

The male occupational structure of Northumberland, 1762–
1871:
A preliminary report

*Part of an ESRC-funded project:
Male occupational change and economic growth in England 1750–1850*

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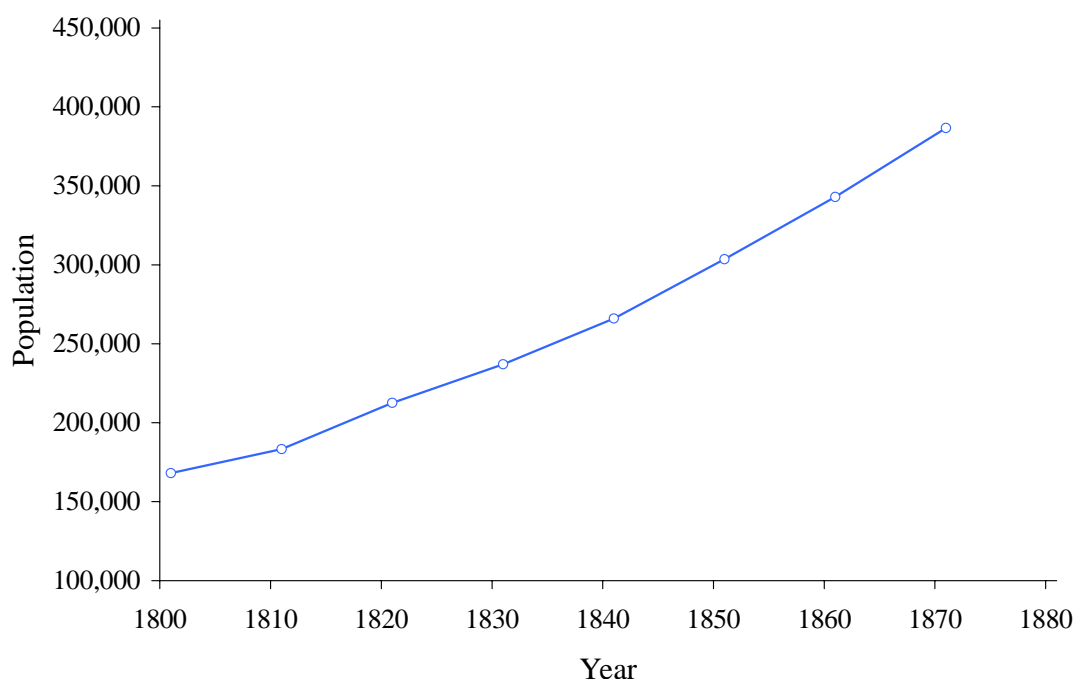
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Note: this is a preliminary report rather than a completed paper. Comments would be very welcome (to Peter Kitson: pmk24@hermes.cam.ac.uk) but please do not cite or use this material without permission

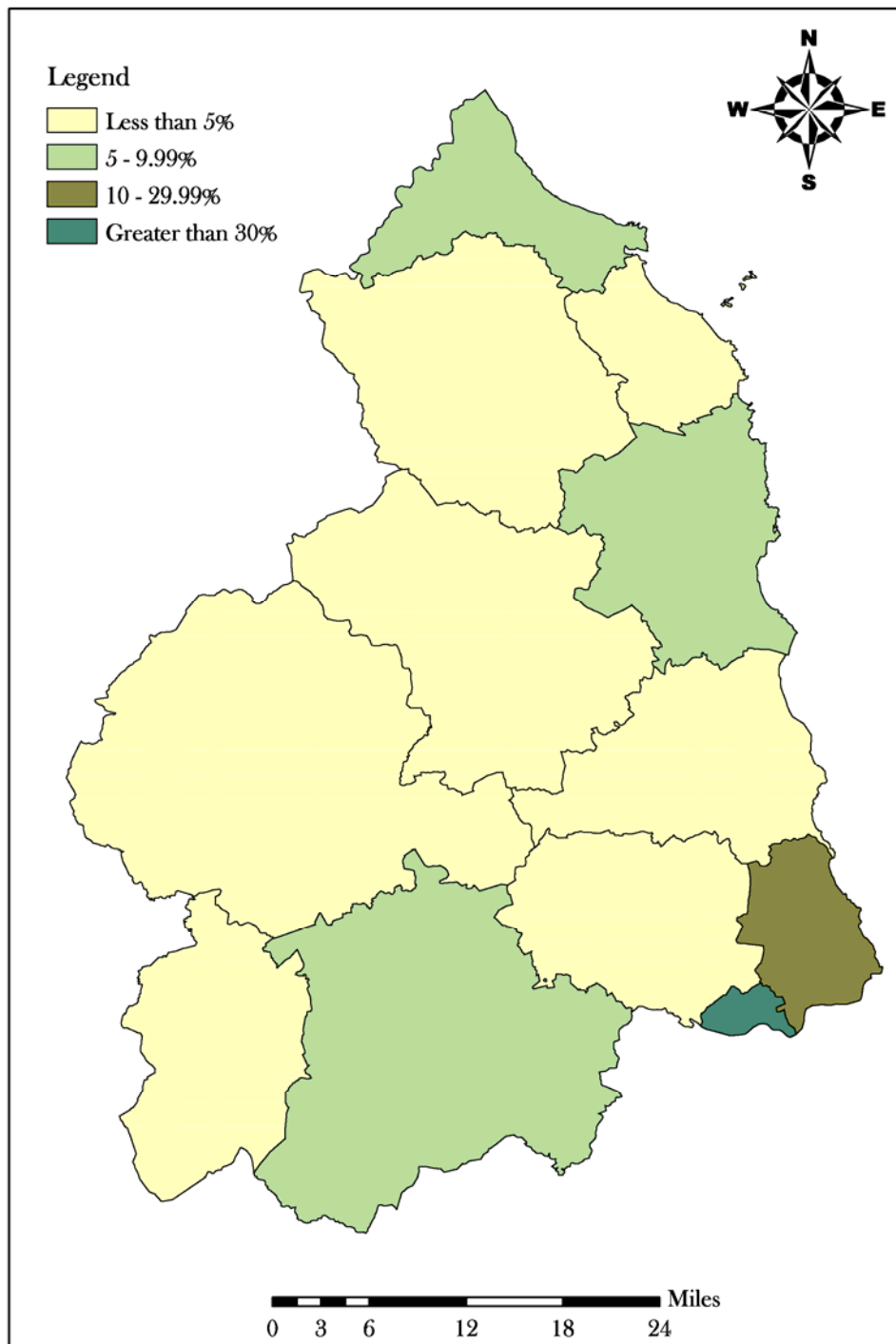
This paper presents a preliminary overview of changes in the occupational structure of Northumberland between 1762 and 1871. It discusses the population trends in the county during the nineteenth century, and the sources available for studying its changing occupational structure from the mid-eighteenth to the late nineteenth centuries. Alterations in the distribution of adult men between the primary, secondary and tertiary sectors of the economy for the county, as well as the important towns of Newcastle upon Tyne and Tynemouth, will then be analysed and discussed. An examination of changes in two specific sectors, namely mining and textiles, will follow. It will conclude by offering some tentative conclusions concerning the changing structure of the county's economy during the Industrial Revolution.

