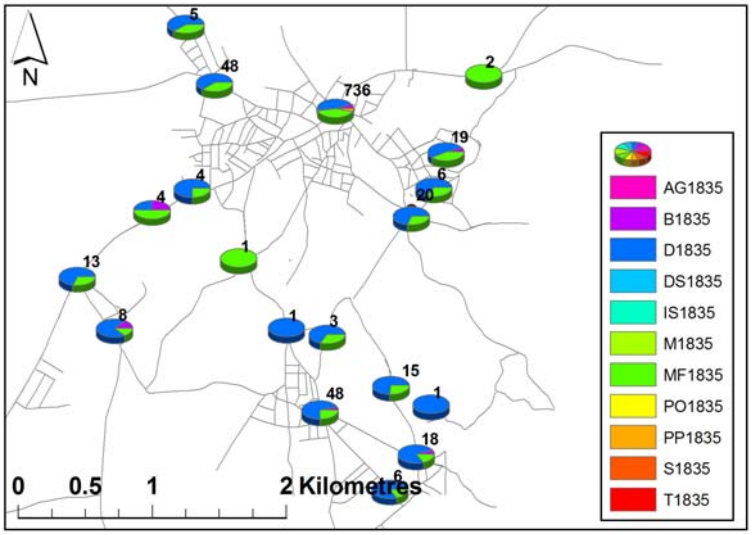


Figure 3.40: B

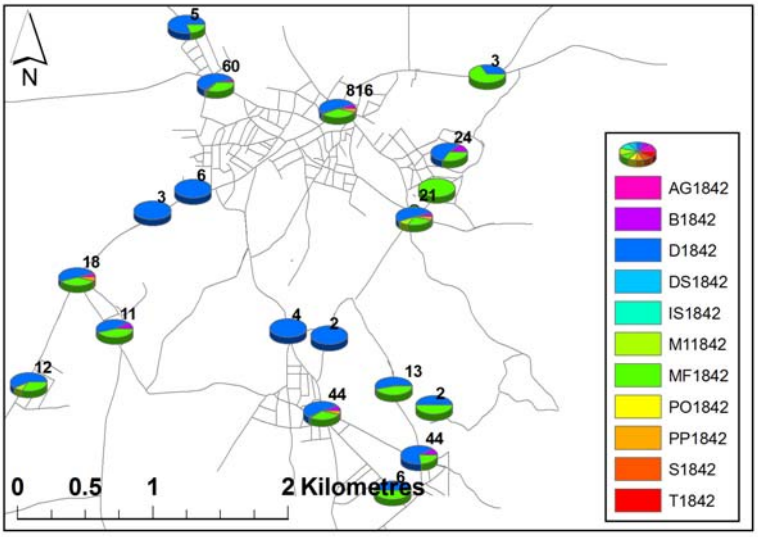


Figure 3.40: C

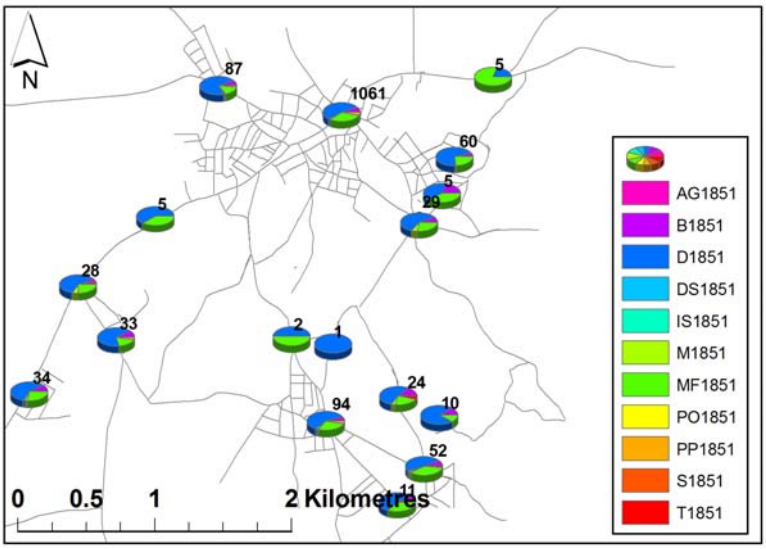


Figure 3.40: D

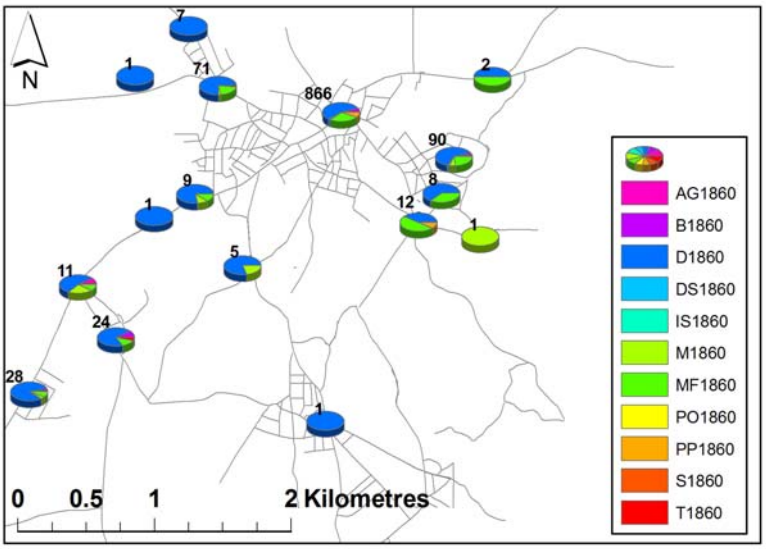


Figure 3.40: E

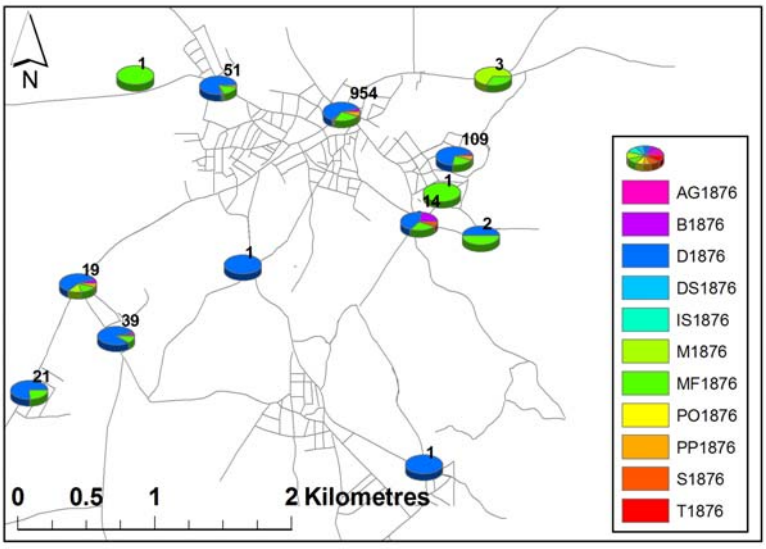


Figure 3.40: F

Figure 3.40: (A-F) Count and distribution of trade categories by suburb for all years recorded in the database

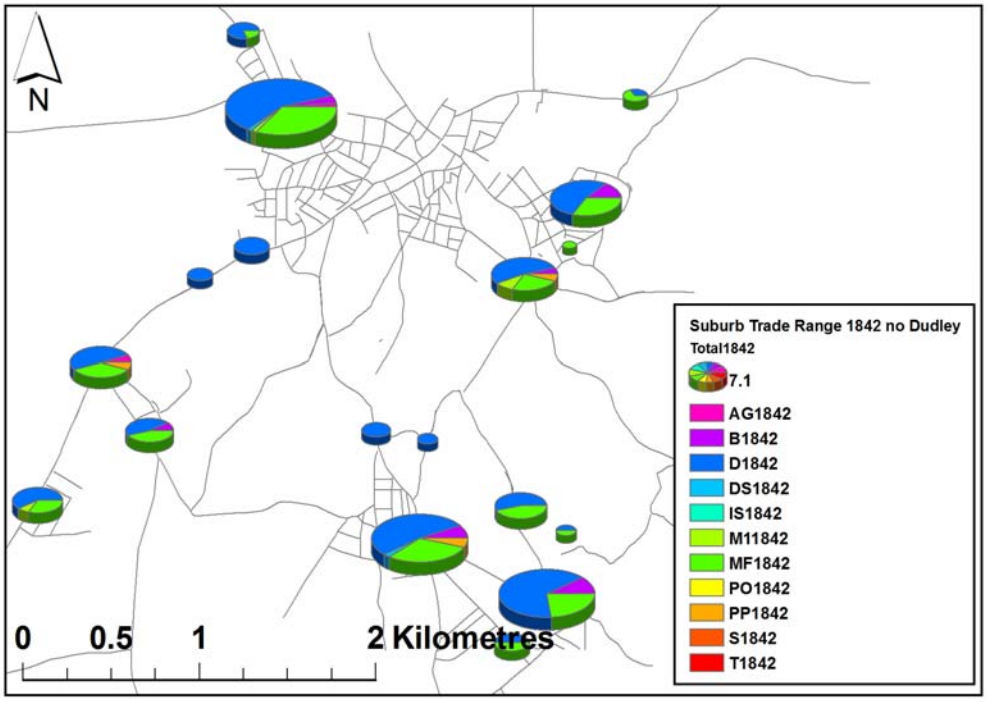


Figure 3.41: A

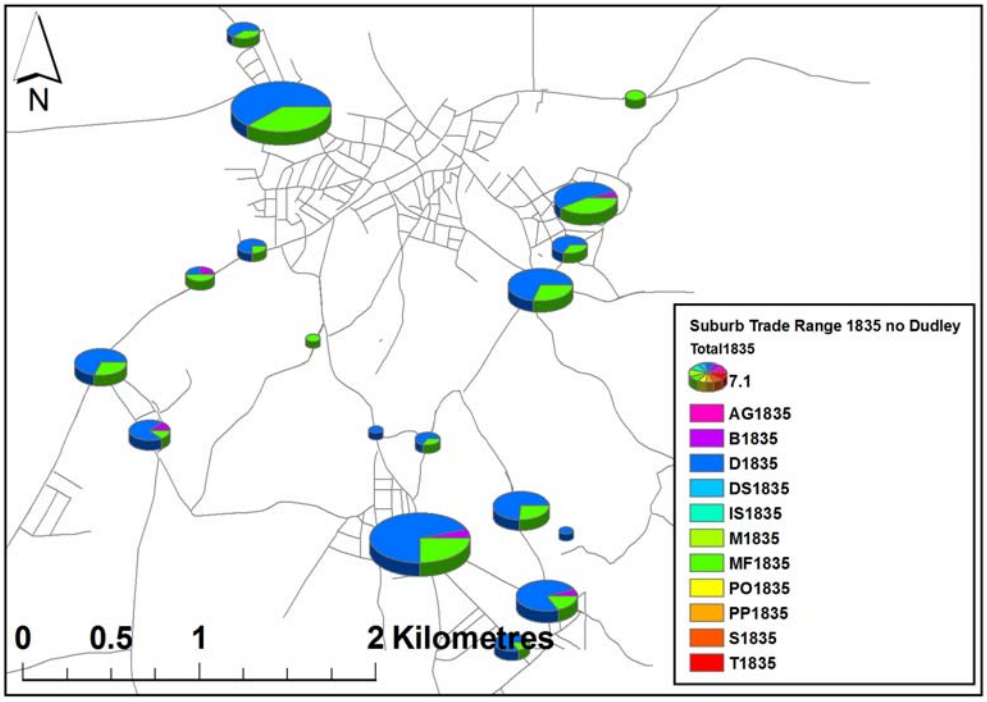


Figure 3.41: B

Figure 3.41: (A-B) Count, range and distribution of simple trade categories at suburb level for selected years (excluding Dudley itself).

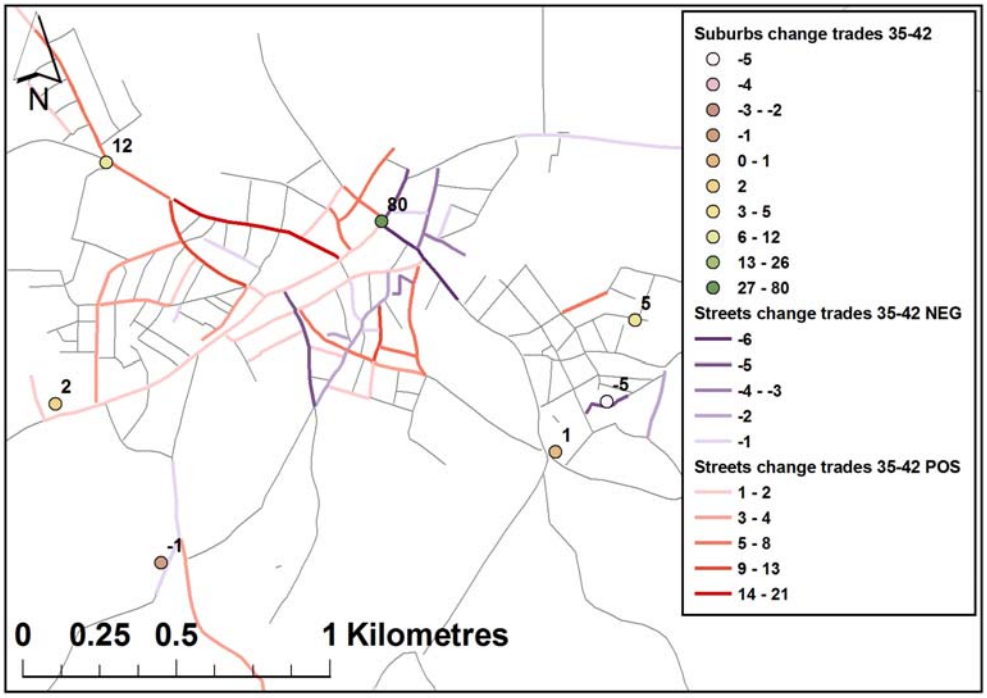


Figure 3.42: A

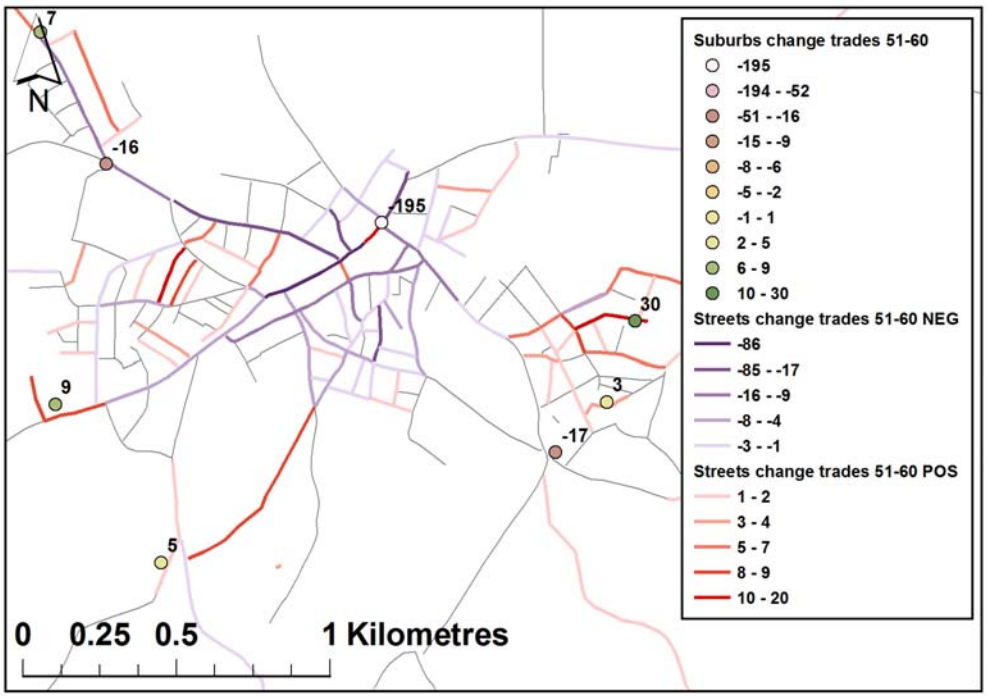


Figure 3.42: B

Figure 3.42: (A-B) Change in the distribution and count of trades for selected suburbs at street level for selected years.

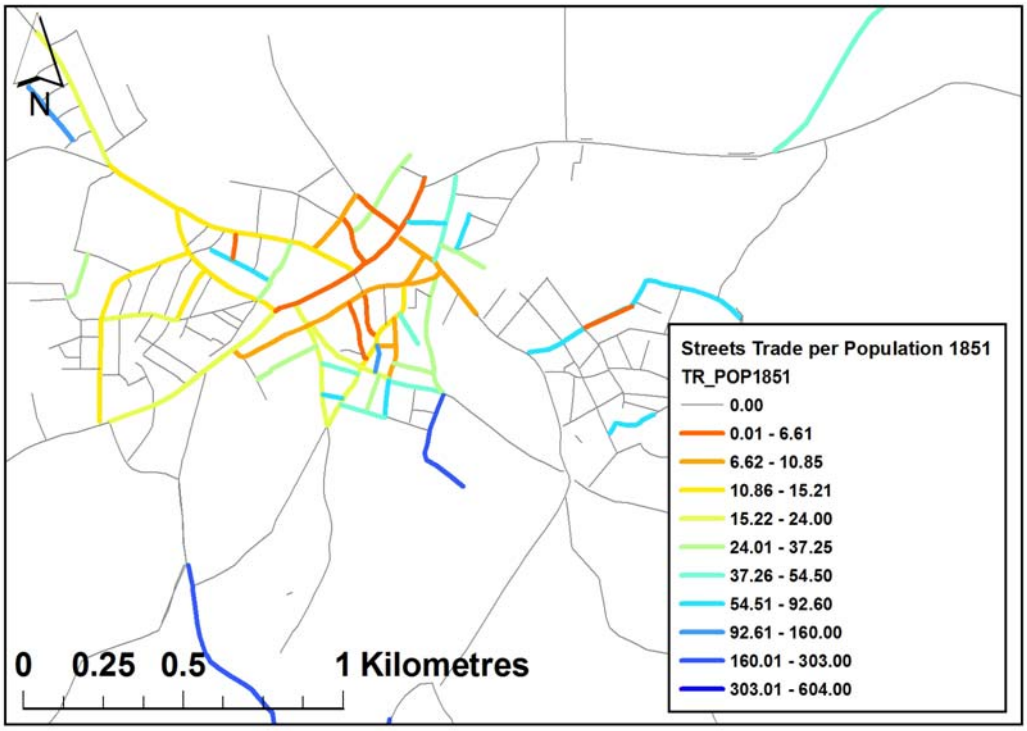


Figure 3.43: Number of trades listed in the 1851 trade directory per number of people listed in the 1851 census

Distribution and range of trade revised categories

Maps were produced such as Figure 3.44 showing the range of trades listed, rather than the number of entries themselves, to try and identify areas of occupation diversity. However, due to the bias in the number of trades listed with regards to location within the area, these maps are unlikely to be particularly enlightening.

Compare change trades to change range trades

Changes to the methodology for the 1860 trade directory meant that far fewer entries were recorded for this year. Figure 3.45 shows that the reduction in trades recorded was not uniform, with the greatest reduction occurring in the central area of Dudley town, with increases recorded to the west, and in the Kates Hill suburb.

However, the range of trades recorded shows a dissimilar pattern. There is a similar number of trade categories recorded along the High Street and immediately to the south despite the reduction in numbers themselves, and while Kates Hill shows an increase in trades and trade range, Wolverhampton Street shows an increase in trade range corresponding to a decrease in actual numbers.

Distribution of categories as a percentage of overall trade entries

By mapping the percentage of dealing and/or manufacturing entries at a street level, it was hoped to identify differences in the distribution of street characters. For instance, Figure 3.49 shows that in 1851, the area to the south of the High Street had several streets with a very high percentage of manufacturing trades, suggesting this area as a whole had an

industrial character. The High Street itself, and to the north, dealing was the more dominant category, suggesting these areas were more residential in nature.

In a similar way that the distribution of trade category percentages might highlight areas of character, maps showing changes to these percentages such as Figure 3.50 might illustrate areas where the character of a particular street or area changes over time.

The maps on Figure 3.51 show that the first trades listed outside Dudley itself were D1 and D2, Coals and Raw Materials. As the areas continued to grow, D12, General Dealers become more prevalent.

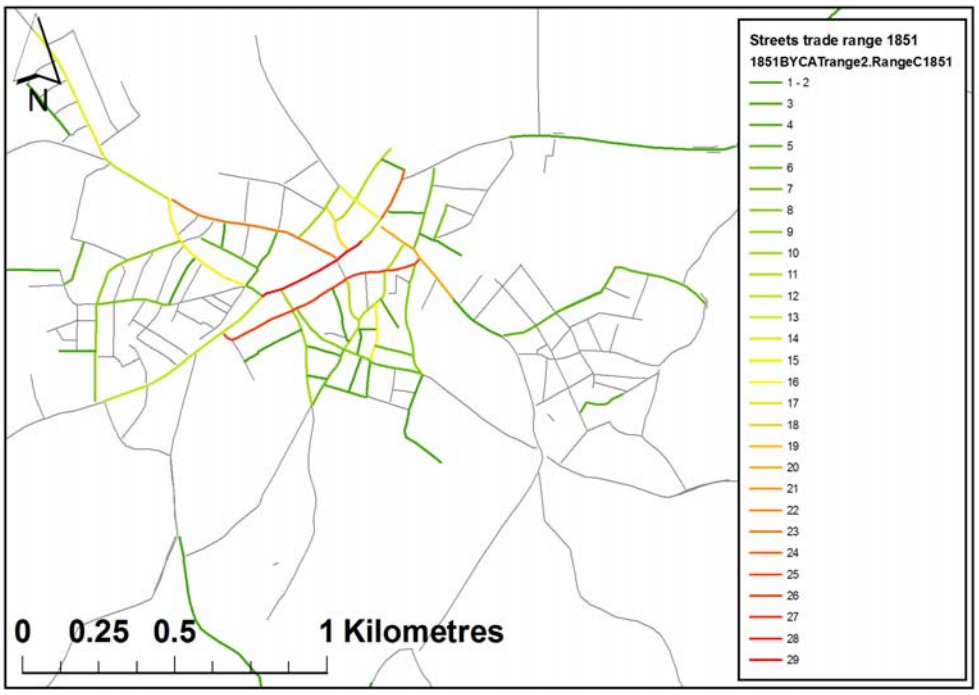


Figure 3.44: A

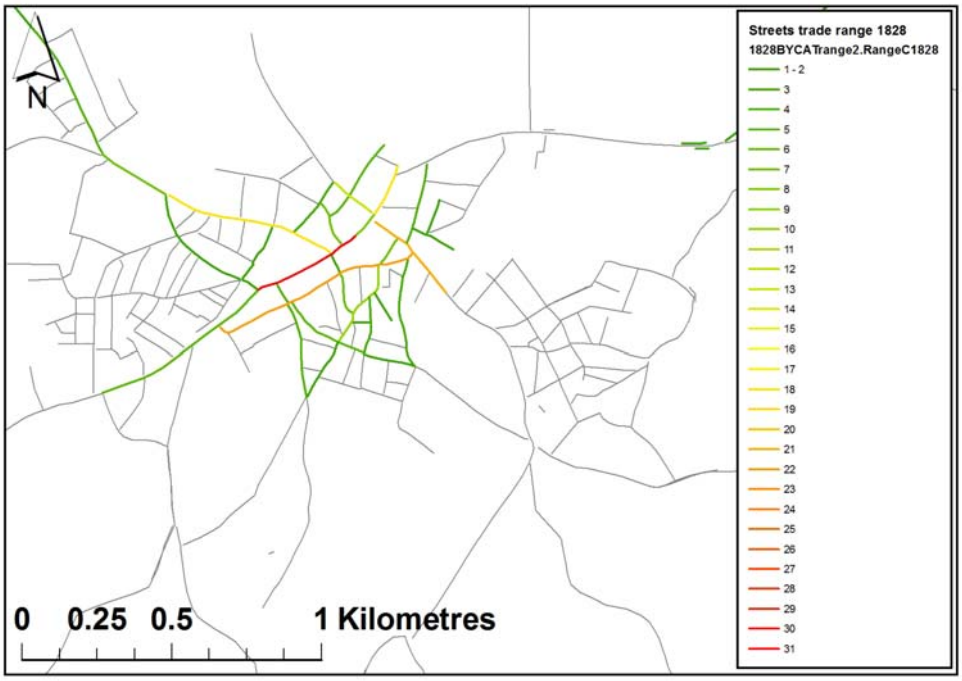


Figure 3.44: B

Figure 3.44: (A-B) Distribution and range of categories at a street level for Dudley for selected years.

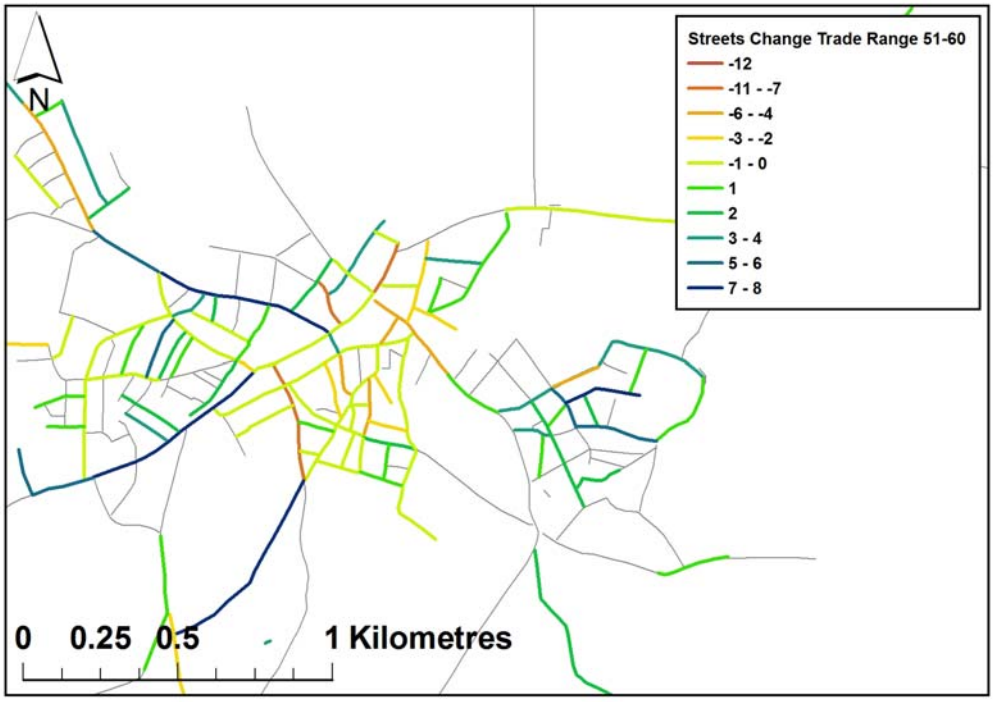


Figure 3.45: A

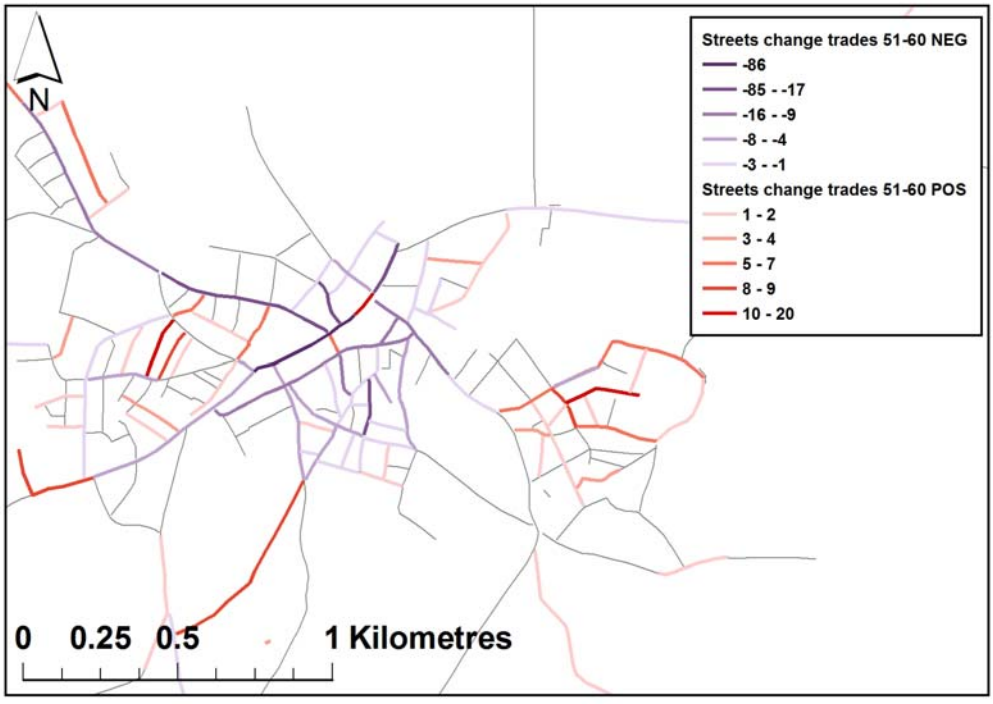


Figure 3.45: B

Figure 3.45: (A-B) Comparison of the change in the number of entries to the change in the number of categories for streets within Dudley between 1851 and 1860.

