Local Population Studies in Schools

Understanding local populations in a primary school: the role of the microcomputer

Alistair Ross

Fox Primary School, Inner London Education Authority

This paper examines some of the problems children have in handling bodies of evidence about local populations, and suggests that information-handling microcomputer systems may offer help in allowing children to develop skills of analysis and deduction while handling large files of historical data. The paper goes on to argue that children are able to develop such skills better if graphic displays of sorted information are produced. References are made in particular to the writer's experience with older primary-school-aged children, and to a number of information handling programs — micro-LEEP, SCAN, and more recently DATAPROBE, the later program being developed by Malcolm Hall and the writers.

As a primary school teacher anxious to develop historical skills and concepts with my classes, I have grown to realise that there are particular problems in young children studying social history. I suspect that these problems are not unique to the primary school, and that many will apply equally to secondary school pupils studying history. These problems arise from three factors: the need, at least initially, of the child to relate to real individuals, rather than to generalised groups in society; the child's difficulty in managing quantities of original historical evidence; and the consequent inaccessibility of much information about ordinary people and everyday life that is potentially useful to the child. As Terry Gwynne has put it, such studies of a local populations

> 'offer the teacher . . . a human study; a study of people from all levels of society with whom pupils can readily identify and who can satisfy children's curiosity about the lives of their forebears.'[2]

Children have difficulty understanding many generalisations about the past. Adults glibly refer to 'the family', 'the middle classes', 'Londoners', 'farmers' — and other adults usually understand both the conceptualised group being referred to, and the implicit qualification of the speaker that they are referring to tendencies and trends, not to absolutes. To young children referring to 'the church' in the middle ages can be totally confusing — to them the church is the building at the end of the road, perhaps Victorian red-brick, which they had hitherto thought hadn't been there in medieval times. On the other hand, if they can refer to real individuals, and understand their everyday lives, they can begin to make generalisations for themselves.

Therein lies the second problem. Increasingly books are published for the primary school market that do give such details of real people — books like **The Blacksmith's House** and **Jubilee Terrace**.[3] However, if children generalise from

these, they begin to assume that all people behaved in that particular way. There needs to be much input of additional information, that will make children realise that the conclusions they reach are tentative, and will probably need refining and qualifying as they acquire more and more information. Also there must be much work developing probability language, so that children learn to qualify such overgeneralisations.

How are children to reach such additional informations that will move them from the concrete, the specific, into making rules and generalisations about groups of individuals? Working one's way through historical evidence is laborious even for the adult professional historian. For the child, particular problems interfere with the processes of analysis and deduction — sometimes mechanical problems of deciphering and reading, sometimes problems of access, and often problems of physically handling piles and files of paper. I recall using photocopied census returns of the local streets with third year juniors in Hackney in 1977; having helped them with the enumerator's handwriting (so rarely the copperplate that textbooks tell us was then so common), we were frustrated in our attempts at counting by such things as: playtimes coming halfway through one group's analysis of a particular page — when they came back, they'd forgotten exactly how far they'd got; one group finding that the next page they needed was in use, and so skipping to the page after — and forgetting to go back; and so on. For young children the sheer tedium was enormous. Having invested so much time and effort in trying to collect and analyse information in a particular way, there was understandably little enthusiasm about trying it all out again to test a more refined hypothesis.

When our school acquired a microcomputer, this situation began to change. In 1981 we were fortunate in being selected as one of a small group of pilot schools in the Inner London Education Authority to try out microcomputers in the classroom. We were supplied with a Research Machine 380Z micro (56k), with twin disk drives, a colour monitor, a printer, and a number of programs of various quality, seemingly chosen on the grounds that they were available and might be appropriate!

Since then the Department of Trade and Industry has introduced a scheme of 50-50 financing for all primary schools to acquire one of three microcomputers and some ancillary hardware: the three machines are the BBC microcomputer (chosen by about three-quarters of participating schools), the RML Link 480Z, sister machine to the model our school was given (chosen by about one fifth of schools), and the Sinclair Spectrum. Over 80 per cent of all primary schools are participating in the scheme. The provision of appropriate software (programs) is also developing quickly, as will be seen.

One of the first things we attempted was to use the data handling package we had been supplied with in a local study of census returns. We had been provided with micro-LEEP, a series of programs that could make up files of data and then match and sort them very quickly and efficiently. This program was superseded in 1983 by micro-SCAN. Both of these programs were designed with secondary pupils in mind, consequently we found them rather unfriendly: we now use DATAPROBE, a program written by a colleague and myself. This allows the children to display easily data in a graphical or map form, from which it is far easier for them to determine patterns, trends and generalisations than it is from a list.

How does a data handling program change the learning in the classroom? To answer this question one must first describe some of the procedures and processes of using such a program. In information handling work, the information is collected together in a file. The file may be held on cassette tape, or, more usefully, on a floppy disk. The file can best be imagined as a huge table of results. The vertical columns, known as fields, all contain information of a similar type — for example, in a file of information about articles in **Local Population Studies,** one field might contain the names of all the authors, and another field the numbers of the volume in which the particular article appeared. The horizontal rows are called records: each record in this example would be one article.

