

Measuring misery: Body mass, ageing and gender inequality in Victorian London [☆]

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Abstract

This paper investigates the proposition made by contemporaries that women and children disproportionately bore the brunt of industrialisation and urbanisation by examining how poor working-class families in mid-Victorian London shared their resources. Allocation is inferred from independently pooled cross-sectional data on the height, weight and body mass of 32,584 prisoners from a London House of Correction. As boys and girls moved into adulthood, they made some biological gains consistent with 'catch up' on earlier deprivation. The body masses of women and men then diverged. When families grew, women shrank. When children left home taking their wages with them, when age reduced the earning capacities of herself and her husband, women suffered even more, becoming dangerously underweight in older age. Ageing was a gendered experience.

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1. Introduction

Over recent years, development economists and economic historians have been turning their attention on the institution of the family and the ways in which households act to mediate the relationship between individuals and the economy. One fundamental aspect of this mediation is to do with resource allocation and living standards. It is through the social organisation of the family that most individuals experience material wellbeing. Living standards are not based solely upon an individual's own earning capacity but are a function of the family's *total* earning capacity, supplemented (or not) by non-market production and services, and the decisions made about the way resources are pooled and distributed. Classic approaches to the study of living standards which focus on GDP or individual real wages render the family invisible. Even perfect wages data for men and women, boys and girls, are inadequate to penetrate questions of non-monetary living standards or of distribution. Assumptions that all members of a family share equally in access to household resources, or contribute equally, are challenged by the finding from some developing countries that labour market participation has a strong bearing on who can access welfare-enhancing resources, such as nutrition, housing, education and health (Behrman, 1988; Osmani and Sen, 2001; Pitt et al., 1990; Sen, 1990). How families operate to secure resources and distribute them is thus a fundamental economic issue.

An intriguing gap has recently been opening up in the British economic history literature on the family during industrialisation. On the one side is a story of gender inequality in the male breadwinning household, on the other a tale of egalitarianism. Interestingly, from its inception, nutrition and aspects of biological wellbeing have featured prominently in this discourse. Work on the heights of men and women during British agricultural and industrial revolutions tied the fall in country women's status and stature to declining labour market opportunities for rural women (Nicholas and Oxley, 1993), a finding also made by research into differential mortality rates (Humphries, 1991; McNay et al., 2005) and household budgets (Horrell and Humphries, 1992, 1995; Horrell and Oxley, 1999, 2000). A pro-adult male gender bias in resource allocation was in keeping with contemporary anecdotal evidence. Dr. Edward Smith observed, in 1863, that in the countryside 'the labourer eats meat and bacon almost daily, whilst his wife and children may eat it but once a week, and that both himself and his household believe that course to be necessary, to enable him to perform his labour' (Sixth Report of the Medical Officer, 1864, p. 249). Four decades hence, the theme was still apparent. The noted social investigator Seeböhm Rowntree observed:

We *see* that many a labourer, who has a wife and three or four children, is healthy and a good worker, although he only earns a pound a week. What we *do not see* is that in order to give him enough food, mothers and children habitually go short, for the mother knows that all depends upon the wages of her husband (Rowntree, 1902, p. 135).

Anecdotal evidence is nonetheless far from robust. In an important contribution using aggregate data on heights, weights and body mass of the British population from 1820, Roderick Floud reached a different conclusion. 'All one can say is that these new data do not support the suggestion that there were gross inequities in the division of resources within nineteenth-century households'.

The data do not, however, support the conclusion that Victorian male adults were significantly better nourished, and therefore less stunted or wasted, than women and children; nor do they show that Victorian male children were better nourished than their female siblings. This is surprising, since there is a substantial evidence from nineteenth-century social surveys and remarks by contemporary observers that, in times of distress, the male breadwinner was protected, receiving such food as was available while women and children went without (Floud, 1998).

Floud suggests that the failure of weight and body mass to reflect such inequalities could be reconciled with contemporary testimony if women and children adjusted their activity levels downwards, but given what else is known about life and work in the nineteenth-century, this option seems remote. Instead, the weights and masses of men, women and children suggest an egalitarian household. In similar vein, Bernard Harris found boys and girls seemed to be treated equally.

Taken together with the evidence provided by children's heights, the mortality data provide few grounds for believing that past generations of girls were any more likely to suffer discrimination in the distribution of essential resources than girls today (Harris, 1998, p. 443).

However, Harris argues that this equality changed in adulthood, where an anti-female bias was apparent and may have contributed to excess mortality among women. So, questions remain as to whether there was discrimination within the nineteenth-century English household, and what form best describes the functioning of that household.

The international literature has seen the development of three major models which compete to explain household behaviour. In the standard unitary model the household's objective is to maximise a joint utility function subject to constraints. Such a model implies income pooling and resources being allocated fairly between all members of the unit. Food and other consumption depend on total resources brought into the household, and the number of individuals within it, and not upon the position of a given individual within an internal power structure (Becker, 1981).

Closely related is the risk minimisation or 'safety-first' model. Families still try to maximise their objective function but can be constrained by insufficient resources and inability to smooth consumption, for example, through access to credit markets. They therefore allocate resources (such as food) to minimise risk. Using a safety-first model of decision making, Wright and Kunreuther (1975) explain the corn-or-cotton crop choice made by farming families in the American south in the nineteenth-century. Families grew corn to ensure food security then used surplus land for cotton, thus crop choice showed less response to price variables than would normally be expected. Those households with least land showed the highest concentration of corn growing.¹ In this model, resources may be disproportionately allocated as a hedge against hard times.

An alternative interpretation is that outcomes are negotiated within the household and are the product of bargaining. Bargaining positions are determined by individuals' threat points: the utility each would gain in the event of non-cooperation. The stronger the position (the less to lose) in the event of household dissolution, the more that individual can capture the gains from cooperation. Women, because of their weak labour market position, lack of property rights and responsibility for social reproduction tend to lose out to men in this competition and hence receive a smaller share of the household's resources. Much empirical work is supportive of bargaining being a more accurate description of the internal operation of the household than the unitary model. Labour supply decisions and expenditure choices are affected by who earns and controls money within the household (Manser and Brown, 1980; McElroy and Horney, 1981; Hoddinott and Haddad, 1995; Udry, 1996). Most recently, attention has turned to the position of working children, especially girls, in these family negotiations, and it has been demonstrated that in nineteenth-century American households teenage children's earnings enhanced their bargaining position within the household and resulted in greater expenditures on children's clothes (Moehling, 2005).

In the context of resource allocation within the household leading to height and body mass outcomes these models would generate different predictions. The unitary model would imply no persistent gender gap, beyond that determined by any biological factors. The 'safety-first' model would predict that adult male body mass would exceed adult female body mass but that the difference would decrease as resources increased and constraints lifted. Individual human capital might proxy status and the resources available in a family; increments in human capital should therefore lead to biometric gains for women more than for men, as inequality fell with increasing resources. The model might also see gains for late adolescents (boys more than girls) when they started to contribute to the household coffers: because total household income increased as a result of their earnings, from which everyone potentially benefited, and because risk minimisation now required the substantial earning capacity of sons to be protected.

Like the safety-first model, the bargaining model would also predict differences in male and female body mass but the persistence of these differences would depend on the factors underpinning threat points. Human capital plays an insignificant role. More important is relative earning capacity within the household (which might relate to human capital, but might not). Children were decidedly weak on this, but the entry of adolescents into the labour market should have improved teenage bargaining powers. As boys became breadwinners

¹ However, note the comments by McGuire and Higgs (1977) on the usefulness and appropriateness of this model.

and girls became mothers in families of their own, the power balance between the sexes shifted. The model predicts that breadwinners' earning capacity would guarantee men status enabling them to secure more resources, and consequently more mass—at least until their own earnings dropped and their supremacy was challenged by other family members bringing in significant contributions. The prediction for women is that marriage would reduce bargaining power. Marriage and motherhood effectively removed many women from the labour market, or constrained her engagement with it, and London offered few opportunities for self-provisioning. Such economic dependence afforded women little purchase in negotiations. Furthermore, motherhood might have a second direct bearing on a woman's threat point: the dissolution of a marriage threatened her with life as a sole parent, something that was both highly stigmatized and economically catastrophic. This is not to say that men were indifferent to their families' futures, but the tendency for women to retain responsibility for children after marital breakdown did give women a greater incentive to maintain cooperation and keep the family together. The more the number of dependent children, the harder it was to leave, the more difficult it was to undertake paid work outside or inside the home, the greater the incentive to keep the male breadwinner in the family, and the lower a married woman's bargaining power. Indeed, the near impossibility of a wife walking out on her family in nineteenth-century England arguably meant she had no economic bargaining power at all, although she may have negotiated on non-economic matters. In addition to predictions regarding adult men, and adolescents, the bargaining model would therefore predict different biological outcomes for women by lifecycle stage, marital status, and the presence or absence of children (and indeed husbands) in the matrimonial home.

Family decision making can thus be brought into focus by employing anthropometric measures of wellbeing because net nutritional status is sensitive to distributional inequalities. Specifically, height tells us about *cumulative* net nutritional status from conception to maturity, even capturing conditions at pre-conception plus maternal health and wellbeing (and possibly paternal health at conception). However, it cannot be used to date nutritional insults exactly nor can heights respond to conditions experienced during adulthood. Weight is different. Across an individual's lifetime, weight can fluctuate in response to shifting levels of nutrition (amount, quality), demands on that nutrition, and also illness and the ability to absorb nutrients. Weight, therefore, offers a guide to *current* net nutritional status. As it is normal for height and weight to be strongly correlated, researchers use a measure of weight adjusted for height: the body mass index (BMI) developed by Adolphe Quetelet in the early nineteenth-century, measured as weight in kilograms divided by the square of height in metres.

Body mass offers a snapshot of life at a given moment, and measures over-consumption (leading individuals to be overweight or obese) and under-consumption (when energy intake is inadequate to sustain both a stable body weight and 'a socially desirably level of activity'; Food and Agricultural Organization, 1997, p. 3). Care needs to be taken with the explanation: under-nutrition can derive from either a shortfall in the supply of nutrients, or problems of malabsorption caused by illness or protracted periods of starvation that leave the body unable to process ingested food; and while research has established that changes in BMI are primarily caused by changes in fatness, among the elderly there is the additional possibility of weight loss caused by diminishing bone density or muscle bulk (Health Survey for England, 1996, 2001). But with care in interpretation, information on the masses of people's bodies at different stages of their lives offer unparalleled insights into the wellbeing of populations: their health, labour productivity, consumption of resources, and experience of ageing.