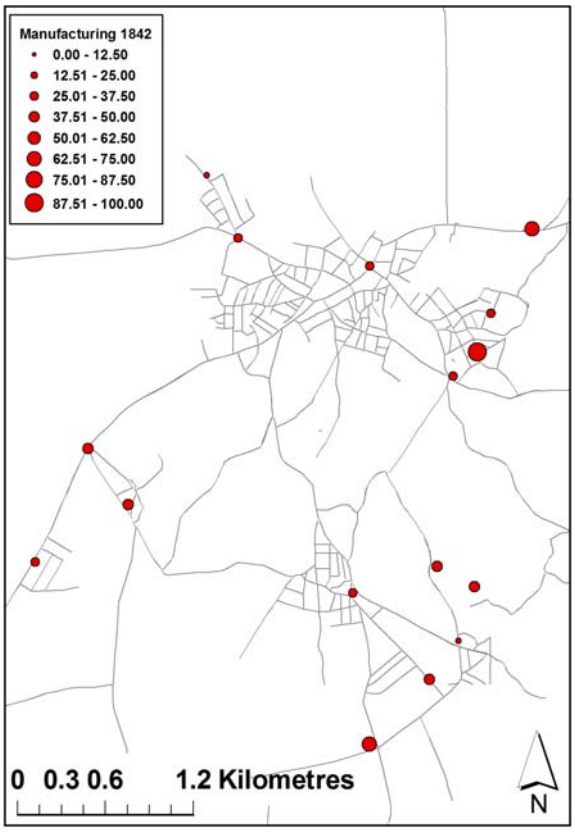


Figure 3.46: A

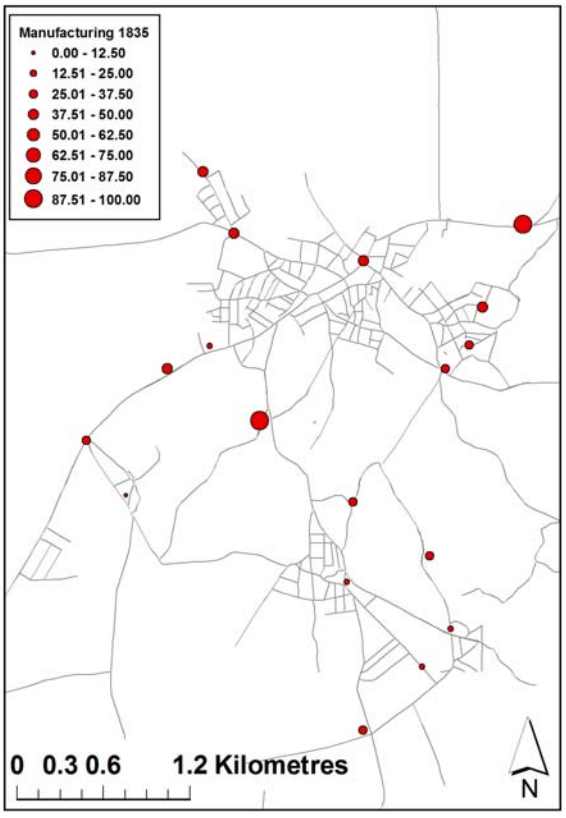


Figure 3.46: B

Figure 3.46: (A-B) Distribution of manufacturing as a percentage of overall totals for selected years at suburb level

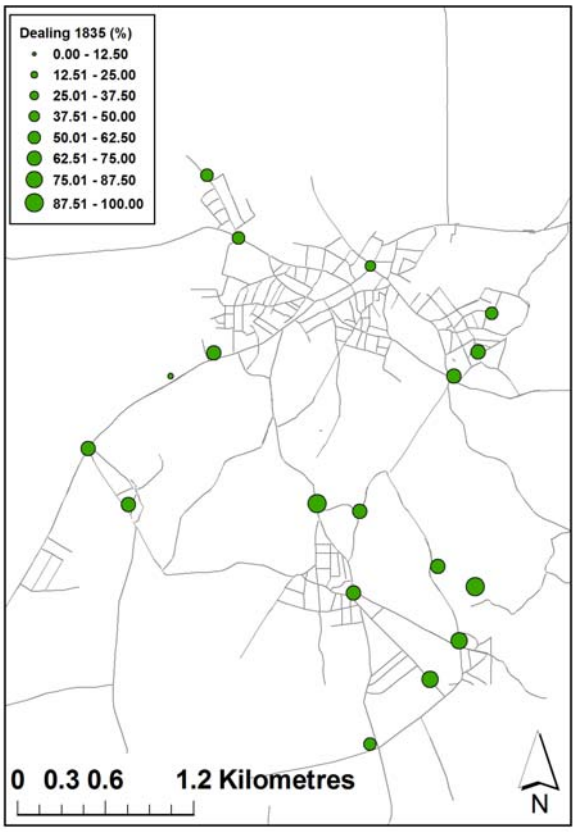


Figure 3.47: Distribution of dealing as a percentage of overall totals for 1835 at suburb level

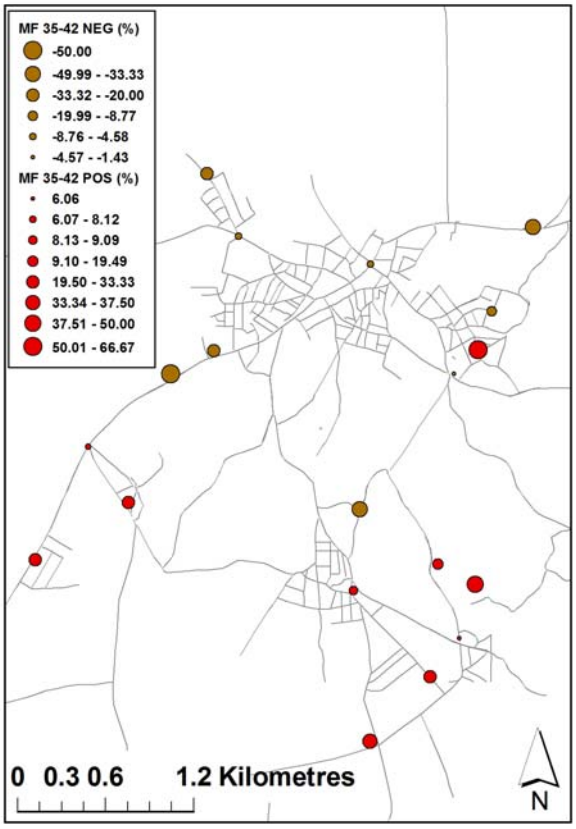


Figure 3.48: Change in the number of manufacturing entries as a percentage of overall entries between 1835 and 1842

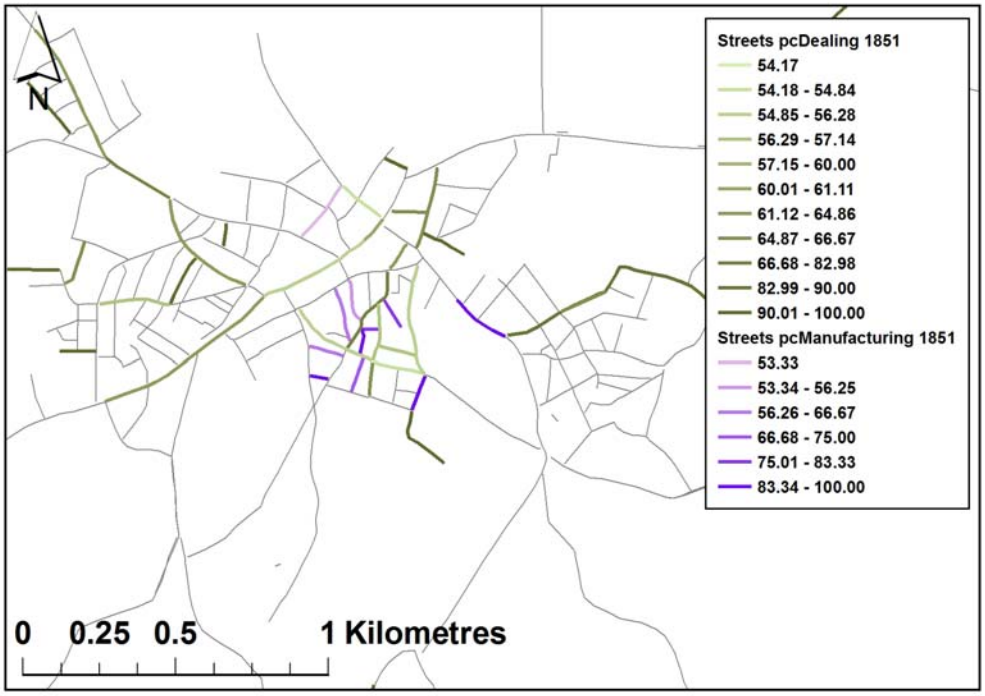


Figure 3.49: Map of streets in 1851 where the percentage of either manufacturing or dealing entries is greater than 50%

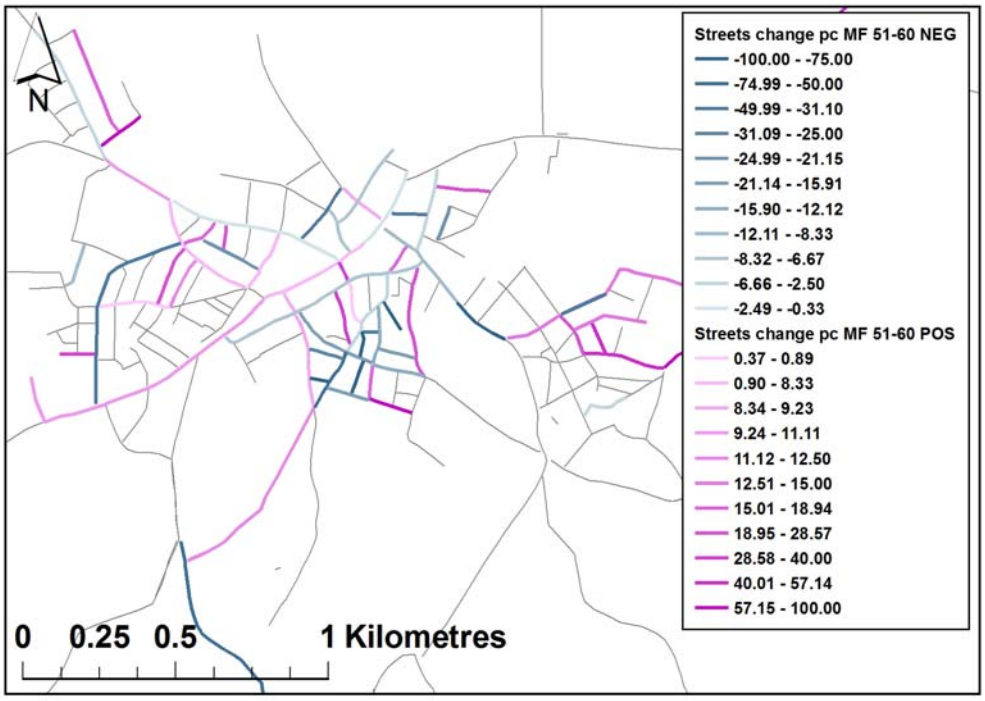


Figure 3.50: Changes to the percentage of manufacturing trades at street level between 1851 and 1860

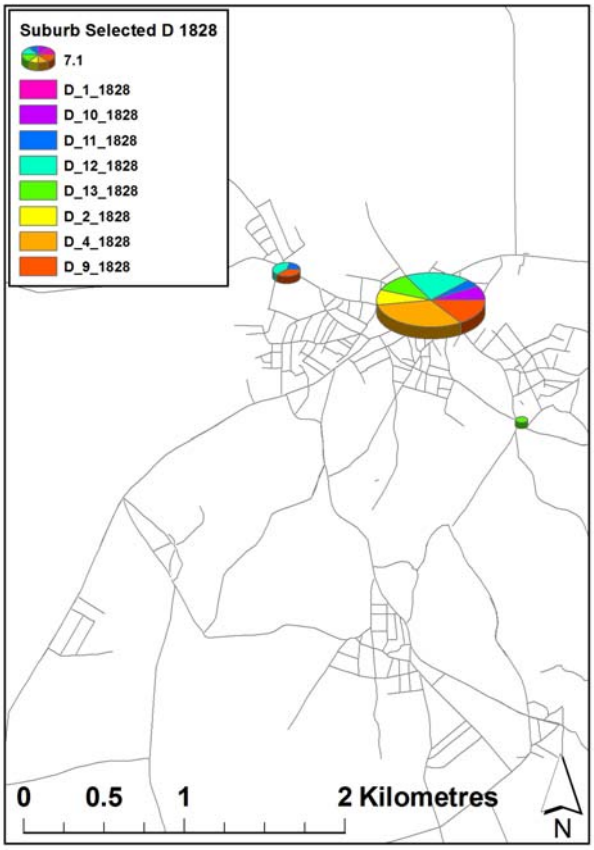


Figure 3.51: A

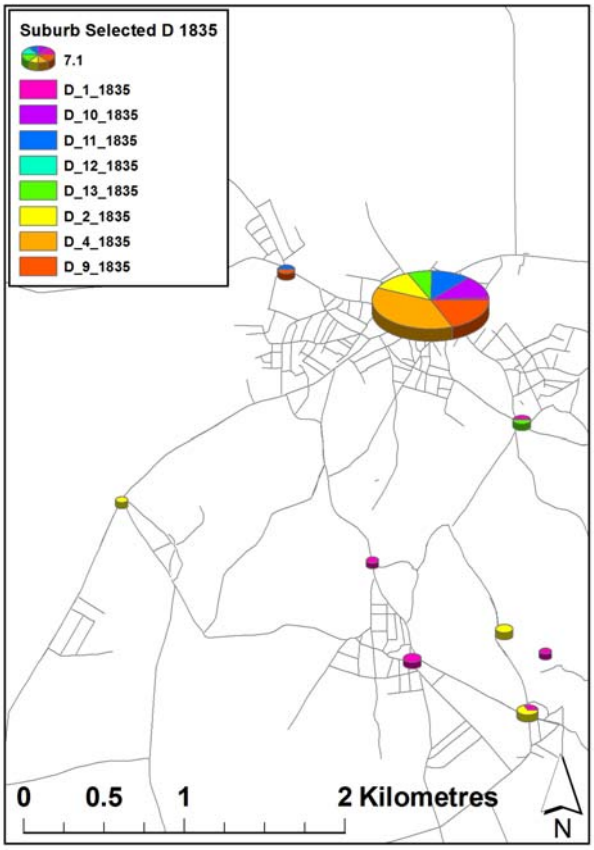


Figure 3.51: B

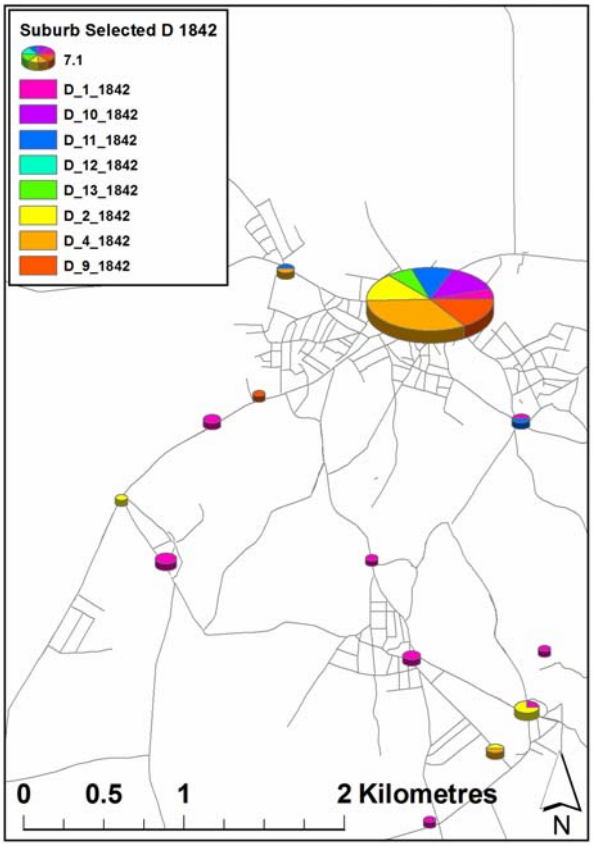


Figure 3.51: C

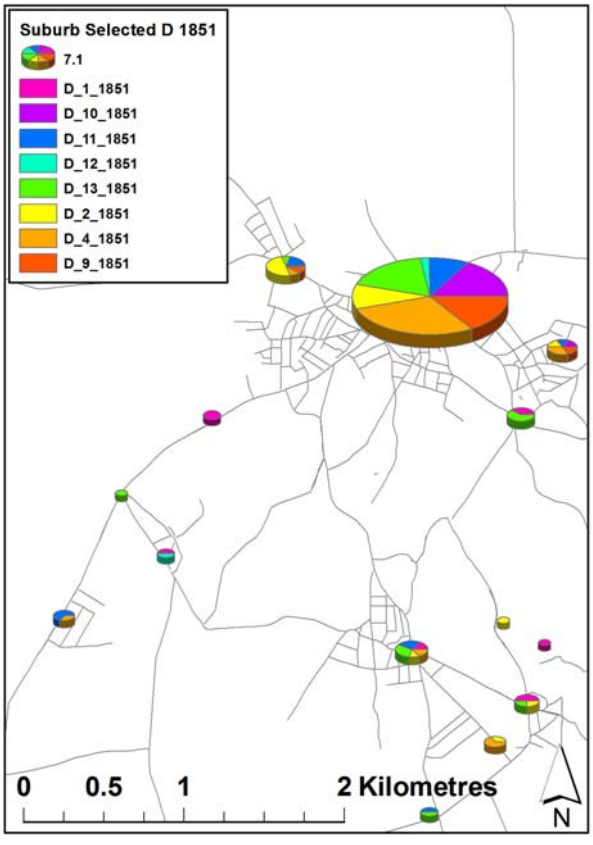


Figure 3.51: D

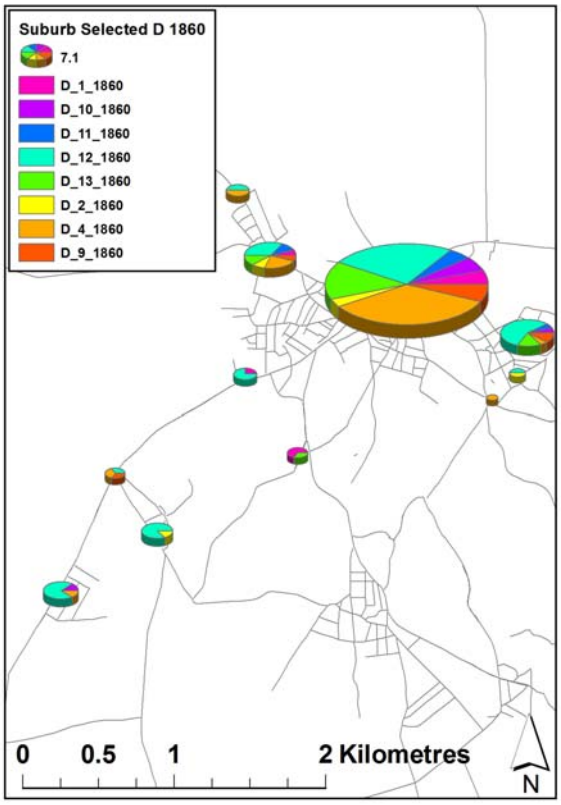


Figure 3.51: E

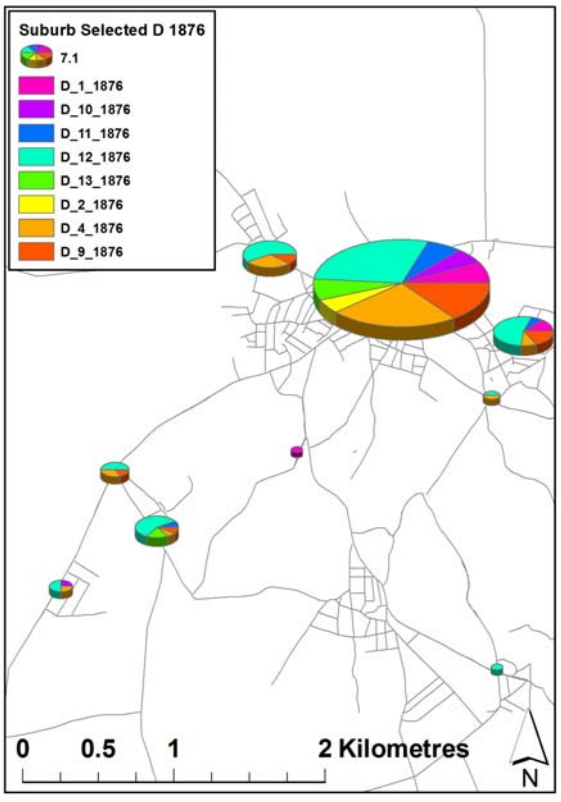


Figure 3.51: F

Figure 3.51: (A-F) Distribution, number and range of selected dealing categories at a suburb level for all years.

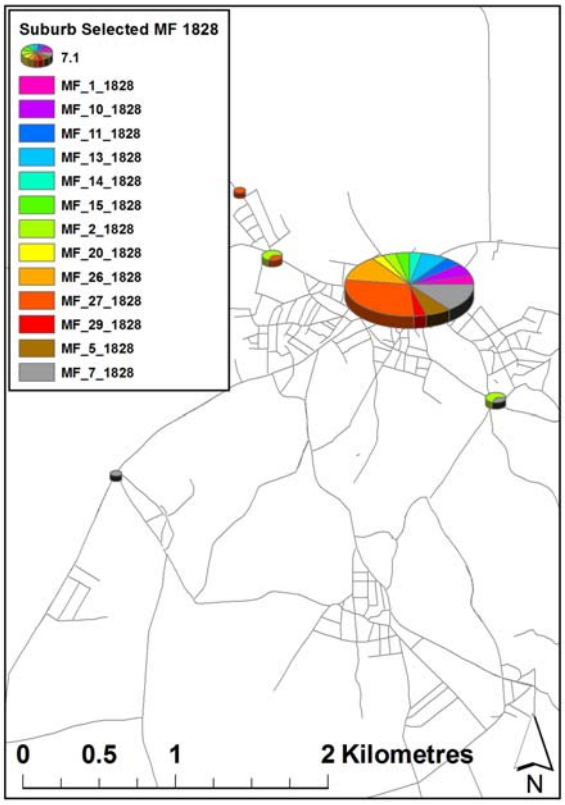


Figure 3.52: A

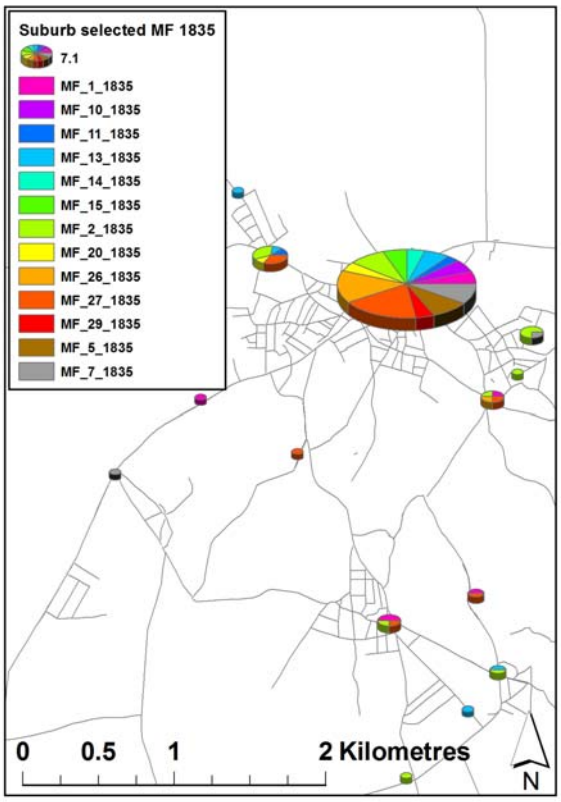


Figure 5.32: B

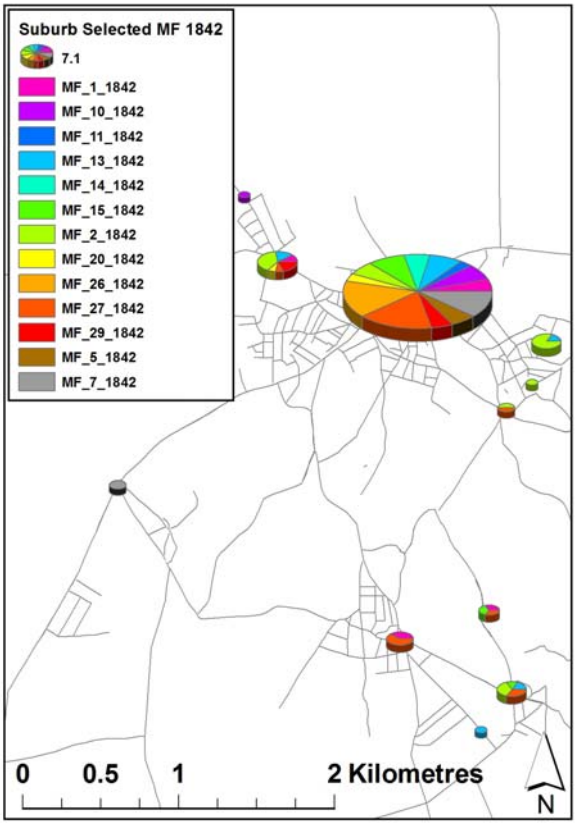


Figure 3.52: C

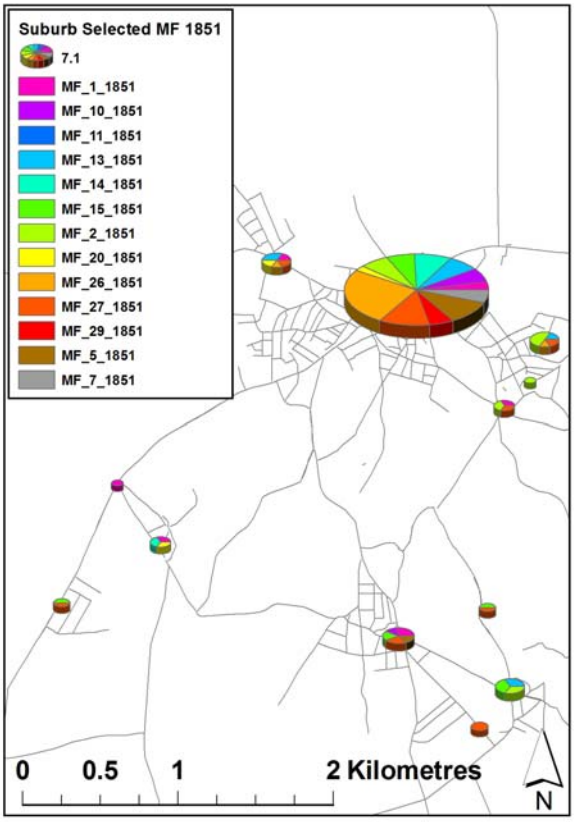


Figure 3.52: D

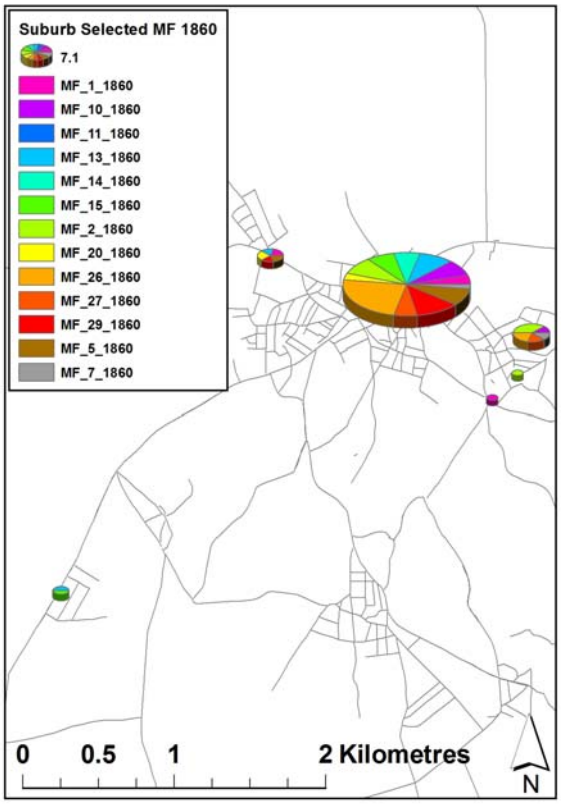


Figure 3.52: E

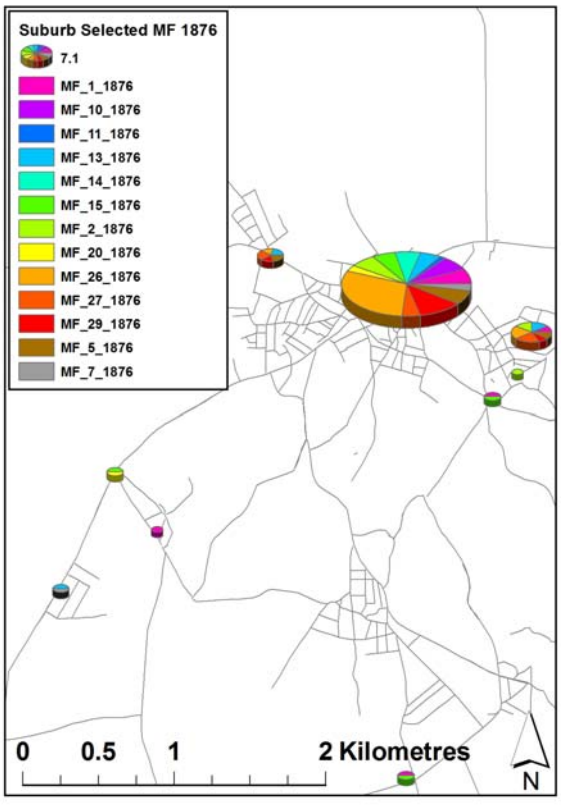


Figure 3.52: F

Figure 3.52: (A-F) Distribution, number and range of selected manufacturing categories at a suburb level for all years.

Distribution of MF4 Street

While the MF4 (ironworking) category was ubiquitous, the maps shown in Figure 3.53 illustrate that it was clearly concentrated in some streets rather than others.

Change in distribution MF 4 street level

The overall pattern of growth and decline (at least in terms of entries recorded on the Trade Directories) shows for Dudley an alternating pattern of increase and decrease throughout the 19th century. The overall number of entries for MF4 increases between 1828 and 1835. The maps shown on Figure 3.54 that there is a spatial patterning to these increases and decreases, that they are not uniform over the area. For instance, although there is a decrease overall in the number of entries for this manufacturing category between 1835 and 1842, the decrease is along certain streets, closest to the High Street, while on the outskirts of the developed area, there is an increase in MF4 entries listed.

Show change by date for NTN MF 4 type

The MF4 category can be further broken down into specific trades, such as Chain Anchor Trace and Nail (CATN), Fenders and Fireirons (FaF), Iron Founders etc (Ifetc) and Blacksmiths and Wheel Wrights (BaWW).

The mapping of the distribution of these MF industries shows clearly that they are not uniformly spread over the Dudley area, and can do much to elaborate on the distribution maps of the MF 4 category in general (see Figures 5.22 and 5.23). CATN, for instance, can be seen to be located throughout the urban area, although predominantly located along

Wolverhampton Street. The increase in this trade between 1828 and 1835 is almost entirely along this street, although by 1842 seems to have moved further to the north (Figure 3.55).

The distribution of FaF (Figure 3.56), on the other hand, while following a similar pattern in terms of overall numbers, peaking in numbers during 1835 then declining, geographically occupies a quite different place within the Dudley town area, concentrated to the south of the High Street. The decline of the industry appears to have occurred evenly throughout the area.

Show distribution by date of NTN MF 4 type

The difference in geographic location of the specific types of ironworking industry present within Dudley and recorded on the Trade Directories can be highlighted by viewing the distributions of a particular date. Figure 3.57 shows clearly the unique distribution patterns of the different types of ironworking within the MF4 category in 1835. Iron Founders were predominantly located along the High Street, with some presence to the south, while Blacksmiths and Wheel Wrights were not listed along the High Street, but were present throughout the town in streets immediately adjacent to the High Street instead. Trades identified as Chain Anchor Trace Nail (which are likely to be predominantly nail makers) were mostly present along Wolverhampton Street to the north of the High Street, although were represented relatively evenly throughout the town itself, while Fender and Fireiron makers mostly present again to the south of the High Street, with an occasional presence elsewhere.

In this way, we can see that while MF 4 category was well represented throughout the town as a whole, individual trades had their own spatial pattern of distribution. Although it can be said that this is not a surprise, and any research conducted on the spatial distribution of

particular industries would be able to identify these patterns, by looking at all the industries together, rather than select ones, the relationship between the industries can be investigated. Furthermore, by comparing the spatial patterns of overall change in MF 4 categories seen in Figure 3.54 with the spatial patterns of particular industries, the rise and fall of the Ironworking industry can be analysed in terms of the rise and fall of specific types of trade within this category, and potential changes in character for individual streets.

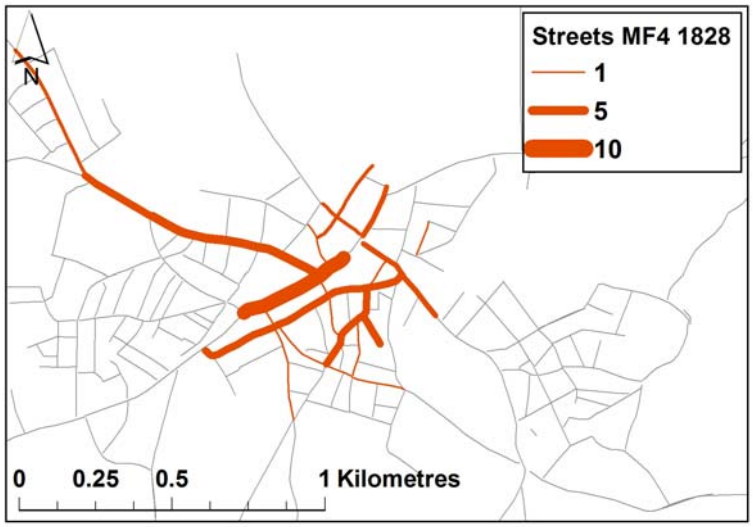


Figure 3.53: A

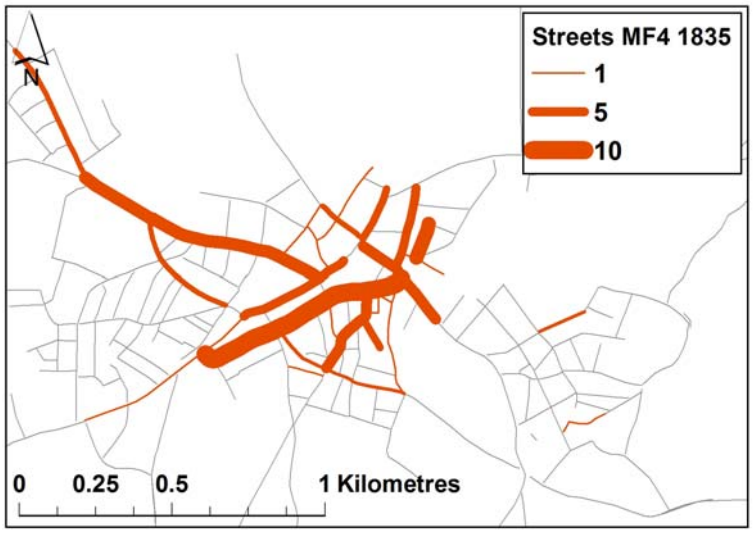


Figure 3.53: B

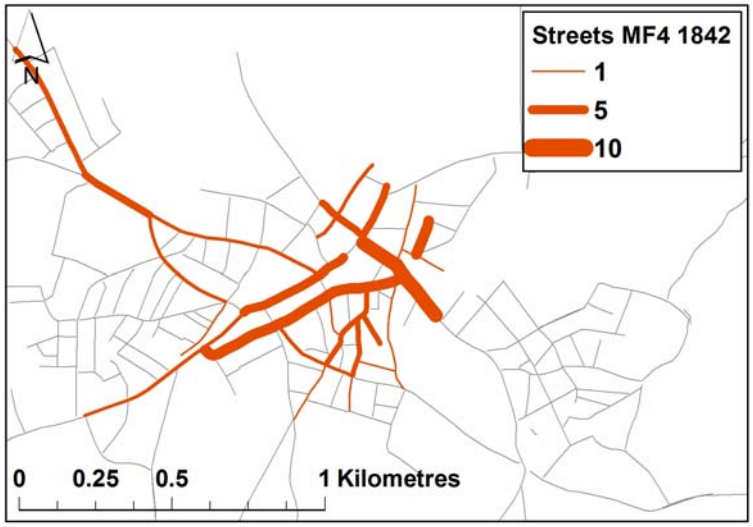


Figure 3.53: C

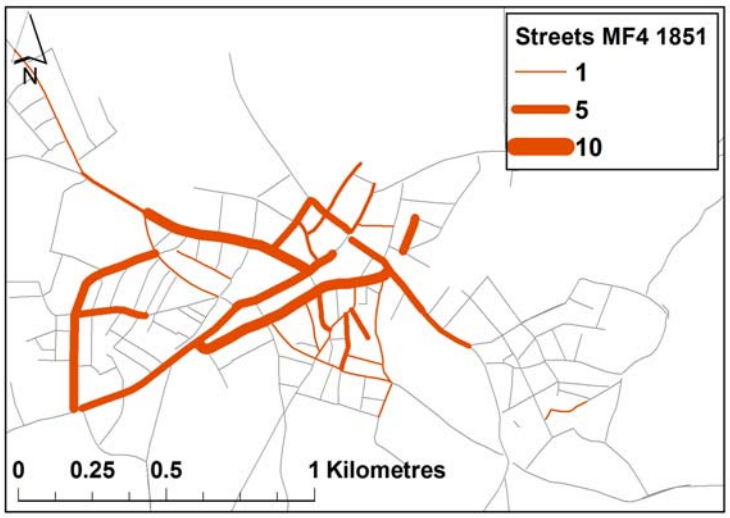


Figure 3.53: D

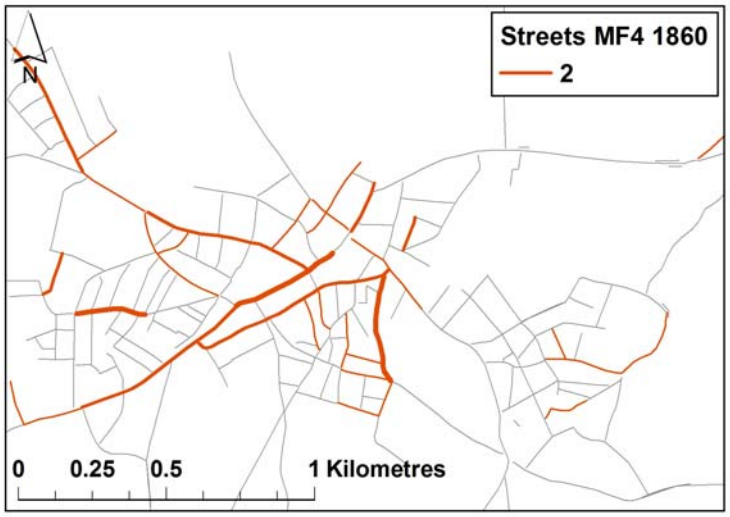


Figure 3.53: E

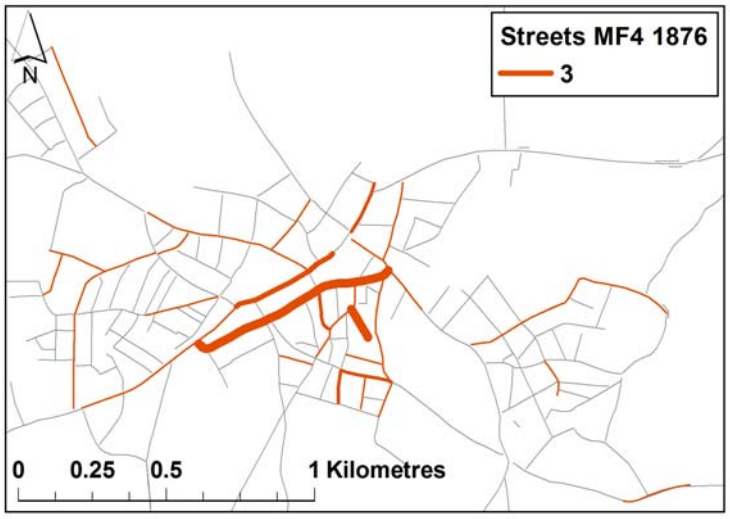


Figure 3.53: F

Figure 3.53: (A-F) Distribution and count of entries allocated to MF4 category by date, at street level in Dudley