Figure 1: *The population of Northumberland, 1801-1871*



The population of the county grew rapidly over the course of the eighteenth century. As figure 1 above demonstrates, between 1801 and 1871 numbers more than doubled from 170,000 in 1801 to nearly 400,000 by 1871. Additionally, the majority of the population growth was taking place in and around Newcastle. Figure 2 below shows the proportion of all population growth during the early nineteenth century in Northumberland taking place in each registration district. Between 1811 and 1851, seventy-two per cent of all population growth took place in the registration districts of Newcastle and Tynemouth. These areas, as we shall see, became increasingly oriented towards the secondary sector of economic activity and, in the registration district of Tynemouth, coal mining. On the other hand, demographic growth in the rest of Northumberland was fairly weak.

Figure 2: *The percentage of all population growth in Northumberland 1811–1851 taking place in each registration district*



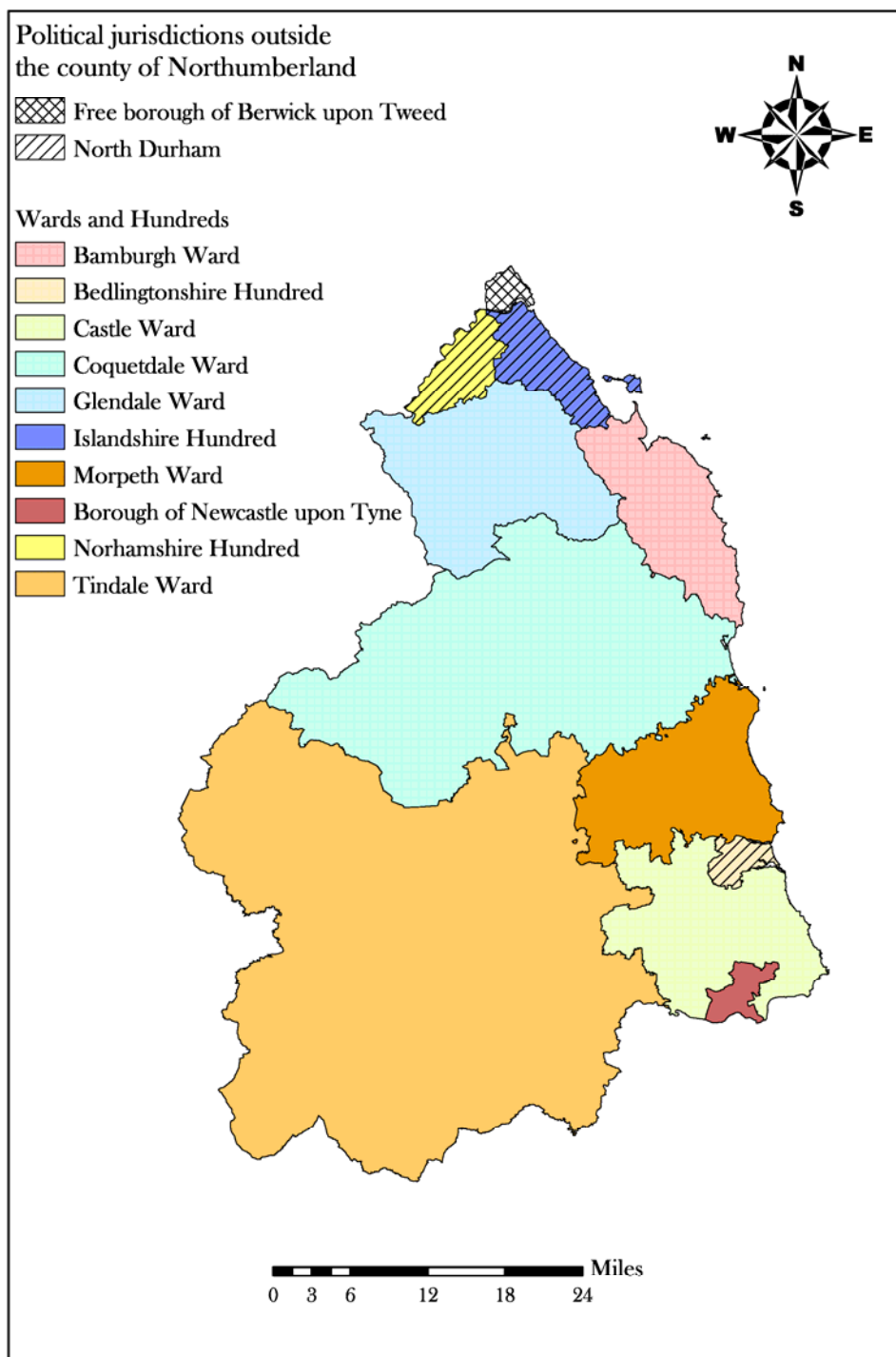
Three principle sources are available for the reconstruction of the changing occupational structure of the county from the mid-eighteenth century onwards. Firstly,

a Militia List compiled for the ancient county of Northumberland in 1762 survives. This source provides the names and, crucially, the occupations of all men aged between 18 and 45, and in total lists 14,000 individuals. Secondly, as a result of the passage of Rose's Act in 1812, the occupation of the father at the baptism of his legitimate children was invariably recorded in Anglican ecclesiastical registers from 1 January 1813. This occupational information has been abstracted from every Anglican register in the modern county between 1813 and 1820, providing a total of over 36,000 occupational descriptors. Finally, the printed volumes of various nineteenth century censuses provide data on the occupations of men over the age of 20 from the mid-nineteenth century onwards. Here, occupational information from the 1841, 1851 and 1871 printed census volumes have been utilised.