Height, weight and body mass are indicators used to capture a complex concept—living standards—and which enable comparisons between groups within society. Studies of the modern world now routinely use these measures,² and there are a growing number of historical studies that deal with height, weight and body mass (for example, Steckel, 1986; Komlos, 1987; Goldin and Margo, 1989; Costa, 1993, 2003, 2004; Cuff, 1993; Riley, 1994; Costa and Steckel, 1997; Fogel and Costa, 1997; McCalman and Morley, 2003; Fogel, 2004; Linares and Su, 2005; Czerniawski, 2007). This paper offers an exploration of height, body mass and

² The progenitor of this field was Waaler (1984), and his work was extended by Engeland et al. (2003). Current surveys collecting anthropometric data include the Annual Health Survey for England, the National Diet and Nutrition Survey, and international studies by the Food and Agricultural Organization (1997, 2001), United Nations Children's Fund (1990), the World Health Organization (1983, 1998), and the World Bank (2005).

inequality over the lifecycle. The first aim is to map the biological consequences for poor males and females of ageing in mid-Victorian London, and second, to consider what type of household behaviour as outlined above would be consistent with the observed anthropometric outcomes. Using height, weight and body mass for 32,584 individual prisoners incarcerated in the Surrey House of Correction in Wandsworth between 1858 and 1878, and a second data set on 1018 English female prisoners up to 1887, this paper examines what it was like for the working (and sometime criminal) poor to grow up and grow old in mid-Victorian London.

2. Data

Prison data are at the heart of this study. Houses of Correction had a long history. Dating back to Elizabethan times, Houses of Correction (also known as bridewells) were locally-administered institutions aimed at ‘correcting’ the behaviour and attitudes of welfare recipients—the ‘idle poor’—and misdemeanants (those guilty of petty crime, primarily social incivilities and thefts below the value of one shilling; [Innes, 1987](#)). From 1706 Parliament permitted judges to sentence convicted felons to terms of imprisonment in a House of Correction, for up to two years with the option of hard labour, and in so doing the first tentative steps were taken towards establishing incarceration as what would become Britain’s principal form of secondary punishment. (From the nineteenth-century, national penitentiaries would be built to house felons on longer sentences; in the meantime, such ‘serious’ felons were shipped out to America and later Australia; [Meredith and Oxley, 2007](#).) Houses of Correction formed one branch of the local prison system—the others being gaols (holding cells for those awaiting trial or the execution of their sentences) and debtors’ prisons (for civil offences)—all finally unified under the 1865 Prison Act. The system expanded with building booms in the 1790s, 1820s and again in mid-century, when the Surrey House of Correction at Wandsworth was commissioned, in 1847. It was built on the Benthamite principle of the panopticon at the cost of some £140,319 11s 4d ([Mayhew and Binny, 1862, p. 495](#)). It was designed to hold 750 prisoners based on the ‘separate system’ of confinement, although in practice usually held over 800.³ In addition to surveillance, management embraced other cutting-edge penal practices that formed part of the separate system. Some of the most chilling pictures come from Wandsworth Prison, of hooded prisoners, silent corridors, and lone prisoners in solitary cells turning cranks for the obligatory 12,000 pointless revolutions per day.⁴ Wandsworth was described as ‘one of the best correctional prisons, if not the best, in the United Kingdom’ ([Mayhew and Binny, 1862, p. 505](#)). Best practice included the identification and measurement of their inmates.

The heights and weights of males and females of nearly all ages are recorded in the Wandsworth prison registers.⁵ The Prison Commission series (PCOM2) commences at volume 230 in 1858 and runs through uninterrupted to volume 289 in 1878. There are approaching 90,000 prisoners documented. Throughout the series the heights and weights of men are recorded. What of women prisoners? In 1858 there was a brief attempt to describe the women’s stature as ‘short’, ‘malett’ or ‘tall’, but the big breakthrough came when the women’s wing acquired its own height measure and weighing machine in January 1866.⁶ This allowed the matron and female warders to start measuring their female charges. By February they were proficient at the task, and from then on, women’s heights and weights were diligently measured and recorded, just like the men’s. Heights were measured in feet and inches, mainly to the half inch and with only a small proportion to the quarter inch. Weights were measured in stones and pounds. Outgoing weight was not consistently recorded in the early years, but incoming weight was. On the basis of admittance procedures, we believe that prisoners entering into Wandsworth House of Correction were measured naked and unshod. Accordingly, we make no adjustment for shoes or clothes when calculating heights, weights and body mass. If we are wrong, this paper overestimates these nineteenth-century biometrics.

The following paper reports on a sample of these data. [Table 1](#) lists the number of cases per year, by sex. Different rules governed the selection of males and females for inclusion in the study, due to the completeness of the data and differences in their incarceration rates. Males were sampled to include whole volumes for the

³ For a discussion of the separate system, see [McGowan \(1995\)](#).

⁴ Some prisoners, notably children, were required to do 10,000 revolutions per day ([Mayhew and Binny, 1862, p. 515](#)).

⁵ For a description of the admittance procedure, see [Mayhew and Binny \(1862, p. 505–508\)](#).

⁶ This is inferred from the date when the records commenced recording weight for female prisoners (January) and height (February).

Table 1
Data collected from prison registers from the Wandsworth House of Correction, Surrey

Year convicted	Collected		Representative matched samples	
	No. female prisoners	No. male prisoners	No. female prisoners	No. male prisoners
<i>PCOM2 Prison Commission Series 2</i>				
1858		691		
1859		2516		
1860		220		
1866	1224	3508	1224	3508
1867	869			
1868	993			
1869	1378			
1870	1148			
1871	1491			
1872	1720			
1873	1764			
1874	1588			
1875	1713			
1876	1745			
1877	1600	1003	1600	1003
1878	2350	5063	2350	5063
Total	19,583	13,001	5174	9574
Total females and males		32,584		14,748
<i>PCOM4 Prison Commission Series 4</i>				
1825	1			
1857	3			
1859	2			
1861	1			
1862	1			
1863	3			
1864	11			
1865	48			
1866	87			
1867	53			
1868	36			
1869	21			
1870	18			
1871	30			
1872	23			
1873	23			
1874	35			
1875	20			
1876	32			
1877	36			
1878	62			
1879	81			
1880	101			
1881	103			
1882	83			
1883	75			
1884	25			
1885	2			
1887	1			
Unknown	1			
Total	1018			

Source: Prison Commission Series 2: Wandsworth Prison Registers PCOM2/230–289. The National Archives, Kew.
Prison Commission Series 4: Female licences PCOM4/50. The National Archives, Kew.

years 1858 and 1859/60 (the earliest records with weight), 1866, and 1878 (the last year available), yielding a sample of 13,001. All females for whom height and weight were recorded were collected, from the earliest recording of weight in 1866 through to the end of the series in 1878. This created a data set of 19,583 females, and a grand total of 32,584 individuals. Information was collected on age, height, incoming weight, pockmarks, occupations, literacy, religion, country of birth, registration number, date of custody, and date and registration number of last conviction where relevant. Out weight was recorded for 14,013 individuals, along with sentence and term in prison. Soldiers could be identified as they were recorded in blue pen. A note was made when a woman was pregnant (there were 80 such cases), stating how many months gone, and this insight was duly recorded on the computer. In a subset of cases (1907), more detailed information was gathered on crime, type of offence (felony or misdemeanour) and punishment, in order to assess the nature of the prison population. Wandsworth prison provides series of cross-sectional data which can be treated as pseudo panel data. When comparing males with females we restrict the analysis to a representative matched sample, including only those years where we have data for both sexes. The data does have one significant disadvantage: it fails to record marital status.

A second, related data set compensates for this. PCOM4 is a set of records relating to different prisons collected when licences for release were granted for female prisoners. These records contain a considerable amount of information. Of particular interest here are height, weight and age data and also information on family structure (marital status and number of living children). In addition, it documents skills (occupation, ability to read and write), place of birth (usually town, county and country), place of conviction, crime, and length of sentence. Height and weight data were collected for the whole sample on leaving prison and for a smaller subsample on entering prison. It is this entry data we utilise as it reflects the circumstances faced by women in the outside world prior to their entry into prison. In total, 1018 records of female prisoners were collected spanning the period 1825–1889. However, few records fell into the earlier and very late years so the analysis focuses on the records collected between 1864 and 1884.

3. The prisoners

Whenever working with a population sample, questions of selectivity arise. In the context of this paper, which is concerned with ageing, it is also important to establish if selectivity varied by age or gender. For example, were older women drawn from a different, more disadvantaged group, compared with younger women or older men? Prisoners in our study can be compared with the underlying population recorded by the national census. Two large projects have computerized samples of the census enumerators books for 1851 and 1881, years falling either side of our study. These data have generously been made available through the UK Data Archive at the University of Essex. Anderson et al. (1979) have assembled a 2% systematic stratified cluster sample of some 415,000 individuals recorded in the enumerators returns of the 1851 Census of Great Britain. Their cluster did not include the Wandsworth registration district, so for 1851 we draw on the returns for the London district of Surrey, the catchment area for Wandsworth House of Correction. Schurer and Woollard (2003) have compiled a 5% random sample for 1881, providing data on more than 1.4 million individuals. For 1881 data for the Wandsworth registration district have been extracted. For simplicity, the following comparisons focus on those individuals born in England.

The first point to note is that the criminal justice system drew into prison everyone from a 7-year-old English boy through to an 89-year-old woman who had been born at sea. It is the breadth of this net's coverage that makes prisoners useful candidates for a study of ageing. The overall age distribution was a distorted bell, peaking from the later teens to 20s, with a long right-hand tail. Juvenile delinquency in England was a masculine affair (Margery, 1978; King, 1998; Shore, 1999). While 10% of females were aged 18 years or less, this category accounted for a substantial 26% of males. Males and females had median ages of 23 and 30 years, respectively (their Irish compatriots were more mature, with median ages of 32 and 38 years, respectively). Table 2 provides the age distributions for males and females in Wandsworth House of Correction, and in the 1851 and 1881 census samples. While covering a wide age span, prisoners differed from the non-incarcerated population. For women, the principal difference arose from the absence of the under 15s: once adjusted for, the proportions at different ages were quite similar until after age 55 when the numbers of prisoners declined. The same was not true of males where the delinquency factor meant there were appreciably more

Table 2
Age distribution in Wandsworth: census samples and prison data

Age	1851 Census for Surrey			1881 Census for Wandsworth			Wandsworth House of Correction	
	N	Percent	Adj. percent	N	Percent	Adj. percent	N	Percent
<i>English-born females</i>								
<5	502	11.5		1715	13.3			
5–14	766	17.6		2895	22.5		250	1.5
15–24	901	20.7	29.2	2634	20.5	31.9	4541	27.9
25–34	762	17.5	24.7	1935	15.0	23.4	5151	31.6
35–44	559	12.8	18.1	1501	11.7	18.2	3656	22.4
45–54	404	9.3	13.1	1011	7.8	12.2	1756	10.8
55–64	250	5.7	8.1	689	5.3	8.3	716	4.4
65–74	154	3.5	5.0	364	2.8	4.4	202	1.2
75–84	49	1.1	1.6	117	0.9	1.4	18	0.1
85+	5	0.1	0.2	18	0.1	0.2	1	0.0
Total	4352	100.0	100.0	12,879	100.0	100.0	16,291	100.0
<i>English-born males</i>								
<5	501	14.3		1744	14.6			
5–14	773	22.0		2720	22.8		786	6.8
15–24	655	18.7	29.3	2506	21.0	33.7	5462	47.1
25–34	584	16.6	26.1	1792	15.0	24.1	2576	22.2
35–44	430	12.2	19.2	1383	11.6	18.6	1439	12.4
45–54	268	7.6	12.0	912	7.7	12.2	839	7.2
55–64	185	5.3	8.3	533	4.5	7.2	349	3.0
65–74	88	2.5	3.9	234	2.0	3.1	117	1.0
75–84	21	0.6	0.9	79	0.7	1.1	17	0.1
85+	6	0.2	0.3	7	0.1	0.1		
Total	3511	100.0	100.0	11,910	100.0	100.0	11,585	100.0

Drawn from: Anderson, M., Collins, B. and Stott, C., *National Sample from the 1851 Census of Great Britain*, 1979. SN: 1316. Schurer, K. and Woollard, M., *National Sample from the 1881 Censuses of Great Britain*, 2003. SN: 4375. Prison Commission Series 2: *Wandsworth Prison Registers* PCOM2/230–289. The National Archives, Kew.

adolescents and men in their early 20s, and consequently proportionally fewer adult men, particularly from their 40s onwards.