Thus a file called **LPS** might begin rather like this:

No.	Page	Author	Title	Notes
28	44	Gwynne T	Local population studies in schools	schools
28	47	Saul S B	A classroom project in historical demography	middle schools, parish registers
29	10	Stevens L	A demographic approach to history in the primary school	primary schools, registers
30	35	Garner A	The use of census enumerators' returns in local history studies: an extra-curricular schoolroom project	secondary schools, 1851 census
31	34	Labbett B	Local population studies in schools: computer aided study	schools, 1851 census, computers

And this chart would continue with a record for each article.

Setting up a data file like this requires some time and effort. The number of fields must be decided, and what to include in each. Most programs enable you to set up a file, specifying its name, the fieldnames, and the length and type of each field. Children can then add records, usually by typing in the entry in each field for a record as it is prompted. Only when the file is complete can interrogation begin.

We have created four local population files based on the census returns. We have two files on the local streets near the school, one for 1861 and one for 1871. We made a file last year for most of the village of Lacock, in Wiltshire, for 1871 (our school was evacuated to Lacock in 1939, and we visited the village in connection with this work and the 1871 study). A fourth file is of the village of Wortham in Suffolk for 1861.

We established the first file three years ago, and this has been added to, modified and supplemented each year as new classes add further records: usually each class adds the records of a new street, examines those in detail, and then compares this street with the others already on file. Our file structure is quite elaborate. It includes not only all the information on the census return itself, which I think is an important way of maintaining the evidence, but also several extra fields designed, as Beverly Labett put it in LPS 31 to 'further squeeze the evidence'.

Our present census file on Kensington in 1861 looks like this:

File : KENS1861
Description : Census records 1861 — part Kensington

Number of fields: 16
Number of records: 450

No.	Field name	Type	Length	Notes
1	SCHEDULE	Numeric	3	enumerator's schedule number
2	ROADNO	Alpha	20	number of house and name of road
3	HOUSECOORDE	Numeric	3	east-west coordinate for residence (detailed below)
4	HOUSECOORDN	Numeric	3	north-south coordinate for residence
5	FORENAMES	Alpha	15	first names
6	SURNAME	Alpha	13	
7	RELATION	Alpha	8	relationship to head of household
8	CON	Alpha	1	condition, U,M or W (Unmarried, Married or Widowed)
9	SEX	Alpha	1	M or F (Male or Female)
10	AGEY	Numeric	2	age in years if one or more
11	AGEM	Numeric	2	age in months if less than one
12	TRADE	Alpha	30	'rank, profession or occupation'
13	TRADECODE	Numeric	3	three digit coding of TRADE (detailed below)
14	BIRTHPLACE	Alpha	22	birth county and town, as on census return
15	BIRTHCOORDE	Numeric	3	east-west coordinate for birth place (detailed below)
16	BIRTHCOORDN	Numeric	3	north-south coordinate for birthplace

('Length' is the number of spaces wide a field is — each letter or number needs one space. 'Type' refers to the kind of information that can be put in a field — Numeric is numerals only, Alpha is either letters or numerals.)

The computer cannot easily recognise, for example, that different descriptions were used for broadly similar occupations, and that if we were searching for one group we might well want all the examples. The user could get round this by asking for all the names of the occupations that he could think of, but might forget other descriptions. Or one of the names might be mis-spelt (in the original return, not by the transcriber, one hopes!). A coding system for occupations allows us to group all similar occupations. We initially used the coding devised by Armstrong from that of Booth,[5] a five-digit number that classifies many nineteenth century trades into broad categories. We found this code difficult to use: it was more elaborate than necessary, and more importantly, omitted codings for the unemployed, for housewives and those without a stated occupation, and lumped scholars in with property owners and independents. A modified code (TRADECODE) was devised, of just three digits, but using additional categories to cover those with no stated occupation, the unemployed and those 'out of place', paupers and to distinguish 'scholars' from those of 'independent means'. As will be seen later in this paper,

such coding systems can have much wider uses than simply the identification of particular trades.

A second type of enrichment field is pairs of co-ordinates (such as HOUSECOORD and BIRTHCOORD) that are used to locate a place on a map. Two places are included in each census record: a person's residence and their birthplace. We have devised maps that can be used to display the distribution of both of these, by plotting co-ordinates. Co-ordinate fields can also be used to define records belonging to a particular area, using greater than (>) and less than (<) signs.

To retrieve information, the children would need first to determine which records were of interest to them, then devise a logical way of enquiring that would match these records, and then decide what they would like to know about these individuals. For example, say that a group wanted to know about the occupations of ten to fourteen year old boys in Kensington and Wortham in 1861. They would need to make two separate enquiries, one for each.