Unfortunately, these sources do not relate to the same geographical entity. The ancient county of Northumberland differs significantly from the modern one, and the early nineteenth century saw the abolition of a series of medieval oddities. Figure 3 below depicts the administrative geography of the county around 1800. In 1836, the free borough of Berwick upon Tweed was made part of the county, while in 1844 the hundreds of Northhamshire, Islandshire and Bedlingtonshire, collectively referred to as North Durham, were transferred from County Durham to Northumberland. These areas were omitted from the 1762 Militia List, and so this source does not cover the whole of the modern county. Unfortunately, the Militia List is also imperfect for Newcastle upon Tyne. Seaman and fisherman were excluded from eighteenth century militia legislation on the grounds that their frequent absence at sea would not make the suitable for militia service, and as a consequence these occupations are seriously under-enumerated by the militia list. At this stage, therefore, it is not possible to generate a continuous series of statistics demonstrating occupational change for the whole of the modern county during the industrial revolution.¹ However, the availability of occupational information at the spatially disaggregated levels in 1813–20 (at the level of the parish) and 1851 (at registration district level) ensures that it is possible to use the parish registers and the 1851 census to study the area reliably covered by the Militia List. All the county-level analysis that follows will be based upon the comparison of two distinct time series. One will cover the whole county from 1813–20 through to 1871. The second will track those parts of the county covered reliably covered by the militia list from 1762 through to 1851.

¹ In future, it is hoped to take advantage of the extensive occupational recording in the parish registers of Newcastle upon Tyne during the eighteenth century, as well as the recording of occupational information in all diocese of Durham registers after 1798, to remedy these lacunae in the data.

Figure 3: *The administrative geography of Northumberland, c.1800*



Through the use of these sources in harness with the PST occupational coding scheme devised by Tony Wrigley, it is possible to study change over time in the occupational structure of the county. Table 1 below provides an overview of the

occupational structure for the whole of modern Northumberland between 1813–20 and 1871. The table shows that for the whole of Northumberland, there was a progressive decline in the size of the primary sector between 1813–20 and 1871, while there was sustained growth within the secondary sector; by 1851, this sector was the leading sector of economic activity. The tertiary sector, by contrast, was relatively stable over most of the nineteenth century.

Table 1: *Adult male employment in the primary, secondary and tertiary sectors in Northumberland, 1813–20 to 1871*

Sector of economic activity		1813–20 PRs	1851 Census	1871 Census
Primary	<i>Agriculture, forestry, fishing</i>	24.9	24.0	16.6
	<i>Mining</i>	14.2	12.1	13.4
	Total	39.0	36.1	30.0
Secondary		37.8	41.2	44.1
Tertiary		23.2	22.6	25.8

Table 2 below shows how the occupational structure of the parts of Northumberland covered by the 1762 Militia List changed in the ninety or so years to 1851. It is clear that there had been rapid change in the primary sector. The agricultural, forestry and fishing sector had declined markedly, while the mining sector had doubled in size. It should however be noted that parish registers provide limited coverage of agricultural servants, who were very common in this county and had a propensity to be unmarried.² It is therefore entirely possible that the figure given for the agricultural, forestry and fishing sector for 1813–20 is an underestimate of its true size. Meanwhile, the tertiary sector had more than doubled its size between 1762 and 1813–20. After this point, there was relatively little change between the 1813–20 parish register abstractions and the 1851 Census.

Table 2: *Adult male employment in the primary, secondary and tertiary sectors in Northumberland excluding Newcastle, Berwick and North Durham, 1813–20 to 1871*

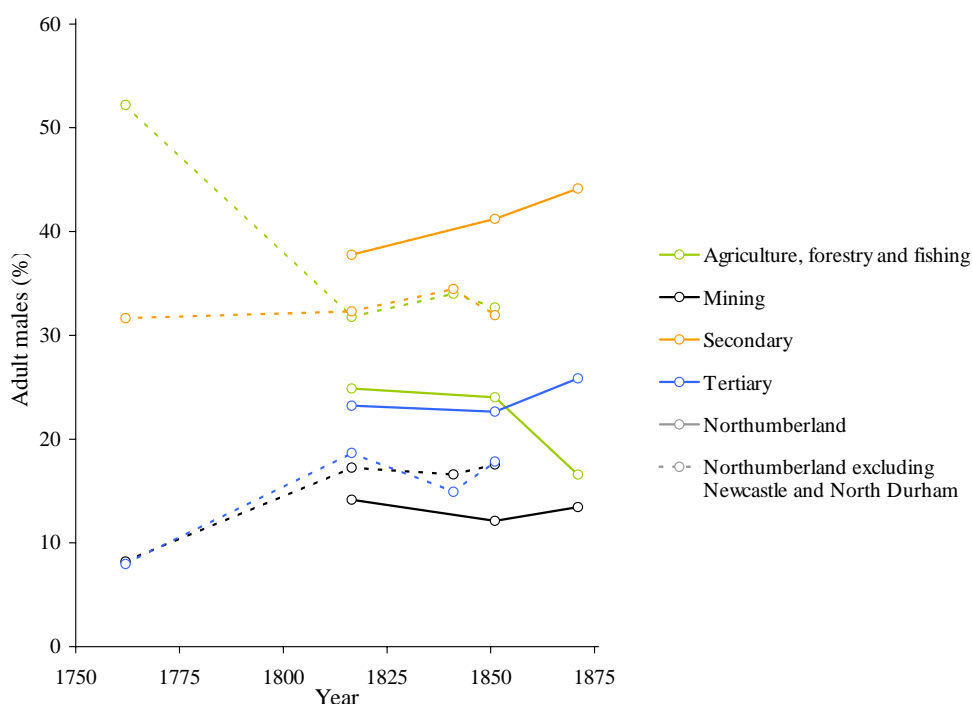
Sector of economic activity		1762 ML	1813–20 PRs	1841 Census	1851 Census
Primary	<i>Agriculture, forestry, fishing</i>	52.2	31.8	34.0	32.7
	<i>Mining</i>	8.2	17.2	16.6	17.6
	Total	60.4	49.0	50.6	50.2
Secondary		31.6	32.3	34.5	31.9

² However, married agricultural servants were relatively common in Northumberland, which may serve to mitigate this problem.

Tertiary	8.0	18.7	14.9	17.8
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The data in both these tables is summarized in figure 4 below, and provides a comparison between these two series. The solid lines represent the data for the whole county, while the broken lines show the changing occupational structure of the areas covered by the 1762 Militia List. The declining importance of agriculture, as well as the development of the mining sector, is nicely highlighted. It becomes immediately clear that the presence of Newcastle makes a marked difference in the size of the secondary and tertiary sectors for the whole county, while mining had become relatively more important in those parts of the county outside Newcastle by 1851. Overall, it becomes clear that the general stability of the mining sector was not enough to compensate for the declining importance of the rest of the primary sector.