Figure 3.54: A

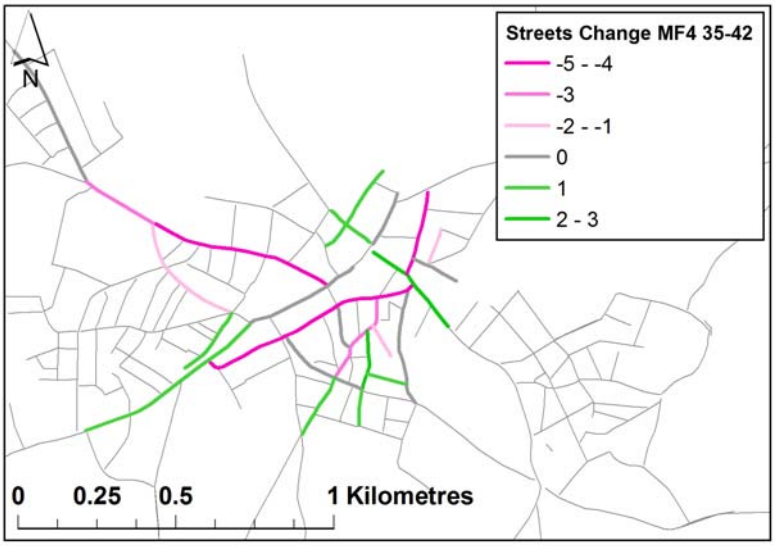


Figure 3.54: B

Figure 3.54: C

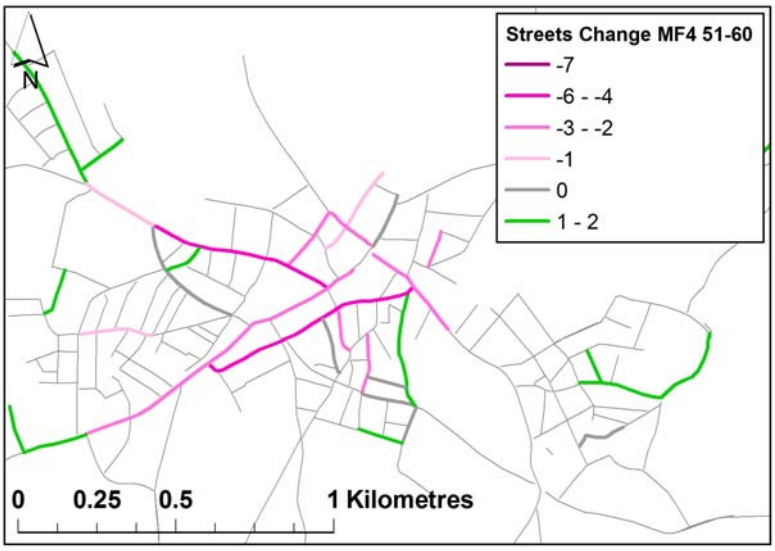


Figure 3.54: D

Figure 3.54: E

Figure 3.54: (A-E) Changes to the number and distribution of entries allocated to MF4 between consecutive years of the trade directories at a street level

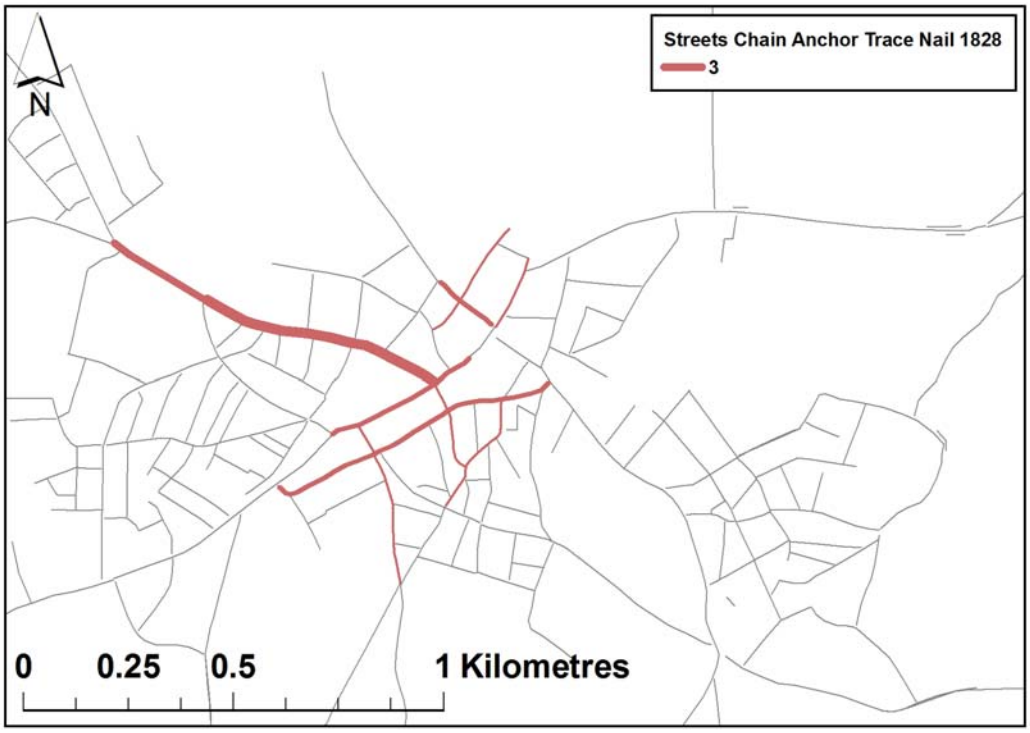


Figure 3.55: A

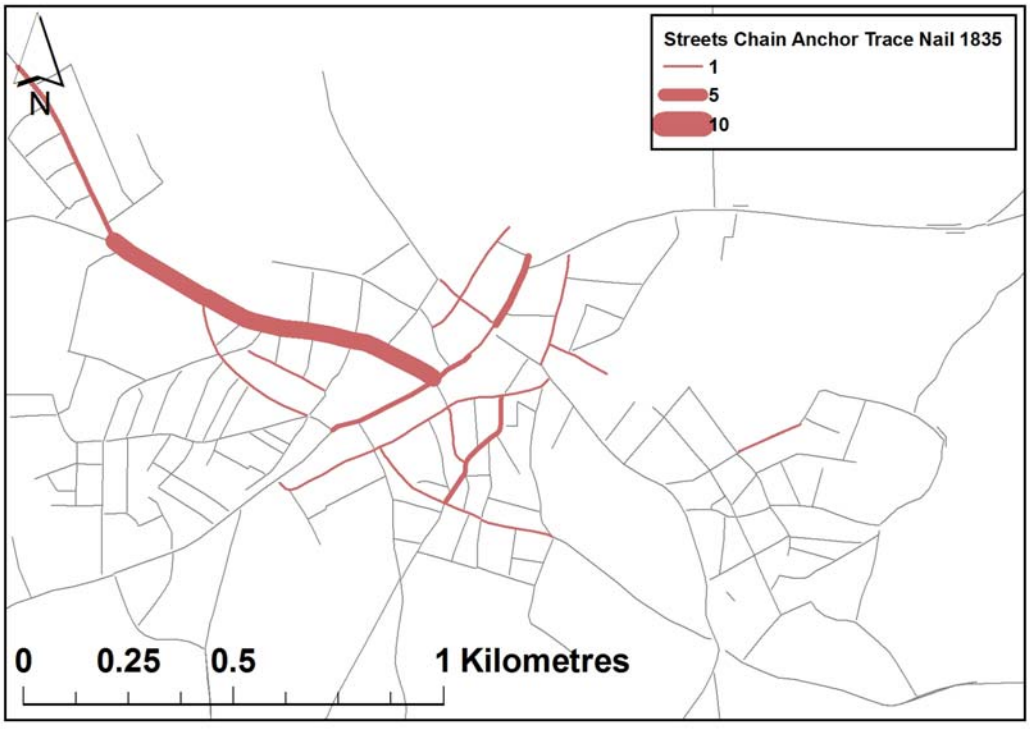


Figure 3.55: B

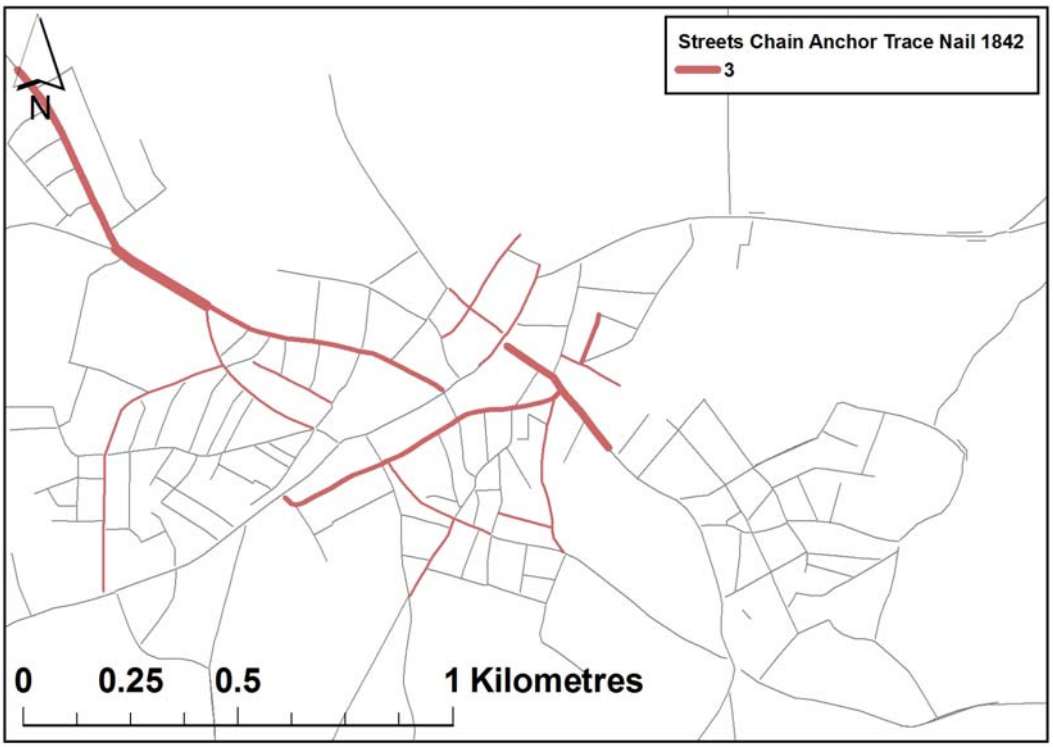


Figure 3.55: C

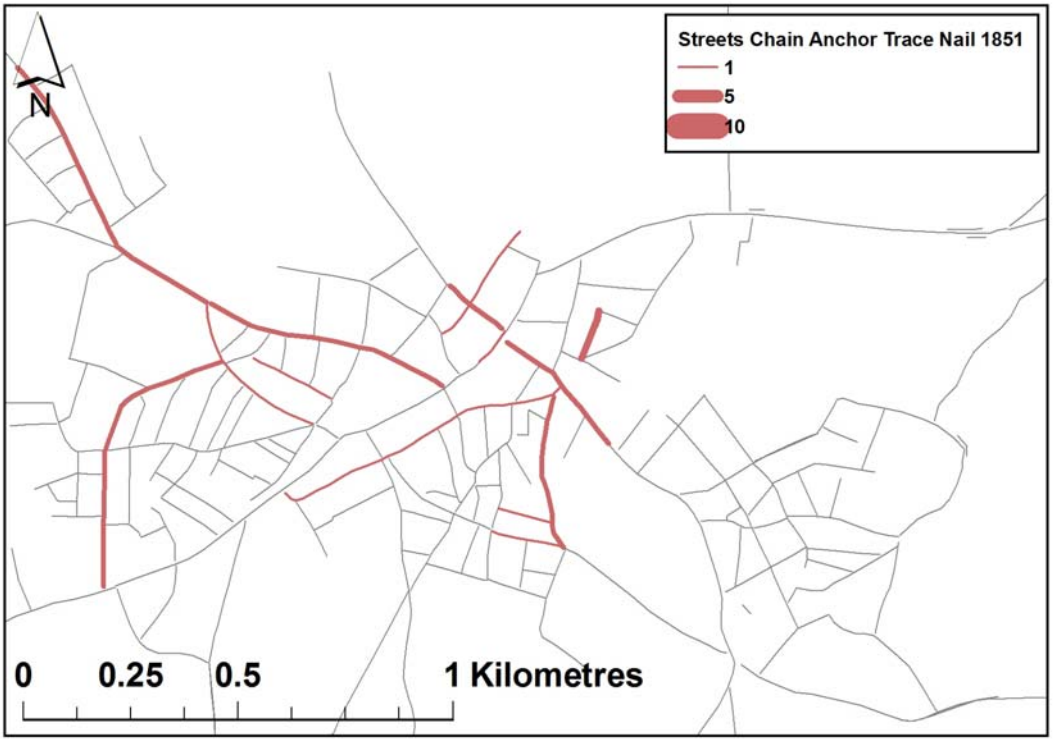


Figure 3.55: D

Figure 3.55: (A-D) Distribution and count of CATN for selected years at street level

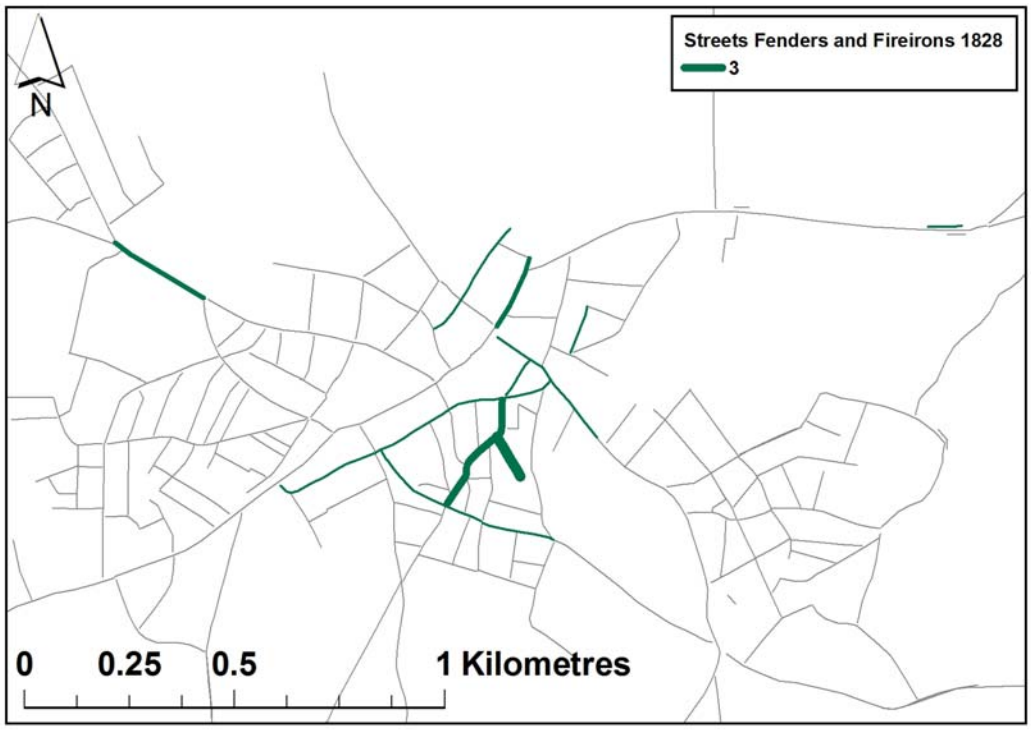


Figure 3.56: A

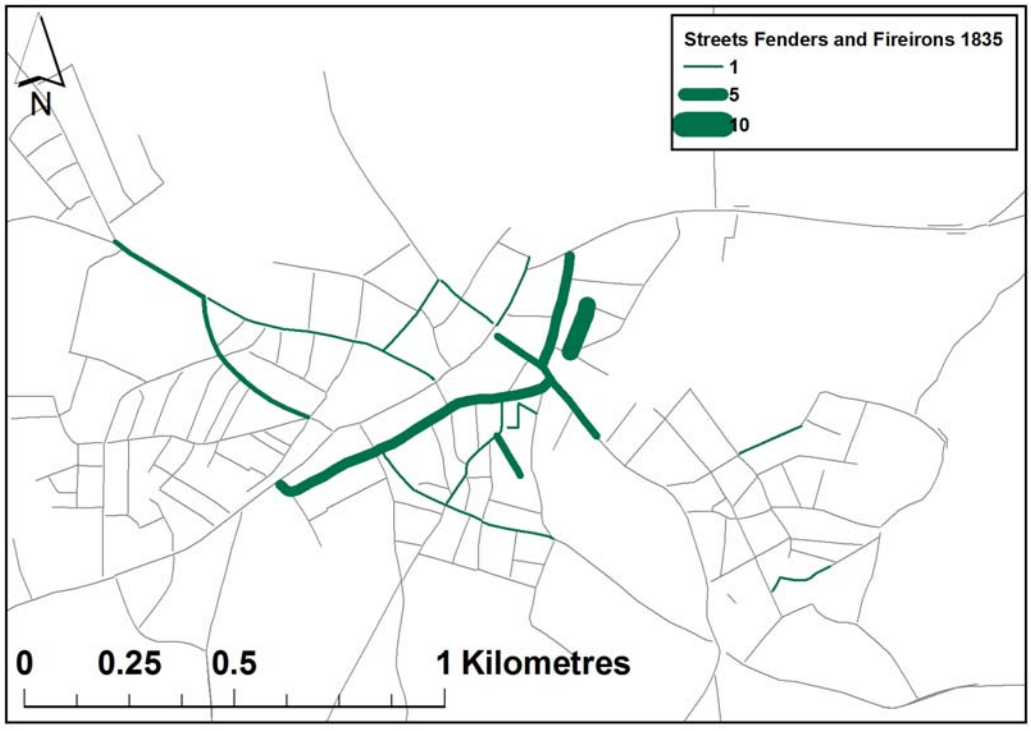


Figure 3.56: B

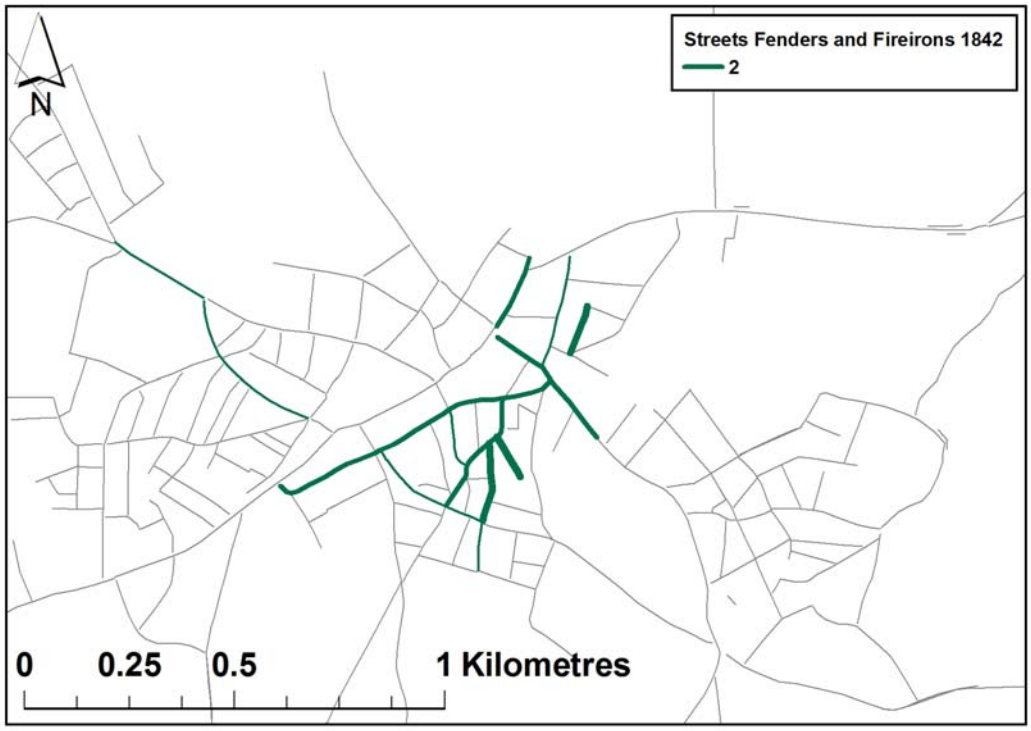


Figure 3.56: C

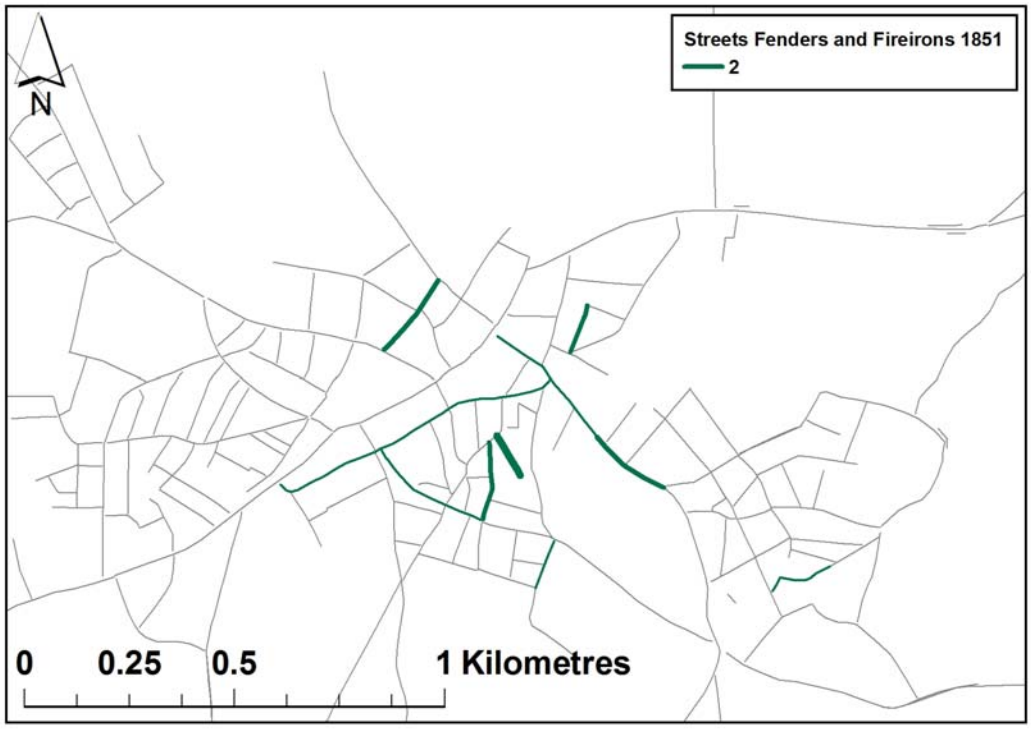


Figure 3.56: D

Figure 3.56: (A-D) Distribution and count of FaF by street for selected years

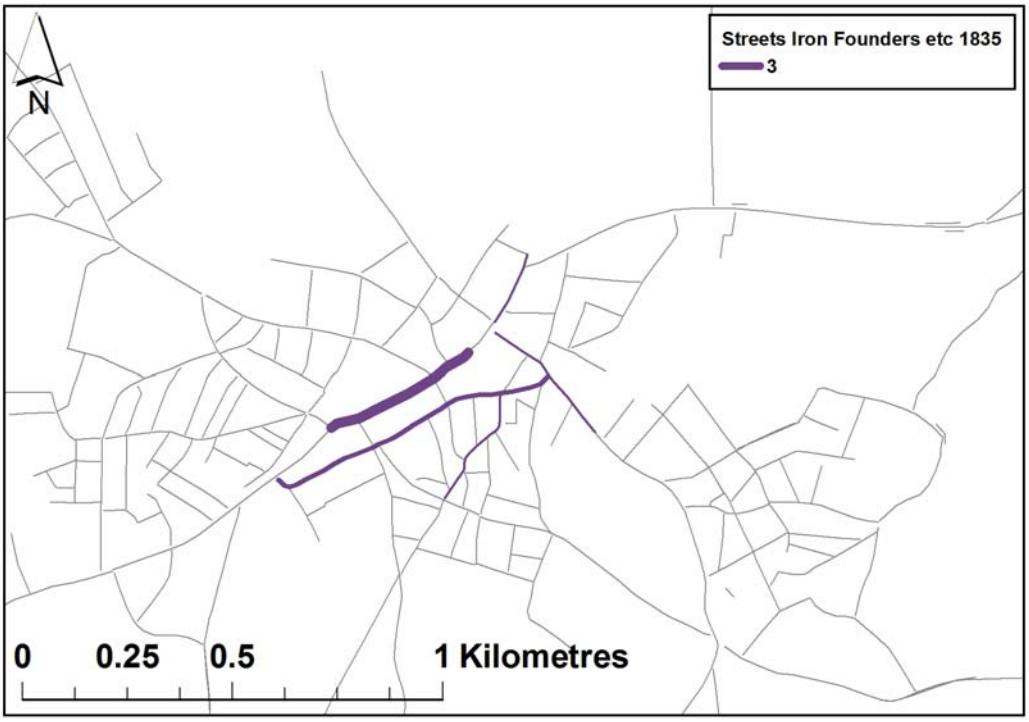


Figure 3.57: A

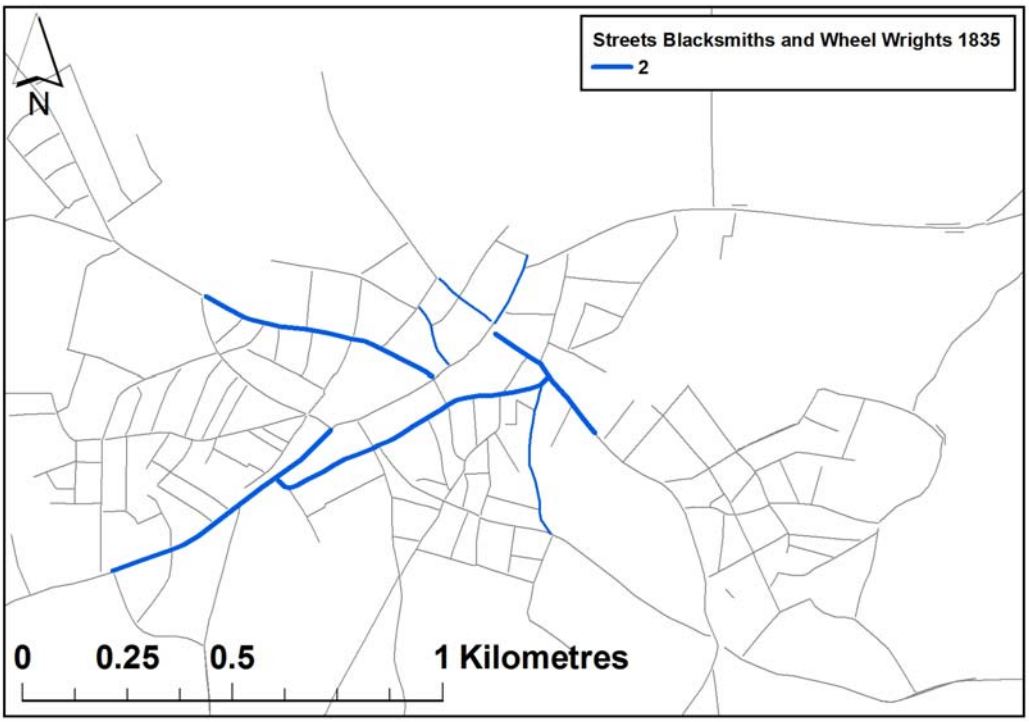


Figure 3.57: B

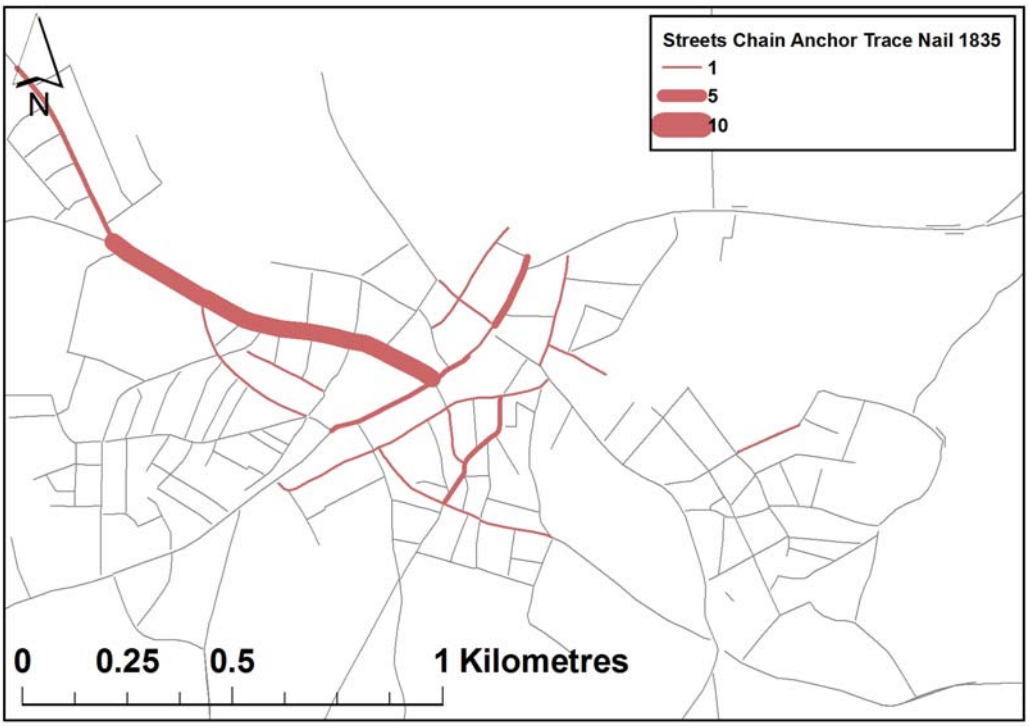


Figure 3.57: C

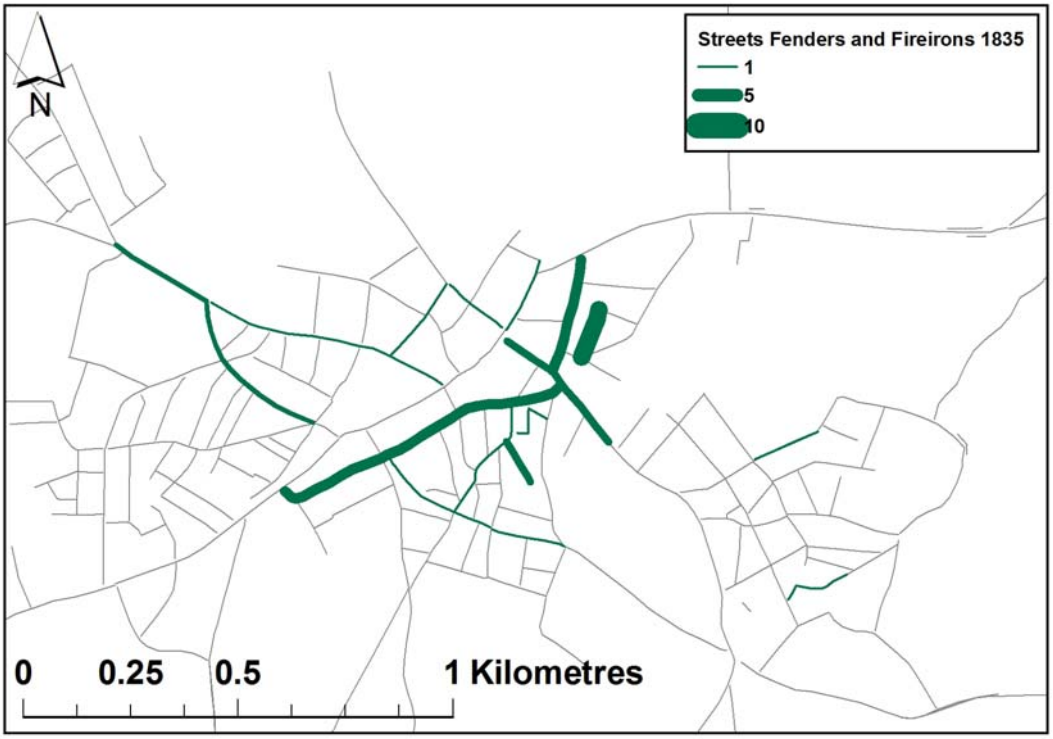


Figure 3.57: D

Figure 3.57: (A-D) Distribution and count of the most common specific trades grouped as MF4 by street for 1835

Distribution of Residents

Although not all of the trade directories included residents in their lists areas (also called Nobility, Gentry and Clergy by some trade directories), and were therefore taken out of the overall numbers used in the calculations of trade, as they were entered into the original database, their distribution can still be mapped. All streets would have had people living in them, however areas where the upper classes were living are likely to have a different character than others. While the number of entries increases, and the number of streets listed increases, the spatial distribution does not alter by much between 1860 and 1876, and throughout the 19th century it appears that once a street was occupied by the Nobility, Gentry and Clergy, it remained so.

