Is status everything?

A comparison of non-specific stress indicators in high-status and low-status populations from post-medieval London

Iris van den Brink

Cover image: Femur of an unknown individual (after elucy.org/compant/femur/) and dentition with hypoplastic defects of the enamel, individual 1449 from St. Bride's Lower Churchyard (www.museumoflondon.org.uk).

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1 Introduction

During the post-medieval period, London was one of the largest cities in Europe (Porter 1994, 131). Traders came to London to buy and sell their products, workers migrated to London from Scotland, Ireland, Wales, The Netherlands, and France with hopes of finding better wages and a better life, and the wealthy elite visited their London townhouses during the so-called “London season” to see and be seen (Bucholz and Ward 2012, 64-66). However, in this flourishing city the division between rich and poor was large. The wealthy high-status inhabitants of London were able to commute between London and the countryside and, while in London, they had the means to frequent the theatre and the royal court, and to hold lavish balls (Bucholz and Ward 2012, 66). In London, they lived in the clean and spacious outskirts of town (Bucholz and Ward 2012, 67).

The poor, low-status, inhabitants of London on the other hand, were not as fortunate and had to struggle to get by on low wages or no wages at all (Bucholz and Ward 2012, 223). They lived and worked in areas where the air was poisoned by the chemicals produced by factories (Porter 1994, 142). The houses of the poor in London were small and overcrowded. Due to the long days of working in factories, the low-status working class had very little access to sunlight, diminishing their vitamin D intake. Furthermore, the access to clean drinking water was scarce, increasing the number of infections and other diseases.

Right in between these two classes of people in London was another class of people usually referred to as “the middling sort” (Guilllery 2004, 11). This group, making up about 16-21% of the population of London, made about triple the wages of the low-status working population and “lived well” (Guillery 2004, 11).

Differences in social status as described above most likely resulted in differences in health status. It is widely accepted that there is a correlation between a decrease in wealth and an increase in physical stress (e.g. Darmon and Drewnowski 2008; Robb *et al.* 2001; Sweeney *et al.* 1971). People that are poorer have less access to food and drinks or only to poorer quality food and drinks and thus, are more prone to disease and famine (Roberts and Cox 2003, 296).

However, the massive differences in living conditions in London do not necessarily reflect a difference in health or healthcare. From the 1710's up to the 1750's numerous hospitals were built for the less fortunate and charities were set up for the sick and poor (Porter 1994, 67). Some of these charities were also more constructive, providing young people with training for a limited number of trades, such as basket weaving and naval duties (Porter 1994, 67). It is possible that institutions such as the hospitals and charities that were founded in London, limited the differences in health and healthcare that one would expect to find between high-status and low-status populations.

Whether a difference in status, like the one described above, is reflected in the archaeological record has not been researched regularly, as of yet. Some examples of research that did compare skeletal collections of different statuses are DeWitte *et al.* (2016) and Robb *et al.* (2001). Since there is limited osteological research concerning this problem, it is important that more studies are done in order to investigate the relationship between social and economic status and health and the level of physical stress. This thesis will do so by answering the following research question:

> *What is the influence of status on the prevalence of (non-specific) stress in post-medieval London and how does this relate to age and sex?*

To answer this research question, two subsidiary questions have been formulated. In these questions, a distinction has been made between intra-site comparisons, between age and sex, and inter-site comparison and between the high-status and low-status populations. The sub-questions are:

1. What are the differences in the prevalence of non-specific stress markers between the sexes and different age groups within four separate populations in post-medieval London?
2. How does the prevalence of non-specific stress markers, in the populations as a whole and between the different age groups and the sexes, in the low-status population compare to the high-status population of post-medieval London?

1.1 Research approach

This research will focus of the occurrence of physical stress in the skeletal remains of several populations from post-medieval London, by analysing the prevalence of non-specific stress markers. As will be explained in more detail in chapter 2, non-specific stress markers are specific features in the skeletal remains as a result of non-specific physical stress, such as famine or disease. Non-specific stress markers have been chosen, as opposed to skeletal features which can be linked to one specific disease, because the aim of this thesis is to get a broader view of the prevalence of physical stress, rather than a detailed picture of the occurrence of a specific disease.