Household level data from the censuses provide trends in marital status by age. One problem with the principal prison registers used in this study is their failure to record whether prisoners were single, married or widowed. If the data pertain much more to singletons than families, then measures of current nutritional status reveal less about household behaviour and resource allocation within families, and more about the worth of wages and inequalities in the labour market. PCOM4 gives some purchase on this problem, for women. Table 3 provides figures for women and men in the 1851 census for Surrey and the 1881 census for Wandsworth, along with female prisoners on licence from PCOM4. All are English-born. Among women and men enumerated in the census, a similar pattern pertains in both 1851 and 1881, with most marrying in their late 20s and early 30s, and a few more into their early 40s. As expected, the proportion losing spouses increased with age so that half of women in their sixties were widows; most men at this age still had a wife. Among female prisoners were fewer single women, roughly similar numbers who were married, but a greater proportion of widows. The over-representation of widows was most pronounced in the younger age categories, with three and four times as many among those in the 35–44 and 25–34 year age brackets. This discrepancy may hint at the economic and social vulnerability of widows, especially those left with young children. If there is an implication for our analysis it is that younger women may have been drawn disproportionately from a disadvantaged group.

The census did not register literacy. It did, as we have seen, record age, and this offers an approximation for numeracy using a technique known as age heaping. Age heaping, or lack of numerical skill, is typically higher among the illiterate, the poor, and the aged (Budd and Guinnane, 1991; Crayen and Baten, 2008; Baten et al.,

Table 3
Marital status by age in Wandsworth: census samples and prison data

English-born females																		
1851 census for Surrey						1881 census for Wandsworth						1864–84 prisoners (England)						
Single		Married		Widowed		Single		Married		Widowed		Single		Married		Widowed		
N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	
<5	125	100.0				1715	100.0											
5–14	287	100.0				2895	100.0					1	100.0					
15–24	714	84.6	128	15.2	2	0.2	2212	84.0	412	15.6	10	0.4	72	69.2	32	30.8		
25–34	291	38.6	438	58.1	25	3.3	657	34.0	1217	63.1	56	2.9	44	28.6	91	59.1	19	12.3
35–44	102	18.4	388	69.9	65	11.7	301	20.2	1087	72.9	104	7.0	13	12.0	59	54.6	36	33.3
45–54	66	16.5	240	60.2	93	23.3	206	20.5	637	63.3	164	16.3	4	7.3	26	47.3	25	45.5
55–64	36	14.6	118	47.8	93	37.7	111	16.3	373	54.9	195	28.7	1	3.1	11	34.4	20	62.5
65–74	16	10.7	39	26.0	95	63.3	67	18.5	113	31.1	183	50.4			3	37.5	5	62.5
75–84	5	10.2	5	10.2	39	79.6	18	15.4	18	15.4	81	69.2			1	100.0		
85+					5	100.0	1	5.6	1	5.6	16	88.9						
	1642		1356		417		8183		3858		809		135		223		105	
English-born males																		
1851 census for Surrey						1881 census for Wandsworth												
Single		Married		Widowed		Single		Married		Widowed		Single		Married		Widowed		
N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	
<5	117	100.0						1744	100.0									
5–14	270	100.0						2720	100.0									
15–24	548	89.8		62	10.2			2211	88.2	294	11.7			1	0.0			
25–34	182	31.4		387	66.7		11	1.9	555	31.2	1206	67.8			18	1.0		
35–44	42	9.8		369	86.0		18	4.2	166	12.0	1163	84.2			52	3.8		
45–54	14	5.2		236	88.1		18	6.7	76	8.4	773	85.3			57	6.3		
55–64	12	6.5		142	77.2		30	16.3	47	8.9	425	80.0			59	11.1		
65–74	2	2.3		64	73.6		21	24.1	21	9.0	167	71.7			45	19.3		
75–84	1	4.8		13	61.9		7	33.3	1	1.3	48	61.5			29	37.2		
85+				4	66.7		2	33.3			1	14.3			6	85.7		
	1188		1277		107			7541		4077		267						

Drawn from: Anderson, M., Collins, B. and Stott, C., *National Sample from the 1851 Census of Great Britain*, 1979. SN: 1316. Schurer, K and Wollard, M., *National Sample from the 1881 Census of Great Britain*, 2003. SN: 4375. Prison Commission Series 4: *Female licences* PCOM4/50. The National Archives, Kew.

forthcoming). Conversely, age heaping is less prevalent among the literate, those who were better off, and the young. It has been argued that numeracy had a greater impact on shaping individual occupational outcomes than did school attendance (Long, 2006, p. 1046). Age heaping is therefore a useful indicator of disadvantage and social position. The technique is based on the misreporting of age. In a random sample, 10% of people would have a rounded age (i.e. exactly divisible by 10). Innumerate individuals are thought to estimate their age, with a greater likelihood of reporting a rounded age, such as 30 or 40 years, rather than, say, 29, or 41. Innumeracy therefore shows up when samples exhibit more than 10% of people on rounded ages. Populations have been known to display high levels of age heaping. For example, in a study of Irish emigrants to the United States in 1841, 30% of those aged in their early 20s reported their age as a multiple of 10, a proportion rising to nearly 80% among those in their early 50s (Erickson, 1989, p. 361). However, there is a note of caution: that heaping increases with age can reflect lower levels of numeracy, or that the test of knowing your exact age becomes more challenging the older you are, involving memory as well as numeric ability.

In stark contrast to the 1841 Irish example, there was only limited evidence of age heaping among the English, with little to distinguish between men and women in the 1851 census books for Surrey, those incarcerated in Wandsworth between 1858 and 78, and the 1881 census for Wandsworth. The results are reported separately for females and males in Figs. 1 and 2, respectively. As sample size falls notably for prisoners, reliability does likewise; for this reason the analysis focuses on those aged under 65. Among all teenagers and those in

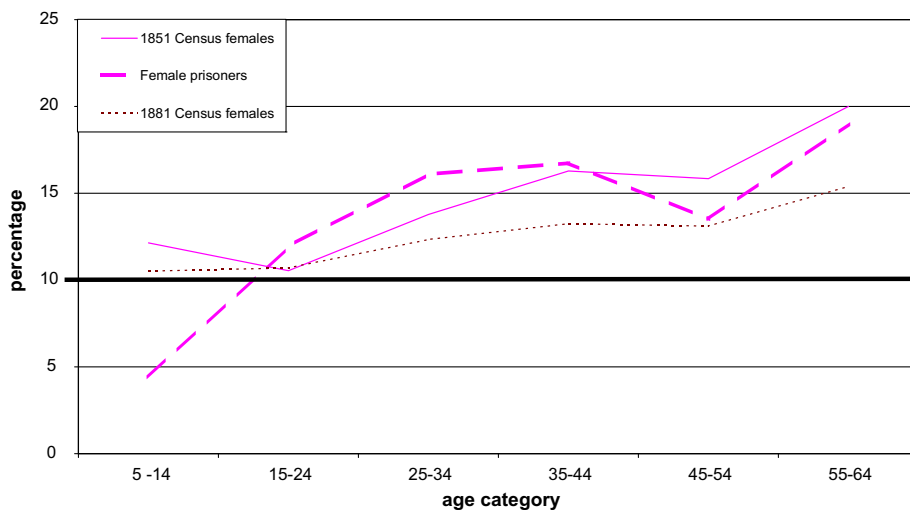


Fig. 1. Female age heaping by age category: Wandsworth census samples and prison data.

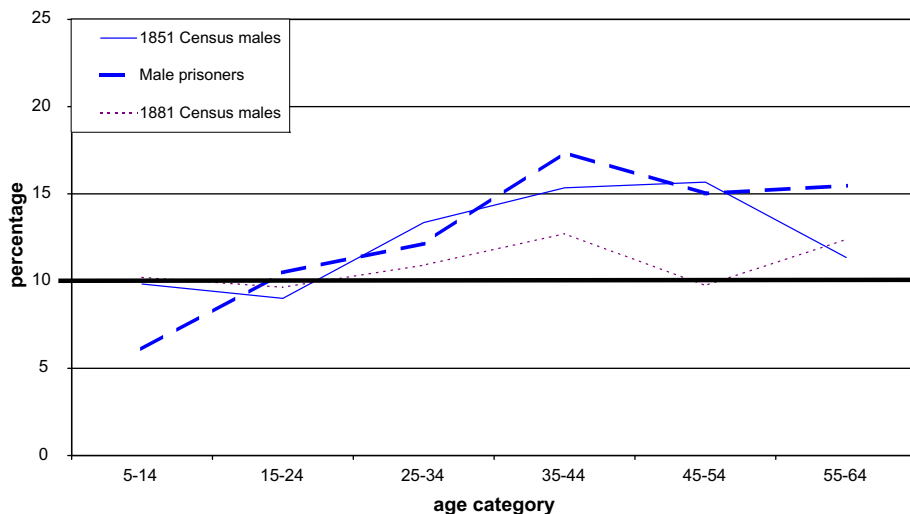


Fig. 2. Male age heaping by age category: Wandsworth census samples and prison data.

their early twenties, between 9% and 12% of males and females gave rounded ages, in line with the proportion expected for a random distribution. Like the Irish emigrants, heaping did vary with age, tending to rise but with an anomalous fall after middle age among men enumerated in 1851, placing them on a divergent trend. However, overall the amount of variation was small. The proportion of individuals who were vague about their exact age was only between 3% and 10% in excess of the share expected to have a rounded age. The figures illustrate a small discrepancy between men and women, with a little more heaping among women; and an overall improvement over time, with individuals in 1881 displaying less heaping than those recorded for 1851.