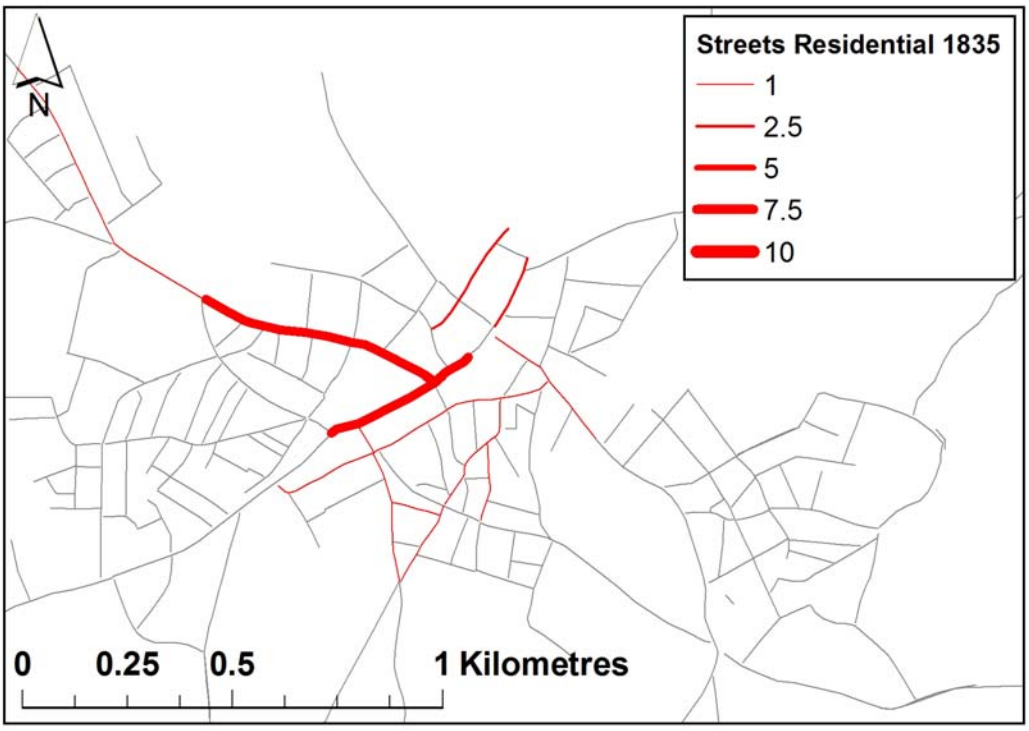


Figure 3.58: A

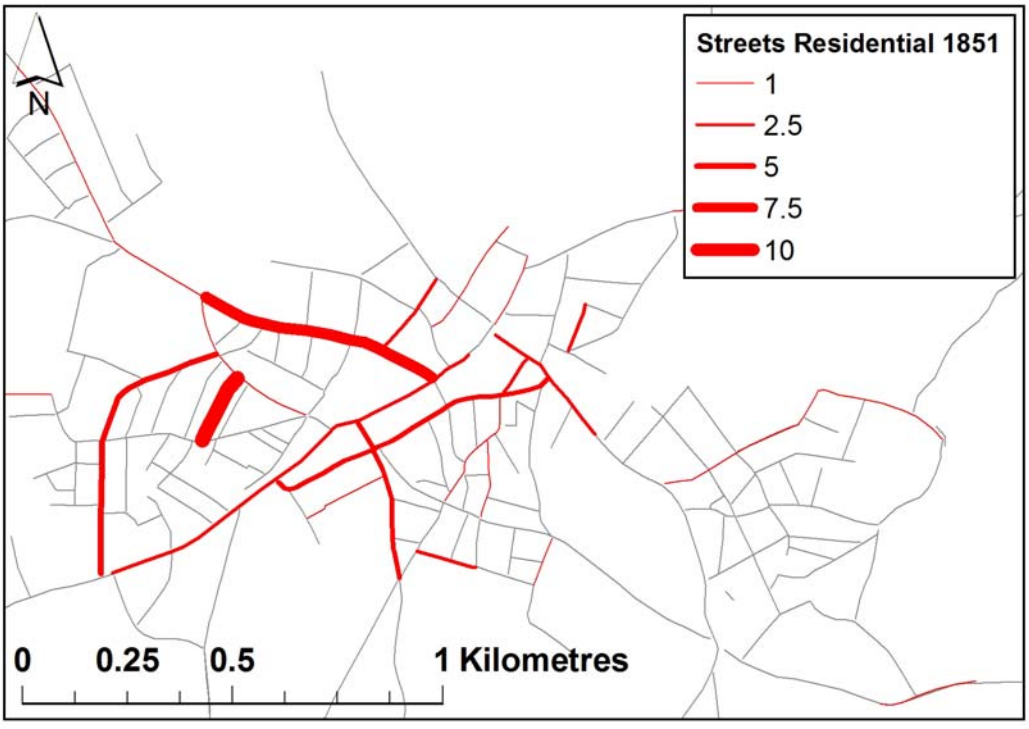


Figure 3.58: B

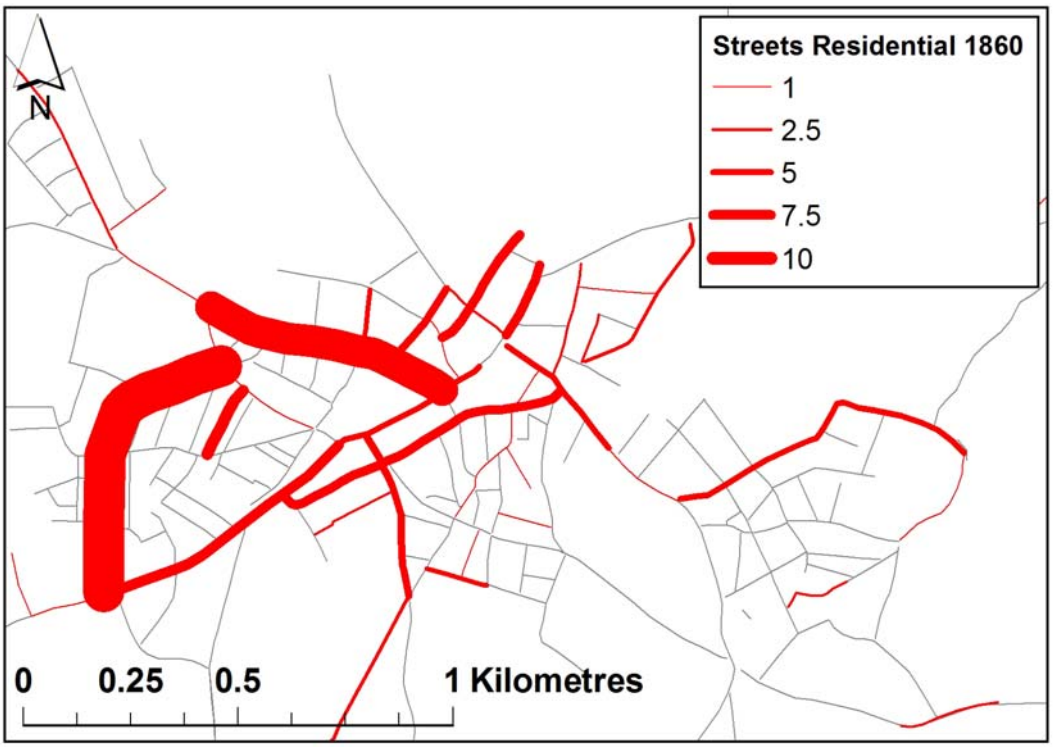


Figure 3.58: C

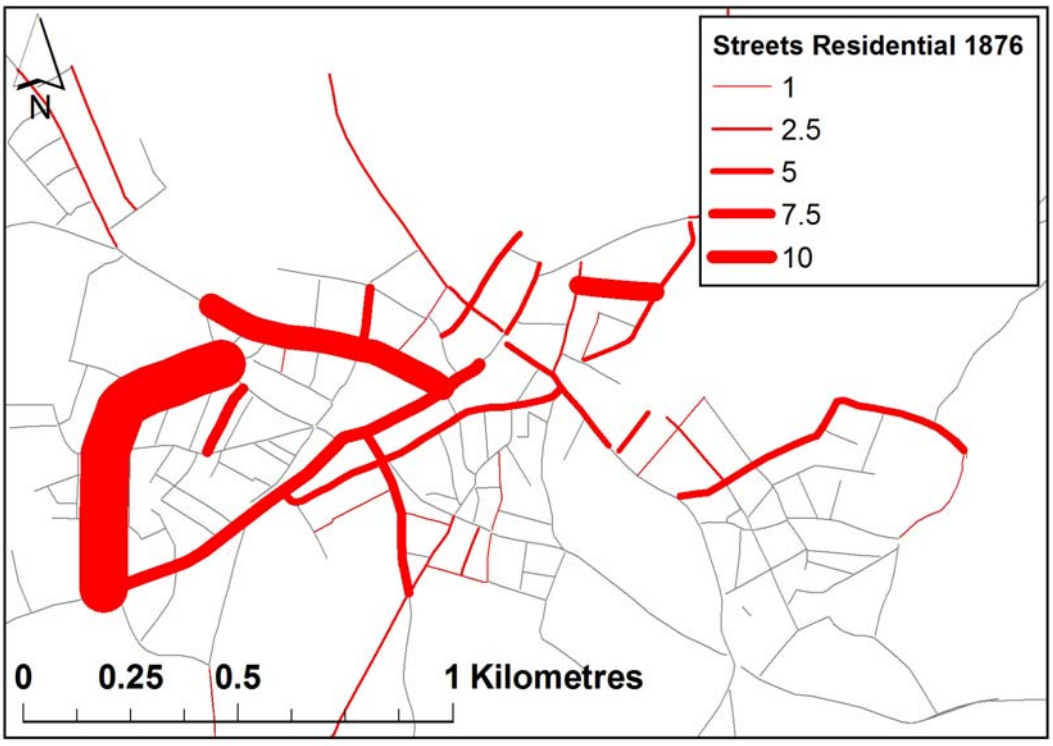


Figure 3.58: D

Figure 3.58: (A-D) Distribution and count of residential entries by street for selected years

3.4 Integration with existing datasets

As well as showing overall patterns within the urban landscape, the mapped data can be used to enhance our understanding of pre-existing GIS datasets, such as the BCHLC and HER.

An illustration of a particular example of how the new data can be used to enhance our understanding of the character and evolution of the urban landscape and the integration with other datasets can be done by looking at a BCHLC unit along Wolverhampton Street.

This unit (HBL6911) is described as small terrace housing dating from the late 18th or 19th century. 176 Wolverhampton Street is listed on the HER (4977), and also within this polygon are two listed buildings associated with a school (7744 and 4949 Figure 3.59).

The map sequence (Figure 3.60, 3.61 and 3.62) depicts the frontages as developed by 1835 in stylised detail, with the school present to the rear of the properties by the time of the OS 1st Edition in the 1880's.

It can be seen from the new data that in the early part of the 19th century the houses along Wolverhampton Street were some of the most crowded in terms of people per building in the region (Figure 3.37), with 6-10 people recorded per building in 1841. In addition to this, of all the streets in Dudley, Wolverhampton Street had the most nail-makers (Figure 3.55), a small scale industry likely to have been conducted out of these properties.

As the century progressed, after 1835 nail-making in Wolverhampton Street (as regards its inclusion in the Trade Directories at least) declines. At the same time it can be seen that the ratio of people per building decreases (Figures 3.37 and 3.38), and the number of people listed as residents increases (Figure 3.58).

It might be suggested therefore that the character of Wolverhampton Street changes throughout the century from small scale industrial to less crowded residential, and that the construction of the school was a response to, and part of this change in character. Furthermore, as the ratio of buildings per street length appears to remain relatively stable Figure 3.34 and 3.35), it can also be suggested that this change in character was one of population and occupation, rather than one of the built environment, something that is not possible to ascertain from the map sequence.

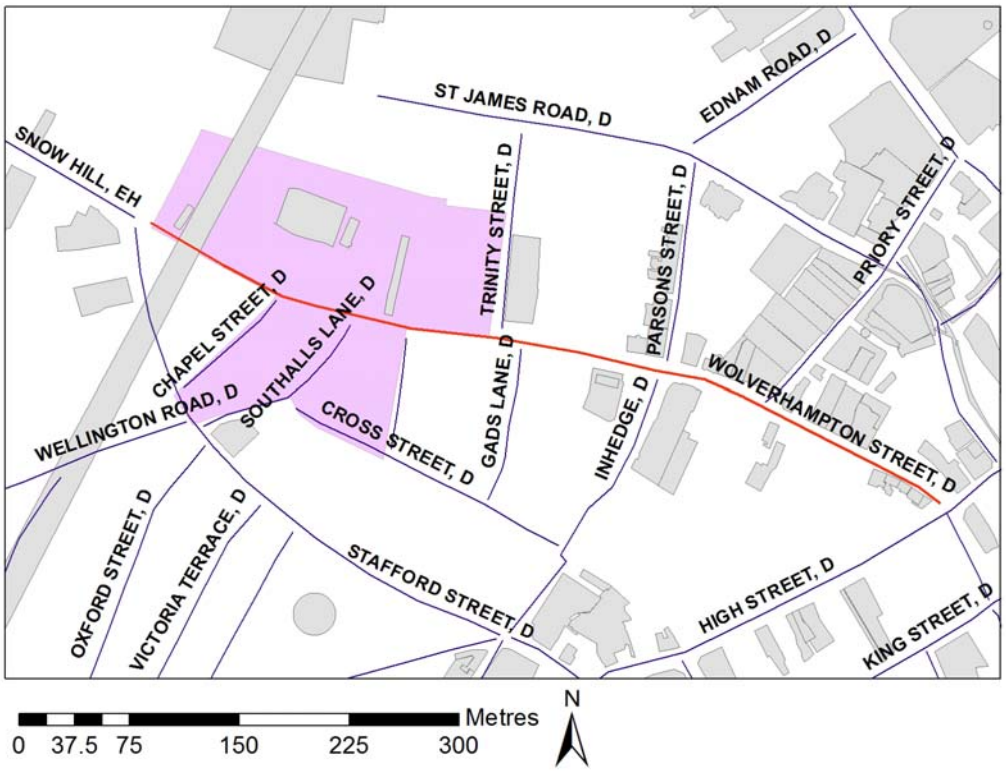


Figure 3.59: BCHLC region HBL6911 shown in pink, HER entries shown in grey)

Figure 3.60: Wolverhampton Street on Treasures map of 1835

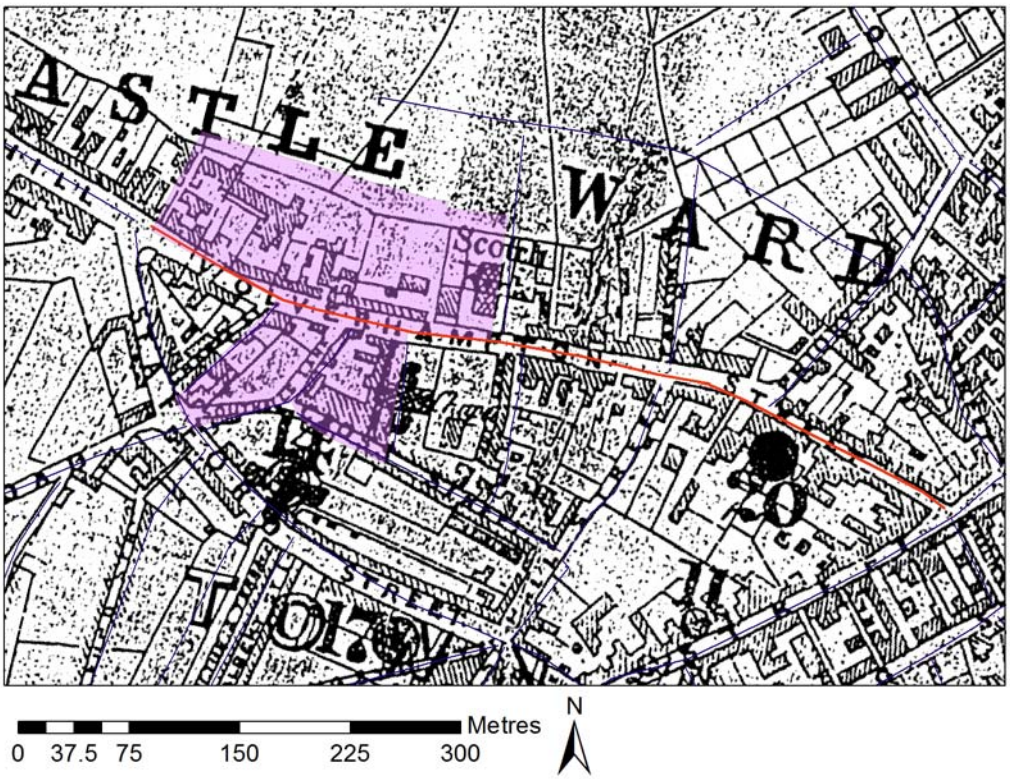


Figure 3.61: Wolverhampton Street on Richards map of 1865

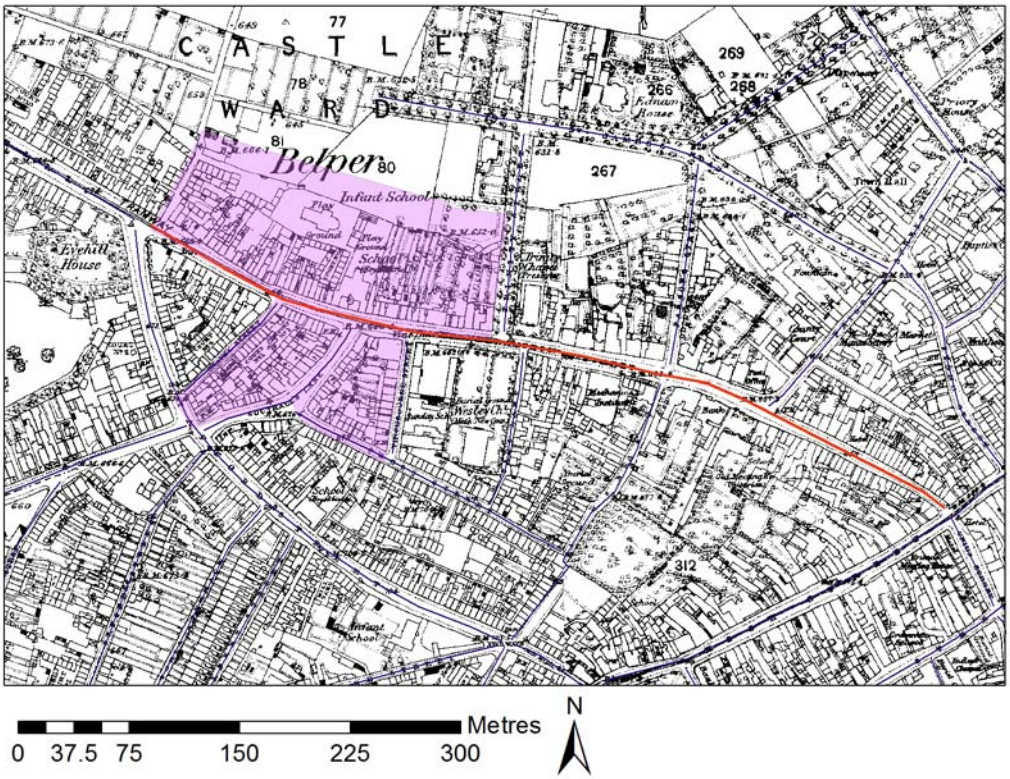


Figure 3.62: Wolverhampton Street on the Ordnance Survey 1st Edition

4.0 DISCUSSION

Overall the research did achieve its aims in filling in the gaps in our understanding of the urban and industrial landscape within the Dudley area, and illustrating changes within that landscape during the mid-19th century. The town of Dudley and its environs can be seen to have undergone very dynamic changes, not only in the physical growth of the urban area, but of the population, built environment in already developed areas, and character in terms of trade and industry itself; elements of the landscape that are not visible on the historic map sequence. The research also achieved the aim of creating an accessible resource that can be integrated with other spatial datasets and used as a basis for further research.

The map sequence illustrating streets by date first mentioned (Figure 3.31 A-F), as has been noted, is not quite in concordance with the historic map sequence. However whether a street was mentioned in the sources or not has its own value, as it potentially shows the 'importance' or significance of a street, and can omit speculative building projects whereby a street might look occupied but not have anyone living in it. It also shows clearly whether a particular street for a particular time has associated documentary evidence. The growth sequence itself shows that the urban growth was not a smooth progression away from the centre, but that particular areas were developed at particular times, including infilling of land blocks within the town centre as well as growth on the outskirts.

Mapping the distribution of buildings, and changes in the number of buildings at a suburb level between censuses, potentially shows in a finer temporal detail the changes to the built environment at the time (although it should be noted that only residential buildings are recorded on the census, and so factories, works and municipal buildings are not represented in this value).

Mapping the value of street length per building (Figure 34 A-D) does not necessarily give an accurate indication of the actual size of the buildings (determined by frontage), but does give an indication of the density of buildings within a particular street or area. The mapping from 1835, 1836 and 1865 depicts stylised buildings along the frontages of the roads, and little can be drawn from these other than a buildings presence. Comparison between the patterns identified within the street length/building maps and Ropers map of 1850 (not illustrated) does suggest that the value is relevant, and therefore has the potential to identify areas of particularly dense buildings including those behind the frontage, in areas where no detailed mapping was available. Also, changes between years of this value can very much highlight areas where there was physical change in the built environment, and identify these changes down to the nearest decade. Likewise, the research noted that there were general trends in the population per building value, and was able to map these to determine spatial patterns.

Trades such as dealing and small scale manufacturing are unlikely to show on the historic map sequence, but by mapping the trade directory data at both street and suburb level, this detail can be added to the landscape. Without looking at the actual composition of the trades identified and listed for each street, it is difficult to say specific things about its character. However, overall changes to areas and streets can be identified, objectively highlighting areas of continuity or change that might be worth investigating further. Also, by mapping the data at a variety of scales, and with a range of details (from general category down to specific trade/industry groups) the trade and industrial character of the landscape and changes in this character can be put into context against other values and datasets. For instance, changes in the number of trades within a street can be analysed against changes in particular trade categories, and can be verified against overall changes in the number of

buildings and the actual population. While this still is only representing a part of the story of what was going on, it can very much enhance what we already know.

Underlying problems with the datasets themselves, along with the methodologies of processing needs to be acknowledged. Individual maps generated by the project are not necessarily on their own particularly enlightening, and at times may be downright misleading. While many biases and inaccuracies are noted for the sources, it was assumed that these biases were consistent through time for comparable editions. While only trade directories initially identified as reliable and comparable were used in the research, further analysis did identify changes in recording methodology, and any changes identified between certain years might be due to this, rather than representing real change within the landscape. It should be noted, however, that it is only by looking at the datasets as a whole that these underlying methodological changes can come to light, and by allowing comparison with overall changes, the bias can be identified and taken into consideration.

In this way, although perhaps the count and distribution of trades reflects only a small part of the overall industry of an area, identifying change between years is still a valid exercise. It may be that the precise nature of the change is not fully understood by analysis of this data alone, but it is possible to objectively highlight areas where change was occurring and at the same time, drill down into the data to potentially identify what was driving that change.

However, even without the bias in the datasets, caution is needed when interpreting the results. The values themselves can be quite misleading if taken out of context, and it is important to assess the data further for significance in the results rather than necessarily take them at face value. For instance, a 100% increase in the number of dealing entries listed for a particular street, may only represent a change from 1 to 2 entries. Also values such as

the street length per building is likely to be erroneous for ribbon development along arterial routes where only some of the road digitised was colonised at any particular time. However, an attempt was made to counter these potential problems by creating a variety of values, that calculated both count and ratio, so that the most appropriate value for any particular question could be mapped.

Analysis of the census data indicates further problems in that some areas there were omissions of data, and not all streets were possible to identify. For the most part, the street layout itself did not change dramatically throughout this period, and the Ordnance Survey 1st edition is representative of early street networks. Where there had been changes within the urbanised area, these tended to be infilling of street blocks, rather than wholesale demolition and reconstruction as happened in the 20th century. However, some streets listed in the documentary sources were not possible to find.

The underlying database resource itself undeniably has research value in its own right, and it might be suggested that the true value of the research comes from its ability to be compared and integrated into other spatially recorded data and to be used for future research. While much research has been done using trade directories, much of this research aggregates the data at a town level. By splitting the data to a street level gives an element of detail and description not easily accessible or visible previously.

The database is not perfect, and while as much was done as possible in the time available, additions to the database such as other trade directories for intervening years, and further cross-referencing to identify streets that are currently still 'lost' would enhance its research value further.

Previously research conducted that analysed and mapped the distribution of particular industries would have taken a long time and which now can be conducted (to a certain extent) in a matter of minutes. While not mapped, the underlying database can also be used to query particular streets to generate lists of people and trades for a particular date (searching for which is problematic in the original resource as they are listed by trade), and also queried to identify particular people for those interested in genealogical research. In particular family names can be mapped. For instance, it was noted during the data entry stage of the project that there were a number of 'travelling tea dealers and drapers' with names beginning 'Mc – ', and that these tended to congregate in particular areas. The way the database is structured would also enable the mapping of female business owners.

5.0 CONCLUSIONS

It can be shown that where there is confidence in the data, a far more detailed picture of the people and occupations of Dudley in the mid-19th century can be gained. This mapping can be used in its own right to highlight patterns of population movement and industry, at a broad scale and detailed level.

The data might be used in two ways. The first is to gain an overall insight into the nature, distribution and changes of occupations and population in the landscape, by using the whole dataset to create broadscale mapping. While the attributes themselves need further research to identify whether there is genuine meaning to the values, they can be used to identify character and changes to that character within the landscape over time. In a similar fashion to the Black Country Historic Landscape Characterisation, it is perhaps a valueless map that is created, where all areas can be compared to other areas.

The second way is to use the particular details at a street level, to give added information to previously identified spatial units. These could be those identified on the BCHLC or listed buildings on the Historic Environment Record, or to areas of proposed development, to enhance and facilitate desk-based assessments and Environmental Impact Assessments.

While only a small amount of detailed mapping was generated, specifically for the MF4 Ironworking category, there is the potential for further maps similar to this to be created for other categories. There is much previous work conducted using Trade Directories to map the locations of specific occupations and industries, however, by having the data on a database

and linking the data into a GIS facilitates this type of research and also allows the data to be analysed and cross-referenced with other forms of geographic information.

The use of GIS as an analysis tool, visualisation tool and dissemination tool facilitates the further use of the dataset for future research. In this way it can be shown that the changes to the urban and industrial landscape of 19th century Dudley was not only outwards with new development and industry encroaching on the fields surrounding the town, but was subject to substantial changes within the already urbanised areas themselves. These areas show fluctuations and patterns of population movement, and potential rebuilding etc.

Although this research only scratches the surface of the potential, it gives an indication of what could be done in the future. For instance, changes identified spatially that suggest building changes or population changes can perhaps be confirmed or refuted by comparing the results of building recording work carried out previously.

What it can do is map and disseminate the data that is available, and provide a way of analysing or quantifying the patterns of building/population and trade changes. Additional datasets could also be created with their own databases, and linked to the streets, such as the rate books. For this reason, the dissemination of the results and data is an important part of the research itself. It is hoped in the first instance to deposit copies of the GIS and databases with Dudley HER, and potentially look at other repositories such as the Archaeological Data Service.

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1855 Billing Directory and Gazetteer of Worcestershire

1860 Post Office Directory of Staffordshire

1876 Post Office Directory of Worcestershire

APPENDIX 1

List of Booth Armstrong Classifications of Occupations

(After Armstrong 1972)

Appendix 1 –

List of Booth Armstrong Classifications of occupations (after Armstrong 1972)

Broad Category	Detailed category	Example of individual occupation	Revised Category Field
Agriculture and Breeding	1 – Farming	Agricultural labourer	A.1
	2 – Land service	Agricultural machine proprietor	A.2
	3 – Breeding	Horse dealer	A.3
	4 – Fishing	Fisherman	A.4
Mining	1 – Mining	Coal minor	M.1
	2 – Quarrying	Lime quarrier	M.2
	3 – Brick making	Gravel digger	M.3
	4 – Salt and water works	Well sinker	M.4
Building	1 – Management	Architect	B.1
	2 – Operative	Bricklayer	B.2
	3 – Roadmaking	Railway labourer	B.3
Manufacture	1 – Machinery	Boiler maker	MF.1
	2 – Tools etc	Anvil maker	MF.2
	3 – Shipbuilding	Boat and barge maker	MF.3
	4 – Iron and steel	Anchor and chain maker	MF.4
	5 – Copper, tin, lead etc	Brass manufacturer	MF.5
	6 – Gold and silver	Goldsmith	MF.6
	7 – Earthenware	Glass enameller	MF.7
	8 – Coals and gas	Coke burner	MF.8
	9 – Chemicals	Asphalte manufacturer	MF.9
	10 – Furs and leather	Currier	MF.10
	11 – Glue tallow etc	Tallow chandler	MF.11
	12 – Hair etc	Bone cutter	MF.12
	13 – Woodworkers	Basket maker	MF.13
	14 – Furniture	Bedstead maker	MF.14

	15 – Carriages and harness	Wheelwright	MF.15
	16 – Paper	Card manufacturer	MF.16
	17 – Floorcloth, waterproofs etc	Oilcloth manufacturer	MF.17
	18 – Woollens	Blanket manufacturer	MF.18
	19 – Cotton and silk	Chenille manufacturer	MF.19
	20 – Flax, hemp etc	Canvas maker	MF.20
	21 – Lace	Artificial flower maker	MF.21
	22 – Dyeing	Bleacher	MF.22
	23 – Dress	Bonnet maker	MF.23
	24 – Sundries	Fancy leather goods maker	MF.24
	25 – Food preparation	Miller	MF.25
	26 – Baking	Confectioner	MF.26
	27 – Drink preparation	Brewer	MF.27
	28 – Smoking	Tobacco pipe maker	MF.28
	29 – Watches, instruments, toys	Musical instruments maker	MF.29
	30 – Printing	Bookbinder	MF.30
	31 – Unspecified	Apprentice	MF.31
Transport	1 – Warehouses and docks	Watchman	T.1
	2 - Ocean navigation	Seaman	T.2
	3 – Inland navigation	Bargeman	T.3
	4 – Railways	Stationmaster	T.4
	5 – Roads	Haulier	T.5
Dealing	1 – Coals	Coal merchant	D.1
	2 – Raw materials	Corn merchant	D.2
	3 – Clothing materials	Ribbon dealer	D.3
	4 – Dress	Draper	D.4
	5 – Food	Butcher	D.5
	6 – Tobacco	Tobacconist	D.6
	7 – Wines, spirits, hotels	Beer seller	D.7
	8 – Lodging and coffee	Eating house keeper	D.8

	houses		
	9 – Furniture	Furniture broker	D.9
	10 – Stationary and publications	Bookseller	D.10
	11 – Household utensils, ornaments	Glass dealer	D.11
	12 – General dealer	Bazaar stall keeper	D.12
	13 – Unspecified	Auctioneer	D.13
Industrial Service	1 – Banking, insurance, accountancy	Actuary	IS.1
	2 – Labour	General labour (branch undefined)	IS.2
Public service and professional	1 – Central administration	Customs	PP.1
	2 – Local administration	Mayor	PP.2
	3 – Sanitary administration	Sewerman	PP.3
	4 – Army	Chelsea pensioner	PP.4
	5 – Navy	Coastguard	PP.5
	6 – Police and prisons	Prison officer	PP.6
	7 – Law	Barrister	PP.7
	8 – Medicine	Chemist	PP.8
	9 – Art and amusement (painting)	Sculptor	PP.9
	10 – Art and amusement (music etc)	Actor	PP.10
	11 – Literature	Newspaper proprietor	PP.11
	12 – Science	Astronomer	PP.12
	13 – Education	Governess	PP.13
	14 – Religion	Missionary	PP.14
Domestic Service	1 – Indoor	Cook	DS.1
	2 – Outdoor	Groom	DS.2
	3 – Extra service	Hairdresser	DS.3
Property Owning and Independent	*NA*		PO

APPENDIX 2

Full list of attributes created for suburb and street shapefiles

Appendix 2 -

List of attributes created for suburb and street shapefiles

SHAPEFILE	TYPE	ATTRIBUTE NAME	DESCRIPTION
1. Suburb	Count	Build1841	Count of all buildings in the census allocated to each suburb for 1841
2. Suburb	Count	Build1851	Count of all buildings in the census allocated to each suburb for 1851
3. Suburb	Count	Build1861	Count of all buildings in the census allocated to each suburb for 1861
4. Suburb	Count	Build1871	Count of all buildings in the census allocated to each suburb for 1871
5. Suburb	Count	Pop1841	Count of all people in the census allocated to each suburb for 1841
6. Suburb	Count	Pop1851	Count of all people in the census allocated to each suburb for 1851
7. Suburb	Count	Pop1861	Count of all people in the census allocated to each suburb for 1861
8. Suburb	Count	Pop1871	Count of all people in the census allocated to each suburb for 1871
9. Suburb	Count	Total1828	Count of individual entries for each suburb in the trade directory of 1828
10. Suburb	Count	Total1835	Count of individual entries for each suburb in the trade directory of 1835
11. Suburb	Count	Total1842	Count of individual entries for each suburb in the trade directory of 1842
12. Suburb	Count	Total1851	Count of individual entries for each suburb in the trade directory of 1851
13. Suburb	Count	Total1860	Count of individual entries for each suburb in the trade directory of 1860
14. Suburb	Count	Total1876	Count of individual entries for each suburb in the trade directory of 1876
15. Suburb	Count	AG1828	Count of entries of the AG simple category for each suburb in the directory of 1828
16. Suburb	Count	B1828	Count of entries of the B simple category for each suburb in the directory of 1828
17. Suburb	Count	D1828	Count of entries of the D simple category for each suburb in the directory of 1828
18. Suburb	Count	DS1828	Count of entries of the DS simple category for each suburb in the directory of 1828
19. Suburb	Count	IS1828	Count of entries of the IS simple category for each suburb in the directory of 1828
20. Suburb	Count	M1828	Count of entries of the M simple category for each suburb in the directory of 1828
21. Suburb	Count	MF1828	Count of entries of the MF simple category for each suburb in the directory of 1828
22. Suburb	Count	PO1828	Count of entries of the PO simple category for each suburb in the directory of 1828
23. Suburb	Count	PP1828	Count of entries of the PP simple category for each suburb in the directory of 1828
24. Suburb	Count	S1828	Count of entries of the S simple category for each suburb in the directory of 1828
25. Suburb	Count	T1828	Count of entries of the T simple category for each suburb in the directory of 1828