They would type
Command: Enquire KENS1861
Enquiry: SEX = M and AGEY > 9 and AGEY < 15
Command: Show List
Which fields?: Trade, Agey, Forenames, Surnames

This would be followed by a similar enquiry for the file WORTHAM.
The results of these enquiries would be a display on the screen, or on the printer, like this:

DATAPROBE Enquiry
File: KENS1861
Description: Census records 1861; part Kensington
Enquiry: Sex = M and Agey > 9 and Agey < 15
Printing: List
Fields: Trade Agey Forenames Surname

TRADE	AGEY	FORENAMES	SURNAME
Scholar	12	Benjamin	WOODARD
Hawkboy (bricklayer)	13	Samuel	LURCOMBE
Scholar	10	Robert	LURCOMBE
Errand boy	13	John	KELLY
Ragged school scholar	10	George	SWEETMAN
Assistant sweep	10	William	JAMES
With a printer	11	William	COLE
Scholar	12	David	CALNAN
Scholar	10	Henry	GRANT
Telegraph Messenger	13	Edward	DALTON
Scholar	11	George	PRITCH
Scholar	12	William	KELSEY
Scholar	12	George	POWELL
Scholar	12	William	MILES
Errand boy	13	James R	FISH
Scholar	10	George	

End of file
Records Matched: 16
Records Read: 450

DATAPROBE Enquiry
File: WORTHAM
Description: Census records 1861; part Wortham
Enquiry: Sex = M and Agey >9 and Agey <15
Printing: List
Fields: Trade Agey Forenames Surname

TRADE	AGEY	FORENAMES	SURNAME
Shepherd boy	13	Leonard	BARHAM
Labourer	13	George	COLLINS
Scholar	11	Robert	COLLINS
Scholar	10	James	RODWELL
Scholar	11	Walter	OFFORD
Farm labourer	13	Henry	BUSH
Scholar	11	Albert W	BARTRAM
Farm labourer	13	Joseph	KEELY
Labourer	12	Alfred	BARTRAM
	14	John	COX
Servant	14	Edward	COLLINS
Miller's son	11	Jonathan	TIPPLE

End of file
Records Matched: 12
Records Read: 373

The difference between the two lists is clearer when a histogram is drawn of the TRADECODEs. To interpret these, one needs to know that each column represents the following categories of occupations:

0 — 99 no income (in this case the blank entry and the 'Miller's son')
100 — 199 agriculture, etc.
200 — 299 mining
300 — 399 building
400 — 499 manufacturing ('with a printer')
500 — 599 transport ('errand boy')
600 — 699 trading
700 — 799 public and commerical service
800 — 899 domestic service ('assistant sweep' and 'servant')
900 — 999 independent (includes a sub-category of 'scholar')

The differences between the two areas is clear: of all the males between ten and fourteen in this sample of 823 people, 63 per cent of those living in London were at school, compared with only 33 per cent of those enumerated in the rural parish of Wortham.

It is work of this sort that has engaged my classes over the past three years. Each year the class adds some more information to a file — usually another street of individuals. We first draw and photograph the street, and then look at modern and old maps, and then match census records to houses. The information is typed into the data file by the children working in groups of two or three (while the rest of us get on with other work): only when it is complete do we meet as a class to talk about

what we will investigate. Usually, after pouring over the data in such detail, there are several theories advanced by the children that we can try out.

One year we compared the Wiltshire village of Lacock with our local area in 1871. The children were struck by the number of paupers in Lacock, and by the servants in Kensington. They searched out the paupers, and found

> 'They were among the oldest people in the village. One of them was eighty-seven, called Harriet Edwards. There were thirteen paupers altogether, and eight were heads of household themselves. Three were males and ten were females . . . the youngest was forty-one years old.'

> 'We found that only thirty-four people were born outside Wiltshire and 260 were born in Wiltshire. There were 294 altogether. Out of the people born in Wiltshire 206 were born in Lacock. We think this happened because they liked staying near their relations and because if they were ill they would have their relations to look after them.'

This piechart was constructed to show the distances of people's birthplace from the village.

This contrasts with their finding in Kensington, where

> 'As people get older, they were more likely to be born out of London . . . the reason for this was because Kensington was much smaller then, before 1836, and I think it didn't start growing till about 1843. Then more people were born (there) as older people from different counties started moving in.'

This difference between the birth places of young and old people can be seen graphically in the next two computer-generated distribution maps, created by children in class.

Changes in naming patterns were fascinating. The children working on Lacock divided the population into four age groups, and plotted changes in the names William, Elizabeth, Mary, John and Sarah as follows:

This was quite a difficult task to accomplish: the subsequent year was more fortunate, as they were able to get the computer to draw a series of barcharts for them, showing the changes in popularity of Ann, Elizabeth, George, James, John, Mary, Sarah and William.

Other ways of showing sorted data are also used. A common mathematical technique in primary schools is to draw Venn diagrams, showing sets of data with intersections, where items possess more than one quality. The following example shows all the females in the population: in set A are all those who are married (CON = M), in set B all those born in Kensington (BIRTHPLACE CONTAINS KENSINGTON) and in set C all those whose occupation was listed as washerwoman or laundry worker (TRADECODE: 851).