Figure 4: Adult male employment in the primary, secondary and tertiary sectors in



Northumberland, 1762 to 1871

The next series of tables explore occupational change in both the secondary and tertiary sectors in Northumberland. Table 3 shows how various elements of the former sector changed in the whole of modern Northumberland during the nineteenth century. Traditional industries such as shoemaking, clothing and textiles either stagnated or went into decline. On the other hand, engineering, iron and steel manufacture and (from 1851) shipbuilding all exhibited growth over the course of this period. The shipbuilding sector exhibits some interesting patterns. Its proportionate share of the adult male workforce fell markedly between 1813-20 and 1851, but then

grew sharply again by 1871. This could be connected with the demand for commercial vessels created by the preoccupation of shipbuilding capacity elsewhere in England on government orders during the Napoleonic Wars. Following the cessation of hostilities, this sector languished until the development of iron and steel shipbuilding on the Tyne in the second half of the nineteenth century.

Table 3: *Adult male employment in the secondary sector in Northumberland, 1813–20 to 1871*

Sector of economic activity	Proportion of adult males (%)		
	1813–20 PRs	1851 Census	1871 Census
Construction	7.49	7.80	8.88
Food and Drink	2.97	3.15	2.71
Footware	4.07	3.82	2.77
Clothing	2.47	2.79	2.22
Textiles	1.63	0.89	0.31
Shipbuilding	2.31	1.42	2.94
Engineering	1.18	1.97	4.22
Iron and Steel Manufacture	3.56	5.17	5.16

Less dramatic changes are apparent in those parts of the county covered by the 1762 Militia List in table 4. Shoemaking became more important during the subsequent ninety years; however, the clothing sector contracted while the manufacture of textiles went into rapid decline. The rapid growth and development of Tynemouth underlies the growth of the shipbuilding and engineering sectors of the economy in this part of Northumberland over this period.

Table 4: *Adult male employment in the secondary sector in Northumberland excluding Newcastle, Berwick and North Durham, 1762–1851*

Sector of economic activity	Proportion of adult males (%)			
	1762 ML	1813–20 PRs	1841 Census	1851 Census
Construction	5.97	8.03	7.24	6.49
Food and Drink	3.50	2.60	2.60	2.45
Footware	2.60	3.54	3.77	3.36
Clothing	3.73	2.37	2.20	2.26
Textiles	5.16	1.47	1.05	0.69
Shipbuilding	0.05	2.32	1.33	1.46
Engineering	0.25	1.00	1.60	0.90

Iron and Steel Manufacture	3.29	3.40	4.24	4.56
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Tables 5 and 6 below show how the various components of the tertiary sector changed during the period under study. The former tabulates data for the whole county from 1813-20 to 1871. Perhaps surprisingly, the transport sector seems to have lacked dynamism during the nineteenth century in the whole county of Northumberland. However, there was rapid growth in both the dealing and retailing sectors, while the professions and local and central government grew, albeit at a less spectacular rate.

Table 5: *Adult male employment in the tertiary sector in Northumberland, 1813-20 to 1871*

Sector of economic activity	Proportion of adult males (%)		
	1813-20 PRs	1851 Census	1871 Census
Transport	14.21	10.14	12.53
Dealing	1.18	2.00	2.48
Retailing	1.34	2.85	3.42
Professions	1.38	2.10	2.01
Government	0.72	1.11	1.13

Table 6 reports equivalent figures for the tertiary sector through to 1851 for the parts of the county covered by the militia list of 1762. The most striking feature is the meteoric growth of the transportation sector by 1813-20, although this figure does fall between this point and 1841; a pattern also apparent in table 6. Steady growth in both the dealing, retailing, professional and governmental sectors are also apparent, though not quite to the same extent as for the whole county.

Table 6: *Adult male employment in the tertiary sector in Northumberland excluding Newcastle, Berwick and North Durham, 1762 to 1851*

Sector of economic activity	Proportion of adult males (%)			
	1762 ML	1813-20 PRs	1841 Census	1851 Census
Transport	2.20	12.86	6.12	8.77
Dealing	0.73	0.67	1.06	1.15
Retailing	0.50	1.01	1.79	1.92
Professions	0.85	1.19	1.86	1.94
Government	0.24	0.51	0.97	0.90

The 1841 and 1851 Census also published occupational data for a small number of towns in Northumberland. Figures are available for both Newcastle and Tynemouth from both these dates, and they may also be compared with the parish register data abstracted for both these places between 1813 and 1820. Table 7 reports

changes in the primary, secondary and tertiary sectors during the first half of the nineteenth century. In both towns, there were marked declines in the primary sector until 1851, driven predominantly by the relative decline of the mining industry. Though there are some marked fluctuations in the secondary and tertiary sectors between 1841 and 1851, it would appear that the tertiary sector in both Newcastle and Tynemouth were relatively stable, while the secondary sector was steadily growing.³

Table 7: *Adult male employment in the primary, secondary and tertiary sectors in Newcastle and Tynemouth, 1813–20 to 1851*

Sector of economic activity		Newcastle			Tynemouth		
		1813– 20 PRs	1841 Census	1851 Census	1813– 20 PRs	1841 Census	1851 Census
Primary	Agriculture, forestry, fishing	4.9	3.7	3.0	3.8	8.6	5.2
	Mining	7.9	1.6	2.3	15.6	11.9	6.6
	<i>Total</i>	12.8	5.3	5.4	19.4	20.5	11.8
Secondary		53.0	66.1	61.9	34.5	46.0	40.9
Tertiary		34.2	28.6	32.7	46.1	33.5	47.3

Table 8: *Adult male employment in the secondary sector in Newcastle and Tynemouth, 1813–20 to 1851*

Sector of economic activity	Proportion of adult males (%)					
	<i>Newcastle upon Tyne</i>			<i>Tynemouth</i>		
	1813–20 PRs	1841 Census	1851 Census	1813–20 PRs	1841 Census	1851 Census
Construction	9.46	11.00	10.72	4.75	7.04	6.78
Food and Drink	3.77	3.73	4.48	2.64	4.92	3.44
Footware	5.37	6.65	4.76	3.75	5.13	4.14
Clothing	2.83	7.11	3.99	2.80	3.28	3.05
Textiles	1.94	2.60	1.34	0.20	0.61	1.06
Shipbuilding	2.47	1.19	1.48	7.88	4.71	5.95
Engineering	1.81	2.38	4.31	1.09	2.19	1.09
Iron and Steel Manufacture	3.65	4.60	6.32	2.04	5.03	4.60

³ The fluctuations in the secondary and tertiary sectors appear to be connected with different approaches to the issue of general labourers and dock workers. It would appear that the 1841 Census tended to regard the latter as general labourers, and would thus be classified in the secondary sector. By 1851, such workers were classified differently, and under the PST scheme are allocated to the tertiary sector.