26. Suburb	Count	AG1835	Count of entries of the AG simple category for each suburb in the directory of 1835
27. Suburb	Count	B1835	Count of entries of the B simple category for each suburb in the directory of 1835
28. Suburb	Count	D1835	Count of entries of the D simple category for each suburb in the directory of 1835
29. Suburb	Count	DS1835	Count of entries of the DS simple category for each suburb in the directory of 1835
30. Suburb	Count	IS1835	Count of entries of the IS simple category for each suburb in the directory of 1835
31. Suburb	Count	M1835	Count of entries of the M simple category for each suburb in the directory of 1835
32. Suburb	Count	MF1835	Count of entries of the MF simple category for each suburb in the directory of 1835
33. Suburb	Count	PO1835	Count of entries of the PO simple category for each suburb in the directory of 1835
34. Suburb	Count	PP1835	Count of entries of the PP simple category for each suburb in the directory of 1835
35. Suburb	Count	S1835	Count of entries of the S simple category for each suburb in the directory of 1835
36. Suburb	Count	T1835	Count of entries of the T simple category for each suburb in the directory of 1835
37. Suburb	Count	AG1842	Count of entries of the AG simple category for each suburb in the directory of 1842
38. Suburb	Count	B1842	Count of entries of the B simple category for each suburb in the directory of 1842
39. Suburb	Count	D1842	Count of entries of the D simple category for each suburb in the directory of 1842
40. Suburb	Count	DS1842	Count of entries of the DS simple category for each suburb in the directory of 1842
41. Suburb	Count	IS1842	Count of entries of the IS simple category for each suburb in the directory of 1842
42. Suburb	Count	M1842	Count of entries of the M simple category for each suburb in the directory of 1842
43. Suburb	Count	MF1842	Count of entries of the MF simple category for each suburb in the directory of 1842
44. Suburb	Count	PO1842	Count of entries of the PO simple category for each suburb in the directory of 1842
45. Suburb	Count	PP1842	Count of entries of the PP simple category for each suburb in the directory of 1842
46. Suburb	Count	S1842	Count of entries of the S simple category for each suburb in the directory of 1842
47. Suburb	Count	T1842	Count of entries of the T simple category for each suburb in the directory of 1842
48. Suburb	Count	AG1851	Count of entries of the AG simple category for each suburb in the directory of 1851
49. Suburb	Count	B1851	Count of entries of the B simple category for each suburb in the directory of 1851
50. Suburb	Count	D1851	Count of entries of the D simple category for each suburb in the directory of 1851
51. Suburb	Count	DS1851	Count of entries of the DS simple category for each suburb in the directory of 1851
52. Suburb	Count	IS1851	Count of entries of the IS simple category for each suburb in the directory of 1851
53. Suburb	Count	M1851	Count of entries of the M simple category for each suburb in the directory of 1851
54. Suburb	Count	MF1851	Count of entries of the MF simple category for each suburb in the directory of 1851
55. Suburb	Count	PO1851	Count of entries of the PO simple category for each suburb in the directory of 1851

56. Suburb	Count	PP1851	Count of entries of the PP simple category for each suburb in the directory of 1851
57. Suburb	Count	S1851	Count of entries of the S simple category for each suburb in the directory of 1851
58. Suburb	Count	T1851	Count of entries of the T simple category for each suburb in the directory of 1851
59. Suburb	Count	AG1860	Count of entries of the AG simple category for each suburb in the directory of 1860
60. Suburb	Count	B1860	Count of entries of the B simple category for each suburb in the directory of 1860
61. Suburb	Count	D1860	Count of entries of the D simple category for each suburb in the directory of 1860
62. Suburb	Count	DS1860	Count of entries of the DS simple category for each suburb in the directory of 1860
63. Suburb	Count	IS1860	Count of entries of the IS simple category for each suburb in the directory of 1860
64. Suburb	Count	M1860	Count of entries of the M simple category for each suburb in the directory of 1860
65. Suburb	Count	MF1860	Count of entries of the MF simple category for each suburb in the directory of 1860
66. Suburb	Count	PO1860	Count of entries of the PO simple category for each suburb in the directory of 1860
67. Suburb	Count	PP1860	Count of entries of the PP simple category for each suburb in the directory of 1860
68. Suburb	Count	S1860	Count of entries of the S simple category for each suburb in the directory of 1860
69. Suburb	Count	T1860	Count of entries of the T simple category for each suburb in the directory of 1860
70. Suburb	Count	AG1876	Count of entries of the AG simple category for each suburb in the directory of 1876
71. Suburb	Count	B1876	Count of entries of the B simple category for each suburb in the directory of 1876
72. Suburb	Count	D1876	Count of entries of the D simple category for each suburb in the directory of 1876
73. Suburb	Count	DS1876	Count of entries of the DS simple category for each suburb in the directory of 1876
74. Suburb	Count	IS1876	Count of entries of the IS simple category for each suburb in the directory of 1876
75. Suburb	Count	M1876	Count of entries of the M simple category for each suburb in the directory of 1876
76. Suburb	Count	MF1876	Count of entries of the MF simple category for each suburb in the directory of 1876
77. Suburb	Count	PO1876	Count of entries of the PO simple category for each suburb in the directory of 1876
78. Suburb	Count	PP1876	Count of entries of the PP simple category for each suburb in the directory of 1876
79. Suburb	Count	S1876	Count of entries of the S simple category for each suburb in the directory of 1876
80. Suburb	Count	T1876	Count of entries of the T simple category for each suburb in the directory of 1876
81. Suburb	Count	MF_1_1828	Count of entries of the MF1 category for each suburb in the directory of 1828
82. Suburb	Count	MF_2_1828	Count of entries of the MF2 category for each suburb in the directory of 1828
83. Suburb	Count	MF_3_1828	Count of entries of the MF3 category for each suburb in the directory of 1828
84. Suburb	Count	MF_4_1828	Count of entries of the MF4 category for each suburb in the directory of 1828
85. Suburb	Count	MF_5_1828	Count of entries of the MF5 category for each suburb in the directory of 1828

86. Suburb	Count	MF_6_1828	Count of entries of the MF6 category for each suburb in the directory of 1828
87. Suburb	Count	MF_7_1828	Count of entries of the MF7 category for each suburb in the directory of 1828
88. Suburb	Count	MF_8_1828	Count of entries of the MF8 category for each suburb in the directory of 1828
89. Suburb	Count	MF_9_1828	Count of entries of the MF9 category for each suburb in the directory of 1828
90. Suburb	Count	MF_10_1828	Count of entries of the MF10 category for each suburb in the directory of 1828
91. Suburb	Count	MF_11_1828	Count of entries of the MF11 category for each suburb in the directory of 1828
92. Suburb	Count	MF_12_1828	Count of entries of the MF12 category for each suburb in the directory of 1828
93. Suburb	Count	MF_13_1828	Count of entries of the MF13 category for each suburb in the directory of 1828
94. Suburb	Count	MF_14_1828	Count of entries of the MF14 category for each suburb in the directory of 1828
95. Suburb	Count	MF_15_1828	Count of entries of the MF15 category for each suburb in the directory of 1828
96. Suburb	Count	MF_16_1828	Count of entries of the MF16 category for each suburb in the directory of 1828
97. Suburb	Count	MF_17_1828	Count of entries of the MF17 category for each suburb in the directory of 1828
98. Suburb	Count	MF_18_1828	Count of entries of the MF18 category for each suburb in the directory of 1828
99. Suburb	Count	MF_19_1828	Count of entries of the MF19 category for each suburb in the directory of 1828
100. Suburb	Count	MF_20_1828	Count of entries of the MF20 category for each suburb in the directory of 1828
101. Suburb	Count	MF_21_1828	Count of entries of the MF21 category for each suburb in the directory of 1828
102. Suburb	Count	MF_22_1828	Count of entries of the MF22 category for each suburb in the directory of 1828
103. Suburb	Count	MF_23_1828	Count of entries of the MF23 category for each suburb in the directory of 1828
104. Suburb	Count	MF_24_1828	Count of entries of the MF24 category for each suburb in the directory of 1828
105. Suburb	Count	MF_25_1828	Count of entries of the MF25 category for each suburb in the directory of 1828
106. Suburb	Count	MF_26_1828	Count of entries of the MF26 category for each suburb in the directory of 1828
107. Suburb	Count	MF_27_1828	Count of entries of the MF27 category for each suburb in the directory of 1828
108. Suburb	Count	MF_28_1828	Count of entries of the MF28 category for each suburb in the directory of 1828
109. Suburb	Count	MF_29_1828	Count of entries of the MF29 category for each suburb in the directory of 1828
110. Suburb	Count	MF_30_1828	Count of entries of the MF30 category for each suburb in the directory of 1828
111. Suburb	Count	MF_1_1835	Count of entries of the MF1 category for each suburb in the directory of 1835
112. Suburb	Count	MF_2_1835	Count of entries of the MF2 category for each suburb in the directory of 1835
113. Suburb	Count	MF_3_1835	Count of entries of the MF3 category for each suburb in the directory of 1835
114. Suburb	Count	MF_4_1835	Count of entries of the MF4 category for each suburb in the directory of 1835
115. Suburb	Count	MF_5_1835	Count of entries of the MF5 category for each suburb in the directory of 1835

116. Suburb	Count	MF_6_1835	Count of entries of the MF6 category for each suburb in the directory of 1835
117. Suburb	Count	MF_7_1835	Count of entries of the MF7 category for each suburb in the directory of 1835
118. Suburb	Count	MF_8_1835	Count of entries of the MF8 category for each suburb in the directory of 1835
119. Suburb	Count	MF_9_1835	Count of entries of the MF9 category for each suburb in the directory of 1835
120. Suburb	Count	MF_10_1835	Count of entries of the MF10 category for each suburb in the directory of 1835
121. Suburb	Count	MF_11_1835	Count of entries of the MF11 category for each suburb in the directory of 1835
122. Suburb	Count	MF_12_1835	Count of entries of the MF12 category for each suburb in the directory of 1835
123. Suburb	Count	MF_13_1835	Count of entries of the MF13 category for each suburb in the directory of 1835
124. Suburb	Count	MF_14_1835	Count of entries of the MF14 category for each suburb in the directory of 1835
125. Suburb	Count	MF_15_1835	Count of entries of the MF15 category for each suburb in the directory of 1835
126. Suburb	Count	MF_16_1835	Count of entries of the MF16 category for each suburb in the directory of 1835
127. Suburb	Count	MF_17_1835	Count of entries of the MF17 category for each suburb in the directory of 1835
128. Suburb	Count	MF_18_1835	Count of entries of the MF18 category for each suburb in the directory of 1835
129. Suburb	Count	MF_19_1835	Count of entries of the MF19 category for each suburb in the directory of 1835
130. Suburb	Count	MF_20_1835	Count of entries of the MF20 category for each suburb in the directory of 1835
131. Suburb	Count	MF_21_1835	Count of entries of the MF21 category for each suburb in the directory of 1835
132. Suburb	Count	MF_22_1835	Count of entries of the MF22 category for each suburb in the directory of 1835
133. Suburb	Count	MF_23_1835	Count of entries of the MF23 category for each suburb in the directory of 1835
134. Suburb	Count	MF_24_1835	Count of entries of the MF24 category for each suburb in the directory of 1835
135. Suburb	Count	MF_25_1835	Count of entries of the MF25 category for each suburb in the directory of 1835
136. Suburb	Count	MF_26_1835	Count of entries of the MF26 category for each suburb in the directory of 1835
137. Suburb	Count	MF_27_1835	Count of entries of the MF27 category for each suburb in the directory of 1835
138. Suburb	Count	MF_28_1835	Count of entries of the MF28 category for each suburb in the directory of 1835
139. Suburb	Count	MF_29_1835	Count of entries of the MF29 category for each suburb in the directory of 1835
140. Suburb	Count	MF_30_1835	Count of entries of the MF30 category for each suburb in the directory of 1835
141. Suburb	Count	MF_1_1842	Count of entries of the MF1 category for each suburb in the directory of 1842
142. Suburb	Count	MF_2_1842	Count of entries of the MF2 category for each suburb in the directory of 1842
143. Suburb	Count	MF_3_1842	Count of entries of the MF3 category for each suburb in the directory of 1842
144. Suburb	Count	MF_4_1842	Count of entries of the MF4 category for each suburb in the directory of 1842
145. Suburb	Count	MF_5_1842	Count of entries of the MF5 category for each suburb in the directory of 1842

146. Suburb	Count	MF_6_1842	Count of entries of the MF6 category for each suburb in the directory of 1842
147. Suburb	Count	MF_7_1842	Count of entries of the MF7 category for each suburb in the directory of 1842
148. Suburb	Count	MF_8_1842	Count of entries of the MF8 category for each suburb in the directory of 1842
149. Suburb	Count	MF_9_1842	Count of entries of the MF9 category for each suburb in the directory of 1842
150. Suburb	Count	MF_10_1842	Count of entries of the MF10 category for each suburb in the directory of 1842
151. Suburb	Count	MF_11_1842	Count of entries of the MF11 category for each suburb in the directory of 1842
152. Suburb	Count	MF_12_1842	Count of entries of the MF12 category for each suburb in the directory of 1842
153. Suburb	Count	MF_13_1842	Count of entries of the MF13 category for each suburb in the directory of 1842
154. Suburb	Count	MF_14_1842	Count of entries of the MF14 category for each suburb in the directory of 1842
155. Suburb	Count	MF_15_1842	Count of entries of the MF15 category for each suburb in the directory of 1842
156. Suburb	Count	MF_16_1842	Count of entries of the MF16 category for each suburb in the directory of 1842
157. Suburb	Count	MF_17_1842	Count of entries of the MF17 category for each suburb in the directory of 1842
158. Suburb	Count	MF_18_1842	Count of entries of the MF18 category for each suburb in the directory of 1842
159. Suburb	Count	MF_19_1842	Count of entries of the MF19 category for each suburb in the directory of 1842
160. Suburb	Count	MF_20_1842	Count of entries of the MF20 category for each suburb in the directory of 1842
161. Suburb	Count	MF_21_1842	Count of entries of the MF21 category for each suburb in the directory of 1842
162. Suburb	Count	MF_22_1842	Count of entries of the MF22 category for each suburb in the directory of 1842
163. Suburb	Count	MF_23_1842	Count of entries of the MF23 category for each suburb in the directory of 1842
164. Suburb	Count	MF_24_1842	Count of entries of the MF24 category for each suburb in the directory of 1842
165. Suburb	Count	MF_25_1842	Count of entries of the MF25 category for each suburb in the directory of 1842
166. Suburb	Count	MF_26_1842	Count of entries of the MF26 category for each suburb in the directory of 1842
167. Suburb	Count	MF_27_1842	Count of entries of the MF27 category for each suburb in the directory of 1842
168. Suburb	Count	MF_28_1842	Count of entries of the MF28 category for each suburb in the directory of 1842
169. Suburb	Count	MF_29_1842	Count of entries of the MF29 category for each suburb in the directory of 1842
170. Suburb	Count	MF_30_1842	Count of entries of the MF30 category for each suburb in the directory of 1842
171. Suburb	Count	MF_1_1851	Count of entries of the MF1 category for each suburb in the directory of 1851
172. Suburb	Count	MF_2_1851	Count of entries of the MF2 category for each suburb in the directory of 1851
173. Suburb	Count	MF_3_1851	Count of entries of the MF3 category for each suburb in the directory of 1851
174. Suburb	Count	MF_4_1851	Count of entries of the MF4 category for each suburb in the directory of 1851
175. Suburb	Count	MF_5_1851	Count of entries of the MF5 category for each suburb in the directory of 1851

176. Suburb	Count	MF_6_1851	Count of entries of the MF6 category for each suburb in the directory of 1851
177. Suburb	Count	MF_7_1851	Count of entries of the MF7 category for each suburb in the directory of 1851
178. Suburb	Count	MF_8_1851	Count of entries of the MF8 category for each suburb in the directory of 1851
179. Suburb	Count	MF_9_1851	Count of entries of the MF9 category for each suburb in the directory of 1851
180. Suburb	Count	MF_10_1851	Count of entries of the MF10 category for each suburb in the directory of 1851
181. Suburb	Count	MF_11_1851	Count of entries of the MF11 category for each suburb in the directory of 1851
182. Suburb	Count	MF_12_1851	Count of entries of the MF12 category for each suburb in the directory of 1851
183. Suburb	Count	MF_13_1851	Count of entries of the MF13 category for each suburb in the directory of 1851
184. Suburb	Count	MF_14_1851	Count of entries of the MF14 category for each suburb in the directory of 1851
185. Suburb	Count	MF_15_1851	Count of entries of the MF15 category for each suburb in the directory of 1851
186. Suburb	Count	MF_16_1851	Count of entries of the MF16 category for each suburb in the directory of 1851
187. Suburb	Count	MF_17_1851	Count of entries of the MF17 category for each suburb in the directory of 1851
188. Suburb	Count	MF_18_1851	Count of entries of the MF18 category for each suburb in the directory of 1851
189. Suburb	Count	MF_19_1851	Count of entries of the MF19 category for each suburb in the directory of 1851
190. Suburb	Count	MF_20_1851	Count of entries of the MF20 category for each suburb in the directory of 1851
191. Suburb	Count	MF_21_1851	Count of entries of the MF21 category for each suburb in the directory of 1851
192. Suburb	Count	MF_22_1851	Count of entries of the MF22 category for each suburb in the directory of 1851
193. Suburb	Count	MF_23_1851	Count of entries of the MF23 category for each suburb in the directory of 1851
194. Suburb	Count	MF_24_1851	Count of entries of the MF24 category for each suburb in the directory of 1851
195. Suburb	Count	MF_25_1851	Count of entries of the MF25 category for each suburb in the directory of 1851
196. Suburb	Count	MF_26_1851	Count of entries of the MF26 category for each suburb in the directory of 1851
197. Suburb	Count	MF_27_1851	Count of entries of the MF27 category for each suburb in the directory of 1851
198. Suburb	Count	MF_28_1851	Count of entries of the MF28 category for each suburb in the directory of 1851
199. Suburb	Count	MF_29_1851	Count of entries of the MF29 category for each suburb in the directory of 1851
200. Suburb	Count	MF_30_1851	Count of entries of the MF30 category for each suburb in the directory of 1851
201. Suburb	Count	MF_1_1860	Count of entries of the MF1 category for each suburb in the directory of 1860
202. Suburb	Count	MF_2_1860	Count of entries of the MF2 category for each suburb in the directory of 1860
203. Suburb	Count	MF_3_1860	Count of entries of the MF3 category for each suburb in the directory of 1860
204. Suburb	Count	MF_4_1860	Count of entries of the MF4 category for each suburb in the directory of 1860
205. Suburb	Count	MF_5_1860	Count of entries of the MF5 category for each suburb in the directory of 1860

206. Suburb	Count	MF_6_1860	Count of entries of the MF6 category for each suburb in the directory of 1860
207. Suburb	Count	MF_7_1860	Count of entries of the MF7 category for each suburb in the directory of 1860
208. Suburb	Count	MF_8_1860	Count of entries of the MF8 category for each suburb in the directory of 1860
209. Suburb	Count	MF_9_1860	Count of entries of the MF9 category for each suburb in the directory of 1860
210. Suburb	Count	MF_10_1860	Count of entries of the MF10 category for each suburb in the directory of 1860
211. Suburb	Count	MF_11_1860	Count of entries of the MF11 category for each suburb in the directory of 1860
212. Suburb	Count	MF_12_1860	Count of entries of the MF12 category for each suburb in the directory of 1860
213. Suburb	Count	MF_13_1860	Count of entries of the MF13 category for each suburb in the directory of 1860
214. Suburb	Count	MF_14_1860	Count of entries of the MF14 category for each suburb in the directory of 1860
215. Suburb	Count	MF_15_1860	Count of entries of the MF15 category for each suburb in the directory of 1860
216. Suburb	Count	MF_16_1860	Count of entries of the MF16 category for each suburb in the directory of 1860
217. Suburb	Count	MF_17_1860	Count of entries of the MF17 category for each suburb in the directory of 1860
218. Suburb	Count	MF_18_1860	Count of entries of the MF18 category for each suburb in the directory of 1860
219. Suburb	Count	MF_19_1860	Count of entries of the MF19 category for each suburb in the directory of 1860
220. Suburb	Count	MF_20_1860	Count of entries of the MF20 category for each suburb in the directory of 1860
221. Suburb	Count	MF_21_1860	Count of entries of the MF21 category for each suburb in the directory of 1860
222. Suburb	Count	MF_22_1860	Count of entries of the MF22 category for each suburb in the directory of 1860
223. Suburb	Count	MF_23_1860	Count of entries of the MF23 category for each suburb in the directory of 1860
224. Suburb	Count	MF_24_1860	Count of entries of the MF24 category for each suburb in the directory of 1860
225. Suburb	Count	MF_25_1860	Count of entries of the MF25 category for each suburb in the directory of 1860
226. Suburb	Count	MF_26_1860	Count of entries of the MF26 category for each suburb in the directory of 1860
227. Suburb	Count	MF_27_1860	Count of entries of the MF27 category for each suburb in the directory of 1860
228. Suburb	Count	MF_28_1860	Count of entries of the MF28 category for each suburb in the directory of 1860
229. Suburb	Count	MF_29_1860	Count of entries of the MF29 category for each suburb in the directory of 1860
230. Suburb	Count	MF_30_1860	Count of entries of the MF30 category for each suburb in the directory of 1860
231. Suburb	Count	MF_1_1876	Count of entries of the MF1 category for each suburb in the directory of 1876
232. Suburb	Count	MF_2_1876	Count of entries of the MF2 category for each suburb in the directory of 1876
233. Suburb	Count	MF_3_1876	Count of entries of the MF3 category for each suburb in the directory of 1876
234. Suburb	Count	MF_4_1876	Count of entries of the MF4 category for each suburb in the directory of 1876
235. Suburb	Count	MF_5_1876	Count of entries of the MF5 category for each suburb in the directory of 1876

236. Suburb	Count	MF_6_1876	Count of entries of the MF6 category for each suburb in the directory of 1876
237. Suburb	Count	MF_7_1876	Count of entries of the MF7 category for each suburb in the directory of 1876
238. Suburb	Count	MF_8_1876	Count of entries of the MF8 category for each suburb in the directory of 1876
239. Suburb	Count	MF_9_1876	Count of entries of the MF9 category for each suburb in the directory of 1876
240. Suburb	Count	MF_10_1876	Count of entries of the MF10 category for each suburb in the directory of 1876
241. Suburb	Count	MF_11_1876	Count of entries of the MF11 category for each suburb in the directory of 1876
242. Suburb	Count	MF_12_1876	Count of entries of the MF12 category for each suburb in the directory of 1876
243. Suburb	Count	MF_13_1876	Count of entries of the MF13 category for each suburb in the directory of 1876
244. Suburb	Count	MF_14_1876	Count of entries of the MF14 category for each suburb in the directory of 1876
245. Suburb	Count	MF_15_1876	Count of entries of the MF15 category for each suburb in the directory of 1876
246. Suburb	Count	MF_16_1876	Count of entries of the MF16 category for each suburb in the directory of 1876
247. Suburb	Count	MF_17_1876	Count of entries of the MF17 category for each suburb in the directory of 1876
248. Suburb	Count	MF_18_1876	Count of entries of the MF18 category for each suburb in the directory of 1876
249. Suburb	Count	MF_19_1876	Count of entries of the MF19 category for each suburb in the directory of 1876
250. Suburb	Count	MF_20_1876	Count of entries of the MF20 category for each suburb in the directory of 1876
251. Suburb	Count	MF_21_1876	Count of entries of the MF21 category for each suburb in the directory of 1876
252. Suburb	Count	MF_22_1876	Count of entries of the MF22 category for each suburb in the directory of 1876
253. Suburb	Count	MF_23_1876	Count of entries of the MF23 category for each suburb in the directory of 1876
254. Suburb	Count	MF_24_1876	Count of entries of the MF24 category for each suburb in the directory of 1876
255. Suburb	Count	MF_25_1876	Count of entries of the MF25 category for each suburb in the directory of 1876
256. Suburb	Count	MF_26_1876	Count of entries of the MF26 category for each suburb in the directory of 1876
257. Suburb	Count	MF_27_1876	Count of entries of the MF27 category for each suburb in the directory of 1876
258. Suburb	Count	MF_28_1876	Count of entries of the MF28 category for each suburb in the directory of 1876
259. Suburb	Count	MF_29_1876	Count of entries of the MF29 category for each suburb in the directory of 1876
260. Suburb	Count	MF_30_1876	Count of entries of the MF30 category for each suburb in the directory of 1876
261. Suburb	Count	D_1_1828	Count of entries of the D1 category for each suburb in the directory of 1828
262. Suburb	Count	D_2_1828	Count of entries of the D2 category for each suburb in the directory of 1828
263. Suburb	Count	D_3_1828	Count of entries of the D3 category for each suburb in the directory of 1828
264. Suburb	Count	D_4_1828	Count of entries of the D4 category for each suburb in the directory of 1828
265. Suburb	Count	D_5_1828	Count of entries of the D5 category for each suburb in the directory of 1828

266. Suburb	Count	D_6_1828	Count of entries of the D6 category for each suburb in the directory of 1828
267. Suburb	Count	D_7_1828	Count of entries of the D7 category for each suburb in the directory of 1828
268. Suburb	Count	D_8_1828	Count of entries of the D8 category for each suburb in the directory of 1828
269. Suburb	Count	D_9_1828	Count of entries of the D9 category for each suburb in the directory of 1828
270. Suburb	Count	D_10_1828	Count of entries of the D10 category for each suburb in the directory of 1828
271. Suburb	Count	D_11_1828	Count of entries of the D11 category for each suburb in the directory of 1828
272. Suburb	Count	D_12_1828	Count of entries of the D12 category for each suburb in the directory of 1828
273. Suburb	Count	D_13_1828	Count of entries of the D13 category for each suburb in the directory of 1828
274. Suburb	Count	D_1_1835	Count of entries of the D1 category for each suburb in the directory of 1835
275. Suburb	Count	D_2_1835	Count of entries of the D2 category for each suburb in the directory of 1835
276. Suburb	Count	D_3_1835	Count of entries of the D3 category for each suburb in the directory of 1835
277. Suburb	Count	D_4_1835	Count of entries of the D4 category for each suburb in the directory of 1835
278. Suburb	Count	D_5_1835	Count of entries of the D5 category for each suburb in the directory of 1835
279. Suburb	Count	D_6_1835	Count of entries of the D6 category for each suburb in the directory of 1835
280. Suburb	Count	D_7_1835	Count of entries of the D7 category for each suburb in the directory of 1835
281. Suburb	Count	D_8_1835	Count of entries of the D8 category for each suburb in the directory of 1835
282. Suburb	Count	D_9_1835	Count of entries of the D9 category for each suburb in the directory of 1835
283. Suburb	Count	D_10_1835	Count of entries of the D10 category for each suburb in the directory of 1835
284. Suburb	Count	D_11_1835	Count of entries of the D11 category for each suburb in the directory of 1835
285. Suburb	Count	D_12_1835	Count of entries of the D12 category for each suburb in the directory of 1835
286. Suburb	Count	D_13_1835	Count of entries of the D13 category for each suburb in the directory of 1835
287. Suburb	Count	D_1_1842	Count of entries of the D1 category for each suburb in the directory of 1842
288. Suburb	Count	D_2_1842	Count of entries of the D2 category for each suburb in the directory of 1842
289. Suburb	Count	D_3_1842	Count of entries of the D3 category for each suburb in the directory of 1842
290. Suburb	Count	D_4_1842	Count of entries of the D4 category for each suburb in the directory of 1842
291. Suburb	Count	D_5_1842	Count of entries of the D5 category for each suburb in the directory of 1842
292. Suburb	Count	D_6_1842	Count of entries of the D6 category for each suburb in the directory of 1842
293. Suburb	Count	D_7_1842	Count of entries of the D7 category for each suburb in the directory of 1842
294. Suburb	Count	D_8_1842	Count of entries of the D8 category for each suburb in the directory of 1842
295. Suburb	Count	D_9_1842	Count of entries of the D9 category for each suburb in the directory of 1842

296. Suburb	Count	D_10_1842	Count of entries of the D10 category for each suburb in the directory of 1842
297. Suburb	Count	D_11_1842	Count of entries of the D11 category for each suburb in the directory of 1842
298. Suburb	Count	D_12_1842	Count of entries of the D12 category for each suburb in the directory of 1842
299. Suburb	Count	D_13_1842	Count of entries of the D13 category for each suburb in the directory of 1842
300. Suburb	Count	D_1_1851	Count of entries of the D1 category for each suburb in the directory of 1851
301. Suburb	Count	D_2_1851	Count of entries of the D2 category for each suburb in the directory of 1851
302. Suburb	Count	D_3_1851	Count of entries of the D3 category for each suburb in the directory of 1851
303. Suburb	Count	D_4_1851	Count of entries of the D4 category for each suburb in the directory of 1851
304. Suburb	Count	D_5_1851	Count of entries of the D5 category for each suburb in the directory of 1851
305. Suburb	Count	D_6_1851	Count of entries of the D6 category for each suburb in the directory of 1851
306. Suburb	Count	D_7_1851	Count of entries of the D7 category for each suburb in the directory of 1851
307. Suburb	Count	D_8_1851	Count of entries of the D8 category for each suburb in the directory of 1851
308. Suburb	Count	D_9_1851	Count of entries of the D9 category for each suburb in the directory of 1851
309. Suburb	Count	D_10_1851	Count of entries of the D10 category for each suburb in the directory of 1851
310. Suburb	Count	D_11_1851	Count of entries of the D11 category for each suburb in the directory of 1851
311. Suburb	Count	D_12_1851	Count of entries of the D12 category for each suburb in the directory of 1851
312. Suburb	Count	D_13_1851	Count of entries of the D13 category for each suburb in the directory of 1851
313. Suburb	Count	D_1_1860	Count of entries of the D1 category for each suburb in the directory of 1860
314. Suburb	Count	D_2_1860	Count of entries of the D2 category for each suburb in the directory of 1860
315. Suburb	Count	D_3_1860	Count of entries of the D3 category for each suburb in the directory of 1860
316. Suburb	Count	D_4_1860	Count of entries of the D4 category for each suburb in the directory of 1860
317. Suburb	Count	D_5_1860	Count of entries of the D5 category for each suburb in the directory of 1860
318. Suburb	Count	D_6_1860	Count of entries of the D6 category for each suburb in the directory of 1860
319. Suburb	Count	D_7_1860	Count of entries of the D7 category for each suburb in the directory of 1860
320. Suburb	Count	D_8_1860	Count of entries of the D8 category for each suburb in the directory of 1860
321. Suburb	Count	D_9_1860	Count of entries of the D9 category for each suburb in the directory of 1860
322. Suburb	Count	D_10_1860	Count of entries of the D10 category for each suburb in the directory of 1860
323. Suburb	Count	D_11_1860	Count of entries of the D11 category for each suburb in the directory of 1860
324. Suburb	Count	D_12_1860	Count of entries of the D12 category for each suburb in the directory of 1860
325. Suburb	Count	D_13_1860	Count of entries of the D13 category for each suburb in the directory of 1860

326. Suburb	Count	D_1_1876	Count of entries of the D1 category for each suburb in the directory of 1876
327. Suburb	Count	D_2_1876	Count of entries of the D2 category for each suburb in the directory of 1876
328. Suburb	Count	D_3_1876	Count of entries of the D3 category for each suburb in the directory of 1876
329. Suburb	Count	D_4_1876	Count of entries of the D4 category for each suburb in the directory of 1876
330. Suburb	Count	D_5_1876	Count of entries of the D5 category for each suburb in the directory of 1876
331. Suburb	Count	D_6_1876	Count of entries of the D6 category for each suburb in the directory of 1876
332. Suburb	Count	D_7_1876	Count of entries of the D7 category for each suburb in the directory of 1876
333. Suburb	Count	D_8_1876	Count of entries of the D8 category for each suburb in the directory of 1876
334. Suburb	Count	D_9_1876	Count of entries of the D9 category for each suburb in the directory of 1876
335. Suburb	Count	D_10_1876	Count of entries of the D10 category for each suburb in the directory of 1876
336. Suburb	Count	D_11_1876	Count of entries of the D11 category for each suburb in the directory of 1876
337. Suburb	Count	D_12_1876	Count of entries of the D12 category for each suburb in the directory of 1876
338. Suburb	Count	D_13_1876	Count of entries of the D13 category for each suburb in the directory of 1876
339.			
340. Street	Count	H1841	Count of all buildings in the census allocated to each street for this year
341. Street	Count	H1851	Count of all buildings in the census allocated to each street for this year
342. Street	Count	H1861	Count of all buildings in the census allocated to each street for this year
343. Street	Count	H1871	Count of all buildings in the census allocated to each street for this year
344. Street	Count	P1841	Count of all people in the census allocated to each street for this year
345. Street	Count	H1851	Count of all people in the census allocated to each street for this year
346. Street	Count	H1861	Count of all people in the census allocated to each street for this year
347. Street	Count	H1871	Count of all people in the census allocated to each street for this year
348. Street	Count	T1828	Count of individual entries for each street in the trade directory for this year
349. Street	Count	T1835	Count of individual entries for each street in the trade directory for this year
350. Street	Count	T1842	Count of individual entries for each street in the trade directory for this year
351. Street	Count	T1851	Count of individual entries for each street in the trade directory for this year
352. Street	Count	T1860	Count of individual entries for each street in the trade directory for this year
353. Street	Count	T1876	Count of individual entries for each street in the trade directory for this year
354. Street	Count	RangeC1828	Count of the number of different trade categories recorded for each street for this year
355. Street	Count	RangeC1835	Count of the number of different trade categories recorded for each street for this year

