3.2. Determination of Sex

3.2.1. Methods and Problems

Although sexual dimorphism is usually quite well marked in the human skeleton, it is often difficult to decide whether an individual was male or female. The problem of masculine women and effeminate men is one which occurs in all populations, and problems of sexing are not simply confined to poorly preserved remains. However, given a large population of adult skeletons it is usually possible to provide a sex distribution with far greater confidence than is the case with age determination.

Unfortunately, it is almost impossible to sex the skeleton of a child with present methods, since the sexual characteristics found in adult bones are not developed in the child until about 14-18 years of age, following puberty. For this reason, none of the children from the sites studied in this paper have been sexed.The most reliable indication of sex in the adult human skeleton is the size and form of the pelvis. In the female, the pelvis is generally wide and bowl-shaped, due to one of its major function in life, to hold the foetus in pregnancy. It has wide sciatic notches and a sub-pubic angle which appears greater than 90º (although when the notch is traced and the angle measured, the female sciatic notch is found to be around 65º and that of the male around 40-50º on average). The pelvis of the male is more robust and larger than that of the female, but it is comparatively narrower and taller, with narrow sciatic notches and an acute sub-pubic angle.

Several workers have attempted to produce less subjective sexing techniques based on the morphology of the pelvis. Phenice (1969) suggested a visual sexing technique for the Os pubis, based on three features, the ventral arch, subpubic concavity and the medial aspect of the ischio-pubic ramus. He claimed an accuracy of greater than 95% using this method. Kelley (1978) tested the method on an unknown population and concluded that it provided a good sexual discriminator. Lovell (1989) found an accuracy of c.83% on a dissecting room population, and concluded that this lower figure was due to the larger number of older individuals in her population than in the original study, since accuracy appears to decrease on older specimens. The method is widely used, but in most archaeological populations the same problem will be found as that applying to age determination from the pubic symphysis, namely that the bone is often lost or damaged by post-mortem erosion.

If the pelvis is not present, or is fragmentary, as often happens in archaeological material, the next most useful group of bones to study are those making up the skull (Workshop of European Anthropologists, 1980). The major differences between male and female crania, apart from the overall size, are the size of the supra-orbital ridges, the mastoid process and the nuchal crests, and the sharpness of the orbits. In the male, the first three are generally larger, and the last is more blunt than those of the female.

In the absence of either the skull or the pelvis, the size of the long bones can be used as a guide, especially if the diameter of the femoral head or humeral head can be measured. For both of these measurements the mid-point is around 45mm. Below this is usually female, and above is probably male. However, this mid-point is only an average and can vary with different populations. There is also the problem of those skeletons with a femoral/humeral head diameter of exactly 45mm. If no other criteria are available for study, it is almost impossible to sex such an individual.

If all else fails, the robusticity of the bones can be used to sex the individual, but there can be problems with this method as well. In ancient populations there may not be such a distinct difference between the sexes as is seen in modern peoples. The women may have used their muscles almost as much as the men, and the size of their bones may be larger than expected due to this. The Australian Aborigines, for example, show very little difference between the sexes.

Black (1978b) proposed a method of sexing based on the midshaft circumference of the femur, for which he claimed an accuracy of 85%. This method is difficult to use, however, since the irregular contours of the linea aspera make it almost impossible to take accurate measurements. MacLaughlin and Bruce (1985) attempted to rectify this problem, and also that of not being able to use the method with incomplete femora due to the ensuing problem of inability to determine the exact midpoint of the shaft. They suggest instead that the maximum antero-posterior diameter of the femoral shaft should be used. This yielded a high consistency of about 90% with sex determinations based on pelvic and cranial morphology in a Scottish prehistoric population.

Sexual dimorphism has also been noted in the formation patterns and overall size of the teeth. Black (1978a) suggests a method of sexing children based on tooth crown diameters of the deciduous teeth, but found discriminant functions less effective in sexing children than in adults. Although sexing of juveniles by tooth size has been seen as a possibly useful technique (Hillson, 1986:241), it probably should not be used alone, since even in adult remains there is greater certainty of allocating the correct sex to an individual if more than one sexing technique is applied. Brace and Ryan (1980) found that ‘human dental sexual dimorphism was greater during the Upper Paleolithic than at any subsequent time and that it is at its least in some modern human populations’. The Workshop of European

Anthropologists (1980) state in their recommendations that 'In recent populations...there is a broad overlapping of male and female measurements. Therefore, sex diagnosis really cannot be based on the teeth.'

The most reliable method of sexing the skeleton is to use a combination of all these skeletal features. Using the whole skeleton can produce an accuracy of 95-100% according to some sources (Krogman, 1978; Shipman et al. 1985), with the pelvis yielding 90-95% accuracy, and the skull slightly less (87-92%). These are all based on morphological studies.

Statistical methods of sexual differentiation, in particular based on discriminant function analysis, have also been proposed, but in general these have been found to be less accurate and more time consuming than visual techniques. Seidler (1980) and Day and Pitcher-Wilmott (1975) have produced schemes for the sexual diagnosis of innominate bones, but these are based on measurements of the whole bone, which is often not available in many archaeological populations. Giles (1970) and the Workshop of European Anthropologists (1980) have recommended discriminant function techniques based on various bones of the skeleton. These involve a number of osteometric points which are often very eroded or lost in the majority of individuals from archaeological sites. Pons (1955) even suggested a discriminant function based on the sternum, a bone which is singularly conspicuous by its absence in many populations. At Guisborough Priory, the most well-preserved series in this study, for example, only 5 males and 2 females had fragments of sternum surviving.

A recent study by Meindl, Lovejoy, Mensforth and Carlos (1985) based on 100 known skeletons from the Hamann-Todd Collection in America has suggested that females are less likely to be wrongly sexed than males, thus contradicting the assertion of Weiss (1972) that there is a systematic bias in skeletal sexing towards males. The authors recommend that the best determination of sex can be made from the complete pelvis. They studied the use of discriminant function sexing methods and compared them with simple morphological techniques, and concluded that '[their] own numerous attempts to resolve metrically the sex of those very few cases in which the pelvic morphology is indeterminant have never proved more successful than ordinary observational methods' (1985:84). They also suggest that archaeological populations tend to be more sexually dimorphic and genetically homogeneous than the mixed samples used in most forensic studies.