The non-specific stress markers that will be used to analyse the differences between the populations are enamel hypoplasia and growth. These two have been chosen because they are two types of non-specific stress indicator which are complementary. Enamel hypoplasia, a disruption of the formation of tooth enamel, forms when the teeth are growing and it does not remodel over time, therefore it reflects a specific moment of physical stress (Hillson 2008, 303). Growth, on the other hand, is the cumulation of stressful and non-stressful periods in an individual's entire childhood and adolescence (Mays 2010, 128). This could result in a more inclusive picture of both short term stress and the long term repercussions of stress, which would be more when the stress was long term as opposed to short-lived.

Four populations have been chosen for which the prevalence of non-specific stress markers will be analysed (for locations see fig. 1). Two of these populations are considered to be high-status populations and two of these are low-status populations. The populations that have been chosen to represent high-status London are the populations that have been excavated at St. Bride's Church Fleet Street and Chelsea Old Church. To represent the low-status population of London the populations of St. Bride's Lower Churchyard and Cross Bones burial ground have been chosen.

As their names suggest, the populations of St. Bride's Fleet Street and St. Bride's Lower Churchyard both originate from one church parish, that of St. Bride's Church. Since, these two populations are from the same church parish, there are very few differences in their living environment apart from their social and economic status, which is why these two populations were chosen for this study. The Chelsea Old Church and Cross Bones burial ground populations were chosen because, as with the St. Bride's populations, the social status of these two cemeteries is well-known.

The skeletal remains from the four cemetaries studied in this thesis have all been analysed by the Musem of London Archaeological Service and the raw data of these analyses is available online (www.museumoflondon.org.uk).

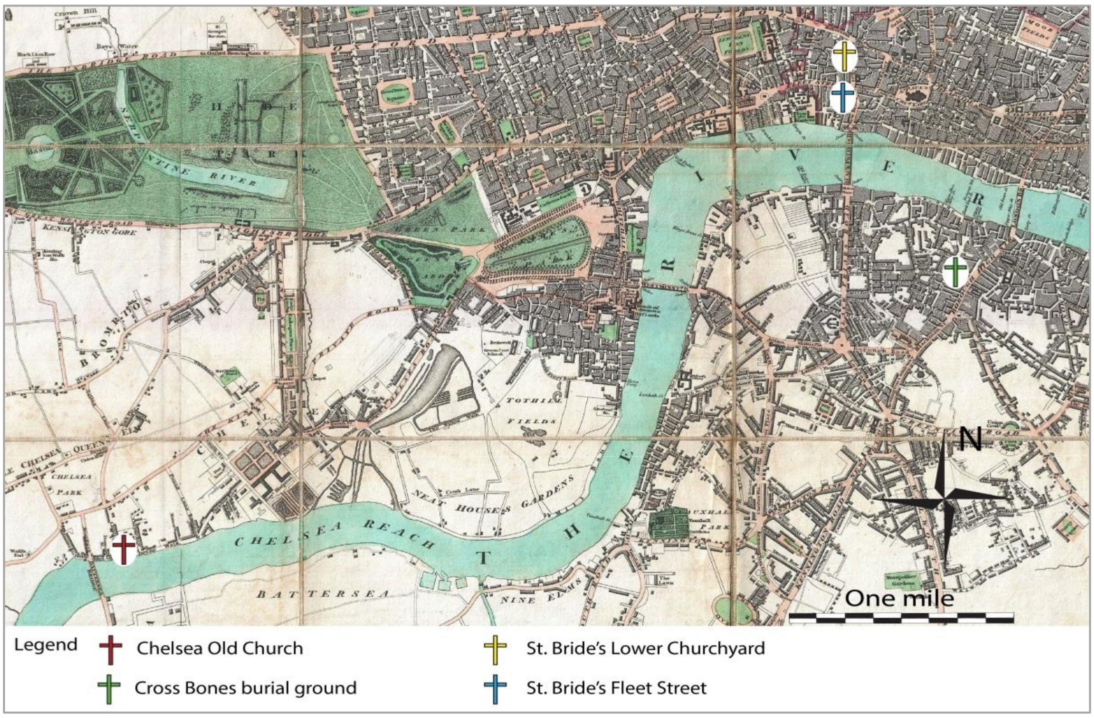

Figure 1: A map of the locations of the burial grounds included in this study (after Edward Mogg's map of post-medieval London (commons.wikimedia.org)).