A final example are two maps of the Kensington locality, showing on one the residence of the domestic servants, and on the other the residence of washerwomen. The distribution of rich and poor was evident.

> 'The heads (of household) who could afford servants had mostly better jobs than those without servants . . . Bedford Gardens had several servants, and Edge Terrace none, so it looks as if Edge Terrace was a much poorer street.' (Edge Terrace was the row of houses on the extreme left of the map. More detailed maps than can be reproduced on the computer were available in the classroom.)

The use of the microcomputer has enormously aided the children's ability to understand and use the information on the census returns. They can still identify real individuals, easily work out the house in which they lived, and determine quite a lot about their family size, history and circumstances. Yet they are also able to move to a larger sphere of abstraction, detecting and delimiting social classes, using occupational groupings, making discoveries about life expectancy and longevity, in a way that would not normally be thought possible of nine to ten year old children.

NOTES

1. MicroLEEP and SCAN are published by the Inner London Educational Computing Centre, Bethwin Road, London SW9. DATAPROBE is published by Addison Wesley Ltd, 53 Bedford Square, London WC1 3DZ.
2. T. Gwynne, 'Local population studies in schools', **Local Population Studies**, 28, Spring 1982, 44, 45, 46.
3. C. Schenk, **Jubilee Terrace**, 1980; C. Joy, **Blacksmith's Cottage**, 1980.
4. The 1861 files for Kensington and Wortham are published with DATAPROBE (note 1). see also R. Fletcher (ed.), **The Biography of a Victorian Village: Richard Cobbold's account of Wortham, Suffolk, 1860**, 1977.
5. W. A. Armstrong and C. Booth, 'The uses of information about occupations (Part 2 — an industrial classification 1841-1891: Appendix E — The occupations of 1861', in E. A. Wrigley (ed.), **Nineteenth Century society: Essays in the use of quantitative methods for the study of social data**, 1972.

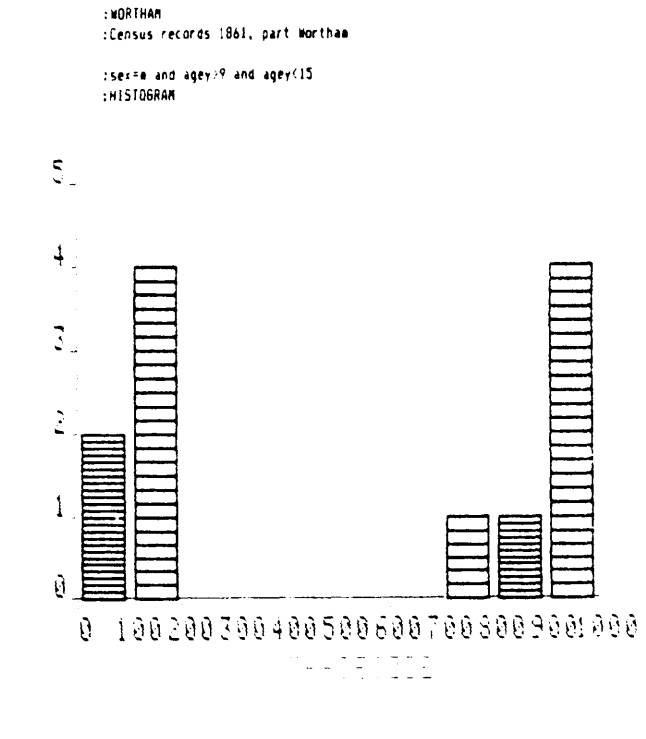


Figure 1 (a) Occupations of 10-14 year old boys in Wortham, 1861.