Perhaps the most striking feature of the graph is the overall similarity between individuals recorded in the census, and those imprisoned in Wandsworth House of Correction. On the basis of this proxy for numeracy, there is little to suggest that these occasional criminals were *markedly* different from the rest of the local population, but there is a suggestion that there was *a* difference. Prisoners, male and female, clung more tightly to the pattern exhibited in the 1851 census than the improved profile evident 30 years later, even though they themselves were imprisoned mainly in the late 1860s and 1870s. This does hint that prisoners were more likely

to be drawn from a poorer and less educated section of the working class. On selectivity and ageing there is no evidence that the criminal justice system targeted particularly deprived and disadvantaged older women, although there is a small suggestion that age heaping was a little elevated in the age category where widows were particularly prominent (25–34 years). Older men, perhaps, also leaned more towards the innumerate. Both cases deviated by only small amounts. Literacy among prisoners similarly furnishes no evidence to suggest that men and women above 40 years of age were much different from younger adults.

Occupational information drawn from the prison registers can be compared with census data to establish the socio-economic credentials of Wandsworth's prison population. Of especial interest is the inclusion in the 1881 census of prison inmates (it was a male prison by this point). This provides a direct comparison within one census data set, which avoids the complexity of ever-changing practices in the recording of occupations between census years (Higgs, 1996, p. 114). The single most important employment for men in Wandsworth was as a general labourer, with sizable numbers of other labourers attending to bricklaying, plumbing and plastering; agricultural labourers were in shorter supply. Around 15% of enumerated men were occupied as labourers in 1881. Among male prisoners incarcerated on census night, the proportion was twice that, at 30%. Beyond that, for both groups of men, similar occupations in similar proportions dominated: carpenter, bricklayer, carman, gardener, painter, clerk, plasterer, baker, tailor, shoemaker, butcher and blacksmith. Women in the 1881 census were principally laundresses, dressmakers, needlewomen and sempstresses, cooks, housemaids and other domestic servants, charwomen, nurses, housekeepers, milliners and governesses. Single women had the most varied occupational spread, while widows, and in particular married women, were more likely to work as laundresses (15% and 23%, respectively), dressmakers (5–6%) and charwomen (4–5%), occupations more readily undertaken from home or squeezed around other commitments.

Occupational data recorded in the prison registers, as opposed to those reported above from the census, appear a little less specific in the case of men. Compared with the 1881 census listing for Her Majesty's Prison at Wandsworth, the PCOM2 registers included a much larger proportion of men recorded as general labourers. This is highlighted in Table 4. Using prisoners in our study aged 20 and above, Table 4 groups occupations into categories used by the 1861 census.⁷ Male prisoners stood out as being disproportionately drawn from the labouring category, with fewer involved in building, dealing, public and domestic service. Some 46% of male prisoners were designated simply as 'labourer'. This may have captured a number who were unemployed, as very few prisoners had their trade described as 'none' while 3.5% were recorded thus in the census. Employing Armstrong's social-skill classification, half were unskilled but some 42% of male prisoners made it into the skilled class.⁸ Skill and literacy correlated positively and significantly. Over one-third of the unskilled were functionally illiterate, the proportion dropping noticeably to 20% for semi-skilled, 16% for skilled, and 11% for the small number of professionals and intermediates. Among these more skilled male workers, 70–80% could both read and write.

Half of women recorded by the census enumerators were classified as 'unwaged and indefinite', and some 30% of female prisoners also fell into this category. The 3% identified solely as prostitutes in the PCOM2 series were included here, while they might more appropriately be classified under 'dealing', and there is some suggestion that census enumerators may have put prostitutes down as dressmakers (and therefore under manufacturing; Emerson, quoted in Higgs, 1996, p. 114). Women identified as working were overwhelming domestics, be they English, Irish, free or prisoner. Compared with the census, the latter (prisoners) were more likely to be employed in dealing and manufacturing, domestic service, and also in agriculture and farming, although the proportion there was small. Again employing skill categories: 49% of women prisoners in our study were unskilled, 26% partly skilled, and 25% skilled. Literacy rates followed a less steep gradient than for men: one-third of the unskilled were illiterate, dropping to 29% for semi-skilled and 20% of skilled women. The ability to write was more evasive, with only 60% of skilled women achieving both reading and writing.

On the basis of age, marital status, numeracy, occupations, skill and literacy, it would appear that overall prisoners were similar, but not identical, to the broader population from where they were drawn: Wandsworth in Surrey. Prison held fewer children and adolescents, especially among the women; fewer unmarried women

⁷ The 1861 census was favoured over the 1871 census as in the latter 80% of the female population all fell into the same 'II Domestic class'.

⁸ Based on a modified Armstrong social-skill classification. See Armstrong (1972).

Table 4
Occupations in Wandsworth by 1861 census groupings: population and prisoners

	Males aged 20 years and over						Females aged 20 years and over					
	1861 census		Prisoners 1858–78				1861 census		Prisoners 1866–78			
	N	%	English		Irish		N	%	English		Irish	
			N	%	N	%			N	Col %	N	Col %
Agriculture and farming	1658	9.8	231	3.0	12	1.4	65	0.3	237	1.7	188	7.2
Mining and bricks	95	0.6	38	0.5	3	0.3	2	0.0	2	0.0	0	0.0
Building	2635	15.6	739	9.6	42	4.8	3	0.0	2	0.0	0	0.0
Manufacturing	3437	20.3	1453	18.9	136	15.7	1943	8.5	2649	19.3	261	10.0
Transport and storage	1147	6.8	535	6.9	22	2.5	11	0.0	2	0.0	0	0.0
Dealing	2126	12.6	653	8.5	41	4.7	596	2.6	1497	10.9	307	11.8
Commercial service	378	2.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
General labour	1534	9.1	3534	45.9	573	66.0	6	0.0	18	0.1	1	0.0
Public service	1506	8.9	124	1.6	10	1.2	848	3.7	16	0.1	0	0.0
Domestic service	1442	8.5	280	3.6	8	0.9	6963	30.4	5073	37.0	1049	40.3
Property owners	370	2.2	0	0.0	0	0.0	1029	4.5	0	0.0	0	0.0
Unwaged and indefinite	591	3.5	119	1.5	21	2.4	11,460	50.0	4228	30.8	797	30.6
Total	16,919	100	7706	100	868	100	22,926	100	13,724	100	2603	100

Source: Prison Commission Series 2: PCOM2/230–289, National Archive Kew. 1871 Census England and Wales: Ages, Civil condition, Occupations and Birthplaces, Tables Division I—London, Table 13, British Parliamentary Papers, IUP *Population* 18.

and more widows; and prisoners had perhaps marginally lower levels of human capital in terms of numeracy and occupational concentration, suggesting they were from the less endowed, poorer quarters of the working class. If there was a compositional change with age, it was not that older women were drawn from a particularly disadvantaged or unrepresentative section of the population; rather, the suggestion is that more vulnerable women in their 20s and 30s—notably widows—seemed to end up in prison.

That prisoners were not so different from the rest of the Wandsworth population is not surprising, given the nature of the Surrey House of Correction. It housed small-time criminals, occasional thieves, vagrants, rogues, vagabonds and drunks, some in work, some without it, others caught in the vagaries of piece and seasonal work as were so many Londoners (Fishman, 1988; Picard, 2005; Porter, 1994; White, 2007). Around half the women were misdemeanants (a misdemeanour being below a felony), and even more men were in this category. About one-fifth of women were guilty of felonies (particularly thieving, and unlawful possession, with some assaults and also damage to property), and the remaining 30% of crimes were associated with vagrancy and vagabondage (guilty of begging, or having no visible means of support, or workhouse inmates sentenced for either refusing to work, or destroying their own clothes). The single most popular offence for women was being drunk, sometimes riotous, and at others, ‘disorderly’ too. While many women were prostitutes (972 of them or 5%), it should be noted that prostitution was not a crime as is often supposed. Being a prostitute who was publicly drunk, on the other hand, earned the label disorderly, and with it a short stint in prison of seven, 14 or 21 days. Exactly 35% of women were admitted for just seven days or less; another 36% were in for between two weeks and a month, another one-tenth for one month, with rapidly diminishing proportions thereafter. On the whole men were rogues and vagabonds (24%), vagrants (21%), and thieves (18%). They were rarely arrested for workhouse offences (4.5%) which seem much more the preserve of women, as was conviction for drinking (which was more socially unacceptable among the ‘fairer’ sex). Few men were in Wandsworth because of drink (4%), but twice that many were imprisoned for assault (8%). There was a miscellany of other offences, from unlawful possession, to gaming, poaching and trespass, but here the numbers were few. Sentences were heavier for men. Fewer were in for just seven days or less (20%), but most were in for a few weeks, or one, two or three months. Just 15% were in for longer. Men were incarcerated for an average of 67 days, and women for 50 days.

It is through the carefully maintained records of this prison that we can gain an insight into the experiences of ordinary girls and boys, women and men, as they progressed through life’s major stages and to its end. Wandsworth House of Correction housed the vulnerable and the rough and rowdy end of the working class,

many the working poor, who on occasion fell foul of the law. These were the type of people for whom resources were not in abundance, who had to make hard decisions about their expenditures. Those decisions had biological consequences. It is their very bodies, incarcerated and documented, that bear testament to life in the burgeoning metropolis of mid-Victorian London.

4. Biometric explorations

Contemporary observations held that when times were hard, women and children did without food in order to feed their husbands and fathers. This is often presented as a nutritional sacrifice required to support the energy needs of the male breadwinner at work—a risk minimisation strategy. In poor families, this meant ongoing deprivation suffered by women and children. Even though favoured in resource allocation, it remains unclear whether adult men were (1) also underfed, (2) adequately well-nourished to meet their work requirements, or (3) had sufficient bargaining power to secure an even larger share than that required merely for work and survival. Nor is it known how children made the transition to adulthood that would metamorphosise their position within this household hierarchy. Boys became breadwinners, and girls became mothers, but what steps were taken in between? Did income-earning during adolescence top-up the household budget to the equal gain of all, or did it afford leverage in deciding how funds were spent? And what happened to men and women as they aged and their role within the family shifted once more? It is possible to test these contemporary claims and lifecycle shifts through a study of height and body mass.