1.2 Structure

This thesis will start with an introduction into (non-specific) stress research within archaeology, followed by a discussion of the research methods. The next chapter will give an introduction of status and burial in the post-medieval period in London and the archaeological and historical background of each site included in this study. In chapter 5, the results of this study will be presented, followed in chapter 6 by a discussion of the results. Lastly, in chapter 7 a conclusion will be drawn based on the results and discussion and the sub-questions will be answered, which will lead to an answer of the main research question of this thesis.

2 Stress in archaeology

Living circumstances between and within populations can differ tremendously. During the Middle Ages the development of towns changed the living circumstances of people. They went from living in small farmsteads to living in big towns in which people lived close together with poor hygienics and little ventilation, causing the more rapid spread of infection and other diseases (Roberts and Manchester 2010, 17). Then later, industrialisation changed living circumstances again and with it came the increase of the occurance of certain diseases such as scurvy and rickets (Lewis 2002, 212). However, differences in living circumstances are not only a temporal development. Rather, geographic and social differences between populations can also greatly influence people's living circumstances (Lundberg 1993, 1051). In post-medieval London, there was major social differentiation (Bucholz and Ward 2012, 64-66). Different social classes meant distinct living environments and differing health risks. Scientists have long been interested in the differences in living circumstances that are created due to social differentiation, studies on this topic include Robb *et al.* (2001), Darmon and Drewnowski (2008), and Steckel (2009).

In order to study the effects that living circumstances had on past populations, one must first understand how living circumstances influence the human body and how this influence is preserved in the archaeological record. As with the studies mentioned above, this kind of research often investigates differences in living circumstances in terms of how much physical stress an individual or population experiences. Physical stress meaning disruptions such as illness, malnutrition or overburdening. In this type of research, the model of Goodman *et al.* (1984 in Goodman *et al.* 1988, 172) is often referred to (fig. 2). In this model there are two sources of physical stress, environmental constraints which

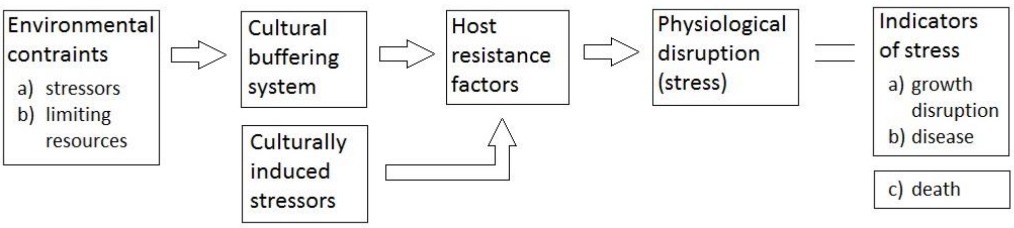

Figure 2: Stress model illustrating the causes and effects of physical stress (after Goodman et al. 1984 in Goodman et al. 1988, 172).

can be buffered by cultural elements, and stress introduced due to cultural practices. In other words, culture (i.e. social circumstances) has a large impact on the amount of physical stress an individual or population experiences.

Since physical stress is, among others, the manifestation of a lack of a good quality diet or the persistence of disease, researchers compare the consequences of physical stress, such as stunted growth or the development of enamel hypoplasia, in order the gain an understanding of how quality of diet and prevalence of disease in the studied groups compare to one another (Roberts and Manchester 2010, 42).