356. Street	Count	RangeC1842	Count of the number of different trade categories recorded for each street for this year
357. Street	Count	RangeC1851	Count of the number of different trade categories recorded for each street for this year
358. Street	Count	RangeC1860	Count of the number of different trade categories recorded for each street for this year
359. Street	Count	RangeC1876	Count of the number of different trade categories recorded for each street for this year
360. Street	Count	MF1828_1	Count of entries of the MF1 category for each street in the directory of 1828
361. Street	Count	MF1828_2	Count of entries of the MF2 category for each street in the directory of 1828
362. Street	Count	MF1828_3	Count of entries of the MF3 category for each street in the directory of 1828
363. Street	Count	MF1828_4	Count of entries of the MF4 category for each street in the directory of 1828
364. Street	Count	MF1828_5	Count of entries of the MF5 category for each street in the directory of 1828
365. Street	Count	MF1828_6	Count of entries of the MF6 category for each street in the directory of 1828
366. Street	Count	MF1828_7	Count of entries of the MF7 category for each street in the directory of 1828
367. Street	Count	MF1828_8	Count of entries of the MF8 category for each street in the directory of 1828
368. Street	Count	MF1828_9	Count of entries of the MF9 category for each street in the directory of 1828
369. Street	Count	MF1828_10	Count of entries of the MF10 category for each street in the directory of 1828
370. Street	Count	MF1828_11	Count of entries of the MF11 category for each street in the directory of 1828
371. Street	Count	MF1828_12	Count of entries of the MF12 category for each street in the directory of 1828
372. Street	Count	MF1828_13	Count of entries of the MF13 category for each street in the directory of 1828
373. Street	Count	MF1828_14	Count of entries of the MF14 category for each street in the directory of 1828
374. Street	Count	MF1828_15	Count of entries of the MF15 category for each street in the directory of 1828
375. Street	Count	MF1828_16	Count of entries of the MF16 category for each street in the directory of 1828
376. Street	Count	MF1828_17	Count of entries of the MF17 category for each street in the directory of 1828
377. Street	Count	MF1828_18	Count of entries of the MF18 category for each street in the directory of 1828
378. Street	Count	MF1828_19	Count of entries of the MF19 category for each street in the directory of 1828
379. Street	Count	MF1828_20	Count of entries of the MF20 category for each street in the directory of 1828
380. Street	Count	MF1828_21	Count of entries of the MF21 category for each street in the directory of 1828
381. Street	Count	MF1828_22	Count of entries of the MF22 category for each street in the directory of 1828
382. Street	Count	MF1828_23	Count of entries of the MF23 category for each street in the directory of 1828
383. Street	Count	MF1828_24	Count of entries of the MF24 category for each street in the directory of 1828
384. Street	Count	MF1828_25	Count of entries of the MF25 category for each street in the directory of 1828
385. Street	Count	MF1828_26	Count of entries of the MF26 category for each street in the directory of 1828

386. Street	Count	MF1828_27	Count of entries of the MF27 category for each street in the directory of 1828
387. Street	Count	MF1828_28	Count of entries of the MF28 category for each street in the directory of 1828
388. Street	Count	MF1828_29	Count of entries of the MF29 category for each street in the directory of 1828
389. Street	Count	MF1828_30	Count of entries of the MF30 category for each street in the directory of 1828
390. Street	Count	MF1835_1	Count of entries of the MF1 category for each street in the directory of 1835
391. Street	Count	MF1835_2	Count of entries of the MF2 category for each street in the directory of 1835
392. Street	Count	MF1835_3	Count of entries of the MF3 category for each street in the directory of 1835
393. Street	Count	MF1835_4	Count of entries of the MF4 category for each street in the directory of 1835
394. Street	Count	MF1835_5	Count of entries of the MF5 category for each street in the directory of 1835
395. Street	Count	MF1835_6	Count of entries of the MF6 category for each street in the directory of 1835
396. Street	Count	MF1835_7	Count of entries of the MF7 category for each street in the directory of 1835
397. Street	Count	MF1835_8	Count of entries of the MF8 category for each street in the directory of 1835
398. Street	Count	MF1835_9	Count of entries of the MF9 category for each street in the directory of 1835
399. Street	Count	MF1835_10	Count of entries of the MF10 category for each street in the directory of 1835
400. Street	Count	MF1835_11	Count of entries of the MF11 category for each street in the directory of 1835
401. Street	Count	MF1835_12	Count of entries of the MF12 category for each street in the directory of 1835
402. Street	Count	MF1835_13	Count of entries of the MF13 category for each street in the directory of 1835
403. Street	Count	MF1835_14	Count of entries of the MF14 category for each street in the directory of 1835
404. Street	Count	MF1835_15	Count of entries of the MF15 category for each street in the directory of 1835
405. Street	Count	MF1835_16	Count of entries of the MF16 category for each street in the directory of 1835
406. Street	Count	MF1835_17	Count of entries of the MF17 category for each street in the directory of 1835
407. Street	Count	MF1835_18	Count of entries of the MF18 category for each street in the directory of 1835
408. Street	Count	MF1835_19	Count of entries of the MF19 category for each street in the directory of 1835
409. Street	Count	MF1835_20	Count of entries of the MF20 category for each street in the directory of 1835
410. Street	Count	MF1835_21	Count of entries of the MF21 category for each street in the directory of 1835
411. Street	Count	MF1835_22	Count of entries of the MF22 category for each street in the directory of 1835
412. Street	Count	MF1835_23	Count of entries of the MF23 category for each street in the directory of 1835
413. Street	Count	MF1835_24	Count of entries of the MF24 category for each street in the directory of 1835
414. Street	Count	MF1835_25	Count of entries of the MF25 category for each street in the directory of 1835
415. Street	Count	MF1835_26	Count of entries of the MF26 category for each street in the directory of 1835

416. Street	Count	MF1835_27	Count of entries of the MF27 category for each street in the directory of 1835
417. Street	Count	MF1835_28	Count of entries of the MF28 category for each street in the directory of 1835
418. Street	Count	MF1835_29	Count of entries of the MF29 category for each street in the directory of 1835
419. Street	Count	MF1835_30	Count of entries of the MF30 category for each street in the directory of 1835
420. Street	Count	MF1842_1	Count of entries of the MF1 category for each street in the directory of 1842
421. Street	Count	MF1842_2	Count of entries of the MF2 category for each street in the directory of 1842
422. Street	Count	MF1842_3	Count of entries of the MF3 category for each street in the directory of 1842
423. Street	Count	MF1842_4	Count of entries of the MF4 category for each street in the directory of 1842
424. Street	Count	MF1842_5	Count of entries of the MF5 category for each street in the directory of 1842
425. Street	Count	MF1842_6	Count of entries of the MF6 category for each street in the directory of 1842
426. Street	Count	MF1842_7	Count of entries of the MF7 category for each street in the directory of 1842
427. Street	Count	MF1842_8	Count of entries of the MF8 category for each street in the directory of 1842
428. Street	Count	MF1842_9	Count of entries of the MF9 category for each street in the directory of 1842
429. Street	Count	MF1842_10	Count of entries of the MF10 category for each street in the directory of 1842
430. Street	Count	MF1842_11	Count of entries of the MF11 category for each street in the directory of 1842
431. Street	Count	MF1842_12	Count of entries of the MF12 category for each street in the directory of 1842
432. Street	Count	MF1842_13	Count of entries of the MF13 category for each street in the directory of 1842
433. Street	Count	MF1842_14	Count of entries of the MF14 category for each street in the directory of 1842
434. Street	Count	MF1842_15	Count of entries of the MF15 category for each street in the directory of 1842
435. Street	Count	MF1842_16	Count of entries of the MF16 category for each street in the directory of 1842
436. Street	Count	MF1842_17	Count of entries of the MF17 category for each street in the directory of 1842
437. Street	Count	MF1842_18	Count of entries of the MF18 category for each street in the directory of 1842
438. Street	Count	MF1842_19	Count of entries of the MF19 category for each street in the directory of 1842
439. Street	Count	MF1842_20	Count of entries of the MF20 category for each street in the directory of 1842
440. Street	Count	MF1842_21	Count of entries of the MF21 category for each street in the directory of 1842
441. Street	Count	MF1842_22	Count of entries of the MF22 category for each street in the directory of 1842
442. Street	Count	MF1842_23	Count of entries of the MF23 category for each street in the directory of 1842
443. Street	Count	MF1842_24	Count of entries of the MF24 category for each street in the directory of 1842
444. Street	Count	MF1842_25	Count of entries of the MF25 category for each street in the directory of 1842
445. Street	Count	MF1842_26	Count of entries of the MF26 category for each street in the directory of 1842

446. Street	Count	MF1842_27	Count of entries of the MF27 category for each street in the directory of 1842
447. Street	Count	MF1842_28	Count of entries of the MF28 category for each street in the directory of 1842
448. Street	Count	MF1842_29	Count of entries of the MF29 category for each street in the directory of 1842
449. Street	Count	MF1842_30	Count of entries of the MF30 category for each street in the directory of 1842
450. Street	Count	MF1851_1	Count of entries of the MF1 category for each street in the directory of 1851
451. Street	Count	MF1851_2	Count of entries of the MF2 category for each street in the directory of 1851
452. Street	Count	MF1851_3	Count of entries of the MF3 category for each street in the directory of 1851
453. Street	Count	MF1851_4	Count of entries of the MF4 category for each street in the directory of 1851
454. Street	Count	MF1851_5	Count of entries of the MF5 category for each street in the directory of 1851
455. Street	Count	MF1851_6	Count of entries of the MF6 category for each street in the directory of 1851
456. Street	Count	MF1851_7	Count of entries of the MF7 category for each street in the directory of 1851
457. Street	Count	MF1851_8	Count of entries of the MF8 category for each street in the directory of 1851
458. Street	Count	MF1851_9	Count of entries of the MF9 category for each street in the directory of 1851
459. Street	Count	MF1851_10	Count of entries of the MF10 category for each street in the directory of 1851
460. Street	Count	MF1851_11	Count of entries of the MF11 category for each street in the directory of 1851
461. Street	Count	MF1851_12	Count of entries of the MF12 category for each street in the directory of 1851
462. Street	Count	MF1851_13	Count of entries of the MF13 category for each street in the directory of 1851
463. Street	Count	MF1851_14	Count of entries of the MF14 category for each street in the directory of 1851
464. Street	Count	MF1851_15	Count of entries of the MF15 category for each street in the directory of 1851
465. Street	Count	MF1851_16	Count of entries of the MF16 category for each street in the directory of 1851
466. Street	Count	MF1851_17	Count of entries of the MF17 category for each street in the directory of 1851
467. Street	Count	MF1851_18	Count of entries of the MF18 category for each street in the directory of 1851
468. Street	Count	MF1851_19	Count of entries of the MF19 category for each street in the directory of 1851
469. Street	Count	MF1851_20	Count of entries of the MF20 category for each street in the directory of 1851
470. Street	Count	MF1851_21	Count of entries of the MF21 category for each street in the directory of 1851
471. Street	Count	MF1851_22	Count of entries of the MF22 category for each street in the directory of 1851
472. Street	Count	MF1851_23	Count of entries of the MF23 category for each street in the directory of 1851
473. Street	Count	MF1851_24	Count of entries of the MF24 category for each street in the directory of 1851
474. Street	Count	MF1851_25	Count of entries of the MF25 category for each street in the directory of 1851
475. Street	Count	MF1851_26	Count of entries of the MF26 category for each street in the directory of 1851

476. Street	Count	MF1851_27	Count of entries of the MF27 category for each street in the directory of 1851
477. Street	Count	MF1851_28	Count of entries of the MF28 category for each street in the directory of 1851
478. Street	Count	MF1851_29	Count of entries of the MF29 category for each street in the directory of 1851
479. Street	Count	MF1851_30	Count of entries of the MF30 category for each street in the directory of 1851
480. Street	Count	MF1860_1	Count of entries of the MF1 category for each street in the directory of 1860
481. Street	Count	MF1860_2	Count of entries of the MF2 category for each street in the directory of 1860
482. Street	Count	MF1860_3	Count of entries of the MF3 category for each street in the directory of 1860
483. Street	Count	MF1860_4	Count of entries of the MF4 category for each street in the directory of 1860
484. Street	Count	MF1860_5	Count of entries of the MF5 category for each street in the directory of 1860
485. Street	Count	MF1860_6	Count of entries of the MF6 category for each street in the directory of 1860
486. Street	Count	MF1860_7	Count of entries of the MF7 category for each street in the directory of 1860
487. Street	Count	MF1860_8	Count of entries of the MF8 category for each street in the directory of 1860
488. Street	Count	MF1860_9	Count of entries of the MF9 category for each street in the directory of 1860
489. Street	Count	MF1860_10	Count of entries of the MF10 category for each street in the directory of 1860
490. Street	Count	MF1860_11	Count of entries of the MF11 category for each street in the directory of 1860
491. Street	Count	MF1860_12	Count of entries of the MF12 category for each street in the directory of 1860
492. Street	Count	MF1860_13	Count of entries of the MF13 category for each street in the directory of 1860
493. Street	Count	MF1860_14	Count of entries of the MF14 category for each street in the directory of 1860
494. Street	Count	MF1860_15	Count of entries of the MF15 category for each street in the directory of 1860
495. Street	Count	MF1860_16	Count of entries of the MF16 category for each street in the directory of 1860
496. Street	Count	MF1860_17	Count of entries of the MF17 category for each street in the directory of 1860
497. Street	Count	MF1860_18	Count of entries of the MF18 category for each street in the directory of 1860
498. Street	Count	MF1860_19	Count of entries of the MF19 category for each street in the directory of 1860
499. Street	Count	MF1860_20	Count of entries of the MF20 category for each street in the directory of 1860
500. Street	Count	MF1860_21	Count of entries of the MF21 category for each street in the directory of 1860
501. Street	Count	MF1860_22	Count of entries of the MF22 category for each street in the directory of 1860
502. Street	Count	MF1860_23	Count of entries of the MF23 category for each street in the directory of 1860
503. Street	Count	MF1860_24	Count of entries of the MF24 category for each street in the directory of 1860
504. Street	Count	MF1860_25	Count of entries of the MF25 category for each street in the directory of 1860
505. Street	Count	MF1860_26	Count of entries of the MF26 category for each street in the directory of 1860

506. Street	Count	MF1860_27	Count of entries of the MF27 category for each street in the directory of 1860
507. Street	Count	MF1860_28	Count of entries of the MF28 category for each street in the directory of 1860
508. Street	Count	MF1860_29	Count of entries of the MF29 category for each street in the directory of 1860
509. Street	Count	MF1860_30	Count of entries of the MF30 category for each street in the directory of 1860
510. Street	Count	MF1876_1	Count of entries of the MF1 category for each street in the directory of 1876
511. Street	Count	MF1876_2	Count of entries of the MF2 category for each street in the directory of 1876
512. Street	Count	MF1876_3	Count of entries of the MF3 category for each street in the directory of 1876
513. Street	Count	MF1876_4	Count of entries of the MF4 category for each street in the directory of 1876
514. Street	Count	MF1876_5	Count of entries of the MF5 category for each street in the directory of 1876
515. Street	Count	MF1876_6	Count of entries of the MF6 category for each street in the directory of 1876
516. Street	Count	MF1876_7	Count of entries of the MF7 category for each street in the directory of 1876
517. Street	Count	MF1876_8	Count of entries of the MF8 category for each street in the directory of 1876
518. Street	Count	MF1876_9	Count of entries of the MF9 category for each street in the directory of 1876
519. Street	Count	MF1876_10	Count of entries of the MF10 category for each street in the directory of 1876
520. Street	Count	MF1876_11	Count of entries of the MF11 category for each street in the directory of 1876
521. Street	Count	MF1876_12	Count of entries of the MF12 category for each street in the directory of 1876
522. Street	Count	MF1876_13	Count of entries of the MF13 category for each street in the directory of 1876
523. Street	Count	MF1876_14	Count of entries of the MF14 category for each street in the directory of 1876
524. Street	Count	MF1876_15	Count of entries of the MF15 category for each street in the directory of 1876
525. Street	Count	MF1876_16	Count of entries of the MF16 category for each street in the directory of 1876
526. Street	Count	MF1876_17	Count of entries of the MF17 category for each street in the directory of 1876
527. Street	Count	MF1876_18	Count of entries of the MF18 category for each street in the directory of 1876
528. Street	Count	MF1876_19	Count of entries of the MF19 category for each street in the directory of 1876
529. Street	Count	MF1876_20	Count of entries of the MF20 category for each street in the directory of 1876
530. Street	Count	MF1876_21	Count of entries of the MF21 category for each street in the directory of 1876
531. Street	Count	MF1876_22	Count of entries of the MF22 category for each street in the directory of 1876
532. Street	Count	MF1876_23	Count of entries of the MF23 category for each street in the directory of 1876
533. Street	Count	MF1876_24	Count of entries of the MF24 category for each street in the directory of 1876
534. Street	Count	MF1876_25	Count of entries of the MF25 category for each street in the directory of 1876
535. Street	Count	MF1876_26	Count of entries of the MF26 category for each street in the directory of 1876

536. Street	Count	MF1876_27	Count of entries of the MF27 category for each street in the directory of 1876
537. Street	Count	MF1876_28	Count of entries of the MF28 category for each street in the directory of 1876
538. Street	Count	MF1876_29	Count of entries of the MF29 category for each street in the directory of 1876
539. Street	Count	MF1876_30	Count of entries of the MF30 category for each street in the directory of 1876
540. Street	Count	BaWW1828	Count of entries recorded as Blacksmiths and Wheel Wrights in 1828
541. Street	Count	BaWW1835	Count of entries recorded as Blacksmiths and Wheel Wrights in 1835
542. Street	Count	BaWW1842	Count of entries recorded as Blacksmiths and Wheel Wrights in 1842
543. Street	Count	BAWW1851	Count of entries recorded as Blacksmiths and Wheel Wrights in 1851
544. Street	Count	BaWW1876	Count of entries recorded as Blacksmiths and Wheel Wrights in 1876
545. Street	Count	CATN1828	Count of entries recorded as Chain Anchor Trace Nails in 1828
546. Street	Count	CATN1835	Count of entries recorded as Chain Anchor Trace Nails in 1835
547. Street	Count	CATN1842	Count of entries recorded as Chain Anchor Trace Nails in 1842
548. Street	Count	CATN1851	Count of entries recorded as Chain Anchor Trace Nails in 1851
549. Street	Count	CATN1876	Count of entries recorded as Chain Anchor Trace Nails in 1876
550. Street	Count	FaF1828	Count of entries recorded as Fenders and Fireirons in 1828
551. Street	Count	FaF1835	Count of entries recorded as Fenders and Fireirons in 1835
552. Street	Count	FaF1842	Count of entries recorded as Fenders and Fireirons in 1842
553. Street	Count	FAF1851	Count of entries recorded as Fenders and Fireirons in 1851
554. Street	Count	FaF1876	Count of entries recorded as Fenders and Fireirons in 1876
555. Street	Count	IFetc1828	Count of entries recorded as Iron Founders etc in 1828
556. Street	Count	IFetc1835	Count of entries recorded as Iron Founders etc in 1835
557. Street	Count	IFetc1842	Count of entries recorded as Iron Founders etc in 1842
558. Street	Count	IFETC1851	Count of entries recorded as Iron Founders etc in 1851
559. Street	Count	IFetc1876	Count of entries recorded as Iron Founders etc in 1876
560. Street	Count	EN1835	Count of residents recorded in each street in 1835
561. Street	Count	EN1851	Count of residents recorded in each street in 1851
562. Street	Count	EN1860	Count of residents recorded in each street in 1860
563. Street	Count	EN1876	Count of residents recorded in each street in 1876
564. Suburb	Ratio	P_B1841	Calculation of the average number of people per building recorded within each suburb
565. Suburb	Ratio	P_B1851	Calculation of the average number of people per building recorded within each suburb

566. Suburb	Ratio	P_B1861	Calculation of the average number of people per building recorded within each suburb
567. Suburb	Ratio	P_B1871	Calculation of the average number of people per building recorded within each suburb
568. Suburb	Ratio	B_S1841	Calculation (in metres) of the average street length per building recorded within each suburb
569. Suburb	Ratio	B_S1851	Calculation (in metres) of the average street length per building recorded within each suburb
570. Suburb	Ratio	B_S1861	Calculation (in metres) of the average street length per building recorded within each suburb
571. Suburb	Ratio	B_S1871	Calculation (in metres) of the average street length per building recorded within each suburb
572. Suburb	Ratio	Pc_MF1828	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries
573. Suburb	Ratio	Pc_MF1835	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries
574. Suburb	Ratio	Pc_MF1842	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries
575. Suburb	Ratio	Pc_MF1851	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries
576. Suburb	Ratio	Pc_MF1860	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries
577. Suburb	Ratio	Pc_MF1876	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries
578. Suburb	Ratio	Pc_D1828	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries
579. Suburb	Ratio	Pc_D1835	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries
580. Suburb	Ratio	Pc_D1842	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries
581. Suburb	Ratio	Pc_D1851	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries
582. Suburb	Ratio	Pc_D1860	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries
583. Suburb	Ratio	Pc_D1876	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries
584. Street	Ratio	PperB1841	Calculation of the average number of people per building recorded per street for this year
585. Street	Ratio	PperB1851	Calculation of the average number of people per building recorded per street for this year
586. Street	Ratio	PperB1861	Calculation of the average number of people per building recorded per street for this year
587. Street	Ratio	PperB1871	Calculation of the average number of people per building recorded per street for this year
588. Street	Ratio	BperS1841	Calculation (in metres) of the average street length per building recorded within each street
589. Street	Ratio	BperS1851	Calculation (in metres) of the average street length per building recorded within each street
590. Street	Ratio	BperS1861	Calculation (in metres) of the average street length per building recorded within each street
591. Street	Ratio	BperS1871	Calculation (in metres) of the average street length per building recorded within each street
592. Street	Ratio	pcMF1828	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
593. Street	Ratio	pcMF1835	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
594. Street	Ratio	pcMF1842	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
595. Street	Ratio	pcMF1851	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries

596. Street	Ratio	pcMF1860	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
597. Street	Ratio	pcMF1876	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
598. Street	Ratio	pcD1828	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
599. Street	Ratio	pcD1835	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
600. Street	Ratio	pcD1842	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
601. Street	Ratio	pcD1851	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
602. Street	Ratio	pcD1860	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
603. Street	Ratio	pcD1876	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
604. Street	Ratio	TR_POP1851	Calculation of the number of people divided by the number of trades listed within each street
605. Street	Ratio	PperB1841	Calculation of the average number of people per building recorded per street for this year
606. Street	Ratio	PperB1851	Calculation of the average number of people per building recorded per street for this year
607. Street	Ratio	PperB1861	Calculation of the average number of people per building recorded per street for this year
608. Street	Ratio	PperB1871	Calculation of the average number of people per building recorded per street for this year
609. Street	Ratio	BperS1841	Calculation (in metres) of the average street length per building recorded within each street
610. Street	Ratio	BperS1851	Calculation (in metres) of the average street length per building recorded within each street
611. Street	Ratio	BperS1861	Calculation (in metres) of the average street length per building recorded within each street
612. Street	Ratio	BperS1871	Calculation (in metres) of the average street length per building recorded within each street
613. Street	Ratio	pcMF1828	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
614. Street	Ratio	pcMF1835	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
615. Street	Ratio	pcMF1842	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
616. Street	Ratio	pcMF1851	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
617. Street	Ratio	pcMF1860	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
618. Street	Ratio	pcMF1876	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries
619. Street	Ratio	pcD1828	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
620. Street	Ratio	pcD1835	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
621. Street	Ratio	pcD1842	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
622. Street	Ratio	pcD1851	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
623. Street	Ratio	pcD1860	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
624. Street	Ratio	pcD1876	Calculation of the percentage of D trades listed for each street in terms of the total number of entries
625. Street	Ratio	TR_POP1851	Calculation of the number of people divided by the number of trades listed within each street

626. Suburb	Change Count	Bu4151	Calculation of the change in number of buildings recorded between 1841 and 1851
627. Suburb	Change Count	Bu5161	Calculation of the change in number of buildings recorded between 1851 and 1861
628. Suburb	Change Count	Bu6171	Calculation of the change in number of buildings recorded between 1861 and 1871
629. Suburb	Change Count	Pop4151	Calculation of the change in number of people recorded between 1841 and 1851
630. Suburb	Change Count	Pop5161	Calculation of the change in number of people recorded between 1851 and 1861
631. Suburb	Change Count	Pop6171	Calculation of the change in number of people recorded between 1861 and 1871
632. Suburb	Change Count	chToT2835	Calculation of the change in total number of entries recorded between 1828 and 1835
633. Suburb	Change Count	chToT3542	Calculation of the change in total number of entries recorded between 1835 and 1842
634. Suburb	Change Count	chToT4251	Calculation of the change in total number of entries recorded between 1842 and 1851
635. Suburb	Change Count	chToT5160	Calculation of the change in total number of entries recorded between 1851 and 1860
636. Suburb	Change Count	chToT6076	Calculation of the change in total number of entries recorded between 1860 and 1876
637. Suburb	Change Count	chMF2835	Calculation of the change in number of MF entries recorded between 1828 and 1835
638. Suburb	Change Count	chMF3542	Calculation of the change in number of MF entries recorded between 1835 and 1842
639. Suburb	Change Count	chMF4251	Calculation of the change in number of MF entries recorded between 1842 and 1851
640. Suburb	Change Count	chMF5160	Calculation of the change in number of MF entries recorded between 1851 and 1860
641. Suburb	Change Count	chMF6076	Calculation of the change in number of MF entries recorded between 1860 and 1876
642. Suburb	Change Count	chD2835	Calculation of the change in number of D entries recorded between 1828 and 1835
643. Suburb	Change Count	chD3542	Calculation of the change in number of D entries recorded between 1835 and 1842
644. Suburb	Change Count	chD4251	Calculation of the change in number of D entries recorded between 1842 and 1851
645. Suburb	Change Count	chD5160	Calculation of the change in number of D entries recorded between 1851 and 1860
646. Suburb	Change Count	chD6076	Calculation of the change in number of D entries recorded between 1860 and 1876
647. Street	Change Count	chB4151	Calculation of the change in number of buildings recorded between 1841 and 1851
648. Street	Change Count	chB5161	Calculation of the change in number of buildings recorded between 1851 and 1861
649. Street	Change Count	chB6171	Calculation of the change in number of buildings recorded between 1861 and 1871
650. Street	Change Count	chP4151	Calculation of the change in number of people recorded between 1841 and 1851
651. Street	Change Count	chP5161	Calculation of the change in number of people recorded between 1851 and 1861
652. Street	Change Count	chP6171	Calculation of the change in number of people recorded between 1861 and 1871
653. Street	Change Count	chTotT2835	Calculation of the change in number of total entries recorded between 1828 and 1835
654. Street	Change Count	chTotT3542	Calculation of the change in number of total entries recorded between 1835 and 1842
655. Street	Change Count	chTotT4251	Calculation of the change in number of total entries recorded between 1842 and 1851

656. Street	Change Count	chTotT5160	Calculation of the change in number of total entries recorded between 1851 and 1860
657. Street	Change Count	chTotT6076	Calculation of the change in number of total entries recorded between 1860 and 1876
658. Street	Change Count	chMF2835	Calculation of the change in number of MF entries recorded between 1828 and 1835
659. Street	Change Count	chMF3542	Calculation of the change in number of MF entries recorded between 1835 and 1842
660. Street	Change Count	chMF4251	Calculation of the change in number of MF entries recorded between 1842 and 1851
661. Street	Change Count	chMF5160	Calculation of the change in number of MF entries recorded between 1851 and 1860
662. Street	Change Count	chMF6076	Calculation of the change in number of MF entries recorded between 1860 and 1876
663. Street	Change Count	chD2835	Calculation of the change in number of D entries recorded between 1828 and 1835
664. Street	Change Count	chD3542	Calculation of the change in number of D entries recorded between 1835 and 1842
665. Street	Change Count	chD4251	Calculation of the change in number of D entries recorded between 1842 and 1851
666. Street	Change Count	chD5160	Calculation of the change in number of D entries recorded between 1851 and 1860
667. Street	Change Count	chD6076	Calculation of the change in number of D entries recorded between 1860 and 1876
668. Street	Change Count	chTR2835	Calculation of the change in the range of categories recorded between 1828 and 1835
669. Street	Change Count	chTR3542	Calculation of the change in the range of categories recorded between 1835 and 1842
670. Street	Change Count	chTR4251	Calculation of the change in the range of categories recorded between 1842 and 1851
671. Street	Change Count	chTR5160	Calculation of the change in the range of categories recorded between 1851 and 1860
672. Street	Change Count	chTR6076	Calculation of the change in the range of categories recorded between 1860 and 1876
673. Street	Change Count	chB4151	Calculation of the change in number of buildings recorded between 1841 and 1851
674. Street	Change Count	chB5161	Calculation of the change in number of buildings recorded between 1851 and 1861
675. Street	Change Count	chB6171	Calculation of the change in number of buildings recorded between 1861 and 1871
676. Street	Change Count	chP4151	Calculation of the change in number of people recorded between 1841 and 1851
677. Street	Change Count	chP5161	Calculation of the change in number of people recorded between 1851 and 1861
678. Street	Change Count	chP6171	Calculation of the change in number of people recorded between 1861 and 1871
679. Street	Change Count	chTotT2835	Calculation of the change in number of total entries recorded between 1828 and 1835
680. Street	Change Count	chTotT3542	Calculation of the change in number of total entries recorded between 1835 and 1842
681. Street	Change Count	chTotT4251	Calculation of the change in number of total entries recorded between 1842 and 1851
682. Street	Change Count	chTotT5160	Calculation of the change in number of total entries recorded between 1851 and 1860
683. Street	Change Count	chTotT6076	Calculation of the change in number of total entries recorded between 1860 and 1876
684. Street	Change Count	chMF2835	Calculation of the change in number of MF entries recorded between 1828 and 1835
685. Street	Change Count	chMF3542	Calculation of the change in number of MF entries recorded between 1835 and 1842

686. Street	Change Count	chMF4251	Calculation of the change in number of MF entries recorded between 1842 and 1851
687. Street	Change Count	chMF5160	Calculation of the change in number of MF entries recorded between 1851 and 1860
688. Street	Change Count	chMF6076	Calculation of the change in number of MF entries recorded between 1860 and 1876
689. Street	Change Count	chD2835	Calculation of the change in number of D entries recorded between 1828 and 1835
690. Street	Change Count	chD3542	Calculation of the change in number of D entries recorded between 1835 and 1842
691. Street	Change Count	chD4251	Calculation of the change in number of D entries recorded between 1842 and 1851
692. Street	Change Count	chD5160	Calculation of the change in number of D entries recorded between 1851 and 1860
693. Street	Change Count	chD6076	Calculation of the change in number of D entries recorded between 1860 and 1876
694. Street	Change Count	chTR2835	Calculation of the change in the range of categories recorded between 1828 and 1835
695. Street	Change Count	chTR3542	Calculation of the change in the range of categories recorded between 1835 and 1842
696. Street	Change Count	chTR4251	Calculation of the change in the range of categories recorded between 1842 and 1851
697. Street	Change Count	chTR5160	Calculation of the change in the range of categories recorded between 1851 and 1860
698. Street	Change Count	chTR6076	Calculation of the change in the range of categories recorded between 1860 and 1876
699. Street	Change Count	ChMF4_2835	Change in the number of entries allocated to MF4 between 1828 and 1835
700. Street	Change Count	ChMF4_3542	Change in the number of entries allocated to MF4 between 1835 and 1842
701. Street	Change Count	ChMF4_4251	Change in the number of entries allocated to MF4 between 1842 and 1851
702. Street	Change Count	ChMF4_5160	Change in the number of entries allocated to MF4 between 1851 and 1860
703. Street	Change Count	ChMF4_6076	Change in the number of entries allocated to MF4 between 1860 and 1876
704. Suburb	Change Ratio	cPperB4151	Calculation of the change in the average number of people per buildings between 1841 and 1851
705. Suburb	Change Ratio	cPperB5161	Calculation of the change in the average number of people per buildings between 1851 and 1861
706. Suburb	Change Ratio	cPperB6171	Calculation of the change in the average number of people per buildings between 1861 and 1871
707. Suburb	Change Ratio	cBperS4151	Calculation of the change (in metres) of the average length of street per building between 1841 and 1851
708. Suburb	Change Ratio	cBperS51611	Calculation of the change (in metres) of the average length of street per building between 1851 and 1861
709. Suburb	Change Ratio	cBperS6171	Calculation of the change (in metres) of the average length of street per building between 1861 and 1871
710. Suburb	Change Ratio	chpcMF2835	Calculation of the change in percentage of MF trades in relation to total trades 1828 to 1835
711. Suburb	Change Ratio	chpcMF3542	Calculation of the change in percentage of MF trades in relation to total trades 1835 to 1842
712. Suburb	Change Ratio	chpcMF4251	Calculation of the change in percentage of MF trades in relation to total trades 1842 to 1851
713. Suburb	Change Ratio	chpcMF5160	Calculation of the change in percentage of MF trades in relation to total trades 1851 to 1860
714. Suburb	Change Ratio	chpcMF6076	Calculation of the change in percentage of MF trades in relation to total trades 1860 to 1876
715. Suburb	Change Ratio	chpcD2835	Calculation of the change in percentage of D trades in relation to total trades 1828 to 1835

716. Suburb	Change Ratio	chpcD3542	Calculation of the change in percentage of D trades in relation to total trades 1835 to 1842
717. Suburb	Change Ratio	chpcD4251	Calculation of the change in percentage of D trades in relation to total trades 1842 to 1851
718. Suburb	Change Ratio	chpcD5160	Calculation of the change in percentage of D trades in relation to total trades 1851 to 1860
719. Suburb	Change Ratio	chpcD6076	Calculation of the change in percentage of D trades in relation to total trades 1860 to 1876
720. Streets	Change Ratio	chPperB4151	Calculation of the change in people per building between 1841 and 1851
721. Streets	Change Ratio	chPperB5161	Calculation of the change in people per building between 1851 and 1861
722. Streets	Change Ratio	chPperB6171	Calculation of the change in people per building between 1861 and 1871
723. Streets	Change Ratio	chBperS4151	Calculation of the change (in metres) of the street length per building between 1841 and 1851
724. Streets	Change Ratio	chBperS5161	Calculation of the change (in metres) of the street length per building between 1851 and 1861
725. Streets	Change Ratio	chBperS6171	Calculation of the change (in metres) of the street length per building between 1861 and 1871
726. Streets	Change Ratio	chpcMF2835	Calculation of the change in percentage of MF trades in relation to total trades 1828 to 1835
727. Streets	Change Ratio	chpcMF3542	Calculation of the change in percentage of MF trades in relation to total trades 1835 to 1842
728. Streets	Change Ratio	chpcMF4251	Calculation of the change in percentage of MF trades in relation to total trades 1842 to 1851
729. Streets	Change Ratio	chpcMF5160	Calculation of the change in percentage of MF trades in relation to total trades 1851 to 1860
730. Streets	Change Ratio	chpcMF6076	Calculation of the change in percentage of MF trades in relation to total trades 1860 to 1876
731. Streets	Change Ratio	chpcD2835	Calculation of the change in percentage of D trades in relation to total trades 1828 to 1835
732. Streets	Change Ratio	chpcD3542	Calculation of the change in percentage of D trades in relation to total trades 1835 to 1842
733. Streets	Change Ratio	chpcD42515	Calculation of the change in percentage of D trades in relation to total trades 1842 to 1851
734. Streets	Change Ratio	chpcD5160	Calculation of the change in percentage of D trades in relation to total trades 1851 to 1860
735. Streets	Change Ratio	chpcD6076	Calculation of the change in percentage of D trades in relation to total trades 1860 to 1876

APPENDIX 3

The GIS Project

(Includes CD with data and map)

Appendix 3 -

The GIS project

The GIS project was created in ArcMap 9.3. A published version (contained on the CD) was created that can be read with ArcReader.