Table 8 above reports some of the key changes in the secondary sectors of these two towns between 1813–20 and 1851. In both, engineering and the manufacture of iron and steel are the fastest growing sectors. These segments of the protean heavy industrial sector, for which Tyneside would become renowned by the late nineteenth century, account for the majority of growth in the secondary sector during this period. The small yet robust textile sector in these two towns was geared towards the production of sailcloth, which ensured its survival while the textile sector elsewhere in the county declined markedly.

Table 9 reports changes in the tertiary sector in both Newcastle and Tynemouth during the first half of the nineteenth century. The fluctuations in the tertiary sector between 1841 and 1851 that were noted earlier appear to have been driven predominantly by changes in the size of the transportation sector. Elsewhere, the patterns identified for the whole county are repeated, as the dealing, retailing, professional and governmental elements of the tertiary sector grew steadily through to 1851.

Table 9: *Adult male employment in the tertiary sector in Newcastle and Tynemouth, 1813–20 to 1851*

Sector of economic activity	Proportion of adult males (%)					
	Newcastle upon Tyne			Tynemouth		
	1813–20 PRs	1841 Census	1851 Census	1813–20 PRs	1841 Census	1851 Census
Transport	17.55	6.33	13.87	41.19	19.78	32.17
Dealing	2.74	3.58	3.90	0.36	1.77	1.88
Retailing	2.35	4.73	4.52	1.00	3.50	3.41
Professions	1.66	2.54	2.50	0.82	1.96	1.82
Government	1.18	1.53	1.46	0.60	1.61	2.06

The evidence so far produced by this paper suggests that the changing occupational structure of the county was driven by the growth of secondary sector on the north bank of the Tyne, harnessed to the rapid growth of population in this area. These changes to some extent mirror the patterns found for England as a whole, whereby regions possessing stable occupational structures and significant differentials in their rates of population growth rate drove occupational change at the aggregate level. However, the part of Northumberland that was growing fastest was also experiencing sustained growth in the secondary sector, reinforcing the county-level growth of the secondary sector.

The final part of this paper will turn to the analysis of a pair of specific economic sectors, commencing with mining. This, in turn, was divided into two

separate sectors. Coal measures were found throughout the county, but the costs of transporting such a bulky commodity ensured that only seams in close proximity to waterborne transport could be exploited on a commercial basis. In practice, this meant the southeastern segment of the county, along the banks of the Tyne. Additionally, lead mining was locally important in many parts of the southwestern part of the county, in the area south of Hexham.

Figure 5: *The changing absolute and relative size of the Mining sector in Northumberland, 1762 to 1871*

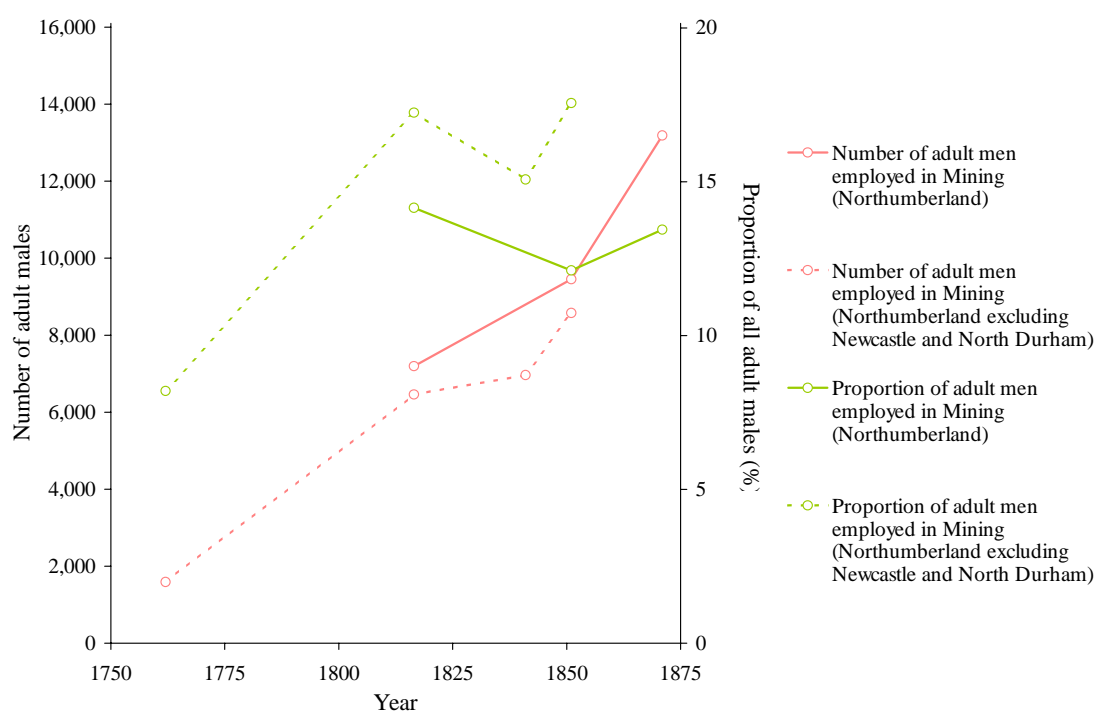


Figure 5 above shows how, as both in absolute and proportionate size, the mining sector overall grew steadily in the areas of the county covered by the militia list through to 1813–20, though after this point growth in the relative size of the sector does not appear to have been sustained. Mining was a smaller fraction of the male workforce in the county as a whole, reflecting the exhaustion of coal seams close to the Tyne, and the development of technologies, such as steam power and waggonways, allowing the economic extraction of coal from more geographically and geologically problematic areas further away from the Tyne. During the nineteenth century, the relative size of the mining sector appears to have declined slightly, though with some fluctuation between censuses. While this sector did continue to create new employment opportunities during the nineteenth century, it does not appear to have done so at quite the same pace at which male adult workforce grew. It is also clear that the importance of Newcastle as a coal mining centre had diminished markedly by 1851, since the difference between the size of the workforce engaged in mining in the county

excluding Newcastle, North Durham and Berwick appears to be gaining on that for Northumberland as a whole by this date.