As height is a measure of net nutritional experiences accumulated over the growing years, it is appropriate to group generations together by their birth cohort. Table 5 explores the major determinant of height—age—along with a measure of human capital, and pockmarking, while controlling for birth cohort.⁹ A separate dummy is included for soldiers because of likely problems of under- and over-sampling in different years: the entry of soldiers into prison varied according to capacity in the military prisons, and was further complicated by the presence of a major war—The Crimean—in the middle of our period. Separate regressions are run for males and females born in England and Ireland, as there is reason to expect differences in the determinants of growth. The model is considerably more robust for males than females, explaining half the variation in male heights but only 8% for English females and half that for Irish ones. Age is the major explanatory factor in these models, and women—especially the Irish—tended to be beyond the growing years by the time they were incarcerated. This poor model strength urges caution against placing too much reliance on the results for females.

Some of the notable features of the analysis include: the significant and sizable effect on male heights of being a soldier, consistent with recruits being subjected to a minimum height standard; the inconsistent results associated with smallpox¹⁰; and the greater importance of human capital among females, both English and Irish. For women, but not for men, there was a significant positive relationship between investment in human capital and stature. There are a number of possible explanations for this. Among the males, there was a large proportion of labourers for whom strength was arguably more important than education. Families may have invested more in girls education for this reason, but this does not explain why girls would be better fed (Fitzpatrick, 1986). Alternatively, compared with their sisters, perhaps better educated girls commanded better pay and consequently superior bargaining power when it came to divvying up household resources. Terminal heights suggest a narrowing of the gender gap in London as the nineteenth-century wore on, with men's heights deteriorating particularly from the 1820s, while women's stature was on a consistent upward trajectory. These results reflect favourably on the youthful experiences of females in this urban community. In Ireland, the impact of the 1840s Great Famine was most pronounced among men born during and just afterwards, into the 1850s, suggesting a protracted period of deprivation and possibly the famine-induced poor health of mothers.

There are two other important observations. One, the familiar discrepancy in the age of physical maturity between boys and girls was quite small, with English girls achieving adult height between age 19 and 20, and

⁹ Note that this is somewhat problematic, as age and birth cohort are very highly correlated, especially for females (with a Pearson's $r = -0.96$ at $p < 0.001$).

¹⁰ There is a debate over the relationship between smallpox and stature (Voth and Leunig, 1996; Heintel and Baten, 1998; Razzell, 1998, 2001; Leunig and Voth, 1998, 2001, 2006; Oxley, 2003, 2006).

Table 5
Determinants of height among Wandsworth prisoners

	English females		Irish females		English Males		Irish males	
	Coefficients	<i>t</i>	Coefficients	<i>t</i>	Coefficients	<i>t</i>	Coefficients	<i>t</i>
(Constant)	59.72*	209.55	60.40*	100.11	65.36*	229.05	65.86*	88.91
Age 7					-17.92*	-6.59		
Age 8					-16.14*	-13.20	-16.91*	-6.48
Age 9	-9.35*	-5.40			-14.94*	-20.21		
Age 10	-11.16*	-14.95			-14.50*	-34.19	-16.11*	-10.34
Age 11	-7.99*	-11.64			-13.04*	-38.59	-13.97*	-7.48
Age 12	-6.40*	-16.22			-11.65*	-41.57	-13.06*	-10.60
Age 13	-4.31*	-13.22	-5.98**	-2.05	-9.87*	-42.24	-9.40*	-10.13
Age 14	-3.34*	-12.36	-0.51	-0.20	-8.29*	-39.19	-8.05*	-10.18
Age 15	-2.24*	-9.65	-2.51	-1.01	-6.35*	-33.92	-5.37*	-5.32
Age 16	-0.83*	-4.10	-1.05	-0.69	-3.77*	-20.36	-3.96*	-4.09
Age 17	-0.80*	-4.78	-1.26	-0.93	-2.46*	-13.37	-3.42*	-3.80
Age 18	-0.40**	-2.59	-2.29***	-1.87	-1.56*	-8.63	-1.32***	-1.66
Age 19	-0.26***	-1.69	0.11	0.13	-0.82*	-4.67	0.59	0.78
Age 20	-0.18	-1.17	-0.55	-0.50	-0.37**	-2.09	-0.07	-0.12
Age 21	-0.08	-0.49	-0.09	-0.11	-0.25	-1.39	1.03	1.60
Age 22	-0.30**	-1.93	-1.45**	-2.22	0.04	0.24	0.66	1.07
Age 23	0.10	0.68	-0.15	-0.25	-0.05	-0.26	1.35**	2.26
Age 25–34	0.15	1.31	-0.38	-0.91	-0.06	-0.43	0.51	1.11
Age 35–44	0.40*	2.92	-0.18	-0.41	-0.01	-0.08	0.69	1.40
Age 45–54	0.54*	3.22	-0.58	-1.22	-0.49**	-2.56	-0.06	-0.11
Age 55–64	0.35	1.58	-0.75	-1.37	-0.78*	-3.21	-0.79	-1.17
Age 65 and up	0.17	0.56	-1.72**	-2.81	-0.97*	-2.85	-2.14**	-2.68
Born on or before 1789	-0.16	-0.13	1.89***	1.69	0.50	0.74	1.02	0.74
Born 1790–1799	-0.55	-1.02	1.50***	1.67	0.45	1.17	0.84	1.17
Born 1810–1819	0.00	0.01	0.47***	1.69	0.26	1.16	-0.06	-0.12
Born 1820–1829	0.33	1.42	0.43	1.15	0.05	0.21	-0.44	-0.84
Born 1830–1839	0.38	1.53	0.50	1.21	-0.17	-0.73	-0.65	-1.18
Born 1840–1849	0.68**	2.63	0.59	1.36	-0.34	-1.41	-1.03***	-1.80
Born 1850–1859	0.81*	3.06	0.12	0.24	-0.49**	-2.00	-1.05***	-1.70
Born 1860–1870	1.34*	4.30	1.10	0.68	-0.16	-0.61	-0.81	-0.76
Human capital	0.14*	9.22	0.24*	5.28	0.03	1.47	0.05	0.86
Pockmarked	0.11	1.50	0.33***	1.77	-0.28**	-2.62	0.10	0.25
Soldier					1.26*	7.93	2.16*	4.71
Adjusted <i>R</i> squared	0.08		0.04		0.53		0.46	
Std. error of the estimate	2.43		2.45		2.71		2.56	
<i>F</i>	44.35*		5.38*		401.03*		27.97*	
<i>N</i>	15,796		2584		11,490		970	

Regression model: excluded category = 24-year-old, born 1800–1809, without pockmarks.

* Significant at $p < 0.005$.

** Significant at $p < 0.05$.

*** Significant at $p \leq 0.10$.

English boys shortly after at 21–22 years of age. Arguably, late adolescence was the best time in a girl's life, from 15 to maturity: the average heights of girls below this age fell short of achieving even the first percentile of the modern growth standard, but at age 15, English girls improved their position and achieved heights equivalent to between the modern second and third percentiles.¹¹ This female biological advantage coincided with a significant stage in the lifecycle, when a girl might have possessed more bargaining power within the

¹¹ It should be noted, however, that these girls' percentiles are artificially depressed in early adolescence by earlier maturation in modern reference populations. See Steckel (1996, pp. 157–166). Age-specific heights were calculated using the constant plus age plus human capital coefficient multiplied by the average human capital score for that age–sex combination.

Table 6
Determinants of body mass in Wandsworth prison (representative matched sample)

	Coefficients	<i>t</i>
(Constant)	18.03*	37.84
Custody year = 1877–8	0.53*	10.29
Female in custody year = 1877–8	0.33*	3.44
Female	6.63*	6.86
Pregnant	1.78*	3.17
Soldier	0.71*	5.59
Human capital	−0.01	−0.88
Female human capital	0.00	0.03
Irish male	0.07	0.79
Irish female	−0.27*	−2.78
Born elsewhere	−0.01	−0.10
Height	0.01	0.85
Female height	−0.11*	−6.85
Age 16–24	3.32*	29.07
Age 25–34	4.49*	36.24
Age 35–44	4.50*	34.11
Age 45–54	4.28*	30.28
Age 55–64	4.24*	24.75
Age 65 and up	3.64*	16.22
Female age 16–24	0.28	1.00
Female age 25–34	−0.57**	−2.06
Female age 35–44	−0.82*	−2.88
Female age 45–54	−1.10*	−3.70
Female age 55–64	−1.32*	−3.98
Female age 65 and up	−1.76*	−4.52
Adjusted <i>R</i> squared	0.19	
Std. error of the estimate	2.31	
<i>F</i>	132.53*	
<i>N</i>	14,372	

Regression model: dependent variable = body mass in kilograms per square metre.

Excluded category: non-military English boy aged under 16 years, committed in 1866.

* Significant at $p < 0.005$.

** Significant at $p < 0.05$.

household concomitant with earning her own income, and she had yet to establish a family of her own with its demands for sacrifice (Moehling, 2005).

A second observation is that Irish boys grew taller than the English boys, and attained their superior terminal height two years earlier, by age 19. For English males, velocity of growth touched zero only at age 22, suggesting that the late teenage years into their early 20s offered an opportunity to catch-up on earlier deprivation for boys as well as girls. English boys languished at the bottom of the modern growth table, equal to just one-tenth of the first percentile, but they improved on this position through an extended period of growth compared with well-nourished modern individuals. Their gain commenced with a significant jump at age 18, to around the second percentile. Their extended growth period enabled them to attain a terminal height of 65.4 in. at age 22, although still leaving them 1 in. shorter than the fully-grown 19-year-old Irish lad at 66.45 in.¹² The figures for women displayed this same Irish superiority. At 19, Irish women stood 60.5 in. compared with the English women 1 in. shorter, at 59.5 in., both six inches shorter than their male counterparts. This pattern of overall shortfall in English adult stature, and delayed maturity for both sexes but particularly the extension of the growing years for males, is suggestive of childhood deprivation followed by improved opportunities as adulthood approached. As noted earlier, this can be seen as lending support to the model of a bargaining household in which more resources were secured by individuals in line with their contributions

¹² Terminal height was measured as the median for those aged 23–34 inclusive.

Table 7
Weight change during prison term (representative matched sample)

	Coefficients	<i>t</i>
(Constant)	24.30*	19.63
Custody year = 1877–8	–1.25*	–9.42
Female in custody year = 1877–8	0.10	0.44
Female	–19.23*	–8.43
Pregnant	0.38	0.29
Soldier	–0.77**	–2.35
Human capital	0.10**	2.41
Female human capital	0.00	–0.01
Irish male	0.56**	2.45
Irish female	0.17	0.78
Born elsewhere	0.36	1.30
Height	–0.43*	–19.93
Female height	0.36*	9.33
Punishment days	0.00*	4.22
Age 16–24	–0.70**	–2.37
Age 25–34	–0.18	–0.57
Age 35–44	0.35	1.03
Age 45–54	1.46*	4.03
Age 55–64	2.22*	5.11
Age 65 and up	3.47*	6.25
Female age 16–24	1.23**	1.91
Female age 25–34	0.17	0.27
Female age 35–44	–0.46	–0.69
Female age 45–54	–1.84**	–2.64
Female age 55–64	–1.95**	–2.48
Female age 65 and up	–3.27*	–3.58
Adjusted <i>R</i> squared	0.18	
Std. error of the estimate	5.17	
<i>F</i>	109.03*	
<i>N</i>	11,950	

Regression model: dependent variable = weight change in pounds.