Some useful metrical sexing criteria have been developed for use on various parts of the pelvis. Kelley (1979c) developed the sciatic notch/acetabular index, but MacLaughlin and Bruce (1986) have shown this to be a poor discriminator of sex in two European populations. The ischio-pubic index and the sacral index are lower in males than in females, but in poorly preserved series they are virtually useless, since these parts of the pelvis are most susceptible to post-mortem erosion. The ischio-pubic index is also very difficult to use because there are often problems in defining the appropriate osteometric points. They have been used very little in this study for these reasons. It is also felt that metrical analysis simply applies figures to visual impressions, thus making observations seem more impressive than they are.

3.2.2. Methods applied to the Study Populations

The techniques used in determining the sex of the adult individuals in the study populations basically fall into the category of morphological methods, although some metrical characteristics were also recorded. The following morphological traits were considered:

Cranial features: general size and robusticity,
size of supra-orbital ridges,
size of mastoid process,
relief of nuchal crests,
shape of occipital protuberance,
sharpness of orbital border,
size and appearance of mandible.
Pelvic features: size and shape of obturator foramen,
angle and shape of sciatic notch,
presence of pre-auricular sulcus,
sub-pubic angle,
form of iliac crest,
reconstructed appearance of pelvis.
Long Bone features: general appearance and robusticity.

Metrical analysis involved the sacral and ischio-pubic indices on the few occasions when it was possible to take these, and the sizes of the femoral and humeral heads were also noted.

Table 3.9 shows the number of individuals sexed according to each technique at the three main sites and Blackgate. The Jarrow and Monkwearmouth figures do not include Wells' data. (N.B. Inclusion of an individual within a certain methodological category does not imply that it was possible to look at every morphological criterion within that category. For example, only the mandible and occipital of the skull may be present, but an individual could still theoretically be counted in one of the skull categories.)

	HIR		MK		JA		BG	
Method	M	F	M	F	M	F	M	F
Cranium (1)	5	8	2	1	2	0	3	3
Pelvis (2)	0	0	1	0	0	0	0	0
L.Bones (3)	4	0	3	2	4	7	15	5
(1) & (2)	0	0	2	0	0	0	0	0
(1)(2) & (3)	43	61	3	3	4	8	17	12
(1) & (3)	12	10	3	0	3	1	9	6
(2) & (3)	14	7	5	1	3	4	14	14

Table 3.9

Most Hirsel skeletons were sexed using all three methods, implying that the determinations are fairly reliable, although individual sexing was in fact often problematical. Many individuals considered to be female from their pelves had extremely masculine skulls, for example.

The Blackgate figures show that 75% of those sexed by long bones alone were male or possibly male. This may suggest some biasing in the technique, especially if the whole population was fairly robust, or it may be that there were more males on the site and that these stood a better chance of becoming disarticulated. The females sexed on all criteria or pelvis and long bones did not appear to be particularly robust.

There were not really enough individuals from Jarrow and Monkwearmouth to make any conclusions, but most Jarrow adults were sexed using all techniques, or long bones only. "All" obviously gives better results, although at least one skeleton from Jarrow could not be sexed based on all criteria. Basically the table gives an idea of preservation of the material at each site. More individuals sexed on all criteria suggests better preservation of skeletons.

Table 3.10 shows the distribution of individuals by number of sexing methods.

Number of	HIR		MK		JA		BG	
Methods	M	F	M	F	M	F	M	F
1	9	8	6	3	6	7	17	8
2	26	17	10	1	7	5	23	20
3	43	61	3	3	4	8	17	12

Table 3.10

Figures 3.15 to 3.17 show the metrical analyses of the adult femora from The Hirsel which are thought to be related to sex. The most sexually dimorphic characteristic, in this population at least, would appear to be the femoral head diameter, with a cut-off point of around 45mm, as suggested above. The robusticity index suggests a modal value of around 13 for the males and 12 for the females, but the overlap is too great for this to be used as a sexual indicator on its own. MacLaughlin and Bruce (1985) found a sectioning point of approximately 27mm for sexing on the maximum femoral antero-posterior diameter. The modal value of the females at The Hirsel is 27mm, which would tend to suggest that the sectioning point would have to be higher in this population, possibly between 28 and 29mm. Since MacLaughlin and Bruce only had 8 female individuals, it is possible that the results from The Hirsel represent a more normal population. This last method would appear to be less sexually dimorphic than femoral head diameter, but more so than femoral robusticity, at least at The Hirsel.

Figure 3.18 shows the distribution of sciatic notch angles measured for the Hirsel population. The method of measurement followed Dawes and Magilton (1980), and involved the tracing of the sciatic notch onto paper in order to measure the angle. This method is very subjective, and it is possible that the general appearance of the sciatic notch gives a better overall impression of the sex. The bar charts appear fairly dimorphic, however, and suggest a sectioning point of around 45º.

3.2.3. Sex and Palaeodemography in the Study Populations

Table 3.11 and Figure 3.19 show the distributions of sexes in the study populations, and the ratios of men to women.