2.1 Non-specific stress

The term ‘stress’ can be problematic to work with, if ill defined. Before the 1980’s stress was defined to be “an environmental condition putting strain on the organism” (Iscan 1983 in Goodman *et al.* 1988, 171). However, around the 1980’s the definition of stress started to change. The most influential work in this time was that of Selye, who observed inconsistencies in how studies approached stress, which caused unclarity on the subject (Selye 1976, 53). He defined stress as being “the nonspecific response of the body to any demand” (Selye 1976, 53). He then divided stress into specific and non-specific, based on the stressor (the agent that produces stress). When the response of the body can be traced back to a particular stressor Selye defined it as specific stress and when this cannot be done he defined it as non-specific stress (Selye 1976, 53). In other words, non-specific stress is stress where the cause of the stress can not be traced back, but the manifestation of the stress could be specific in nature. This Selyean definition of non-specific stress is the definition that will be used in this thesis.

2.1.1 Limitations of non-specific stress research

Non-specific stress research has several limitations. Firstly, the nature of this type of research in itself is limiting, because, as the term already implies, the cause of the stress can not be ascertained (Selye 1976, 54). Therefore, this type of research can never be used in search of a cause of stress. Furthermore, as Goodman *et al.* (1988, 177) point out, the manifestation of stress does not only depend on the stressor, but also depends, among other things, on the sex, age and resilience of the individual experiencing the stress. This causes the same stressor to manifest differently between individuals. Thus, non-specific stress research is only meaningful on a comparative populational level, not on an individual level.

Another limitation that comes with stress research in an archaeological context is the hierarchical nature of stress manifestation (Goodman *et al.* 1988, 177). Stress usually manifests more quickly in the soft tissues of the human body, followed by the bones and lastly in the dentition (Goodman et al. 1988, 177). Sadly, this is also the order in which the human remains deteriorate in an archaeological context. Therefore, the tissues that are usually the most effected by stress are the tissues that we usually find the least (Goodman et al. 1988, 177). However, there are a number of non-specific stress indicators that can be found in archaeological contexts. Non-specific stress indicators such as enamel hypoplasia (e.g. Goodman *et al. 1991*; Starling *et al.* 2007; Sweeney *et al.* 1971), growth or stature (e.g. Pinhasi *et al.* 2014; Steckel 2009; Stinson 1985), signs of anemia such as cribra orbitalia (e.g. Zariĺa *et al.* 2016; Zhang *et al.* 2016), mortality patterns (e.g. Hughes-Morey 2012; Pinhasi *et al.* 2006), and chronic maxillary sinusitis (e.g. Lewis 2002; Sundman and Kjellström 2013) can be used to compare populations and the amount of stress in those populations. In a number of studies, these non-specific stress indicators have been used to research differences in stress prevalence between populations of different social status (e.g. Robb *et al.* 2001). However, as Roberts and Manchester point out, studies on the differences between populations of different status is more often focused on modern populations than on past populations and the archaeological record (Roberts and Manchester 2010, 42). In this thesis, the non-specific stress markers enamel hypoplasia and growth will be used on four archaeological skeletal assamblages to study possible differences in the occurance of non-specific stress in high-status and low-status populations.

2.2 Enamel hypoplasia

As mentioned above, one of the non-specific stress indicator that is often used in this type of research is enamel hypoplasia. Enamel hypoplasia is, at its core, a disruption of the tooth crown development, resulting in less enamel formation than usual, which usually manifests itself as pits or furrows on the tooth surface (Hillson 2008, 303). As it is a defect of the tooth enamel, and enamel is the most resilient part of the human body, enamel hypoplasia is one of the non-specific stress indicators that preserves best in an archaeological context.

2.2.1 Formation

When an individual is experiencing physical stress, such as illness or malnutrition, there will be too little energy that can be devoted to the formation of enamel. In such a time, the enamel forming cells in the teeth (ameloblasts) will cease to produce enamel matrix, leading to the formation of enamel hypoplasia (Hillson and Bond 1997, 96).

There are three main types of enamel hypoplasia. The most common type of enamel hypoplasia is linear enamel hypoplasia (fig. 3), which is the uneven spacing of perikymata, the microscopic grooves on the enamel surface (Hillson and Bond 1997, 97). Rarer are the plane-form defects in which the entire enamel matrix is missing and the underlying dentine can be visible (Hillson and Bond 1997, 100). Lastly, there can be pit-shaped hypoplasia, which can occur as one singular pit, but can also, more commonly, be found as lines of pits situated next to one another (Hillson and Bond 1997, 98). There are some assumptions as to which defect is a testament to a more severe growth disruption, but there are no conclusive studies done to confirm these suspicions (Hillson 2008, 304).