Excluded category: non-military English boy aged under 16 years, committed in 1866.

* Significant at $p < 0.005$.

** Significant at $p < 0.05$.

to the family coffers. Alternatively, it is consistent with the safety-first model: the resource pool was made bigger to the benefit of all, and risk would be minimised by protecting all earners.

Unlike height, which accumulates over the growing years until their end when it is fixed, weight and body mass are flexible. They respond to immediate conditions and measure current net nutritional status. It is therefore appropriate to arrange the data by the year of its creation, rather than by birth cohort. In order to avoid interference by any complicating composition effects arising from the different years covered by the female and male data collection, the following two regression analyses in Tables 6 and 7 use a representative sample matched for the years 1866, 1877 and 1878. Body mass is modelled to control for any period effect based on the year prisoners were taken into custody, and a separate term included to distinguish between males and females. The model considers a number of other factors potentially influential on the human shape: being pregnant, being born in Ireland or elsewhere, and working as a soldier. Also included is a score for human capital based on occupational skill and literacy (points were earned by being more skilled, and more literate), and terms for height (because adult height is invariant in the short run, while weight is not), both again controlling for gender. A series of dummy variables for age are based on the bands used in the Health Survey for England, and a number of terms interacting gender with age capture the issue of central concern: the lifecycle effect on body mass of being female compared with being male.

Human capital had surprisingly little impact on body mass in the regression reported in Table 6. This militates against the safety-first model of household behaviour, in which higher-status families distributing

resources evenly would have had more to invest in girls. Place of birth had little impact for men but Irish women, on the other hand, were significantly disadvantaged. Predictably, there was an increase in body mass associated with a woman being pregnant, or a man being a soldier. Custody year, too, had an effect: compared with those incarcerated in 1866, by the late 1870s—11 years on in Victoria's golden age—male prisoners, and more so female prisoners, were appreciably heavier. Importantly, height had a varied effect: for men, there was no notable association; for women, greater height was born at the cost of lower body mass. It was as if women were encountering a nutritional ceiling, a low one, above which nutrition was insufficient for body maintenance.

When all these effects are controlled, a very clear pattern emerges, based on lifecycle and gender. It is at odds with the modern experience of middle-age spread. In England today, there is little to distinguish between the body mass of men and women. Both share a similar mean, and follow the same upward trajectory with age. Not so in mid-Victorian London. The sizable and positive coefficient for being female quickly diminishes when age and height are factored in to the equation. The regression model demonstrates unequivocally that body mass varied with age, and that this relationship was moderated by sex. This gendered lifecycle effect on body mass is highlighted graphically in Fig. 3, which is derived from the regression equation.¹³ For males the line incorporates the constant, age coefficients, and the height coefficients multiplied by the mean height for each age group. For women, the female terms are also included. By focusing on this subset of variables from the model, we hold other factors constant and isolate age and gender effects.

During the growing years and into the early twenties, male and female body masses tracked one another. Thereafter, their trajectories departed. As boys made the transition from child to breadwinner, their bodies gained in mass, an advantage that only started to diminish slightly from middle age and more rapidly from the later 50s—late middle age and what counted as old age in the nineteenth-century. Body mass peaked when men were in their 30s, coinciding with another peak, that in male household head earnings. Male earnings were maximised from their very late 20s to 30s, reached a plateau, then declined, most evidently from 50 years of age.¹⁴ This mimicked the pattern for body mass, and is consistent with the bargaining model that ties biological wellbeing with individual economic power. This model predicted diminishing power for women dating from age of marriage which, as we have seen, was typically in their late 20s and 30s. For women the downward trajectory was more pronounced than for men, and commenced earlier, at the very age when men were at their zenith and women were marrying them. From their 20s, a gender gap was established that consistently widened over the lifecycle. Even when men's body mass was in decline, the slide for women was steeper.

There is a complementary analysis to mean body mass, and that is what happened to prisoners' weights while incarcerated. In and out weights were recorded for 82% of the matched sample. Prison dietaries for Wandsworth were basic and designed to be punitive, complementing a regime of hard physical labour (Johnson, 1985). Diets were graded by the duration of sentence and by gender. Convicted prisoners confined for one week were expected to survive on a daily diet comprising one pound of bread and two pints of oatmeal gruel. Oatmeal gruel consisted of two ounces of oatmeal per pint of water, on alternate days sweetened with three-quarters of an ounce of molasses or sugar, or seasoned with salt. For those imprisoned for between 8 and 21 days, men gained an additional eight ounces of bread, and women just two. The specifications for the diet for the different classes of prisoners in the 1860s are reproduced in Fig. 4. Following complaints that prison diets were superior to those on offer in the workhouse, with the alleged consequence that paupers were committing crimes in order to be imprisoned, a Parliamentary enquiry revised the diet downwards, but by 1878 the evidence pushed them to once again improve it (Dietaries in prison, 1878). Even so, in 1895, W. D. Morrison, Assistant Chaplain of Wandsworth, observed to the Departmental Committee on Prisons, 'There is one young fellow who came to us or did come to us (I suppose he is dead now) for short sentences, and, of course, under the short sentence system each time he came in he had to be put

¹³ The decline in body mass at older ages is even more precipitous if height measurements are adjusted to compensate for shrinkage. This process is outlined in Price and Steckel (2003, p. 358).

¹⁴ Horrell and Oxley (1999). This article employed the United States Cost of Living Survey for 1889–90 data on Britain, and confirmed the finding identified by Michael Haines in his study of the American component of the data (Haines, 1979, p. 301). Similar results were found by Horrell and Humphries (1997, pp. 25–64, Fig. 3), and by Johnson and Zaidi (2007, pp. 98–116, Fig. 5.3 p. 107).

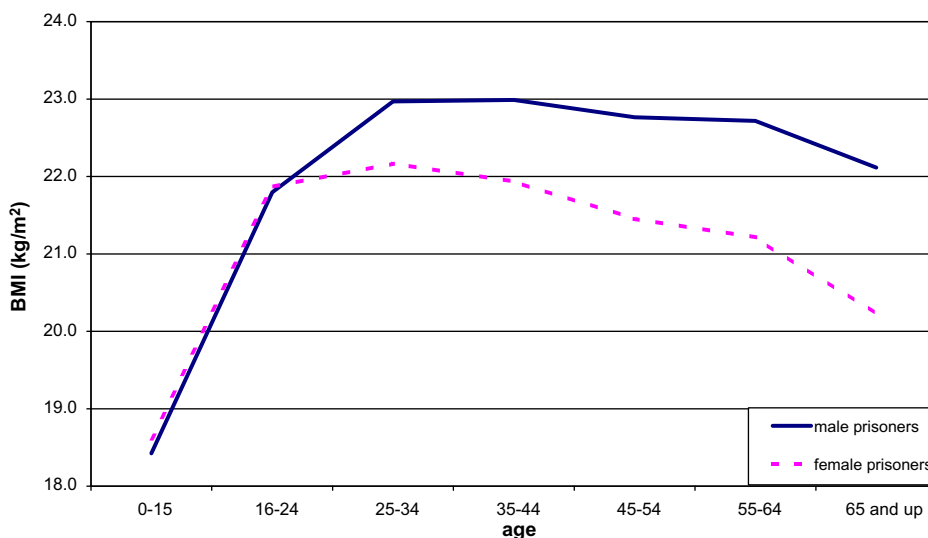


Fig. 3. Body mass among Wandsworth prisoners: age and gender, based on regression model (see text).

on the Number One diet, and I saw that young fellow get, what seemed to me, to be old very soon' (quoted in Johnson, 1985, p. 223).

Weight change in prison becomes an index of the severity of life outside. Under a punitive prison diet teamed with a regime of hard labour, it would be expected that individuals of normal proportions would lose weight. The heavier the individual, the greater the weight loss. For weight to remain stable under such a regime suggests that life outside the prison walls approximated that inside, with the balance between calorific supply and demand provided by typical daily routines no worse nor better than in choky. Weight *gain* in prison suggests life outside was yet more miserable than life within those grey walls where food might be meagre, but it was regular.¹⁵ Weight gain in prison thus becomes an indicator of deprivation, and the inverse of body mass.

Weight change in prison is modelled in the regression presented in Table 7. Again, the data are treated as pseudo panel data with terms allowing the intercept to move by sample period. The model controls for the same factors as for body mass, but introduces a term to control for length of sentence. Custody year has a significant and sizable negative effect on weight change in prison, in line with the downgrading of the prison diet at that point compared with provisions in 1866. Soldiers lost weight, tall men lost weight. Taller women however—perhaps the most deprived in relation to their greater needs for biological maintenance—gained weight in prison. Irish men put weight on in prison, and human capital also displayed a small positive effect on weight change. Most notable is the pattern by age and gender. As before, the key result is presented graphically in Fig. 5, with the line for men calculated based on the constant plus age coefficients plus the height coefficient multiplied by the mean height for each age group, and the line for women also incorporating the female terms. The pattern for males was strikingly varied. It was men in their 20s and 30s who lost marked amounts of weight, with those in their 40s and 50s also suffering but by a lesser amount. In contrast, boys and elderly men gained weight. At all ages the average woman gained some weight in prison, marginally more among those still in their growing years, and women in middle and older age. Weight change in prison bore a direct and inverse relationship with body mass. It is worth bearing in mind that nearly all prisoners were engaged in a daily routine of hard labour, so calorific demands for work were high. A body accustomed to sufficient food suffered under prison dietaries; the deprived body expanded. More often than not, the latter was female.

¹⁵ It is interesting that today, similar conclusions are reached about the health impacts of prison for women. See Plugge et al. (2006).