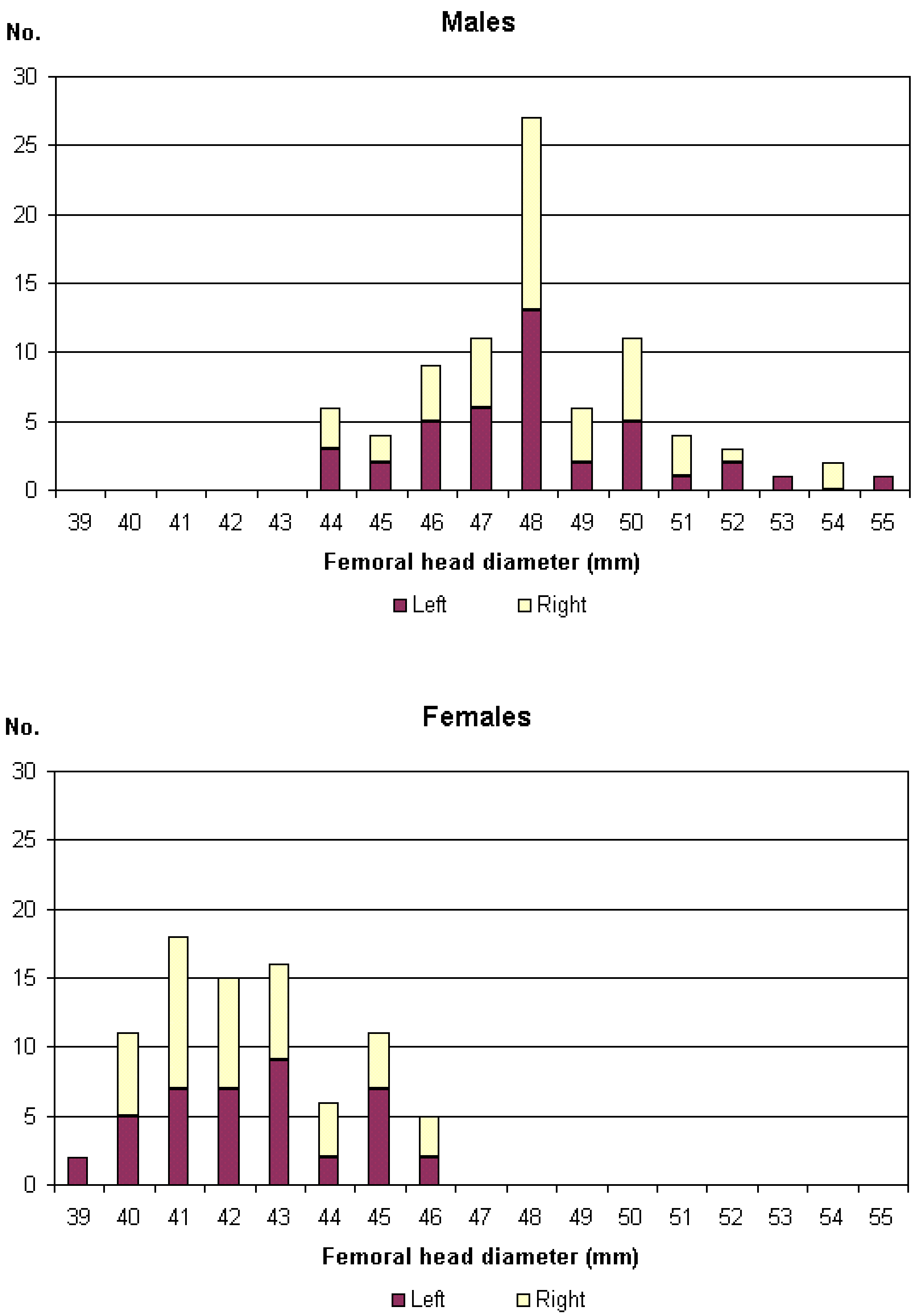


Figure 3.15. Femoral head diameters at The Hirsel.

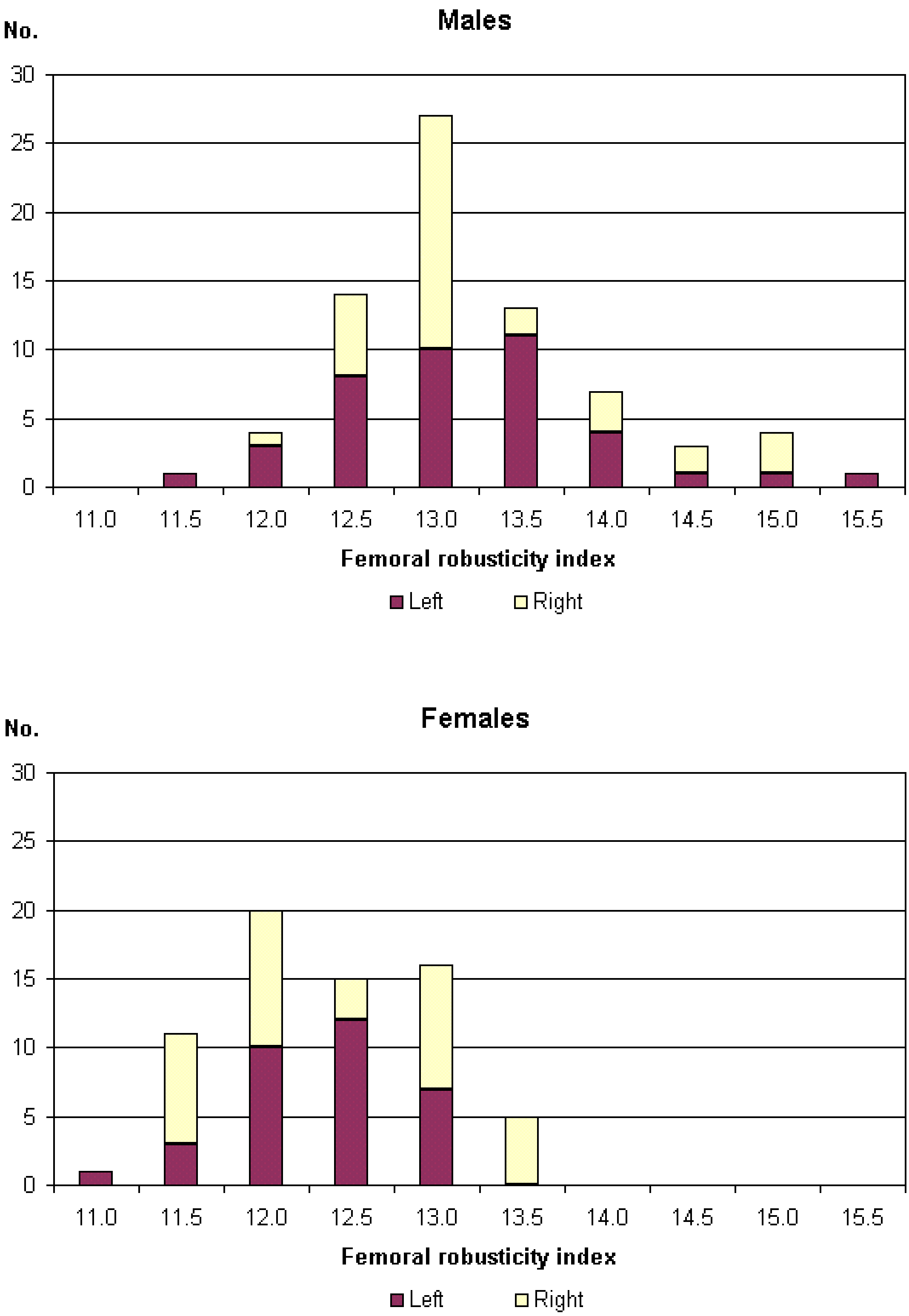
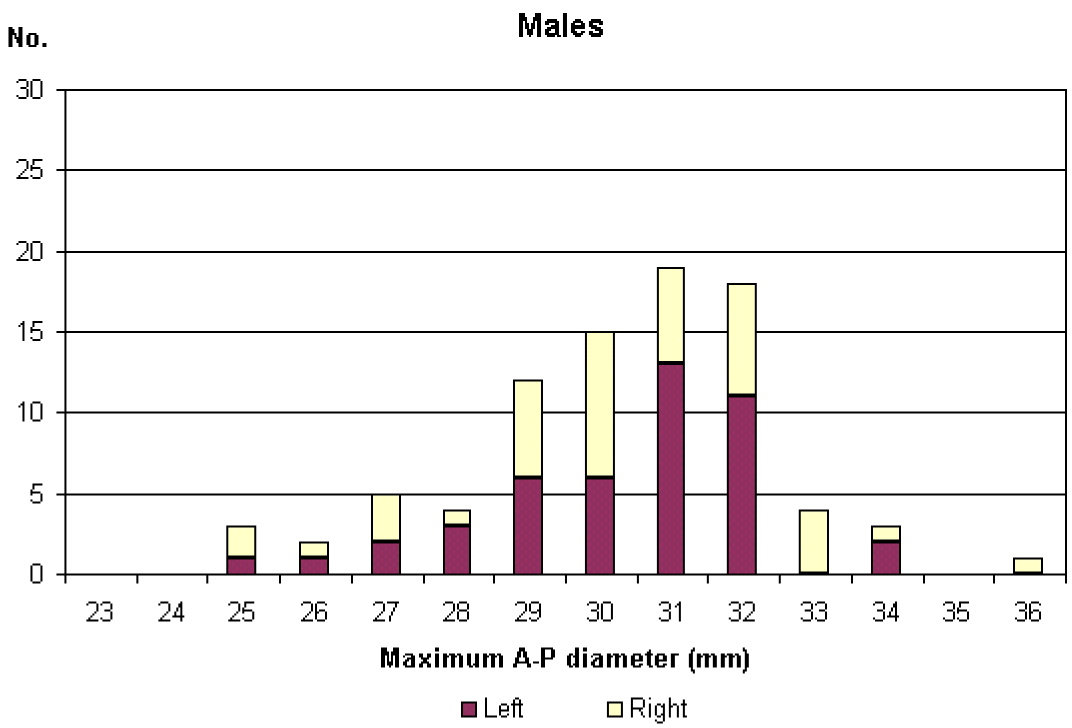