It is possible to use the occupational data from the 1762 Militia List, the 1813–20 parish register abstractions and the 1851 occupational data at the level of the registration district to trace the changing geography of coal mining, and figures 6 through to 8 on the following three pages do so. The first map shows the distribution of mining in the 1762 Militia List. Mining was widely spread throughout the county, though parishes in the immediate hinterland of Newcastle did possess more important local mining sectors. The concentration of green in the south–western corner of the county reflected the local importance of lead mining in Hexhamshire; indeed, the only parts of Northumberland where miners constituted more than fifty per cent of the occupational structure lay in these areas of lead extraction.

By 1813–20, the importance of coal mining in the parishes immediately surrounding Newcastle had grown considerably, as figure 7 shows. Certainly, lead mining in the south–western corner of the county remained important; however, rapid population growth was taking place in the south–eastern portion of the county, along the banks of the Tyne, ensuring that coal mining as both a share of all mining industry and in terms of total numbers of men employed was growing rapidly. The inset map in the bottom right–hand corner of figure 7 shows the network of waggonways that had been constructed by 1812. It becomes immediately apparent from this diagram that this linked up parishes with a heavy involvement in the coal industry by this point with access to the river.

Finally, figure 8 shows how the geography of mining had become strongly concentrated in the registration district of Tynemouth, in the far south–eastern corner of the county, by 1851. This registration district alone accounted for nearly sixty per cent of the total number of men employed in mining in the entire county by this time. Moreover, as table 7 showed, coal mining had become less important within the town of Tynemouth itself as the nineteenth century progressed. Although mining was still significant elsewhere, a combination of rapid population growth and the expansion of the coal mining sector in this area of the county ensured that this region had come to dominate the coal industry on the north side of the Tyne.

Figure 6: *The proportion of adult males employed in mining by parish in the 1762 Militia List of Northumberland*

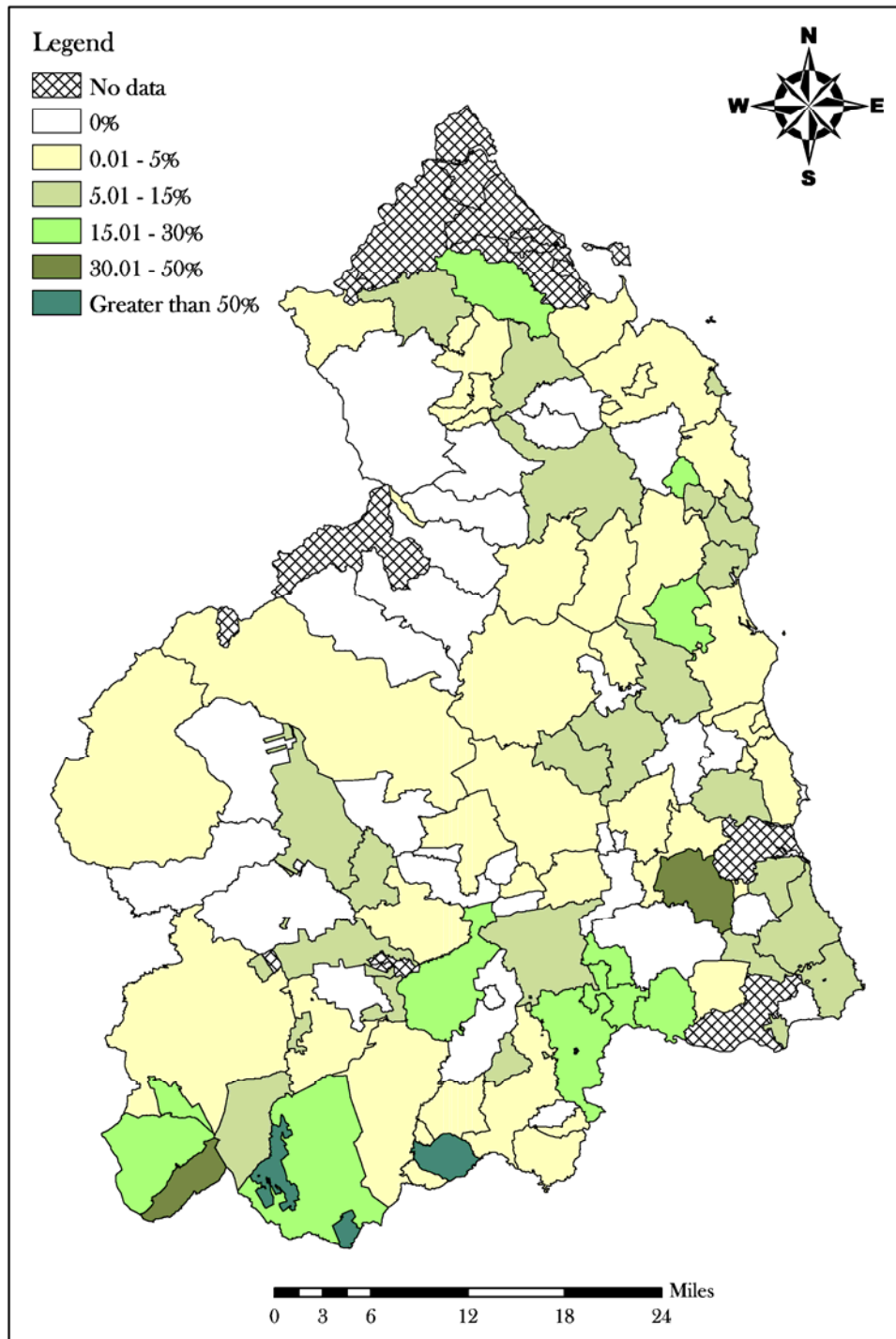


Figure 7: *The proportion of adult males employed in mining by parish in Northumberland from 1813–20 parish register abstractions*