Figure 3: An example of linear enamel hypoplasia (www.eurekalert.org).

Due to the non-remodelling nature of tooth enamel, the defects that develop during childhood will remain the same throughout an individual's lifetime. Therefore, what is being studied when looking at enamel hypoplasia is childhood stress (Hillson 2008, 303). However, this is not to say that the teeth we find in the archaeological context are the same as when they have finished developing. Tooth wear and caries can make the defects hard to observe or can even make them vanish all together (Hillson 2008, 305).

2.2.2 Previous research

A lot has been written about the formation of enamel hypoplasia and about what its presence can say about health (e.g. Hillson 2008; Hillson and Bond 1997; Sweeney *et al.*

1971; Zhou and Corruccini 1998). Enamel hypoplasia has also often been used as a method for archaeological research on non-specific stress in populations (e.g. King *et al.* 2005; Ogden *et al.* 2007; Starling *et al.* 2007). Within archaeology, many of these studies focus on differences in locality like rural vs. urban (e.g. Schats 2016) or urban vs. industrial (e.g. Lewis 2002). There is also a lot of attention for the differences in enamel hypoplasia prevalence between different time periods, especially related to changes in subsistence strategy, for example hunter-gatherer vs. hunter-gatherer/agricultural (e.g. Goodman *et al.* 1988), medieval vs. post-medieval (e.g. Lewis 2002), and late antiquity vs. early medieval (e.g. Šlaus 2008). At present, research on the influence of socioeconomic status differences are underrepresented in enamel hypoplasia studies. Although enamel hypoplasia has been studied in relation with present day status differences (e.g. Sweeney *et al*. 1971; Zhou and Corruccini 1998), there are very few archaeological studies that link enamel hypoplasia and status (Roberts and Manchester 2010, 42).

2.3 Growth

Growth is a process in which the size and dimensions of the body increases, which is a quantitative rather than qualitative change (Molinari and Gasser 2004, 27). Non-adults (individuals under 18 years of age), who are still growing, are more susceptible to effects that environmental stressors might have on them (Pinhasi 2008, 363). Stressors such as disease or poor diet can have a negative effect on an individual's growth rate (Pinhasi 2008, 364). However, stressors are not the only factors which influence an individual's growth. Genetics also play an important role in the final stature that will be attained by an individual (Tanner 1986, 167). After an individual's growth is arrested due to environmental stressors there will be a catch-up period, if possible, so the body can get back on the track of the genetic growth potential (Tanner 1986, 167).

2.3.1 Previous research

There has been extensive research done with regards to human growth development in both past and present populations (for an extensive overview see Humphrey 2000, 25-26). The first research into growth was focused on the relationship between long-bone length and dental development in order to find a relation between growth and age estimation (Humphrey 2000, 24). Later, sex estimation using long bone length was also part of this research (Humphrey 2000, 24). Since the 1980s the focus shifted from biological profile research, to research into the relationship between growth and environmental factors, starting with the influence of diet (e.g. Cook 1984). Later studies, into the influence of environmental factors on growth, include studies on the effects of weaning (e.g. Wall 1991), social implications on growth (e.g. Farwell and Molleson 1993), and male/female differences (e.g. Humphrey 1998). A great part of these studies either include, or focus on, a comparison between an archaeological population and modern populations (Humphrey 2000, 27). However, there is debate about the usefulness of such studies, because the compatibility of measurements from archaeological populations and measurements of living populations is being questioned (Pinhasi 2008, 368).

2.3.2 Stature or growth as a non-specific stress marker?

In previous research into non-specific stress, stature has sometimes been used as a stress indicator (e.g. Temple 2008; Watts 2011). However, there is some debate on whether this is a valid method to use in such research. Humphrey argues that this is actually a fundamentally flawed method to use, since the conversion of measurements into stature does nothing more than add another layer of possible data distortion (Humphrey 2000, 31). This distortion can occur because the relation between long-bone length and stature can differ between populations, but also when a conversion formula is used which is based on a population that is not compatible with the archaeological population (Humphrey 2000, 31). Therefore, Humphrey argues, it is better to use growth, rather than stature, as the non-specific stress marker, in which case long-bone lengths are used as representative of growth (Humphrey 2000, 31).