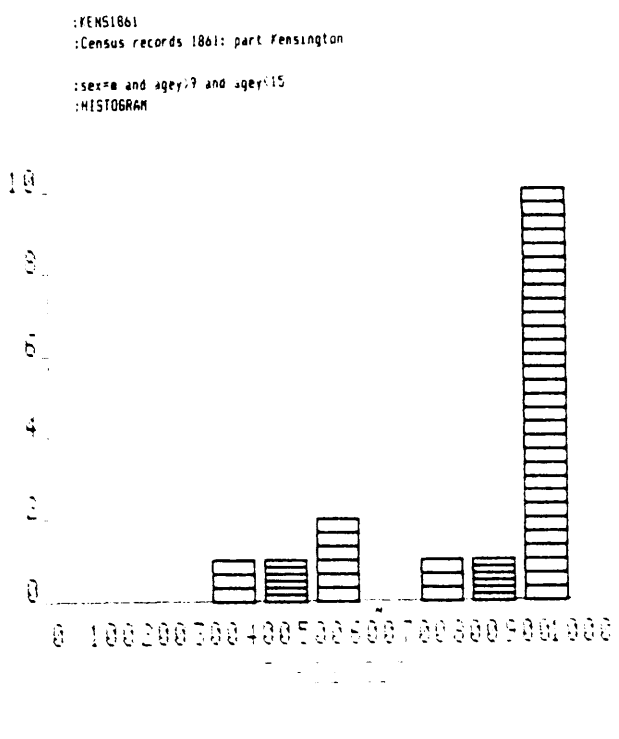
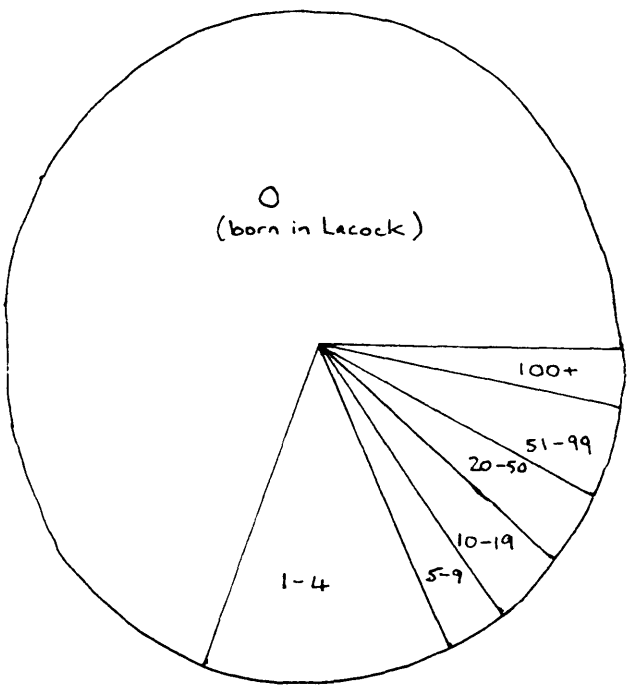


Figure 1 (b) Occupations of 10-14 year old boys in Kensington, 1861.

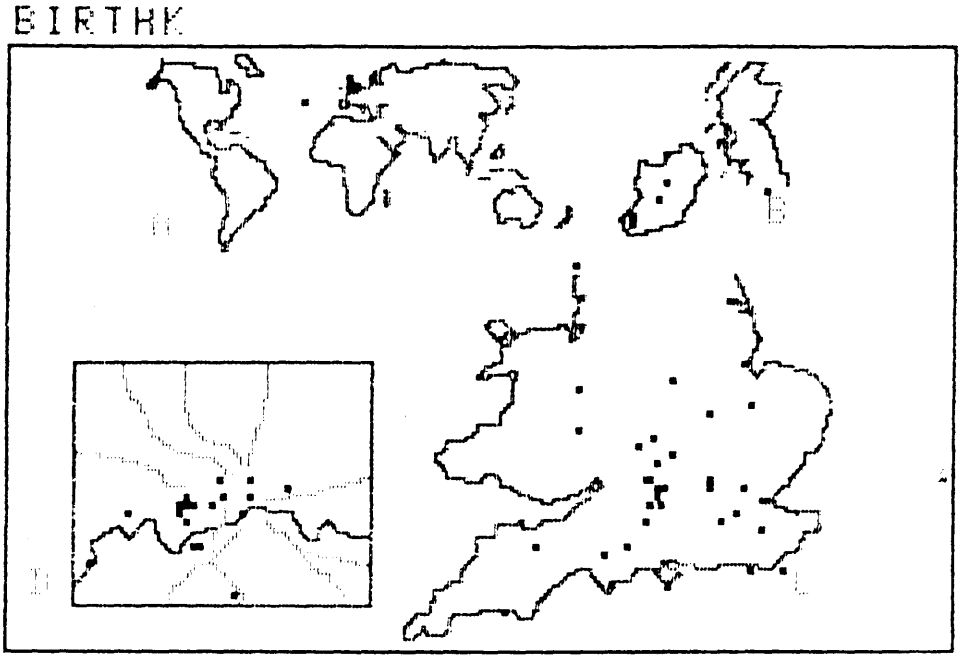


Source: Census 1871 Distance in miles

Figure 2 Piechart drawn by child of distances of birthplace from Laycock 1871

Data Probe Enquiry

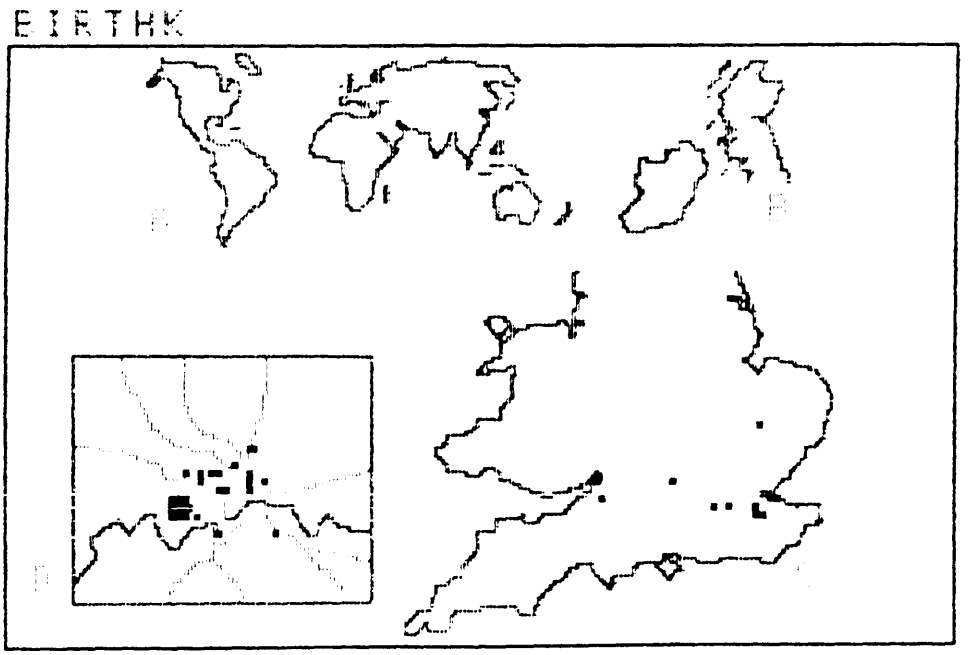
File name :KENS1861
Description Census records 1861: part Kensington
Enquiry :agey 49
Printing :MAP