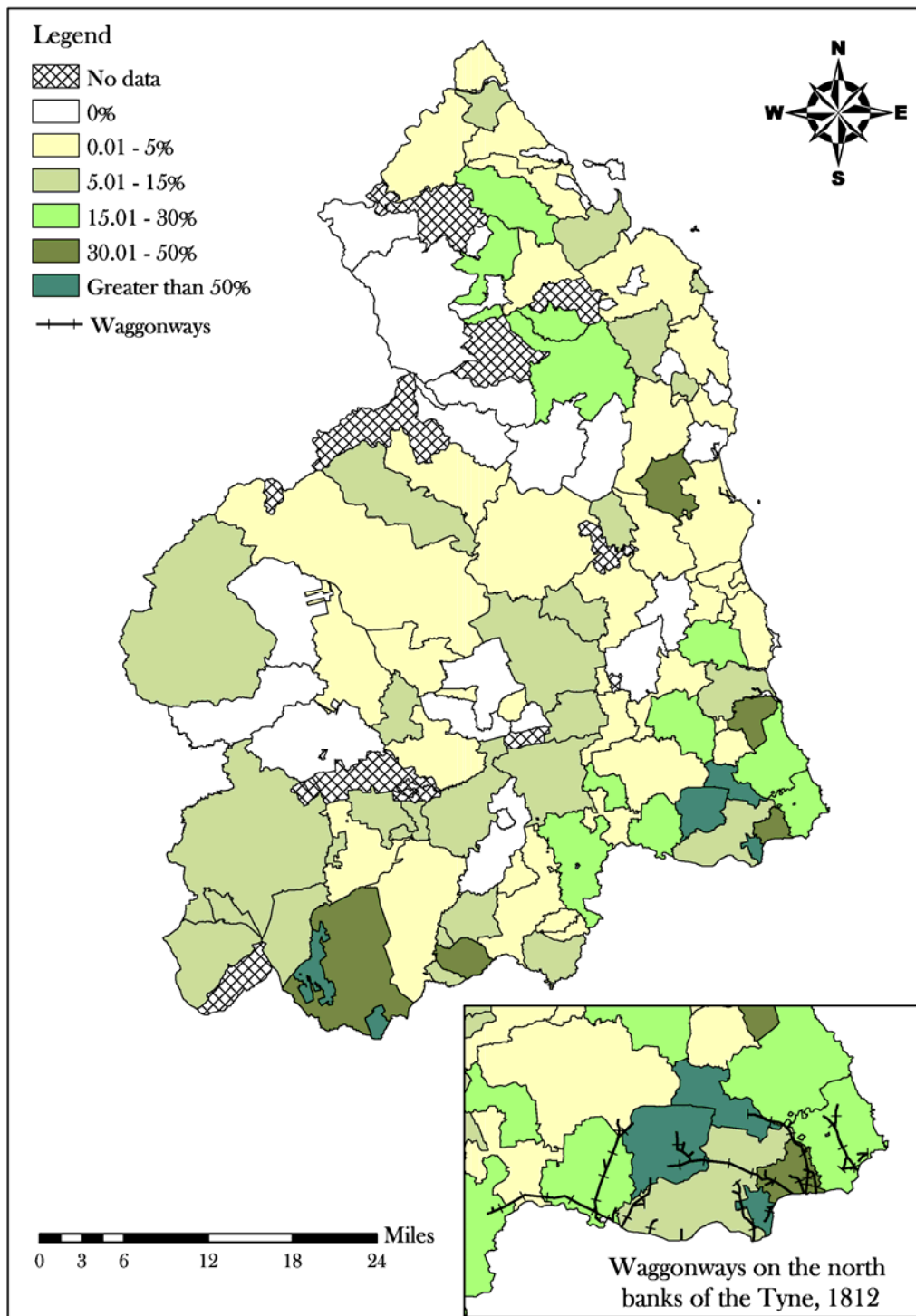
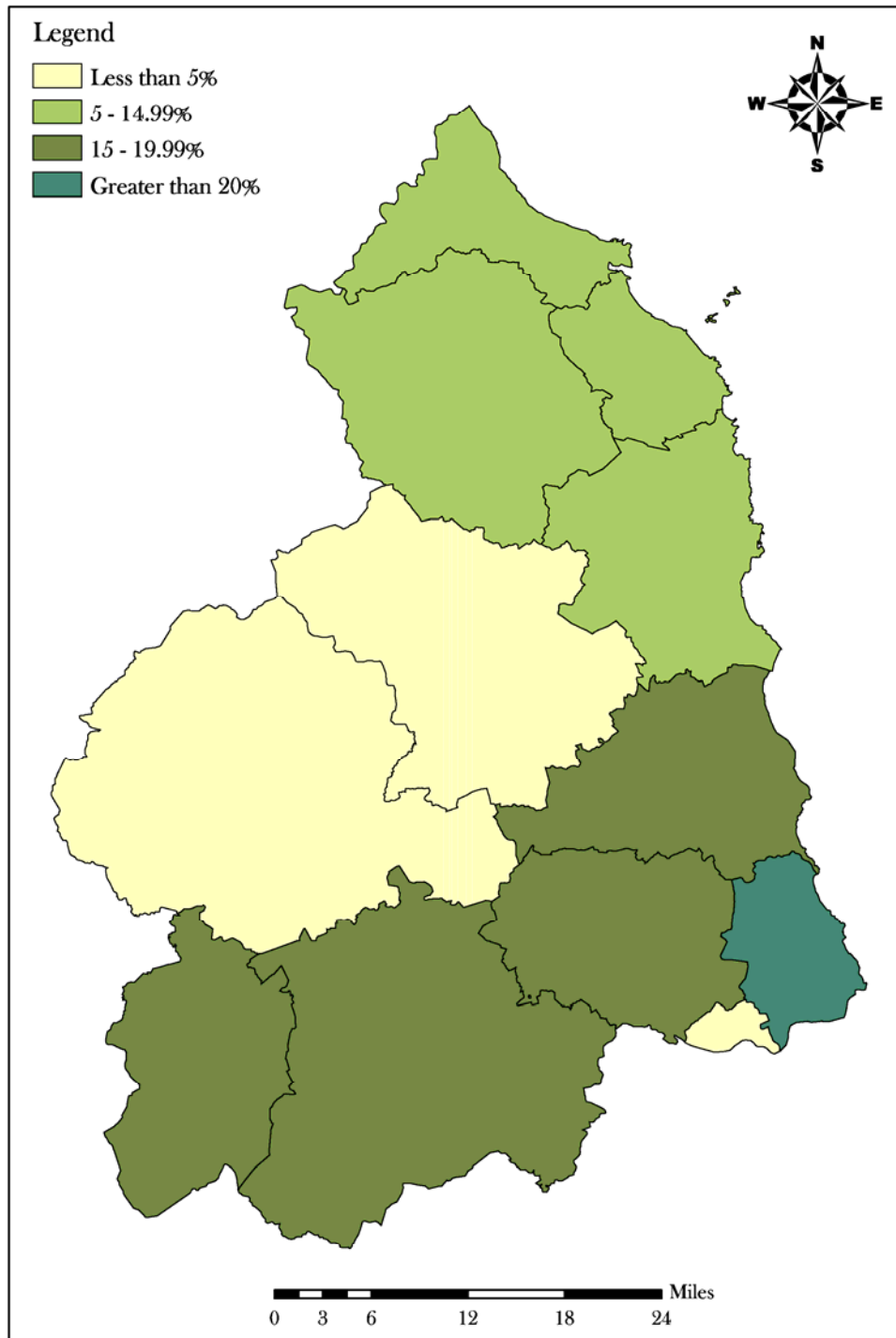
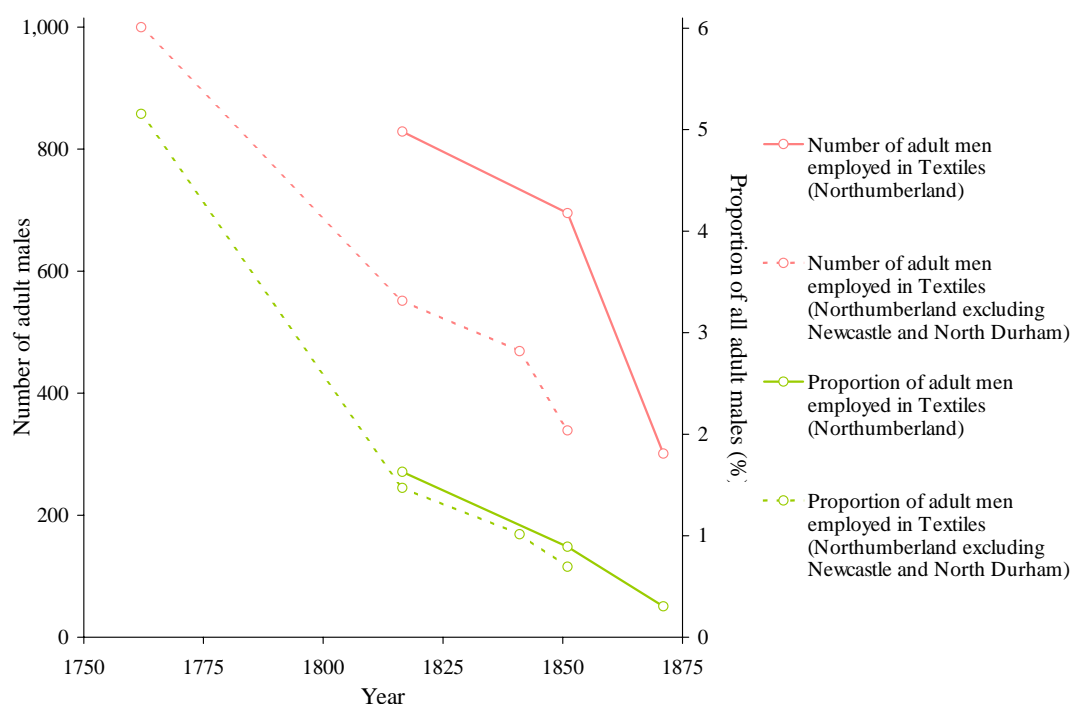