2.4 Summery

In short, physical stress is the occurrence of disease, malnutrition or overburdening, and can be influenced by environmental as well as cultural influences. In the archaeological record the effects of stress can be found in the skeletal remains through, among others, non-specific stress markers. This thesis will analyse the prevalence of two non-specific stress markers, enamel hypoplasia and growth, in four populations from post-medieval London. The aim of that analysis is to see how status can influence the prevalence of physical stress. In the following chapter, the methods used in this thesis will be discussed further.

3 Methods

The data used in this study has been provided by the Museum of London Archaeology Service (MoLAS) and the Centre for Human Bioarchaeology (CHB). The employees of these institutions have analysed the human remains excavated during several projects in the London area (Connel 2012, 8). The results of these analyses have been recorded and published online in the Wellcome Osteological Research Database (WORD) (Connel 2012, 8).

This chapter starts with a description of the methods that the MoLAS and CHB used to analyse the human remains used in this study. This is followed by a description of the way in which growth and the prevalence of enamel hypoplasia were analysed. The chapter will conclude with an identification of the comparisons that have been made within and between the populations and a description of the statistical methods that have been used to analyse the differences in the prevalence of the non-specific stress markers.

3.1 Osteological analysis by MoLAS

All the human remains, of the four cemeteries analysed in this study, were analysed in accordance with the Human osteology method statement of the Museum of London (Powers 2012a). For the biological profile of the individuals the following characteristics were recorded: preservation, completeness, estimation of age-at-death, estimation of sex, metric data, non-metric skeletal traits, dental pathology and skeletal pathology (Powers 2012a). For this research only age-at-death estimation, sex estimation, metric data, and dental pathology are included, therefore these methods will be discussed in more detail below.

3.1.1 Methods used for the age-at-death estimation

Age-at-death of non-adults was estimated using multiple methods. Firstly, diaphyseal length was used; the method of Scheuer and Black (2000) for foetal and neonatal individuals and the method of Maresh (1970) for non-adults over the age of 2 months (Powers 2012b, 12). Second, the state of fusion of the epiphyses was assessed according to Buikstra and Ubelaker (1994, 41) and compared to the fusion data presented by Connell and Rauxloh (2003) (Powers 2012b, 12). For non-adults over the age of 1 month, age-at-death was also estimated through dental eruption according to the method of Gustafson and Koch (1974) (Powers 2012b, 12). In the case of contradicting age estimations, dental age was leading in the estimation as argued by Liversidge (1994), since the physical age estimated through dental eruption is found to be more in line with chronological age than other methods (Powers 2012b, 13).

Age-at-death of adult individuals was estimated based partly on the morphology of the pubic symphysis of the pelvis, according to the methods of Brooks and Suchey (1990) and Buikstra and Ubelaker (1994, 24-32) (Powers 2012b, 14). The auricular surface of the pelvis was also analysed for degeneration, in this case according to the method of Lovejoy *et al.* (1985) (Powers 2012b, 14). Furthermore, sternal rib morphology was analysed in accordance with the method of Iscan *et al.* (1984; 1985). Lastly, dental wear was analysed according to the method of Brothwell (1981, 72) (Powers 2012b, 14). However, dental morphology was seen as the least reliable of these four methods and therefore less important in the overall estimation.

In the analysis performed by the MoLAS, the individuals were catagorised according to the age groups in table 1. However, in this thesis a number of age categories have been grouped in order to enlarge the sample size (tab. 2).

Table 1: Age groups for the age-at-death estimation used by the MoLAS (after: Powers 2012b, 13-14).