THE FOLLOWING ARE THE PRESCRIBED RATES OF DIET:—

CLASS 1.			CLASS 2.		
Convicted prisoners confined for any term not exceeding seven days.			Convicted prisoners for any term exceeding seven days, and not exceeding twenty-one days.		
	Males.	Females.		Males.	Females.
DAILY.	Breakfast.—1 pint of oatmeal gruel. Dinner.—1 lb. of bread. Supper.—1 pint of oatmeal.	1 pint of oatmeal gruel. 1 lb. of bread. 1 pint of oatmeal gruel.	DAILY.	Breakfast.—1 pint of oatmeal gruel; 6 oz. of bread. Dinner.—12 oz. of bread. Supper.—1 pint of oatmeal gruel; 6 oz. of bread.	1 pint of oatmeal gruel; 6 oz. of bread. 6 oz. of bread. 1 pint of oatmeal gruel; 6 oz. of bread.
CLASS 3.			CLASS 4.		
Convicted prisoners employed at hard labour for terms exceeding twenty-one days, but not more than six weeks; and convicted prisoners not employed at hard labour for terms not exceeding twenty-one days, but not more than four months.			Prisoners of this class employed at hard labour to have, in addition, one pint of soup per week. Convicted prisoners employed at hard labour for terms exceeding six weeks, but not more than four months; and convicted prisoners not employed at hard labour, for terms exceeding four months.		
	Males.	Females.		Males.	Females.
DAILY.	Breakfast.—1 pint of oatmeal gruel; 6 oz. of bread.	1 pint of oatmeal gruel; 6 oz. of bread.	DAILY.	Breakfast.—1 pint of oatmeal gruel; 8 oz. of bread.	1 pint of oatmeal gruel; 6 oz. of bread.
SUNDAY, THURSDAY.	Dinner.—1 pint of soup; 8 oz. of bread.	1 pint of soup; 6 oz. of bread.	TUESDAY, THURSDAY, SATURDAY.	Dinner.—3 oz. of cooked meat, without bone; 8 oz. of bread; ½ lb. of potatoes.	3 oz. of cooked meat, without bone; 6 oz. of bread; ½ lb. of potatoes.
MONDAY, WEDN'SDAY, FRIDAY.	Dinner.—8 oz. of bread; 1 lb. of potatoes.	6 oz. of bread; 1 lb. of potatoes.	DAILY.	Dinner.—1 pint of soup; 8 oz. of bread. Supper.—Same as breakfast.	1 pint of soup; 6 oz. of bread. Same as breakfast.
CLASS 5.			CLASS 6.		
Convicted prisoners employed at hard labour for terms exceeding four months.			Prisoners sentenced by court to solitary confinement.		
	Males.	Females.		Males.	Females.
SUNDAY, TUESDAY, THURSDAY, SATURDAY.	Breakfast.—1 pint of oatmeal gruel; 8 oz. of bread. Dinner.—4 oz. of cooked meat, without bone; 1 lb. of potatoes; 6 oz. of bread.	1 pint of oatmeal gruel; 6 oz. of bread. 3 oz. of cooked meat, without bone; ½ lb. of potatoes; 6 oz. of bread.	DAILY.	The ordinary diet of their respective Classes.	The ordinary diet of their respective Classes.
MONDAY, WEDN'SDAY, FRIDAY.	Breakfast.—1 pint of cocoa, made of ½ oz. of flaked cocoa or cocoa-nibs, sweetened with ½ oz. of molasses or sugar; 8 oz. of bread. Dinner.—1 pint of soup; 1 lb. of potatoes; 6 oz. of bread. Supper.—1 pint of oatmeal; 8 oz. of bread.	1 pint of cocoa, made of ½ oz. of flaked cocoa or cocoa-nibs, sweetened with ½ oz. of molasses or sugar; 6 oz. of bread. 1 pint of soup; ½ lb. of potatoes; 6 oz. of bread. 1 pint of oatmeal gruel; 6 oz. of bread.	CLASS 7.		
DAILY.			Prisoners under punishment for prison offences, for terms not exceeding three days:—1 lb. of bread per diem. Prisoners in close confinement for prison offences, under the provisions of the 42nd section of the Jail Act.		
	Males.	Females.		Males.	Females.
DAILY.	Breakfast.—1 pint of gruel; 8 oz. of bread. Dinner.—8 oz. of bread. Supper.—1 pint of gruel; 8 oz. of bread.	1 pint of gruel; 6 oz. of bread. 6 oz. of bread. 1 pint of gruel; 6 oz. of bread.	DAILY.	Breakfast.—1 pint of gruel; 8 oz. of bread. Dinner.—8 oz. of bread. Supper.—1 pint of gruel; 8 oz. of bread.	1 pint of gruel; 6 oz. of bread. 6 oz. of bread. 1 pint of gruel; 6 oz. of bread.

Ingredients of Soup and Gruel.—The soup to contain, per pint, 3 ounces of cooked meat, without bone, 3 ounces of potatoes, 1 ounce of barley, rice, or oatmeal, and 1 ounce of onions or leeks, with pepper and salt. The gruel to contain 2 ounces of oatmeal per pint. The gruel on alternate days to be sweetened with ½ ounce of molasses or sugar, and seasoned with salt. In seasons when the potato crop has failed, 4 ounces of split peas made into a pudding may be occasionally substituted; but the change must not be made more than twice in each week. Boys under fourteen years of age to be placed on the same diet as females.

Fig. 4. Prison dietaries for Wandsworth House of Correction, 1860s. Source: reproduced in H. Mayhew, J. Binny, *The criminal prisons of London and scenes of prison life* (London 1862), p. 505.

Weight gain under these conditions reflects very badly on life outside. To gain weight on a diet of so few calories and such little protein, points to a level of deprivation outside in the free world that is hard to comprehend.

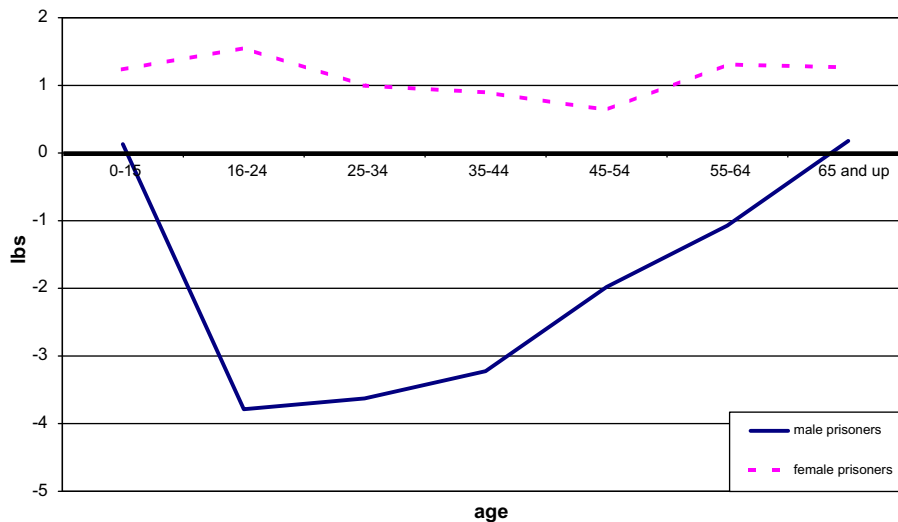


Fig. 5. Weight change in Wandsworth prison: age and gender, based on regression model (see text).

While the principal data do not include information on marital status, the parallel source from PCOM4 does. It only relates to women. Analysis was conducted on the sample of English women convicted between 1864 and 1884, excluding secondary occurrences of all repeat offenders. This leaves just 463 cases. In this data set, 95% of females were under 60 years of age. There was no single woman older than 55, and no widow younger than 25, with married women (the largest category) covering ages from 18 to 75 years. Observations are therefore limited, but these ages do cover the key reproductive period that distinguished between the lives of single, married and widowed women. Table 8 presents a regression analysis for body mass which factors in the decade of conviction, marital status, the presence of living children for married women and widows, conviction in London, and age categories, including terms interacting age with marital status. Fig. 6 represents this graphically, with lines representing the relevant constants, plus the presence of children for married and widowed women multiplied by the average number of children for that age group and marital category, plus each of the relevant age coefficients.

The results are all within a small range of each other, but they do suggest a difference in biological wellbeing associated with marital status in the key reproductive years between 25 and 39 years of age. For that age group, the gap between single women and married women (1 kg/m^2) and widowed women (1.2 kg/m^2) was even statistically significant at $p < .05$. Of note here is that married women had consistently decreasing BMI with age. They commenced with higher body masses, perhaps because being heavier made women more desirable marriage partners; thereafter, mass diminished. Single women had increasing BMI up to age 39, after which it decreased. Young widows, without husbands and whose children would have been dependent, were significantly lighter than any other group of women; in later life, however, the absence of resource-consuming husbands may have been a plus, in terms of body mass relative to married women. Notably, overall, widows benefited significantly from having children, presumably because eventually children's earning capacities boosted household budgets (at least until children left to start families of their own). For married women, however, the opposite was true. Having children significantly cost body mass. Is it credible that married women had a stronger sense of maternal sacrifice than widows? More likely, this finding offers support to the notion that motherhood, by reducing a woman's threat point, limited her power in family negotiations and increased her enthusiasm for seeing her husband well fed at home.

These results are confirmed by that other index of deprivation, weight change in prison. Table 9 and Fig. 7 which visually depicts these findings, again demonstrate a negative relationship between body mass and weight change in prison. Single women whose body mass was robust lost weight in prison. Women widowed early, whose body mass suffered the most, gained most weight in prison. Married women, whose body mass consistently diminished over their lifecycle, from their mid-20s, consistently gained weight when in prison. Although

Table 8
Body mass and marital status by age among women (PCOM4 series)

	Coefficients	<i>t</i>
(Constant)	24.25*	32.95
Married	1.01**	1.73
Married with children	-0.20**	-1.91
Widowed with children	0.28*	1.96
Custody in 1870s	-0.70	-0.98
Custody in 1880s	-0.86	-1.22
Convicted in London	-0.15	-0.51
Age 25–40	1.03**	2.12
Age 41–50	0.69	0.55
Age 51 and up	-4.24	-1.54
Married age 25–40	-1.65**	-2.25
Married age 41–50	-1.46	-1.01
Married age 51 and up	3.58	1.25
Widowed age 25–40	-1.45**	-2.53
Widowed age 41–50	-0.36	-0.27
Widowed age 51 and up	3.77	1.35
Adjusted <i>R</i> squared	0.02	
Std. error of the estimate	2.72	
<i>F</i>	1.59**	
<i>N</i>	452	

Regression model: dependent variable = body mass in kilograms per square metre.

Excluded category: single female aged under 25, committed 1866, convicted outside London.

* Significant at $p < 0.005$.