Records Matched : 57
Records Read : 450

Figure 3(b) Computer drawn map showing birthplace of people living in Kensington in 1861 over fifty

File name :KENS1861
Description :Census records 1861: part Kensington
Enquiry :agey 8
Printing :MAP



Records Matched : 104
Records Read : 450

Figure 3 (a) Computer drawn map showing birthplace of people living in Kensington in 1861 under seven (the large square represents sixty-nine people)

Figure 4 Series of barcharts (rank order) drawn by child to show changing popularity of forenames in Lacock

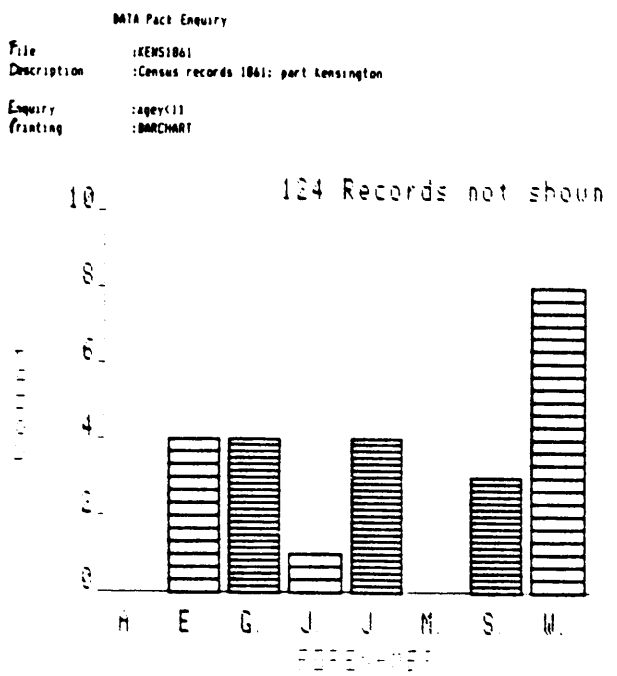


Figure 5 (a) up to 10 years old

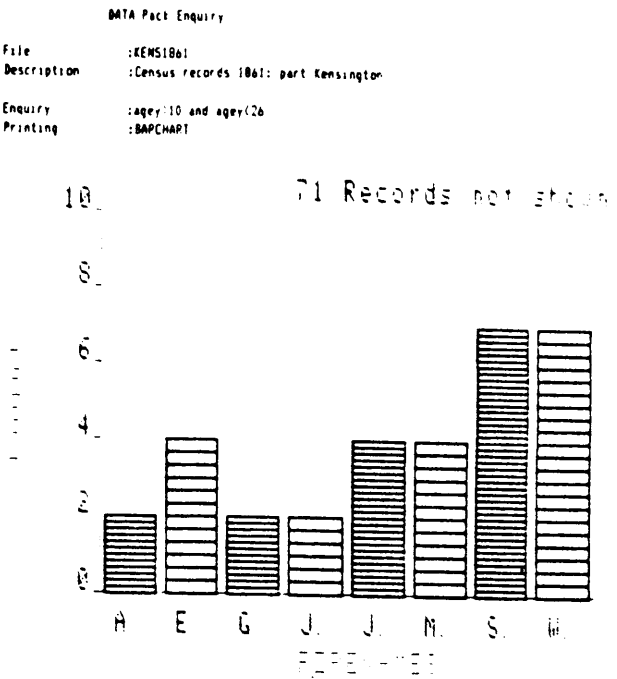


Figure 5 (b) 11-25 years old

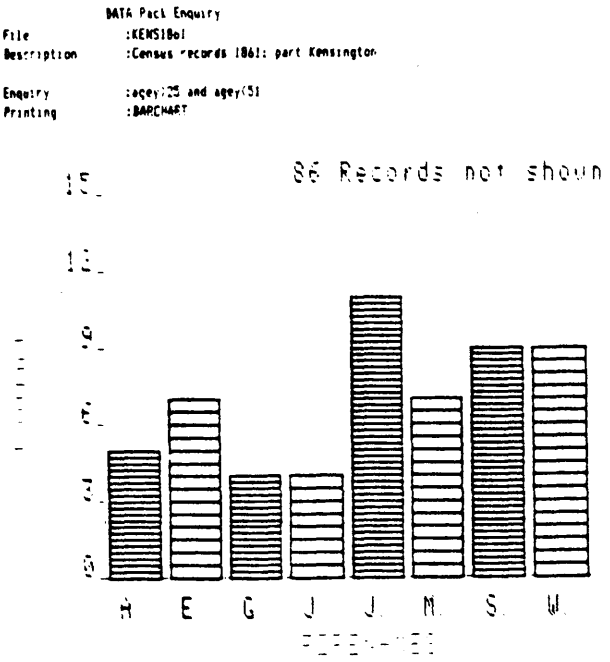


Figure 5 (c) 26-50 years old

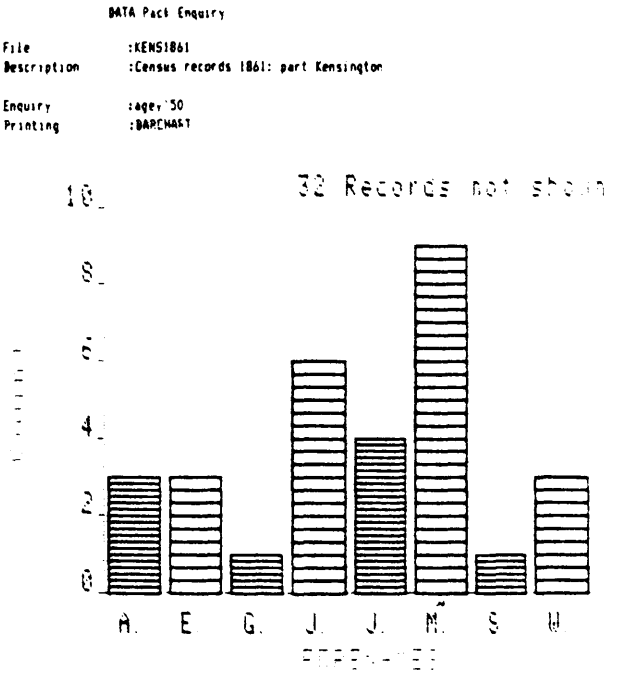
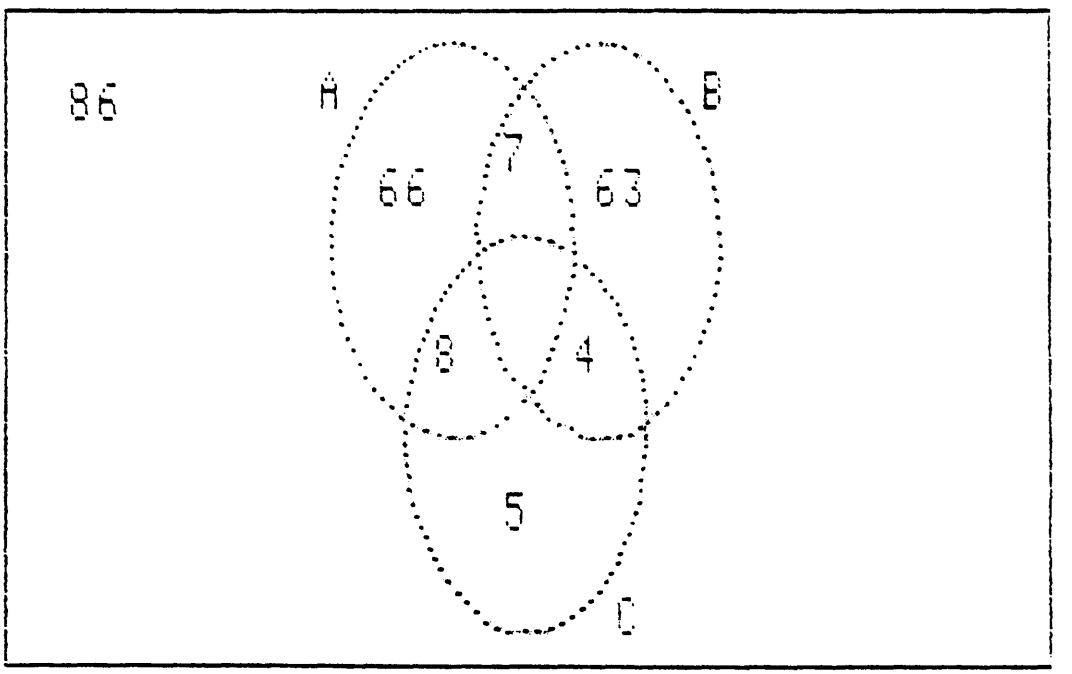


Figure 5 (d) over 50 years old

Series of computer drawn histograms showing changing popularity of surnames in Kensington, 1861.