Figure 3.16. Femoral robusticity at The Hirsel.



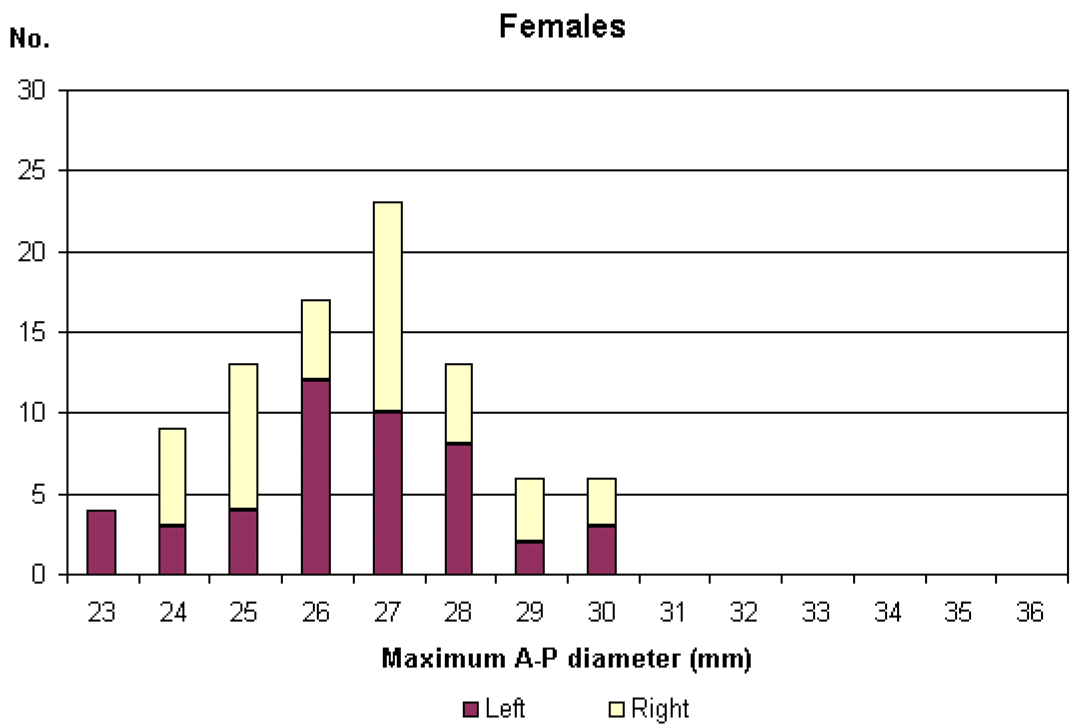


Figure 3.17. Femoral A-P diameter at The Hirsel.