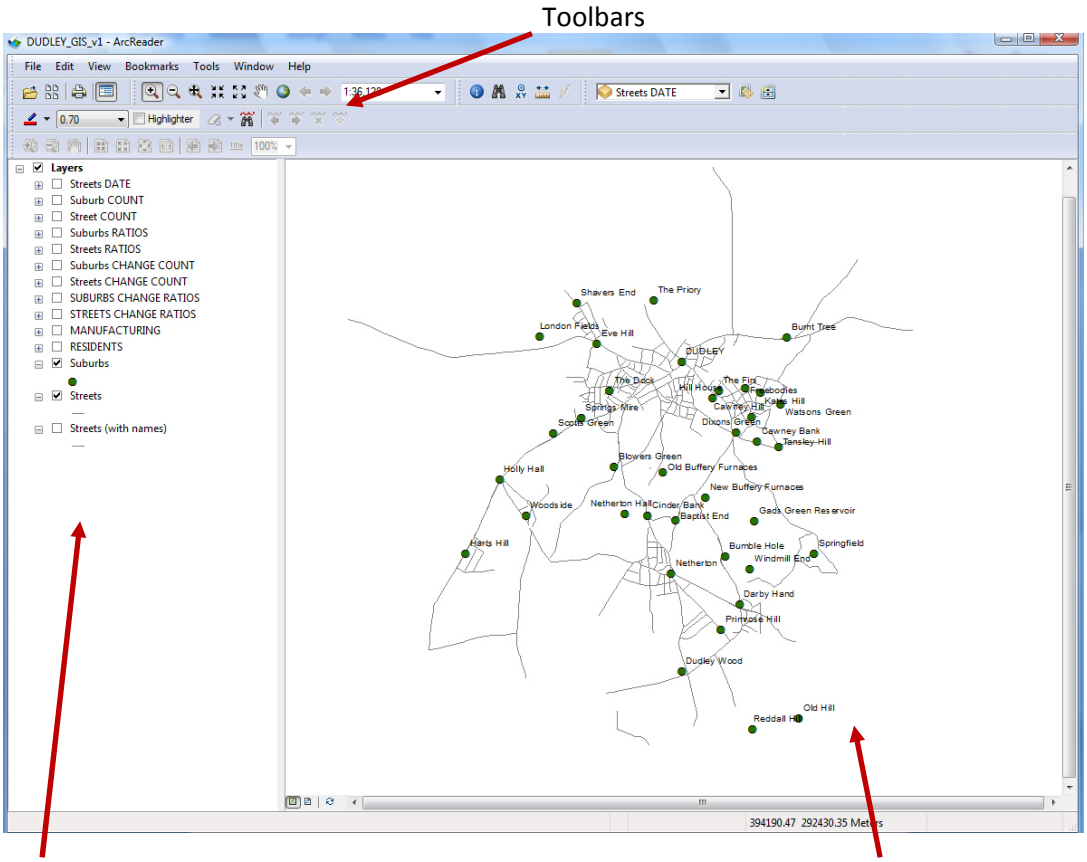
The full version of ArcGIS has ArcReader as an extension. For users who do not have the full version of ArcGIS, the ArcReader extension can be downloaded from the ESRI website –

http://www.esri.com/software/arcgis/arcreader/download.html

This enables all users to be able to view and use the published map.

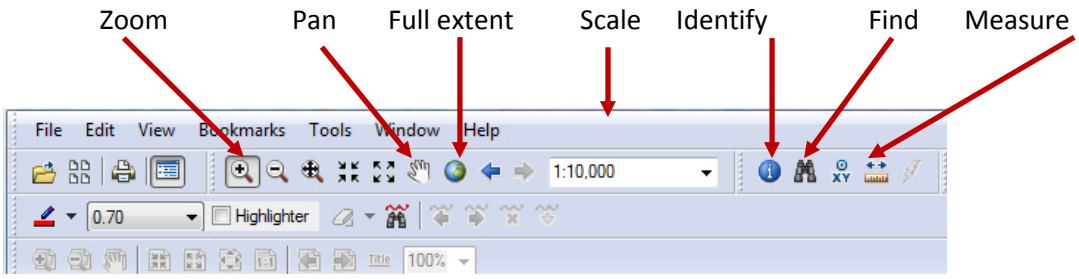
The CD containing the GIS information (GIS_V1) has two folders, one with the data (data) and one with the map file (pmf). To view the map, open the pmf file (DUDLEY_GIS_v1).

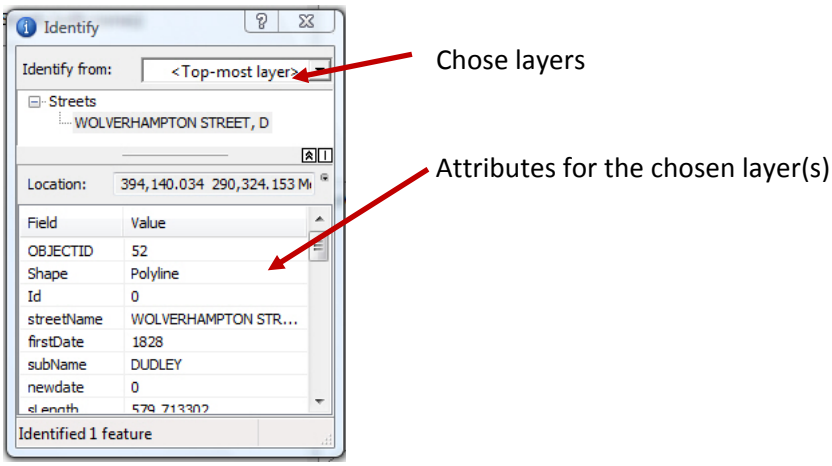
The initial map screen looks like this:



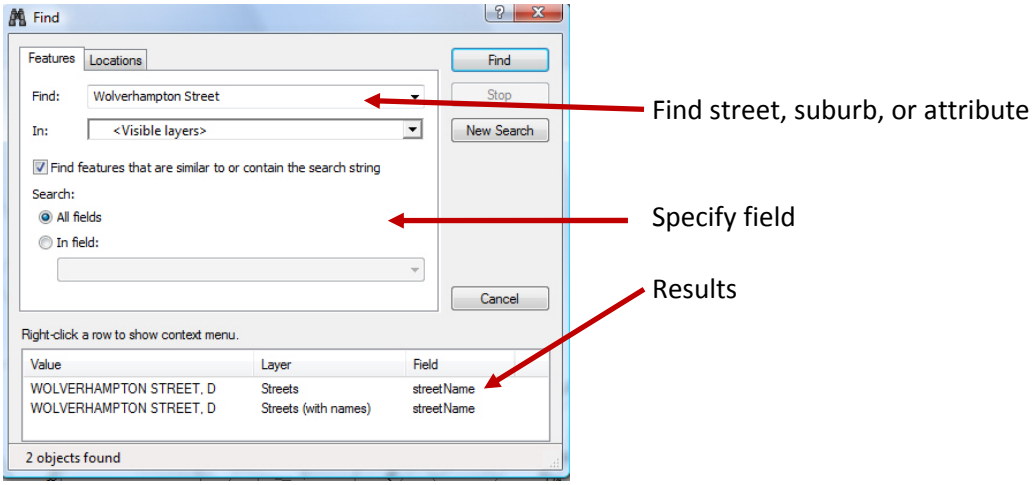
The toolbars are along the top of the map, to the left is the table of contents, and the main map screen initially shows the locations of the suburbs along with the digitised streets (suburbs and streets are ticked). There is also a street layer which has the names as labels, which can be used.

The toolbars at the top of the screen include tools that allow the user to zoom, pan, go to previous extents, and to view the whole map. The current scale of the viewed map is also shown, and there are tools to identify, find, and map.

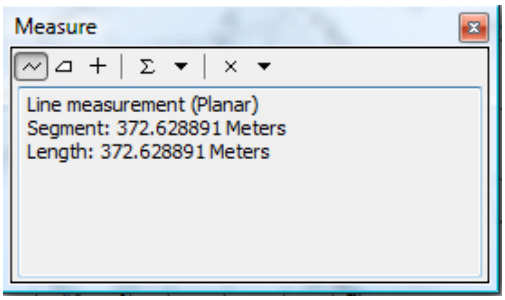




Clicking on a street with the identify tool brings up a dialog box that shows the attributes of that street for a particular layer. The default layer is the Top-most layer clicked on in the table of contents, but other layers can be chosen from the drop-down menu at the top of the box.



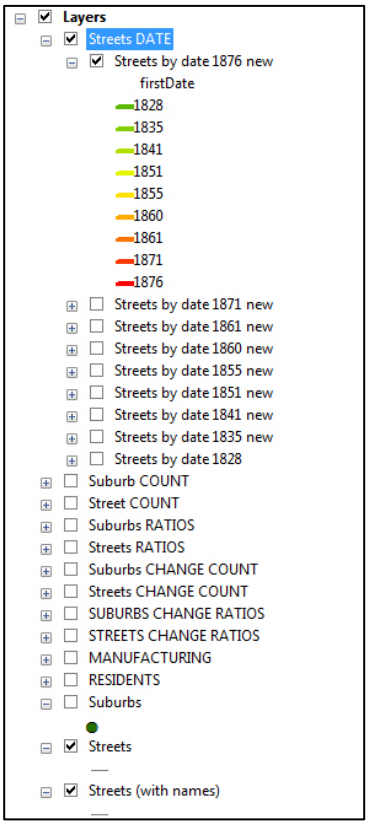
The find tool allows users to identify particular streets in layers. Again, the default is 'Visible layers', but other layers can be chosen to query.

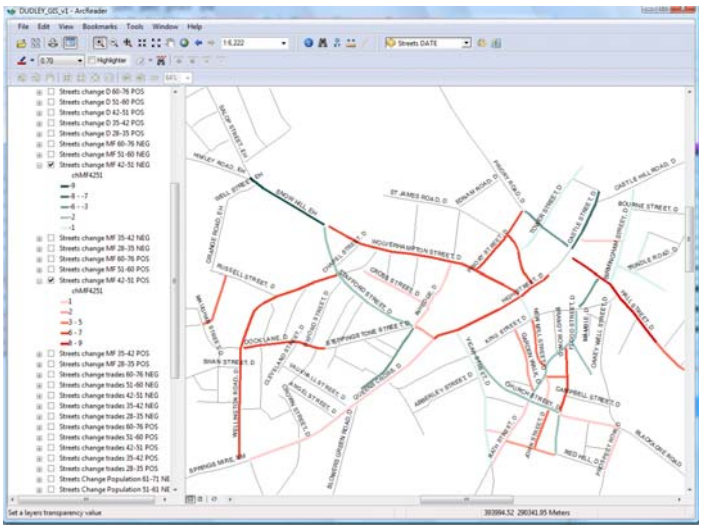


The measure tool can be used to measure linear distances with a line, or areas by drawing a polygon. The measurements themselves can be either metres, kilometres etc.

Each of the layers created and symbolised within the GIS can be turned off and on in the Table of Contents. The contents are grouped into broad categories (such as street COUNT and suburb COUNT etc), then individual layers are within these groupings. A full list of layers is given in the table below. The groups can be minimised and maximised by clicking the +/- icon to the left of each layer group, and each of the layers can be turned on and off using the tick box to the left of each layer itself.

The legend can be viewed by clicking on the +/- sign next to the individual layers

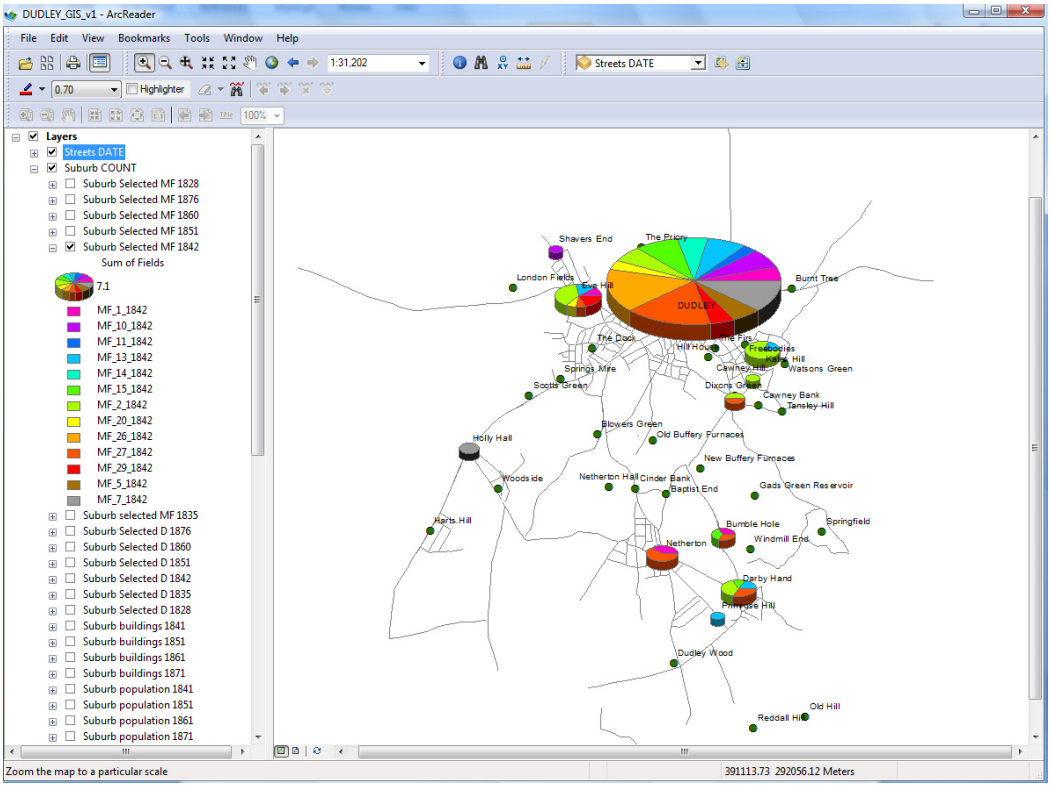




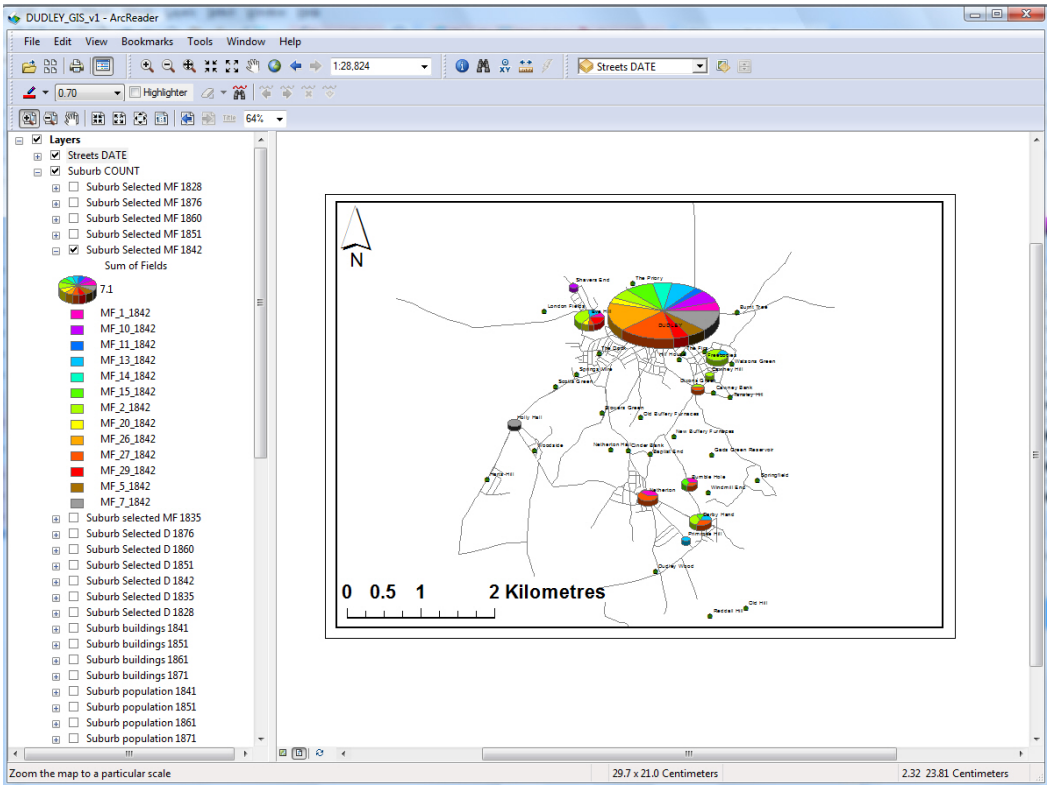
More than one layer can be viewed at the same time

The data can be viewed in either the original map screen, or in the Layout view. The layout view is accessible in the View – Layout view option at the top of the screen. In layout view, a north arrow and scale are added to the map.

There is more information regarding the functions of ArcReader on the ESRI website http://www.esri.com/software/arcgis/arcreader/key-features.html



Normal map view



Layout map view

Below is a full list of the layer groupings and the layers themselves.

Once the streets and suburbs had been digitised, the shapefile was initially given a set of attributes, based on values of the shapefiles themselves. Then a joining field was used to append the data from the database.

The suburb shapefile was digitised as a point. The attribute fields initially created for this shapefile were NEWSUBNAME, which was used as the join field to the database tables. Other fields were also calculated.

SUBURB SHAPEFILE

Field Name	Type	Description
NEWSUBNAME	Text	Name of suburb/ or Dudley
Acc1828	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1835	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1841	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1851	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1855	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1860	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1861	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1871	Number	Sum of the length of all streets allocated to this suburb by this date
Acc1876	Number	Sum of the length of all streets allocated to this suburb by this date

The street shapefile was digitised as a line. The attribute fields initially created for this shapefile were StreetName, which was used as the join field to the database tables. Other fields were also calculated.

STREET SHAPEFILE

Field Name	Type	Description
streetName	Text	Name of street
FirstDate	Number	Date that the street is first mentioned in the documentary sources
SubName	Text	Name of suburb that the street is allocated to
SLength	Number	Length in metres of the street

SUBURB COUNT

Counts were made of various values allocated at suburb level within the database and joined to the suburb point shapefile.

Suburb buildings

This value was calculated in order to show better the relative size in terms of the built environment for each of the suburbs. While the map sequence does illustrate individual

buildings, it is not necessarily an accurate depiction of them. It has the potential to give a numeric value to the relative size of each suburb for an individual year.

In the future, this value could be used with the accumulated street length to give an indication of relative density of buildings at a suburb level.

Suburb population

This value was calculated to show the relative size of each suburb in terms of the population. The values itself are perhaps not different enough from the buildings at suburb level to immediately identify alternate patterns of size, however, this attribute has the potential when used as a ratio with other values, such as buildings or street length to give a relative value of population density or crowding for each of the suburbs.

Suburb Trade Total

This value was calculated to show the number of entries allocated to each suburb in the trade directories. While it can be shown that Dudley most entries are also recorded at a street level, within the suburbs the number of entries recorded at street level varies, with some suburbs recording entries at suburb level only. It might be used as a relative indicator of importance or occupation focus within the landscape.

Suburb Trade Range

A count of the number of entries for each simple category was made for each suburb for each year. In the GIS, these were symbolised together as a piechart. The individual fields (D18**, MF18** etc), could in the future be symbolised separately, to show the distribution of each of the individual categories. While the range is likely to be largely dependent on the number of entries, this map was hoped to show the distribution and count of simple trade categories within the landscape, to identify patterns where a particular trade was present in specific areas.

Additionally a map was produced that omitted the data from Dudley. This was in order to be able to use a proportional size for the pie charts themselves depicting not only the trades represented, but a relative size of the number of entries for each suburb. Including Dudley made this level of symbolisation impossible, due to the much larger numbers allocated to the town rather then the surrounding landscape.

While the symbolisation includes all the values of the simple trades for each year, the individual counts for each simple category for each suburb for each date can be accessed via the information button within the ArcReader project.

Suburb Selected MF

Count of entries allocated to each Manufacturing trade category for each suburb in the directory for this year. Not all of the calculated values were used. As categories such as MF4 were so dominant, and other categories had so few values, they were omitted. It was hoped, therefore, that this map could potentially show the diversity and number of other forms of manufacturing within the landscape, for each year, to identify patterns in their distribution.

As with the values for the simple trade categories, the individual counts can be accessed via the information button within the ArcReader project. Each of the individual values can be mapped separately in the future.

Suburb Selected D

Count of selected entries recorded for each Dealing trade category for each suburb in the directories for each year. Not all of the calculated values were used. As with the MF categories, certain Dealing categories were ubiquitous throughout the dataset, and thus were omitted. Taking out D5 and D7, representing Food and Drink sellers, which may reasonably be expected to be ubiquitous throughout the area, and also taking out D3 (Clothing materials), D6 (Tobacco) and D8 (Lodging and coffee houses) due to their small numbers, the number and distribution of the other categories can be mapped within the GIS.

It was hoped that this map could potentially show the diversity and number of other dealing trades within the overall landscape, for each year, to identify patterns in their distribution. As above, the individual counts can be accessed in the ArcReader project, and mapped separately in the future.

Table of Contents Layer name	Attribute Field Name	Description	Symbology
Suburb buildings 1841	Build1841	Count of all buildings in the census allocated to this suburb for this year	Proportional Symbols
Suburb buildings 1851	Build1851	Count of all buildings in the census allocated to this suburb for this year	Proportional Symbols
Suburb buildings 1861	Build1861	Count of all buildings in the census allocated to this suburb for this year	Proportional Symbols
Suburb buildings 1871	Build1871	Count of all buildings in the census allocated to this suburb for this year	Proportional Symbols
Suburb population 1841	Pop1841	Count of all people in the census allocated to this suburb for this year	Proportional Symbols
Suburb population 1851	Pop1851	Count of all people in the census allocated to this suburb for this year	Proportional Symbols
Suburb population 1861	Pop1861	Count of all people in the census allocated to this suburb for this year	Proportional Symbols
Suburb population 1871	Pop1871	Count of all people in the census allocated to this suburb for this year	Proportional Symbols
Suburb Trade Total 1828	Total1828	Count of individual entries in the trade directory for this year	Graduated Symbols
Suburb Trade Total 1835	Total1835	Count of individual entries in the trade directory for this year	Graduated Symbols
Suburb Trade	Total1842	Count of individual entries	Graduated

Total 1842		in the trade directory for this year	Symbols
Suburb Trade Total 1851	Total1851	Count of individual entries in the trade directory for this year	Graduated Symbols
Suburb Trade Total 1860	Total1860	Count of individual entries in the trade directory for this year	Graduated Symbols
Suburb Trade Total 1876	Total1876	Count of individual entries in the trade directory for this year	Graduated Symbols
Suburb Trade Range 1828	AG1828; B1828; D1828; DS1828; IS1828; M1828; MF1828; PO1828; PP1828; S1828; T1828	Count of entries allocated to each simple trade category for each suburb in the directory for this year	Pie Chart, fixed size
Suburb Trade Range 1835	AG1835; B1835; D1835; DS1835; IS1835; M1835; MF1835; PO1835; PP1835; S1835; T1835	Count of entries allocated to each simple trade category for each suburb in the directory for this year	Pie Chart, fixed size
Suburb Trade Range 1842	AG1842; B1842; D1842; DS1842; IS1842; M1842; MF1842; PO1842; PP1842; S1842; T1842	Count of entries allocated to each simple trade category for each suburb in the directory for this year	Pie Chart, fixed size
Suburb Trade Range 1851	AG1851; B1851; D1851; DS1851; IS1851; M1851; MF1851; PO1851; PP1851; S1851; T1851	Count of entries allocated to each simple trade category for each suburb in the directory for this year	Pie Chart, fixed size
Suburb Trade Range 1860	AG1860; B1860; D1860; DS1860; IS1860; M1860; MF1860; PO1860; PP1860; S1860; T1860	Count of entries allocated to each simple trade category for each suburb in the directory for this year	Pie Chart, fixed size
Suburb Trade Range 1876	AG1876; B1876; D1876; DS1876; IS1876; M1876; MF1876; PO1876; PP1876; S1876; T1876	Count of entries allocated to each simple trade category for each suburb in the directory for this year	Pie Chart, fixed size
Suburb Trade Range 1828 no Dudley	AG1828; B1828; D1828; DS1828; IS1828; M1828; MF1828; PO1828; PP1828; S1828; T1828	Count of entries allocated to each simple trade category for each suburb in the directory for this year – Dudley excluded	Pie Chart, size based on sum of value fields
Suburb Trade Range 1835 no Dudley	AG1835; B1835; D1835; DS1835; IS1835; M1835; MF1835; PO1835; PP1835; S1835; T1835	Count of entries allocated to each simple trade category for each suburb in the directory for this year – Dudley excluded	Pie Chart, size based on sum of value fields
Suburb Trade Range 1842 no Dudley	AG1842; B1842; D1842; DS1842; IS1842; M1842; MF1842; PO1842; PP1842; S1842; T1842	Count of entries allocated to each simple trade category for each suburb in the directory for this year – Dudley excluded	Pie Chart, size based on sum of value fields

Suburb Trade Range 1851 no Dudley	AG1851; B1851; D1851; DS1851; IS1851; M1851; MF1851; PO1851; PP1851; S1851; T1851	Count of entries allocated to each simple trade category for each suburb in the directory for this year – Dudley excluded	Pie Chart, size based on sum of value fields
Suburb Trade Range 1860 no Dudley	AG1860; B1860; D1860; DS1860; IS1860; M1860; MF1860; PO1860; PP1860; S1860; T1860	Count of entries allocated to each simple trade category for each suburb in the directory for this year – Dudley excluded	Pie Chart, size based on sum of value fields
Suburb Trade Range 1876 no Dudley	AG1876; B1876; D1876; DS1876; IS1876; M1876; MF1876; PO1876; PP1876; S1876; T1876	Count of entries allocated to each simple trade category for each suburb in the directory for this year – Dudley excluded	Pie Chart, size based on sum of value fields
Suburb Selected MF 1828	MF_1_1828; MF_10_1828; MF_11_1828; MF_13_1828; MF_14_1828; MF_15_1828; MF_2_1828; MF_20_1828; MF_26_1828; MF_27_1828; MF_29_1828; MF_5_1828; MF_7_1828	Count of entries allocated to selected Manufacturing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields
Suburb Selected MF 1835	MF_1_1835; MF_10_1835; MF_11_1835; MF_13_1835; MF_14_1835; MF_15_1835; MF_2_1835; MF_20_1835; MF_26_1835; MF_27_1835; MF_29_1835; MF_5_1835; MF_7_1835	Count of entries allocated to selected Manufacturing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields
Suburb Selected MF 1842	MF_1_1842; MF_10_1842; MF_11_1842; MF_13_1842; MF_14_1842; MF_15_1842; MF_2_1842; MF_20_1842; MF_26_1842; MF_27_1842; MF_29_1842; MF_5_1842; MF_7_1842	Count of entries allocated to selected Manufacturing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields
Suburb Selected MF 1851	MF_1_1851; MF_10_1851; MF_11_1851; MF_13_1851; MF_14_1851; MF_15_1851; MF_2_1851; MF_20_1851; MF_26_1851; MF_27_1851; MF_29_1851; MF_5_1851; MF_7_1851	Count of entries allocated to selected Manufacturing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields
Suburb Selected MF 1860	MF_1_1860; MF_10_1860; MF_11_1860; MF_13_1860; MF_14_1860; MF_15_1860; MF_2_1860; MF_20_1860; MF_26_1860; MF_27_1860; MF_29_1860; MF_5_1860; MF_7_1860	Count of entries allocated to selected Manufacturing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields
Suburb Selected MF 1876	MF_1_1876; MF_10_1876; MF_11_1876; MF_13_1876; MF_14_1876; MF_15_1876; MF_2_1876; MF_20_1876; MF_26_1876; MF_27_1876; MF_29_1876;	Count of entries allocated to selected Manufacturing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields

	MF_5_1876; MF_7_1876		
Suburb Selected D 1828	D_1_1828; D_10_1828; D_11_1828; D_12_1828; D_13_1828; D_2_1828; D_4_1828; D_9_1828	Count of entries allocated to selected Dealing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields
Suburb Selected D 1835	D_1_1835; D_10_1835; D_11_1835; D_12_1835; D_13_1835; D_2_1835; D_4_1835; D_9_1835	Count of entries allocated to selected Dealing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields
Suburb Selected D 1842	D_1_1842; D_10_1842; D_11_1842; D_12_1842; D_13_1842; D_2_1842; D_4_1842; D_9_1842	Count of entries allocated to selected Dealing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields
Suburb Selected D 1851	D_1_1851; D_10_1851; D_11_1851; D_12_1851; D_13_1851; D_2_1851; D_4_1851; D_9_1851	Count of entries allocated to selected Dealing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields
Suburb Selected D 1860	D_1_1860; D_10_1860; D_11_1860; D_12_1860; D_13_1860; D_2_1860; D_4_1860; D_9_1860	Count of entries allocated to selected Dealing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields
Suburb Selected D 1876	D_1_1876; D_10_1876; D_11_1876; D_12_1876; D_13_1876; D_2_1876; D_4_1876; D_9_1876	Count of entries allocated to selected Dealing categories for each suburb in the directory for this year.	Pie Chart, size based on sum of value fields

STREET COUNT

Streets Buildings

Count of buildings along each street. Likely to be anomalous, due to longer streets having more buildings. However, in built up areas, this attribute can show patterns of building density, and is useful for generating ratios and showing change between years.

Streets Population

As with the count of buildings value, the count of population is dependent on street length, and therefore this attribute needs to be used with caution. Again, the data itself has more use for generating ratios and showing changes between years.

Streets Trade Count

A count of all entries recorded at street level within the various trade directories. Again, the count is likely dependent on the size and length of the street, however, distribution patterns may still be discernable within the dataset. The trade directory data for all values needs the bias inherent in the original dataset to be taken into consideration.

Streets Trade Range

A count of how many different categories of trades were recorded for each street. This is likely to be primarily due to the number of entries recorded, as well as noted bias within the original dataset. It was hoped that this attribute could show areas that specialised for particular trades or industries, however, patterns of this nature were not easily visible in the dataset once processed. Future work could include creating an index of trade range against number of entries. This was not attempted in this project, due to time constraints and the probability of failure.

Table of Contents Layer name	Attribute Field Name	Description	Symbology
Streets Buildings 1841	H1841	Count of all buildings in the census allocated to each street for this year	Graduated symbols
Streets Buildings 1851	H1851	Count of all buildings in the census allocated to each street for this year	Graduated symbols
Streets Buildings 1861	H1861	Count of all buildings in the census allocated to each street for this year	Graduated symbols
Streets Buildings 1871	H1871	Count of all buildings in the census allocated to each street for this year	Graduated symbols
Streets population 1841	P1841	Count of all people in the census allocated to each street for this year	Graduated symbols
Streets population 1851	H1851	Count of all people in the census allocated to each street for this year	Graduated symbols
Streets population 1861	H1861	Count of all people in the census allocated to each street for this year	Graduated symbols
Streets population 1871	H1871	Count of all people in the census allocated to each street for this year	Graduated symbols
Streets trade count 1828	T1828	Count of individual entries for each street in the trade directory for this year	Graduated colours
Streets trade count 1835	T1835	Count of individual entries for each street in the trade directory for this year	Graduated colours
Streets trade count 1842	T1842	Count of individual entries for each street in the trade directory for this year	Graduated colours
Streets trade count 1851	T1851	Count of individual entries for each street in the trade directory for this year	Graduated colours
Streets trade count 1860	T1860	Count of individual entries for each street in the trade directory for this year	Graduated colours
Streets trade count 1876	T1876	Count of individual entries for each street in the trade	Graduated colours

		directory for this year	
Streets trade range 1828	RangeC1828	Count of the number of different trade categories recorded for each street for this year	Graduated colours
Streets trade range 1835	RangeC1835	Count of the number of different trade categories recorded for each street for this year	Graduated colours
Streets trade range 1842	RangeC1842	Count of the number of different trade categories recorded for each street for this year	Graduated colours
Streets trade range 1851	RangeC1851	Count of the number of different trade categories recorded for each street for this year	Graduated colours
Streets trade range 1860	RangeC1860	Count of the number of different trade categories recorded for each street for this year	Graduated colours
Streets trade range 1876	RangeC1876	Count of the number of different trade categories recorded for each street for this year	Graduated colours

SUBURB RATIOS

Suburb People/Buildings

This ratio was calculated to show how crowded each building was (then averaged for each suburb), with the idea that this might illustrate differences in social status or affluence. However, the ratio itself is perhaps anomalous, and the value needs further exploration to understand the patterns identified. A large house and a small house may have the same number of people recorded within it, and it is unclear without cross-referencing with other datasets which is which.