File name : KENS1861
Description : Census records 1861: part Kensington
Enquiry : sex = f
Printing : VENN

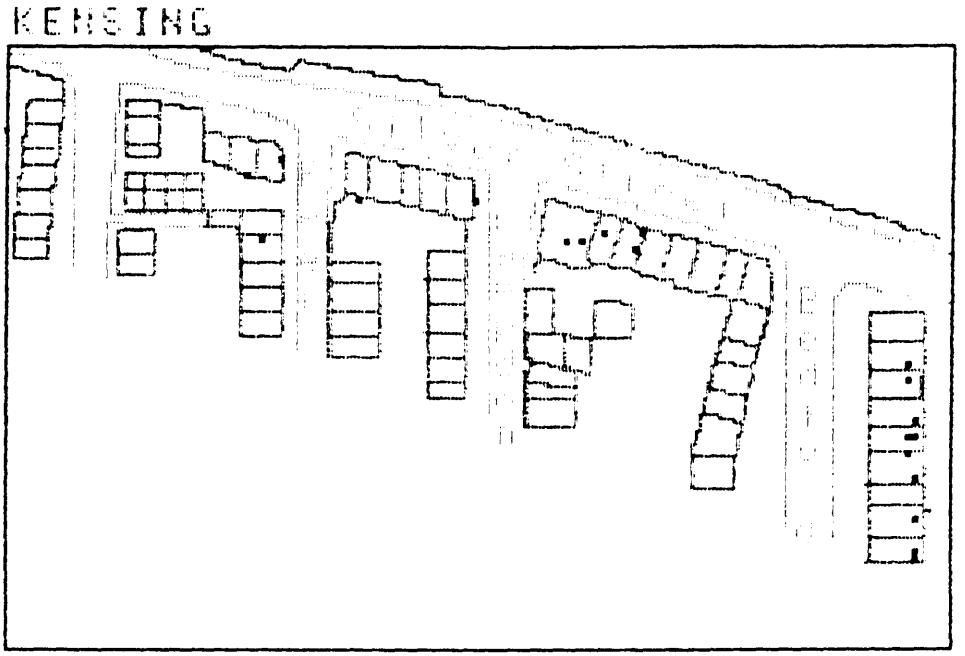


A. CON = M
B. BIRTHPLACE contains Kensington
C. TRADECODE = 851

Records Matched : 239
Records Read : 450

Figure 6 Venn diagram of females in Kensington 1861.

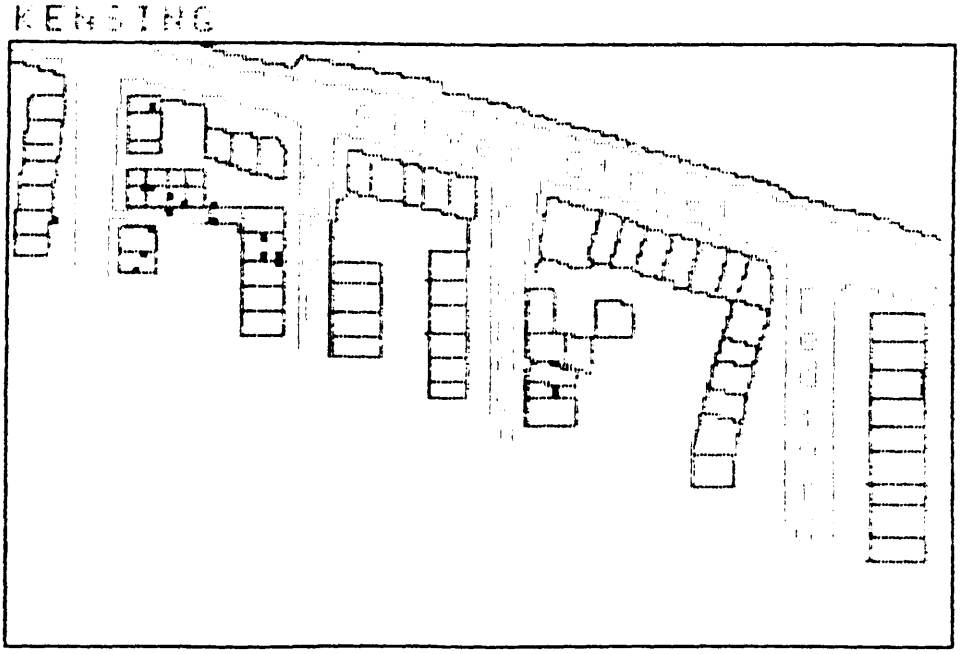
File name :KENS1861
Description :Census Records 1861: part Kensington
Enquiry :relation = servant
Printing :MAP



Records Matched : 21
Records Read : 450

Figure 7 (a) Domestic (that is living-in) servants.

File name :KENS1861
Description :Census records 1861: part Kensington
Enquiry :tradecode = 851
Printing :MAP



Records Matched : 20
Records Read : 450

Figure 7 (b) Washerwomen and laundry workers ('tradecede = 851' in the enquiry).

Maps showing residence in Kensington.