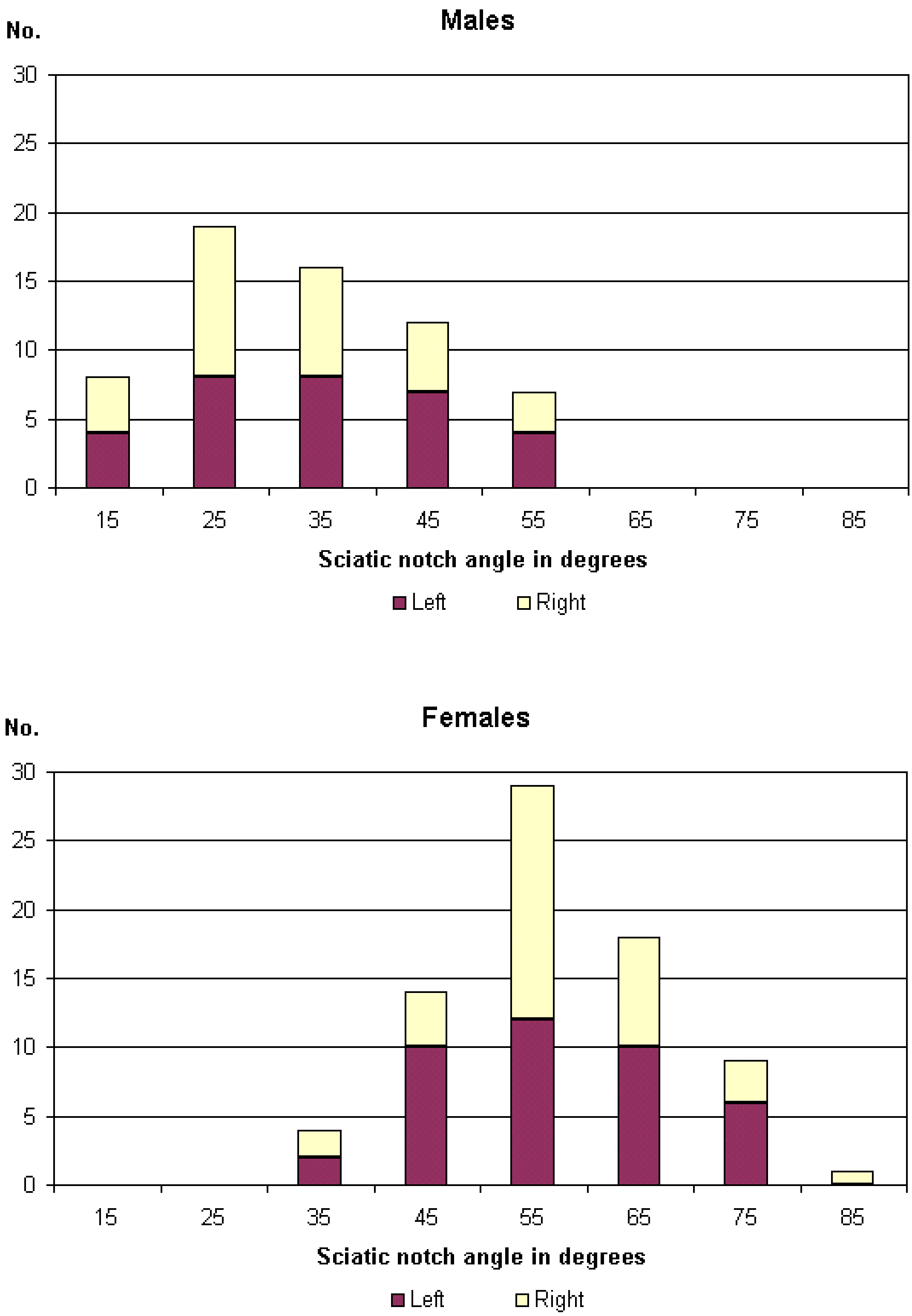


Figure 3.18. Sciatic notch angles at The Hirsel.

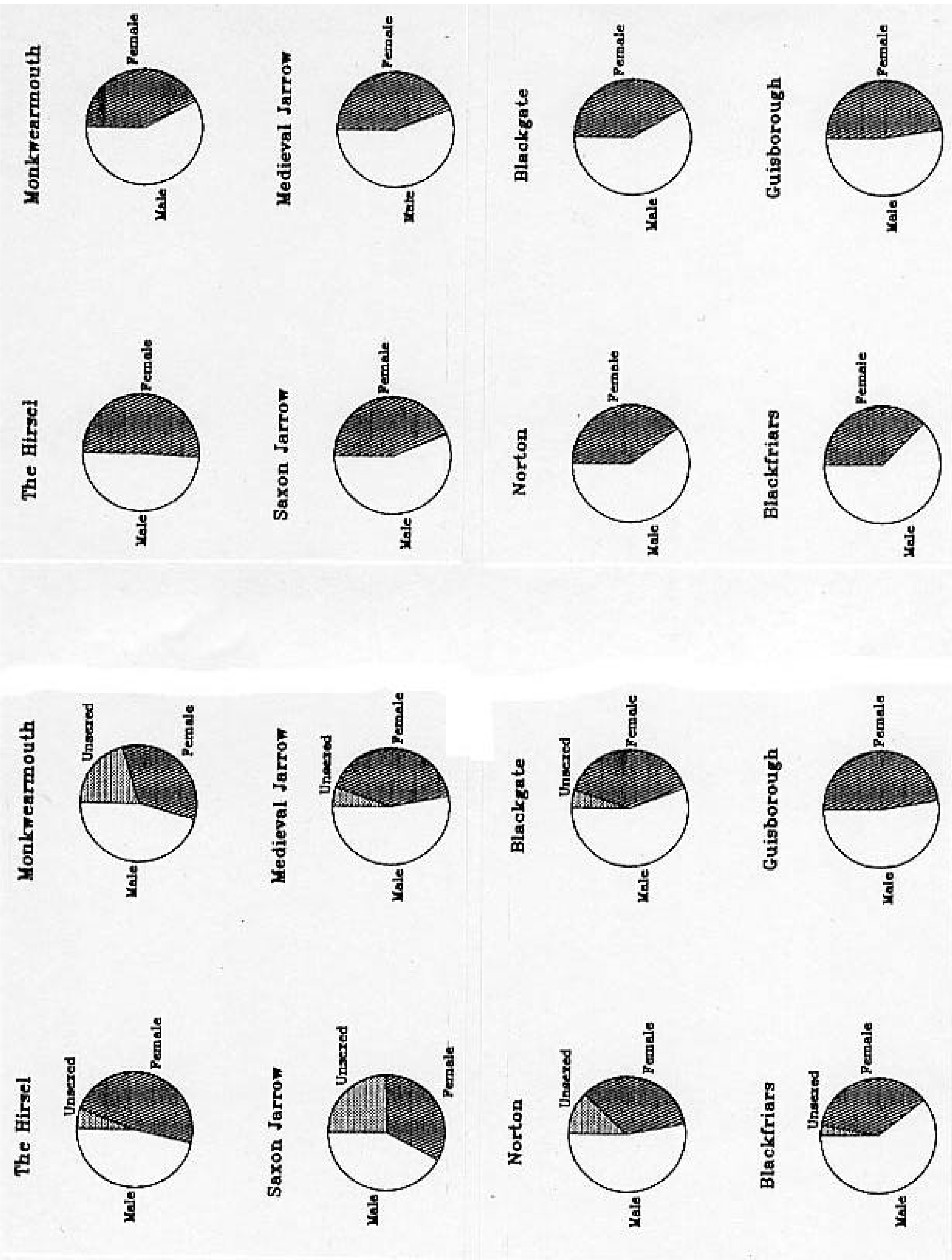


Figure 3.19. Proportions of sexed and unsexed adults.