** Significant at $p < 0.05$.

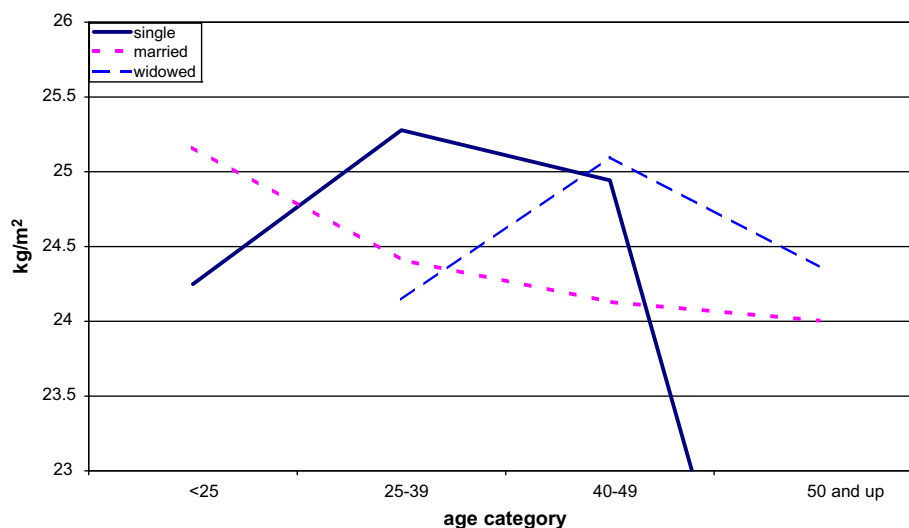


Fig. 6. Women's body mass and marital status by age, based on regression model (see text).

statistically insignificant, the coefficient on weight change for widows with children was negative, whilst it was positive for married women with children; this again suggests that it was married mothers who were in greatest nutritional need upon arrival at Wandsworth House of Correction.

From this analysis of PCOM4 records, it seems likely that our larger data set includes a sizable proportion of married women. The trends observed from PCOM2—of declining body mass with age—conform with the pattern observed for married women in PCOM4. This confirms that the observations made in this paper are

Table 9
Weight change in prison and marital status (PCOM4 series)

	Coefficients	<i>t</i>
(Constant)	−1.05	−0.30
Married	−2.05	−0.72
Married with children	0.33	0.67
Widowed with children	−0.34	−0.48
Custody in 1870s	−0.06	−0.02
Custody in 1880s	3.50	1.03
Convicted in London	−2.46 ^{***}	−1.76
Age 25–40	−0.28	−0.12
Age 41–50	−1.73	−0.28
Age 51 and up	7.01	0.53
Married age 25–40	4.87	1.38
Married age 41–50	7.84	1.13
Married age 51 and up	1.09	0.08
Widowed age 25–40	7.61 [*]	2.75
Widowed age 41–50	5.87	0.91
Widowed age 51 and up	−3.89	−0.29
Adjusted <i>R</i> squared	0.02	
Std. error of the estimate	2.72	
<i>F</i>	1.59 ^{**}	
<i>N</i>	452	

Regression model: dependent variable = weight change in pounds.

Excluded category: single female aged under 25, committed 1866, convicted outside London.

^{*} Significant at $p < 0.005$.

^{**} Significant at $p < 0.05$.

^{***} Significant at $p < 0.10$.

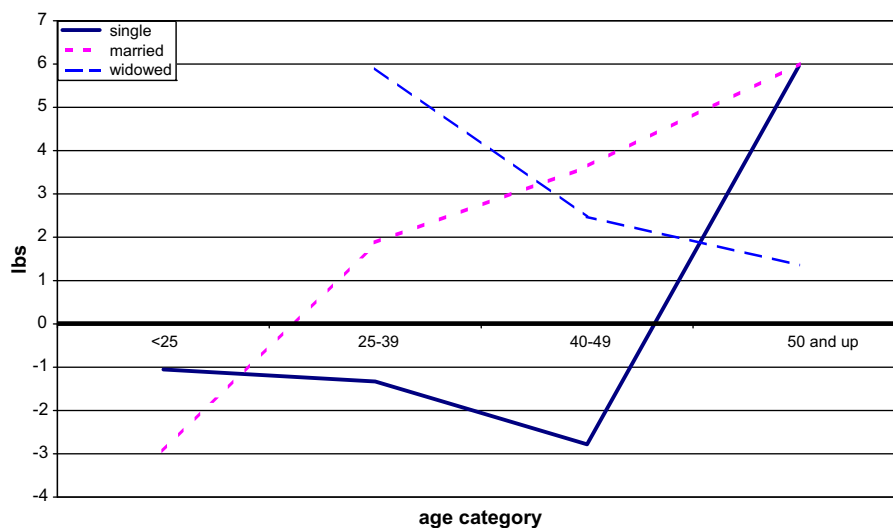


Fig. 7. Women's weight change in prison by age and marital status based on regression model (see text).

not about singletons doing it tough on their own, but reflect on people living in families and decisions about intrahousehold resource allocation.

5. Conclusion

In mapping height and body mass over the lifecycle, it is evident that children suffered deprivation from which there was some recovery in late adolescence, both for girls and boys. Thereafter, the trajectories fol-

lowed by women and men diverged. Men largely maintained their body mass into older age; women lost theirs, seemingly from the date they married. The more children married women had, the more their body mass was compromised. This was not some simple biological disadvantage of childbirth and childrearing, as widows did not conform to the same pattern. As women moved beyond the reproductive years, her value measured in stones and pounds fell further. These findings were reinforced by the inverse relationship between body mass and weight change in prison which confirmed levels of relative—and gendered—deprivation.

How are we to interpret these findings about body mass? These results are grounds for rejecting the unitary, egalitarian model of household behaviour in which household resources were evenly shared. Adult women were clearly disadvantaged compared with adult men, as predicted by both the risk minimisation (safety-first) and bargaining models of household behaviour. Likewise, both of these models predicted the gains we measured for late adolescents when they started to contribute to the household coffers. The safety-first model suggested that boys would do best as risk minimisation again favoured superior male earning capacity. In the bargaining model, both sexes enhanced their positions by contributing to the household, as negotiations between parents and children were more complex than based on money-value alone (Horrell and Oxley, 1999). Here, our results are more supportive of the bargaining model, as late adolescent girls as well as boys fared comparatively well.

The most important prediction of the safety-first model was that risk minimisation, and its associated pro-male bias, arose as a response to resource shortages. As resources improved, the rationale for the bias dissolved. We failed to find evidence, based on human capital as a proxy for social class, that increasing social status and resources reduced inequality between men and women. Instead, the evidence supports a model of household bargaining where power is attributed to labour market position and threat points determined by social as well as economic factors: the capacity of boys and girls to ‘catch up’ in the growth stakes in late adolescence when the importance of their contributions to the household budget grew; the ability of men to maintain their body shape until old age, although with some small reduction after their earnings peaked; the marked decline in the body mass of adult women, particularly married women with children; and the ongoing fall in biological wellbeing among older women. These findings offer more support for a bargaining model of household behaviour, in which marriage and the presence of children diminished women’s threat points.

And yet, it is hard to reconcile this bargaining model with the anecdotal evidence of Smith, Rowntree and others, that women and children were complicit in favouring the breadwinner. In some regards, the two models are distinguished less by their outcomes and most by their implied attitudes. ‘Safety-first’ implies a consensual model where the family agrees on a strategy that minimises risk. The second reduces distribution to a battle of wills backed by individual economic power and socio-economic discrimination. Neither model provides much room for individual agency and personal motivation, or cultural values, especially those of maternal sacrifice, parental love and filial piety. When the starving mother gave food to her children while going without, with protestations ‘I am not hungry’, was she bargaining, managing risk, or acting out of love? When she told her husband that she had already eaten, was she acceding to his superior economic power? Was she trying to keep him working/happy/at home? Was she scared of his physical power and his wrath? When he acquiesced and ate his dinner, was it in ignorance of her hunger, acceptance of his need, or disregard for her wellbeing? Motives are necessarily speculative, and diverse. They suggest, however, the need to complement threat points with the possibility of ‘help points’, allowing altruism and culture to enter the equation.

This was the moral economy of the household.¹⁶ Its antecedents lay in an ancient bargaining position—‘them that earn, eat’—but power was dressed not as threat points but as assertions of moral rights and responsibilities readily recognised by all. These were the rights of the male breadwinner, the expectations that ‘good mothers’ were self-sacrificing, that parents loved their children, that children owed their families. This meant that while men did better than women and children in the biological stakes, they could still have been making sacrifices by not reserving even more of their earnings for themselves. Some probably did keep the lot, others shared. There was inevitably immense variation in the range of practices engaged in by families, from the tyrannical breadwinner who demanded total personal control of the resources he brought in to the family, to the breadwinner who turned over his entire earnings to his wife so that she made all the decisions, and

¹⁶ The term is borrowed from Thompson (1971).

all the families in between as attested by contemporary accounts. The outcome for male and female body mass appears to have been much the same however the household was organised. This was because bargaining was to an extent unnecessary; it was already reinforced by a set of shared cultural values that transcended the need to exercise the relative economic strength on which they were partly—but not exclusively—based. While women may have been responsible for dishing out the food, few seem to have squirreled it away for themselves: a moral economy of the household made them self-policing in being self-sacrificing. Explicit bargaining, cultural assumptions, acts of parental sacrifice, of a wife to a husband, the generosity of a child to their widowed mother, as well as acts of greed and selfishness, all played their part in shaping nineteenth-century bodies, health, ageing and inequality.

This paper is not about winners and losers in the great industrialisation game; it is about different degrees of losing. These were, quite simply, as Dickens put it, hard times. If anyone was going to be stunted and wasted, it would be the working poor of a great metropolis like London, with all its overcrowding and disamenities. These are the people found in the Surrey House of Correction in Wandsworth. People such as these worked hard, were rewarded little, they drank, they brawled, some sold labour, some sold sex (many did both), and they were in and out of institutions from the workhouse to the gaol. The women experienced repeated pregnancies, and couples and sometimes singletons struggled to raise families, to feed and cloth them, to survive illness, and the daily grind of life.

That body mass, morbidity and mortality are linked, that age wore away at that female mass, hints darkly at life expectancy.¹⁷ That the quality of life was low, and diminished further for women over their lives, seems unequivocal. Was life harder for women than for men? Even after this analysis, it is a hard question to answer. We know that over the life course, many women withered while the men in the study generally maintained their body size and shape. But what of the men who are not in the study? Those are men who died. Men may have fared better than women over their lives, but the absolute deprivation implicit in stunted height and low BMI was a clear sign that they, too, suffered, and the question of longevity cannot be ignored even if this particular data set says nothing about it. Does the fragile body of an elderly woman tell us a tale of deprivation, or is it in fact a story of survival and longevity? Do we fail to find wizened old men because men grabbed a bigger share of family resources, or because hardship had already killed them? Far more work needs to be done before conclusions can be reached about the meanings of the findings identified here. In particular, the relationships between different biological indicators need further exploration, with height and body mass ultimately wedded to mortality data. Anthropometry is a comprehensive method for measuring well-being, distribution and diversity, offering unique insights into the workings of the economy, of local communities, and of families: the social prisms through which economic resources are distributed. Yet each component part—height, weight, body mass, health, morbidity, mortality—is made much stronger by the addition of knowledge drawn from one more component. Here we have brought together height and weight to explore body mass. We are assembling pieces of a giant puzzle. When it is all finally put together, then we can gaze upon the complex creation of human society under urban–industrial capitalism.

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¹⁷ Recent findings on differential female mortality have identified older women as being at elevated levels (McNay et al., 2005).

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