Suburb Buildings/Street Length

This ratio was calculated to show how on average how crowded each street was for each suburb for each year, with the idea that this might illustrate differences in general building types in particular areas, as well as some kind of indication of character and social status. In some ways the results are potentially anomalous, as suburbs with longer streets that are not necessarily developed will have much higher values.

Suburbs pcManufacturing

This ratio was calculated to try and identify and map the industrial character of the individual suburbs in relation to each other, with the value being the percentage of entries recorded as MF in relation to the total number of entries for each suburb. The reasoning behind this was that industrial areas were likely to have a higher proportion of

manufacturing trades listed than more residential areas. However, caution needs to be exercised for suburbs with very few entries. In some ways, while duplicating in part the data illustrated in the Trade Range (for suburbs) attribute, it can highlight the differences in the character of areas, at least as was recorded on the trade directories, in a clearer way. The bias in the trade directories needs to be taken into consideration.

Suburbs pcDealing

This ratio was calculated alongside the pcManufacturing attribute. As MF and D dominate the record, it is often a completely opposite value, however, there are areas where there are a larger number of categories listed, such as Dudley.

Table of Contents Layer name	Attribute Field Name	Description	Symbology
Suburb People/Buildings 1841	P_B1841	Calculation of the average number of people per building recorded within each suburb	Graduated colours
Suburb People/Buildings 1851	P_B1851	Calculation of the average number of people per building recorded within each suburb	Graduated colours
Suburb People/Buildings 1861	P_B1861	Calculation of the average number of people per building recorded within each suburb	Graduated colours
Suburb People/Buildings 1871	P_B1871	Calculation of the average number of people per building recorded within each suburb	Graduated colours
Suburb Buildings/Street Length 1841	B_S1841	Calculation (in metres) of the average street length per building recorded within each suburb	Graduated colours
Suburb Buildings/Street Length 1851	B_S1851	Calculation (in metres) of the average street length per building recorded within each suburb	Graduated colours
Suburb Buildings/Street Length 1861	B_S1861	Calculation (in metres) of the average street length per building recorded within each suburb	Graduated colours
Suburb Buildings/Street Length 1871	B_S1871	Calculation (in metres) of the average street length per building recorded within each suburb	Graduated colours
Suburbs pcManufacturing 1828	Pc_MF1828	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries	Graduated symbols
Suburbs pcManufacturing 1835	Pc_MF1835	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries	Graduated symbols
Suburbs pcManufacturing 1842	Pc_MF1842	Calculation of the percentage of MF trades listed for each suburb in terms	Graduated symbols

		of the total number of entries	
Suburbs pcManufacturing 1851	Pc_MF1851	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries	Graduated symbols
Suburbs pcManufacturing 1860	Pc_MF1860	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries	Graduated symbols
Suburbs pcManufacturing 1876	Pc_MF1876	Calculation of the percentage of MF trades listed for each suburb in terms of the total number of entries	Graduated symbols
Suburbs pcDealing 1828	Pc_D1828	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries	Graduated symbols
Suburbs pcDealing 1835	Pc_D1835	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries	Graduated symbols
Suburbs pcDealing 1842	Pc_D1842	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries	Graduated symbols
Suburbs pcDealing 1851	Pc_D1851	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries	Graduated symbols
Suburbs pcDealing 1860	Pc_D1860	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries	Graduated symbols
Suburbs pcDealing 1876	Pc_D1876	Calculation of the percentage of D trades listed for each suburb in terms of the total number of entries	Graduated symbols

STREETS RATIOS

Streets Population/Building

This ratio was calculated with the same intent as for the suburb attribute. It was hoped that areas of crowding could be identified. Certainly, this map shows there was not uniform value across the area, however, the precise reason for this pattern is would require further analysis.

Streets Buildings/Street Length

This ratio was calculated to identify densely developed areas as opposed to less developed areas in addition to the historic mapping. While the occupation of streets can be ascertained from the maps, it was hoped that quantifying the number of buildings per street length index would add context and detail to the mapped buildings. Also, the change in buildings/street length calculated later was hoped to show potentially where re-development had taken place between the years that were mapped. Further work could use

this attribute, and previous archaeological work including building recording, in order to test this against real results.

Streets pcManufacturing

Like the suburb attribute, this was calculated to try and identify, and map the industrial character of individual streets in relation to each other. Again, it was assumed that streets with a higher proportion of manufacturing trades listed could be identified as having a different character to those with a high proportion of dealing. While again, bias in the directories, and the anomalies potentially created by low numbers, definite patterns of distribution can be seen in the data. As well as being able to see overall patterns within the data, making information on individual streets regarding the number and proportion of particular trade directory categories would be useful for future desk-based assessment research.

Streets pcDealing

Again, this attribute was generated with the same intent as the pcManufacturing attribute.

Streets Trade per Population

This attribute was calculated for 1851, with the intention of highlighting the bias in the recording of the entries in the trade directories, identified by previous research. When mapped this highlights quite clearly areas which were comprehensively recorded, and which were less so. While only conducted for the year in which the census and trade directory overlap, it can be used as a cross-check for other calculated values when assessing the reliability of the results.

Table of Contents Layer name	Attribute Field Name	Description	Symbology
Streets Trade per Population	TR_POP1851	Number of people listed on the census per trade directory entry for 1851	Graduated colours
Streets Population/Building 1841	PperB1841	Calculation of the average number of people per building recorded per street for this year	Graduated colours
Streets Population/Building 1851	PperB1851	Calculation of the average number of people per building recorded per street for this year	Graduated colours
Streets Population/Building 1861	PperB1861	Calculation of the average number of people per building recorded per street for this year	Graduated colours
Streets Population/Building 1871	PperB1871	Calculation of the average number of people per building recorded per street for this year	Graduated colours
Streets Building/Street length 1841	BperS1841	Calculation (in metres) of the average street length per building recorded within each street	Graduated colours
Streets Building/Street length 1851	BperS1851	Calculation (in metres) of the average street length per building recorded within each street	Graduated colours

Streets Building/Street length 1861	BperS1861	Calculation (in metres) of the average street length per building recorded within each street	Graduated colours
Streets Building/Street length 1871	BperS1871	Calculation (in metres) of the average street length per building recorded within each street	Graduated colours
Streets pcManufacturing 1828	pcMF1828	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcManufacturing 1835	pcMF1835	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcManufacturing 1842	pcMF1842	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcManufacturing 1851	pcMF1851	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcManufacturing 18608	pcMF1860	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcManufacturing 1876	pcMF1876	Calculation of the percentage of MF trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcDealing 1828	pcD1828	Calculation of the percentage of D trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcDealing 1835	pcD1835	Calculation of the percentage of D trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcDealing 1842	pcD1842	Calculation of the percentage of D trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcDealing 1851	pcD1851	Calculation of the percentage of D trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcDealing 1860	pcD1860	Calculation of the percentage of D trades listed for each street in terms of the total number of entries	Graduated colours
Streets pcDealing 1876	pcD1876	Calculation of the percentage of D trades listed for each street in terms of the total number of entries	Graduated colours
Streets Trade per Population 1851	TR_POP1851	Calculation of the number of people divided by the number of trades listed within each street	Graduated colours

SUBURBS CHANGE COUNT

Suburbs change buildings

This attribute shows the change in the number of buildings recorded between two consecutive years of the census. It was hoped that this would show which suburbs were growing (or reducing) the most between these years, in terms of building stock. While the maps obviously show growth, and the streets themselves have the first date attribute recorded, being able to visualise within the landscape where, and how much, new buildings were recorded would potentially be useful, both in terms of overall landscape development, and to disseminate information regarding individual suburbs themselves.

Suburbs change population

In a similar way to the change in buildings, it was hoped that this attribute would help map the growth of the suburbs and Dudley within the overall landscape.

Suburbs change trades

This attribute shows the increase or decrease in the number of overall entries allocated to each suburb between consecutive years of the trade directories. As has been identified, there is drop in numbers between 1851 and 1860 which is far more likely to be a change in methodology than a decrease in actual trades within the region. However, for the years up to this, and assuming that the trade directories are compatible with each other, it might be used as another indicator of growth within the region.

Suburbs change MF, Suburbs change D

Although this attribute suffers from the same drop in numbers as the overall totals, it was hoped that by mapping the increases or decreases in manufacturing industries throughout the region would give an indication of the change in character of particular areas, if they were becoming more, or less, industrial in nature as the century progressed, as well as an alternate indicator of overall growth. However, the data needs to be viewed with regard to overall trends in order to understand the increase or decrease, as these will largely be dependent on the total numbers of entries. Again, suburbs with small numbers of entries may be anomalous, and the results would require further, more detailed analysis against other datasets, to prove their validity. There are, however, patterns within this data that might be worth further investigation.

Table of Contents Layer name	Attribute Field Name	Description	Symbology
Suburbs change buildings 41-51	Bu4151	Calculation of the change in number of buildings recorded between 1841 and 1851	Graduated colours
Suburbs change buildings 51-61	Bu5161	Calculation of the change in number of buildings recorded between 1851 and 1861	Graduated colours

Suburbs change buildings 61-71	Bu6171	Calculation of the change in number of buildings recorded between 1861 and 1871	Graduated colours
Suburbs change population 41-51	Pop4151	Calculation of the change in number of people recorded between 1841 and 1851	Graduated colours
Suburbs change population 51-61	Pop5161	Calculation of the change in number of people recorded between 1851 and 1861	Graduated colours
Suburbs change population 61-71	Pop6171	Calculation of the change in number of people recorded between 1861 and 1871	Graduated colours
Suburbs change trades 28-35	chToT2835	Calculation of the change in total number of entries recorded between 1828 and 1835	Graduated colours
Suburbs change trades 35-42	chToT3542	Calculation of the change in total number of entries recorded between 1835 and 1842	Graduated colours
Suburbs change trades 42-51	chToT4251	Calculation of the change in total number of entries recorded between 1842 and 1851	Graduated colours
Suburbs change trades 51-60	chToT5160	Calculation of the change in total number of entries recorded between 1851 and 1860	Graduated colours
Suburbs change trades 60-76	chToT6076	Calculation of the change in total number of entries recorded between 1860 and 1876	Graduated colours
Suburbs change MF 28-35	chMF2835	Calculation of the change in number of MF entries recorded between 1828 and 1835	Graduated colours
Suburbs change MF 35-42	chMF3542	Calculation of the change in number of MF entries recorded between 1835 and 1842	Graduated colours
Suburbs change MF 42-51	chMF4251	Calculation of the change in number of MF entries recorded between 1842 and 1851	Graduated colours
Suburbs change MF 51-60	chMF5160	Calculation of the change in number of MF entries recorded between 1851 and 1860	Graduated colours
Suburbs change MF 60-76	chMF6076	Calculation of the change in number of MF entries recorded between 1860 and 1876	Graduated colours
Suburbs change D 28-35	chD2835	Calculation of the change in number of D entries recorded between 1828 and 1835	Graduated colours
Suburbs change D 35-42	chD3542	Calculation of the change in number of D entries recorded between 1835 and 1842	Graduated colours
Suburbs change D 42-51	chD4251	Calculation of the change in number of D entries recorded between 1842 and 1851	Graduated colours
Suburbs change D 51-60	chD5160	Calculation of the change in number of D entries recorded between 1851 and 1860	Graduated colours
Suburbs change D 60-76	chD6076	Calculation of the change in number of D entries recorded between 1860 and 1876	Graduated colours

STREETS

Streets change buildings

While the growth of the developed area is visible on the maps, and potentially expanded on using the first date attribute recorded for the streets, it was hoped that mapping the change in the number of buildings recorded on each street would also identify alterations to the built environment of already established streets, either with the addition of new buildings, perhaps to the rear of buildings on the street frontage, or wholesale demolition and rebuilding along the frontage itself. There is the possibility that some of the patterns identified by mapping this value may be changes in the recording of the addresses on the census, and anomalies were identified for some dates where streets were omitted however, most of the changes identified in these maps are likely to be real. Further work could include corroborating the evidence with other datasets and archaeological investigations, and putting these changes into context.

Streets change population

It was identified that the movement of population within the area was not only not identifiable from current datasets, such as the mapping, but not necessarily directly proportional to the number of buildings. It was hoped that mapping this value would identify areas becoming less crowded, or more crowded throughout the period under investigation, which itself may be an indicator of change of status. While the count itself is dependent on street length, the change in population is less so (although a large change in a very long street would be symbolised the same as a smaller change in a shorter street). Again, further work could include cross-checking the rise and fall of population against changes in street character determined by other values.

Streets change trades

This attribute records the change in total entries for each street between consecutive years, and works on the assumption that bias within the trade directories concerning location and proximity to the central streets, and bias in the types of trades listed, is potentially nullified by comparing individual streets with themselves. On its own, this attribute has less value, as the increase or decrease in numbers is likely to reflect numbers of population, and without specifying the types of trades increasing or decreasing, little can be said in any potential change in street character.

Streets change MF/ Streets change D

The same provisos identified at suburb level need to be taken into consideration when assessing the changes in numbers of MF and D entries for each street, as there is the potential to map the directory, rather than what was happening in reality. However, the data itself is of value when researching individual streets and areas, and there are spatial patterns within the data that might be worth further investigation.

Streets change Trade Range

This attribute represents the change in the range of trade categories recorded for each street between consecutive trade directories. While the range is potentially related to the number of entries itself, it was mapped in order to show increases or decreases in the diversity of trades within an area, with the idea that some streets would have specialised in a particular type of trade, while others would have a mixture of them. Increases and decreases in diversity might illustrate changes in a streets character, and can be compared with other attributes such as total number of entries, changes in MF and D, and population.

CHANGE COUNT

Table of Contents Layer name	Attribute Field Name	Description	Symbology
Streets change buildings 41-51 POS/NEG	chB4151	Calculation of the change in number of buildings recorded between 1841 and 1851	Graduated colours Symbolised as 2 layers
Streets change buildings 51-61 POS/NEG	chB5161	Calculation of the change in number of buildings recorded between 1851 and 1861	Graduated colours Symbolised as 2 layers
Streets change buildings 61-71 POS/NEG	chB6171	Calculation of the change in number of buildings recorded between 1861 and 1871	Graduated colours Symbolised as 2 layers
Streets change population 41-51 POS/NEG	chP4151	Calculation of the change in number of people recorded between 1841 and 1851	Graduated colours symbolised as 2 layers
Streets change population 51-61 POS/NEG	chP5161	Calculation of the change in number of people recorded between 1851 and 1861	Graduated colours symbolised as 2 layers
Streets change population 61-71 POS/NEG	chP6171	Calculation of the change in number of people recorded between 1861 and 1871	Graduated colours symbolised as 2 layers
Streets change trades 28-35 POS/NEG	chTotT2835	Calculation of the change in number of total entries recorded between 1828 and 1835	Graduated colours symbolised as 2 layers
Streets change trades 35-42 POS/NEG	chTotT3542	Calculation of the change in number of total entries recorded between 1835 and 1842	Graduated colours symbolised as 2 layers
Streets change trades 42-51 POS/NEG	chTotT4251	Calculation of the change in number of total entries recorded between 1842 and 1851	Graduated colours symbolised as 2 layers
Streets change trades 51-60 POS/NEG	chTotT5160	Calculation of the change in number of total entries recorded between 1851 and 1860	Graduated colours symbolised as 2 layers
Streets change trades 60-76 POS/NEG	chTotT6076	Calculation of the change in number of total entries recorded between 1860 and 1876	Graduated colours symbolised as 2 layers
Streets change MF 28-35 POS/NEG	chMF2835	Calculation of the change in number of MF entries recorded between 1828 and 1835	Graduated colours symbolised as 2 layers
Streets change MF 35-	chMF3542	Calculation of the change in number	Graduated colours

42 POS/NEG		of MF entries recorded between 1835 and 1842	symbolised as 2 layers
Streets change MF 42-51 POS/NEG	chMF4251	Calculation of the change in number of MF entries recorded between 1842 and 1851	Graduated colours symbolised as 2 layers
Streets change MF 51-60 POS/NEG	chMF5160	Calculation of the change in number of MF entries recorded between 1851 and 1860	Graduated colours symbolised as 2 layers
Streets change MF 60-76 POS/NEG	chMF6076	Calculation of the change in number of MF entries recorded between 1860 and 1876	Graduated colours symbolised as 2 layers
Streets change D 28-35 POS/NEG	chD2835	Calculation of the change in number of D entries recorded between 1828 and 1835	Graduated colours symbolised as 2 layers
Streets change D 35-42 POS/NEG	chD3542	Calculation of the change in number of D entries recorded between 1835 and 1842	Graduated colours symbolised as 2 layers
Streets change D 42-51 POS/NEG	chD4251	Calculation of the change in number of D entries recorded between 1842 and 1851	Graduated colours symbolised as 2 layers
Streets change D 51-60 POS/NEG	chD5160	Calculation of the change in number of D entries recorded between 1851 and 1860	Graduated colours symbolised as 2 layers
Streets change D 60-76 POS/NEG	chD6076	Calculation of the change in number of D entries recorded between 1860 and 1876	Graduated colours symbolised as 2 layers
Streets change Trade Range 28-35	chTR2835	Calculation of the change in the range of categories recorded between 1828 and 1835	Graduated colours
Streets change Trade Range 35-42	chTR3542	Calculation of the change in the range of categories recorded between 1835 and 1842	Graduated colours
Streets change Trade Range 42-51	chTR4251	Calculation of the change in the range of categories recorded between 1842 and 1851	Graduated colours
Streets change Trade Range 51-60	chTR5160	Calculation of the change in the range of categories recorded between 1851 and 1860	Graduated colours
Streets change Trade Range 60-76	chTR6076	Calculation of the change in the range of categories recorded between 1860 and 1876	Graduated colours

SUBURBS CHANGE RATIOS

Suburbs change People/Building

This attribute represents the change in the average number of people per building within each suburb. While what the actual values mean may at present be not that well understood, changes in this value are likely to show where changes in status and character are occurring within the landscape. The data would be most useful when used in conjunction with other datasets, such as change in the number of buildings, to identify further whether it was a change in population within the same buildings, or a corresponded to a change in the built character of any particular area.

Suburbs change Buildings/Streets

This attribute was calculated to show if particular suburbs were becoming more crowded or less crowded in general as they grew.

Suburbs change pcManufacturing, Suburbs change pcDealing

These attributes were calculated to show the change in the percentage of MF and D industries in comparison with the overall number of entries, to try and identify whether particular suburbs became more industrial, or less industrial, as the century progressed. As the ratio is based on the overall number of entries, the numbers themselves are comparable across the landscape, however, smaller numbers may produce anomalous results, where a change in one or two trade entries might seem more important than it actually was.

Table of Contents Layer name	Attribute Field Name	Description	Symbology
Suburbs change People/building 41-51 POS/NEG	cPperB4151	Calculation of the change in the average number of people per buildings between 1841 and 1851	Graduated symbols symbolised in 2 layers
Suburbs change People/building 51-61 POS/NEG	cPperB5161	Calculation of the change in the average number of people per buildings between 1851 and 1861	Graduated symbols symbolised in 2 layers
Suburbs change People/building 61-71 POS/NEG	cPperB6171	Calculation of the change in the average number of people per buildings between 1861 and 1871	Graduated symbols symbolised in 2 layers
Suburbs change Buildings/Streets 41-51 POS/NEG	cBperS4151	Calculation of the change (in metres) of the average length of street per building between 1841 and 1851	Graduated symbols symbolised in 2 layers
Suburbs change Buildings/Streets 51-61 POS/NEG	cBperS51611	Calculation of the change (in metres) of the average length of street per building between 1851 and 1861	Graduated symbols symbolised in 2 layers
Suburbs change Buildings/Streets 61-71 POS/NEG	cBperS6171	Calculation of the change (in metres) of the average length of street per building between 1861 and 1871	Graduated symbols symbolised in 2 layers
Suburbs change pcManufacturing 28-35 POS/NEG	chpcMF2835	Calculation of the change in percentage of MF trades in relation to total trades 1828 to 1835	Graduated symbols symbolised in 2 layers
Suburbs change pcManufacturing 35-42 POS/NEG	chpcMF3542	Calculation of the change in percentage of MF trades in relation to total trades 1835 to 1842	Graduated symbols symbolised in 2 layers
Suburbs change pcManufacturing 42-51 POS/NEG	chpcMF4251	Calculation of the change in percentage of MF trades in relation to total trades 1842 to 1851	Graduated symbols symbolised in 2 layers
Suburbs change pcManufacturing 51-60 POS/NEG	chpcMF5160	Calculation of the change in percentage of MF trades in relation to total trades 1851 to 1860	Graduated symbols symbolised in 2 layers
Suburbs change pcManufacturing 60-76 POS/NEG	chpcMF6076	Calculation of the change in percentage of MF trades in relation to total trades 1860 to 1876	Graduated symbols symbolised in 2 layers
Suburbs change	chpcD2835	Calculation of the change in	Graduated symbols

pcDealing 28-35 POS/NEG		percentage of D trades in relation to total trades 1828 to 1835	symbolised in 2 layers
Suburbs change pcDealing 35-42 POS/NEG	chpcD3542	Calculation of the change in percentage of D trades in relation to total trades 1835 to 1842	Graduated symbols symbolised in 2 layers
Suburbs change pcDealing 42-51 POS/NEG	chpcD4251	Calculation of the change in percentage of D trades in relation to total trades 1842 to 1851	Graduated symbols symbolised in 2 layers
Suburbs change pcDealing 51-60 POS/NEG	chpcD5160	Calculation of the change in percentage of D trades in relation to total trades 1851 to 1860	Graduated symbols symbolised in 2 layers
Suburbs change pcDealing 60-76 POS/NEG	chpcD6076	Calculation of the change in percentage of D trades in relation to total trades 1860 to 1876	Graduated symbols symbolised in 2 layers

STREETS CHANGE RATIOS

Streets change Population/Building

This attribute was hoped to be able to map in more detail any changes that were identified at a suburb level in terms of crowding of buildings. While what the number itself means is at present unclear, this value does show the location and the strength of any changes at a street level relating to building crowding.

Streets change Building/Street

This attribute was created in the hope it would highlight areas of potential redevelopment within previously developed areas. While similar to the attribute of a change in a simple count of buildings, by showing the relationship with the length of the street, all streets would be comparable to each other, and the strength of the change could be ascertained.

Streets change pc Manufacturing, Streets change pc Dealing

As with the suburb attribute, these attributes were calculated to show the change in percentage of MF and D entries for each street, to try and identify changes in street character over time, and to map these relative to each other. Again, small numbers of entries are likely to produce anomalous results, however, because it is a change in the percentage of categories recorded, rather than a change in numbers, the patterns caused by the fall in entries due to changes in Trade Directory recording methodology are potentially eliminated. As a numeric value, further work would be needed, cross-checking with other datasets, to identify whether these changes reflected actual change on the ground.

Table of Contents Layer name	Attribute Field Name	Description	Symbology
Streets change Population/Building 41-51 POS/NEG	chPperB4151	Calculation of the change in people per building between 1841 and 1851	Graduated colours symbolised in 2 layers
Streets change	chPperB5161	Calculation of the change in	Graduated colours

Population/Building 51-61 POS/NEG		people per building between 1851 and 1861	symbolised in 2 layers
Streets change Population/Building 61-71 POS/NEG	chPperB6171	Calculation of the change in people per building between 1861 and 1871	Graduated colours symbolised in 2 layers
Streets change Building/Street 41-51 POS/NEG	chBperS4151	Calculation of the change (in metres) of the street length per building between 1841 and 1851	Graduated colours symbolised in 2 layers
Streets change Building/Street 51-61 POS/NEG	chBperS5161	Calculation of the change (in metres) of the street length per building between 1851 and 1861	Graduated colours symbolised in 2 layers
Streets change Building/Street 61-71 POS/NEG	chBperS6171	Calculation of the change (in metres) of the street length per building between 1861 and 1871	Graduated colours symbolised in 2 layers
Streets change pc Manufacturing 28-35 POS/NEG	chpcMF2835	Calculation of the change in percentage of MF trades in relation to total trades 1828 to 1835	Graduated colours symbolised in 2 layers
Streets change pc Manufacturing 35-42 POS/NEG	chpcMF3542	Calculation of the change in percentage of MF trades in relation to total trades 1835 to 1842	Graduated colours symbolised in 2 layers
Streets change pc Manufacturing 42-51 POS/NEG	chpcMF4251	Calculation of the change in percentage of MF trades in relation to total trades 1842 to 1851	Graduated colours symbolised in 2 layers
Streets change pc Manufacturing 51-60 POS/NEG	chpcMF5160	Calculation of the change in percentage of MF trades in relation to total trades 1851 to 1860	Graduated colours symbolised in 2 layers
Streets change pc Manufacturing 60-76 POS/NEG	chpcMF6076	Calculation of the change in percentage of MF trades in relation to total trades 1860 to 1876	Graduated colours symbolised in 2 layers
Streets change pc Dealing 28-35 POS/NEG	chpcD2835	Calculation of the change in percentage of D trades in relation to total trades 1828 to 1835	Graduated colours symbolised in 2 layers
Streets change pc Dealing 35-42 POS/NEG	chpcD3542	Calculation of the change in percentage of D trades in relation to total trades 1835 to 1842	Graduated colours symbolised in 2 layers
Streets change pc Dealing 42-51 POS/NEG	chpcD42515	Calculation of the change in percentage of D trades in relation to total trades 1842 to 1851	Graduated colours symbolised in 2 layers
Streets change pc Dealing 51-60 POS/NEG	chpcD5160	Calculation of the change in percentage of D trades in relation to total trades 1851 to 1860	Graduated colours symbolised in 2 layers
Streets change pc Dealing 60-76 POS/NEG	chpcD6076	Calculation of the change in percentage of D trades in relation to total trades 1860 to 1876	Graduated colours symbolised in 2 layers

MANUFACTURING

A separate group of layers relating to the distribution of selected manufacturing categories was also created within the GIS project.

Suburb MF 2, Suburb MF29 and Suburb MF 4

The counts of selected individual manufacturing categories were mapped for each year of the trade directories, to visualise the number and distribution of the predominant manufacturing industries within the landscape.

Streets MF 4

Ironworking was identified, perhaps unsurprisingly, as the predominant manufacturing category within the study area. A simple count of trade directory entries was mapped for each year, that aimed to identify any patterns in the distribution of this industry within the developed areas. These values can in the future be cross-referenced with other datasets, such as overall numbers of trades, and overall numbers of manufacturers. This particular type of industry was relatively ubiquitous, however, there are patterns in the data that show that some areas had more of this type of manufacturing than others.

Streets Change MF 4

This attribute was mapped in order to try and identify any patterns in the changes in distribution of this industry within the developed areas. Again, it is sensitive to changes in recording methodology (as between 1851 and 1860), although could be cross-referenced with other values and datasets.

Streets –Blacksmiths and Wheel Wrights; Chain Anchor Trace; Nail; Fenders and Fireirons; Iron Founders

As there are many different types of iron working within the MF 4 category, simple counts of the most common individual types were also mapped in the GIS, to identify patterns of count and distribution of particular types of iron working manufacturing.

This was one of the most successful maps, as it shows clearly that while MF4 itself was ubiquitous, the actual types of ironworking were very much localised within particular areas.

Table of Contents Layer name	Attribute Field Name	Description	Symbology
Suburb MF 2 1828	MF_2_1828	Count of all trade directory entries for each suburb allocated to MF2 for this year	Proportional symbols
Suburb MF 2 1835	MF_2_1835	Count of all trade directory entries for each suburb allocated to MF2 for this year	Proportional symbols
Suburb MF 2 1842	MF_2_1842	Count of all trade directory entries for each suburb allocated to MF2 for this	Proportional symbols

		year	
Suburb MF 2 1851	MF_2_1851	Count of all trade directory entries for each suburb allocated to MF2 for this year	Proportional symbols
Suburb MF 2 1860	MF_2_1860	Count of all trade directory entries for each suburb allocated to MF2 for this year	Proportional symbols
Suburb MF 2 1876	MF_2_1876	Count of all trade directory entries for each suburb allocated to MF2 for this year	Proportional symbols
Suburb MF 29 1828	MF_29_1828	Count of all trade directory entries for each suburb allocated to MF29 for this year	Proportional symbols
Suburb MF 29 1835	MF_29_1835	Count of all trade directory entries for each suburb allocated to MF29 for this year	Proportional symbols
Suburb MF 29 1842	MF_29_1842	Count of all trade directory entries for each suburb allocated to MF29 for this year	Proportional symbols
Suburb MF 29 1851	MF_29_1851	Count of all trade directory entries for each suburb allocated to MF29 for this year	Proportional symbols
Suburb MF 29 1860	MF_29_1860	Count of all trade directory entries for each suburb allocated to MF29 for this year	Proportional symbols
Suburb MF 29 1876	MF_29_1876	Count of all trade directory entries for each suburb allocated to MF29 for this year	Proportional symbols
Suburb MF 4 1828	MF_4_1828	Count of all trade directory entries for each suburb allocated to MF4 for this year	Proportional symbols
Suburb MF 4 1835	MF_4_1835	Count of all trade directory entries for each suburb allocated to MF4 for this year	Proportional symbols
Suburb MF 4 1842	MF_4_1842	Count of all trade directory entries for each suburb allocated to MF4 for this year	Proportional symbols
Suburb MF 4 1851	MF_4_1851	Count of all trade directory entries for each suburb allocated to MF4 for this year	Proportional symbols
Suburb MF 4 1860	MF_4_1860	Count of all trade directory entries for each suburb allocated to MF4 for this year	Proportional symbols
Suburb MF 4 1876	MF_4_1876	Count of all trade directory entries for each suburb allocated to MF4 for this year	Proportional symbols
Streets MF4 1828	MF1828_4	Count of all trade directory entries for each street allocated to MF4 for this year	Proportional symbols
Streets MF4 1835	MF1835_4	Count of all trade directory entries for each street allocated to MF4 for this year	Proportional symbols
Streets MF4 1842	MF1842_4	Count of all trade directory entries for each street allocated to MF4 for this year	Proportional symbols
Streets MF4 1851	MF1851_4	Count of all trade directory entries for	Proportional

		each street allocated to MF4 for this year	symbols
Streets MF4 1860	MF1860_4	Count of all trade directory entries for each street allocated to MF4 for this year	Proportional symbols
Streets MF4 1876	MF1876_4	Count of all trade directory entries for each street allocated to MF 4 for this year	Proportional symbols
Streets Change MF4 28-35	ChMF4_2835	Change in the number of entries allocated to MF4 between 1828 and 1835	Graduated colours
Streets Change MF4 35-42	ChMF4_3542	Change in the number of entries allocated to MF4 between 1835 and 1842	Graduated colours
Streets Change MF4 42-51	ChMF4_4251	Change in the number of entries allocated to MF4 between 1842 and 1851	Graduated colours
Streets Change MF4 51-60	ChMF4_5160	Change in the number of entries allocated to MF4 between 1851 and 1860	Graduated colours
Streets Change MF4 60-76	ChMF4_6076	Change in the number of entries allocated to MF4 between 1860 and 1876	Graduated colours
Streets Blacksmiths and Wheel Wrights 1828	BAWW1828	Count of entries recorded as Blacksmiths and Wheel Wrights in 1828	Proportional symbols
Streets Blacksmiths and Wheel Wrights 1835	BAWW1835	Count of entries recorded as Blacksmiths and Wheel Wrights in 1835	Proportional symbols
Streets Blacksmiths and Wheel Wrights 1842	BAWW1842	Count of entries recorded as Blacksmiths and Wheel Wrights in 1842	Proportional symbols
Streets Blacksmiths and Wheel Wrights 1851	BAWW1851	Count of entries recorded as Blacksmiths and Wheel Wrights in 1851	Proportional symbols
Streets Blacksmiths and Wheel Wrights 1876	BAWW1876	Count of entries recorded as Blacksmiths and Wheel Wrights in 1876	Proportional symbols
Streets Chain Anchor Trace Nail 1828	CATN1828	Count of entries recorded as Chain Anchor Trace Nails in 1828	Proportional symbols
Streets Chain Anchor Trace Nail 1835	CATN1835	Count of entries recorded as Chain Anchor Trace Nails in 1835	Proportional symbols
Streets Chain Anchor Trace Nail 1842	CATN1842	Count of entries recorded as Chain Anchor Trace Nails in 1842	Proportional symbols
Streets Chain Anchor Trace Nail 1851	CATN1851	Count of entries recorded as Chain Anchor Trace Nails in 1851	Proportional symbols
Streets Chain Anchor Trace Nail 1876	CATN1876	Count of entries recorded as Chain Anchor Trace Nails in 1876	Proportional symbols
Streets Fenders and Fireirons 1828	FAF1828	Count of entries recorded as Fenders and Fireirons in 1828	Proportional symbols
Streets Fenders and	FAF1835	Count of entries recorded as Fenders	Proportional

Fireirons 1835		and Fireirons in 1835	symbols
Streets Fenders and Fireirons 1842	FAF1842	Count of entries recorded as Fenders and Fireirons in 1842	Proportional symbols
Streets Fenders and Fireirons 1851	FAF1851	Count of entries recorded as Fenders and Fireirons in 1851	Proportional symbols
Streets Fenders and Fireirons 1876	FAF1876	Count of entries recorded as Fenders and Fireirons in 1876	Proportional symbols
Streets Iron Founders etc 1828	IFETC1828	Count of entries recorded as Iron Founders etc in 1828	Proportional symbols
Streets Iron Founders etc 1835	IFETC1835	Count of entries recorded as Iron Founders etc in 1835	Proportional symbols
Streets Iron Founders etc 1842	IFETC1842	Count of entries recorded as Iron Founders etc in 1842	Proportional symbols
Streets Iron Founders etc 1851	IFETC1851	Count of entries recorded as Iron Founders etc in 1851	Proportional symbols
Streets Iron Founders etc 1876	IFETC1876	Count of entries recorded as Iron Founders etc in 1876	Proportional symbols

RESIDENTS

Table of Contents Layer name	Attribute Field Name	Description	Symbology
Streets Residential 1835	EN1835	Count of residents recorded in each street in 1835	Proportional symbols
Streets Residential 1851	EN1851	Count of residents recorded in each street in 1851	Proportional symbols
Streets Residential 1860	EN1860	Count of residents recorded in each street in 1860	Proportional symbols
Streets Residential 1876	EN1876	Count of residents recorded in each street in 1876	Proportional symbols