Site	Male	Female	Unsexed	Ratio
HIR	84	87	10	49:51
MK	97	71	43	58:42
JA Sax	41	32	24	56:44
JA Med	61	48	6	56:44
GP	21	19	0	53:47
BG	58	41	5	59:41
BF	20	12	1	63:37
NEM	44	29	10	60:40

Table 3.11

In a demographically normal population it is usually expected that the ratio of men to women will be roughly 50:50. At all of these sites except The Hirsel the male:female ratio was biased in favour of males. This is probably due to the fact that most of the sites were monastic cemeteries, serving both the spiritual and the temporal communities, although at Norton and Blackgate this was unlikely to have been the case. It is possible, however, that some older females have been lost (or rendered unsexable) as a result of their lighter, more porous bones being more susceptible to erosion and disintegration. As Acsádi and Nemeskéri (1970) point out, however, the sex ratio obtained from the skeletal remains must not be regarded as the sex ratio of the entire population which the remains 'represent'. They state that 'Determination of the sex ratio is necessarily inaccurate because of the difficulties involved in determining the sex of children's skeletons, and its validity covers only the members of juvenile or older age groups, but not the whole population' (1970:66). They also note that if the sex ratio of a cemetery population is 1:1 but the age at death of males is higher, then 'it is obvious that more men than women were living at the same time in the community using the cemetery' (1970:66).

Bennet (1973) tried to overcome the problem of child sexing to some extent in his study of a prehistoric American series. He simply assumed a ratio of 50:50 boys and girls in each age group, and used these figures in his life tables by sex. Given that adult sex ratios are very rarely 50:50 in archaeological populations, however, it seems unlikely that child ratios will be, and this method will not be used here.

The life tables for the adults for each site by sex are presented in Figures 3.20 to 3.24. The life expectancies for Jarrow, Monkwearmouth and The Hirsel are shown graphically in Figure 3.25. Although in general life expectation for women appears to be lower than that for men at all the sites, at Monkwearmouth after age 17 women could expect to live slightly longer than men. Life expectancies at age 17 are fairly similar throughout the groups, although at Norton it was generally quite low, and both the Guisborough and Blackfriars women had a very low expectancy, probably caused by the small numbers of individuals rather than any other factor.

At Saxon Jarrow and at Monkwearmouth more women than men died young, but at Medieval Jarrow this was reversed. One possible reason for this is that the women were having babies at a later age in the later period, although it must be noted that reasons other than childbirth have been postulated for early death of females in the past, most of which involve poor nutrition. As it has already been suggested earlier in this section that the people of Medieval Jarrow were not malnourished, it is possible that the high percentage of deaths in females between 25-35, if this figure can be relied upon, was caused by pregnancy, although it is impossible to say for certain.

3.3. Fertility and Parturition Scars

It has been suggested by a number of workers that scars found in the bony pelvis can be used to determine the number of pregnancies per woman in a skeletal group. These scars are formed at the sacro-iliac joints and the dorsal surface of the pubis due to pregnancy stresses of the muscle and tendon attachments. However, similar grooves are also seen in men which has caused some authors (e.g. Houghton, 1974) to classify such scars into two groups, those which occur in both sexes and are therefore unrelated to pregnancy, and those which are thought to be caused by the stresses of childbirth.

In recent years a number of studies have tested the validity of the original theories that the pre-auricular sulcus and pubic dorsal pitting are related to pregnancy (Stewart 1970b) and that the number of children borne by each woman could be estimated from forms of the pit (Ullrich, 1975). Suchey et al (1979) tested the theories on a group of modern American women with known reproduction rates. They found a statistical association between the number of full-term pregnancies and the degree of pitting of the pubic bone, but the correlation was not strong. In a number of cases nulliparous women were found to have medium to large pits and multiparous women were found to have none. The size of pitting appeared to increase with length of time since the last pregnancy in some women. Scars seemed to be correlated both with age and with pregnancy, but they could not really be used to predict the number of pregnancies for an individual female.

The Hirsel: Males
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	ꝗ(x)	e(x)	C(X)
17	7	9.0	100.0	764.1	2078.2	0.09	0.011	20.8	36.8
25	24	30.8	91.0	756.4	1314.1	0.34	0.034	14.4	36.4
35	31	39.7	60.3	403.8	557.7	0.66	0.066	9.3	19.4
45	16	20.5	20.5	153.8	153.8	1.00	0.067	7.5	7.4

Estimated maximum age: 60 years

The Hirsel: Females
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	ꝗ(x)	e(x)	C(X)
17	17	21.5	100.0	713.9	1717.1	0.22	0.027	17.2	41.6
25	30	38.0	78.5	594.9	1003.2	0.48	0.048	12.8	34.6
35	19	24.1	40.5	284.8	408.2	0.59	0.059	10.1	16.6
45	13	16.5	16.5	123.4	123.4	1.00	0.067	7.5	7.2

Estimated maximum age: 60 years

Monkwearmouth: Males
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	ꝗ(x)	e(x)	C(X)
17	7	16.7	100.0	733.3	2197.6	0.17	0.021	22.0	33.4
25	11	26.2	83.3	702.4	1464.3	0.31	0.031	17.6	32.0
35	8	19.0	57.1	476.2	761.9	0.33	0.033	13.3	21.7
45	16	38.1	38.1	285.7	285.7	1.00	0.067	7.5	13.0

Estimated maximum age: 60 years

Monkwearmouth: Females
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	ꝗ(x)	e(x)	C(X)
17	9	26.5	100.0	694.1	2113.2	0.26	0.033	21.1	32.8
25	8	23.5	73.5	617.6	1419.1	0.32	0.032	19.3	29.2
35	2	5.9	50.0	470.6	801.5	0.12	0.012	16.0	22.3
45	15	44.1	44.1	330.9	330.9	1.00	0.067	7.5	15.7

Estimated maximum age: 60 years

Figure 3.20. Life Tables by sex: The Hirsel and Monkwearmouth.