Figure 8: *The proportion of adult males employed in mining by registration district in Northumberland, 1851*



In contrast to the coal mining industry, the textile industry of eighteenth-century Northumberland did not possess a bright future. Figure 9 below illustrates how the absolute number as well as the proportion of all adult men changed over time. In the parts of the county covered by the militia list in 1762, nearly five per cent of all men listed were employed in the production of woollen cloth. The geography of the county, providing ready supplies of waterpower as well as a plentiful supply of sheep, provided a series of natural advantages. However, this sector declined rapidly from this point onwards, mirroring patterns found elsewhere in England during the closing decades of the eighteenth century. By 1813–20, the textiles sector accounted for just 1.5 per cent of the occupational structure, while the estimated textile workforce had also declined markedly.

Figure 9: *The changing absolute and relative size of the Textiles sector in Northumberland, 1762 to 1871*



By 1851, workers in textiles had all but vanished from the areas covered by the militia list of 1762. By this point, there was less than one hundred men aged twenty and above who were engaged in the production of woollen textiles. The size of the textile sector in 1851 was being sustained by the production of sailcloth in Newcastle and Tyneside, and should be regarded as an offshoot of the shipbuilding industry. The replacement of wood with iron and steel in the construction of ships during the second half of the eighteenth century ensured that this particular economic activity did not have a particularly rosy future.

The decline of the manufacture of woollen textiles in Northumberland over the late eighteenth century is similar to the fate of this industry in the southern counties of Northamptonshire, Hertfordshire and Bedfordshire, though the latter two counties possessed a much smaller textiles sector around 1750 in terms of its share of the adult male workforce. The rise to dominance of the West Riding textiles industry, as well as growing market integration facilitated by the burgeoning tertiary sector of the economy, forced the non-coal mining areas of the county to focus primarily upon agriculture as their key industry.

In conclusion, the research reported in this paper suggests that the experience of economic change in Northumberland during this period varied considerably between Tyneside and the rest of the county. Slow population growth, the fairly rapid growth of employment in coal mining in the areas surrounding Newcastle and the relative stagnation of agriculture in the rest of the county during the late eighteenth and early nineteenth centuries contrasts radically with the rapid growth of nineteenth-century Newcastle and Tynemouth, the rapid increase in size of their secondary sectors, and the relative decline of their coal mining industries. The overall result was a decrease in the size of the agricultural sector that was not counterbalanced by the growth of coal mining. As the proportion of the county's population situated on Tyneside increased, the leverage this area exercised on the occupational structure of the county as a whole grew as the nineteenth century progressed. In this sense, the use of traditional county units to study occupational change is perhaps not without its drawbacks. Clearly, Newcastle and Tynemouth shared more in common with Gateshead, Sunderland and the Durham sector of the north-eastern coalfield, than it did with Berwick, Alnwick or Holy Island.

To conclude, it is worthwhile to speculate on what difference the presence of Newcastle would make to the overall occupational structure of Northumberland in 1762. Since one would expect this town to be dominated by the tertiary sector through its commercial functions as a port, the overall effect would be to markedly increase the size of the tertiary sector on a countywide basis. It is entirely possible, therefore, that the presence of Newcastle would serve to counterbalance changes at the county aggregate level that did take place between in the county without Newcastle, making any changes in the occupational structure of the county before 1800 appear even less muted. Hopefully, the availability of eighteenth century data on the occupations of fathers at the baptism of their legitimate children may be able to shed some light on these issues.

Peter Kitson
10 June 2005