Jarrow (Saxon): Males
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	ꝗ(x)	e(x)	C(X)
17	1	4.5	100.0	781.8	2611.4	0.05	0.006	26.1	29.9
25	5	22.7	95.5	840.9	1829.5	0.24	0.024	19.2	32.2
35	5	22.7	72.7	613.6	988.6	0.31	0.031	13.6	23.5
45	11	50.0	50.0	375.0	375.0	1.00	0.067	7.5	14.4

Estimated maximum age: 60 years

Jarrow (Saxon): Females
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	ꝗ(x)	e(x)	C(X)
17	2	11.1	100.0	755.6	2477.8	0.11	0.014	24.8	30.5
25	3	16.7	88.9	805.6	1722.2	0.19	0.019	19.4	32.5
35	5	27.8	72.2	583.3	916.7	0.38	0.038	12.7	23.5
45	8	44.4	44.4	333.3	333.3	1.00	0.067	7.5	13.5

Estimated maximum age: 60 years

Jarrow (Medieval): Males
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	ꝗ(x)	e(x)	C(X)
17	8	22.2	100.0	711.1	2336.1	0.22	0.028	23.4	30.4
25	6	16.7	77.8	694.4	1625.0	0.21	0.021	20.9	29.7
35	4	11.1	61.1	555.6	930.6	0.18	0.018	15.2	23.8
45	18	50.0	50.0	375.0	375.0	1.00	0.067	7.5	16.1

Estimated maximum age: 60 years

Jarrow (Medieval): Females
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	ꝗ(x)	e(x)	C(X)
17	4	10.8	100.0	756.8	2236.5	0.11	0.014	22.4	33.8
25	11	29.7	89.2	743.2	1479.7	0.33	0.033	16.6	33.2
35	9	24.3	59.5	473.0	736.5	0.41	0.041	12.4	21.1
45	13	35.1	35.1	263.5	263.5	1.00	0.067	7.5	11.8

Estimated maximum age: 60 years

Figure 3.21. Life Tables by sex: Saxon and Medieval Jarrow.

Jarrow (Saxon & Medieval): Males
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	$\bar{q}(x)$	e(x)	C(X)
17	9	15.5	100.0	737.9	2440.5	0.16	0.019	24.4	30.2
25	11	19.0	84.5	750.0	1702.6	0.22	0.022	20.2	30.7
35	9	15.5	65.5	577.6	952.6	0.24	0.024	14.5	23.7
45	29	50.0	50.0	375.0	375.0	1.00	0.067	7.5	15.4

Estimated maximum age: 60 years

Jarrow (Saxon & Medieval): Females
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	$\bar{q}(x)$	e(x)	C(X)
17	6	10.9	100.0	756.4	2315.5	0.11	0.014	23.2	32.7
25	14	25.5	89.1	763.6	1559.1	0.29	0.029	17.5	33.0
35	14	25.5	63.6	509.1	795.5	0.40	0.040	12.5	22.0
45	21	38.2	38.2	286.4	286.4	1.00	0.067	7.5	12.4

Estimated maximum age: 60 years

Figure 3.22. Life Tables by sex: Jarrow combined periods.

Norton: Males
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	$\bar{q}(x)$	e(x)	C(X)
17	15	34.9	100.0	660.5	1439.5	0.35	0.044	14.4	45.9
25	11	25.6	65.1	523.3	779.1	0.39	0.039	12.0	36.3
35	15	34.9	39.5	220.9	255.8	0.88	0.088	6.5	15.3
45	2	4.7	4.7	34.9	34.9	1.00	0.067	7.5	2.4

Estimated maximum age: 60 years

Norton: Females
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	$\bar{q}(x)$	e(x)	C(X)
17	11	39.3	100.0	642.9	1392.9	0.39	0.049	13.9	46.2
25	7	25.0	60.7	482.1	750.0	0.41	0.041	12.4	34.6
35	8	28.6	35.7	214.3	267.9	0.80	0.080	7.5	15.4
45	2	7.1	7.1	53.6	53.6	1.00	0.067	7.5	3.8

Estimated maximum age: 60 years

Blackgate: Males
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	$\bar{q}(x)$	e(x)	C(X)
17	1	2.5	100.0	790.0	2421.2	0.02	0.003	24.2	32.6
25	12	30.0	97.5	825.0	1631.2	0.31	0.031	16.7	34.1
35	12	30.0	67.5	525.0	806.2	0.44	0.044	11.9	21.7
45	15	37.5	37.5	281.3	281.3	1.00	0.067	7.5	11.6

Estimated maximum age: 60 years

Blackgate: Females
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	$\bar{q}(x)$	e(x)	C(X)
17	4	9.8	100.0	761.0	2193.9	0.10	0.012	21.9	34.7
25	8	19.5	90.2	804.9	1432.9	0.22	0.022	15.9	36.7
35	20	48.8	70.7	463.4	628.0	0.69	0.069	8.9	21.1
45	9	22.0	22.0	164.6	164.6	1.00	0.067	7.5	7.5

Estimated maximum age: 60 years

Figure 3.23. Life Tables by sex: Norton and Blackgate.

Blackfriars: Males
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	q̄(x)	e(x)	C(X)
17	2	10.5	100.0	757.9	1942.1	0.11	0.013	19.4	39.0
25	8	42.1	89.5	684.2	1184.2	0.47	0.047	13.2	35.2
35	5	26.3	47.4	342.1	500.0	0.56	0.056	10.6	17.6
45	4	21.1	21.1	157.9	157.9	1.00	0.067	7.5	8.1

Estimated maximum age: 60 years

Blackfriars: Females
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	q̄(x)	e(x)	C(X)
17	4	33.3	100.0	666.7	1437.5	0.33	0.042	14.4	46.4
25	4	33.3	66.7	500.0	770.8	0.50	0.050	11.6	34.8
35	3	25.0	33.3	208.3	270.8	0.75	0.075	8.1	14.5
45	1	8.3	8.3	62.5	62.5	1.00	0.067	7.5	4.3

Estimated maximum age: 60 years

Guisborough: Males
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	q̄(x)	e(x)	C(X)
17	0	0.0	100.0	800.0	2442.9	0.00	0.000	24.4	32.7
25	7	33.3	100.0	833.3	1642.9	0.33	0.033	16.4	34.1
35	6	28.6	66.7	523.8	809.5	0.43	0.043	12.1	21.4
45	8	38.1	38.1	285.7	285.7	1.00	0.067	7.5	11.7

Estimated maximum age: 60 years

Guisborough: Females
Number of individuals: 78 (92.9% of Total Excavated Individuals)

Age	D(X)	d(X)	l(x)	L(X)	T(x)	q(X)	q̄(x)	e(x)	C(X)
17	5	27.8	100.0	688.9	1577.8	0.28	0.035	15.8	43.7
25	6	33.3	72.2	555.6	888.9	0.46	0.046	12.3	35.2
35	5	27.8	38.9	250.0	333.3	0.71	0.071	8.6	15.8
45	2	11.1	11.1	83.3	83.3	1.00	0.067	7.5	5.3

Estimated maximum age: 60 years

Figure 3.24. Life Tables by sex: Guisborough and Blackfriars.

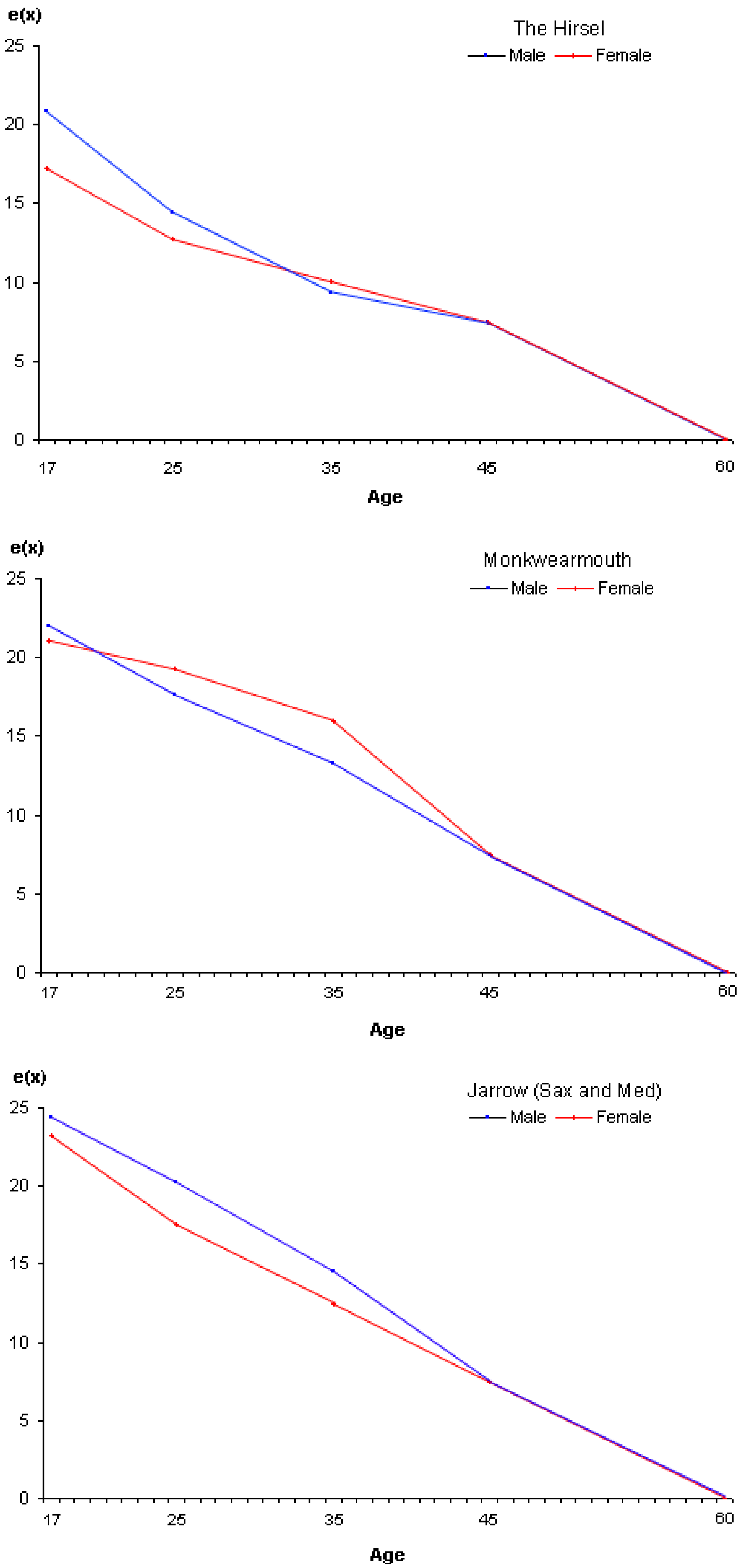


Figure 3.25. Expectation of life by sex.

Bergfelder and Herrmann (1980) found similar results in pubic bones from a modern group. A small exostosis on the superior edge of the pubic bone, the Tuberculum pubicum, was found to be an indicator of several births, and cavity formation on the dorsal surface of the pubis did appear to increase with the number of births. The features suggested by Ullrich (1975) to predict fertility were not found to be connected with number of births.

Most recently, Cox (1989) has found that the formation of pits and grooves on the pelves of women from Spitalfields has no correlation with the number of pregnancies. She has suggested (at the Conference on Archaeological Sciences, University of Bradford, Sept. 1989) that the length and width of the pre-auricular sulcus is associated with pelvic measurements. Large female pelves seem to be inefficient, causing cortical resorption and remodelling at the ligamentous attachments. If this is the case then female pelves must be more unstable than male since there is no correlation of scars with size in males, and there is no pubic pitting in males. Cox suggests that the so-called scars of parturition are actually formed as a consequence of the size and shape of the pelvis, with oestrogen production also being a factor.

Although these results may be disappointing in some respects, it is perhaps not surprising that bones, which often provide such ambiguous information when considering age and sex, cannot provide detailed information about parturition either. The most that can be stated at present is that a female skeleton with large pits or grooves on her pelvis is more likely to have borne children than one without. The preauricular sulcus is perhaps a better indicator of sex than of fertility, and in this study it has has only been used as a sexing characteristic (as noted in Section 3.2.2.).