Group	Age in weeks/months/years
Inter-uterine/neonate	<4 weeks
Early post-natal infant	1–6 months
Later post-natal infant	7–11 months
Early child	1–5 years
Later child	6–11 years
Adolescent	12–17 years
Young adult	18–25 years
Early middle adult	26–35 years
Later middle adult	36–45 years
Mature adult	>46 years
Adult	>18 years
Subadult	<18 years

Table 2: Age groups for the age-at-death estimation used in this thesis.

Group	Age in years
Non-adult	<18 years
Adult	>18 years
Younger adult	18–36 years
Older adult	>36 years

3.1.2 Methods used for sex estimation

Sex was only estimated for adults and was based on multiple features on the skull and pelvis. The methods that were used for assessment of pelvic features are: Phenice (1969) and Bass (1987) (Bekvalac 2012, 15). For the assessment of skull features the methods that were used are: Brothwell (1981), Bass (1987, 82), Ferembach *et al.* (1980), and Brothwell (1981) (Bekvalac 2012, 15). The sex estimation was established by grading each feature in a five point scale (male, possible male, intermediate, possible female, and female). These grades were than weighed, with the pelvic features being more important than the skull features. Each individual was assigned a grade that signified a sex estimation (tab. 3). In this thesis, possible females have been included into the female group and possible males have been included into the male group.

Table 3: Grades for sex estimation used by the MoLAS (after: Bekvalac 2012, 15).

Grade	Sex
1	male
2	probable male
3	intermediate
4	probable female
5	female
9	undetermined sex

3.1.3 Measurement data

A great number of cranial, dental, and post-cranial measurements were taken. The measurements were taken with an osteometric board, a sliding calliper, a tape measure or a spreading calliper, depending on the method that was referenced (Mikulski 2012, 17). All possible measurements taken can be found in the Human Osteology method statement of the MoLAS (Mikulski 2012, 17-20). The measurements were noted in mm or degrees in accordance with the appropriate method (Mikulski 2012, 17).

3.2 Enamel Hypoplasia

For the non-specific stress indicator enamel hypoplasia, the dental pathology table from the WORD was used for each of the four cemeteries. In these tables the presence, location and severity of a number of dental pathologies has been recorded per tooth. From this table the records with values regarding enamel hypoplasia were extracted. These values were recorded by the employees of the MoLAS and the CHB based on the definitions of Hillson (1996) (Kausmally 2012, 24).

To ensure true prevalence can be calculated, it was recorded when the observation of the possible presence of a defect was impossible due to another defect (Kausmally 2012, 23). An example of such an instance is when the observation of enamel hypoplasia was impossible due to the presence of calculus. The teeth where the presence of enamel hypoplasia could have been obscured by another defect have been excluded from this study.

Since this study only looks into the presence or absence of enamel hypoplasia per individual, and not its location and/or severity, all the teeth where the defect was observed have been regarded as teeth with hypoplasia present. Thus, all the values indicating the presence of enamel hypoplasia were converted to one value which represents the presence of enamel hypoplasia. Resulting in a table where the only presence or absence of enamel hypoplasia for each tooth was recorded. Using this table, a count was made of the number of teeth examined per individual. Then another count was made of the number of teeth with enamel hypoplasia per individual. The results of these two counts were then combined into a table with the basic information on the individual (appendix 1). This table was used for the analysis of the prevalence of enamel hypoplasia in the different populations and groups.

For the analysis itself, two precautions were taken to ensure true prevalence was calculated. Firstly, ante- or post-mortem tooth loss could distort the data, since it is possible that an individual with enamel hypoplasia is categorised as not having hypoplastic defects because the teeth with signs of enamel hypoplasia are not available for analysis or vice-versa. This problem is addressed by only including individuals with a minimum of four teeth examined in the analysis, which represents over 10% of the dentition of an individual. Secondly, enamel hypoplasia was only considered present in an individual when there was a minimum of two teeth with enamel hypoplasia. This minimum was used to ensure that local trauma, which can leave similar traces on teeth, is not confused with enamel hypoplasia (Hillson 1992 in King *et al.* 2005, 547). The prevalence of enamel hypoplasia in a population or group was determined by calculating the percentage of individuals with enamel hypoplasia out of the total number of individuals meeting the criteria defined above.

3.3 Growth

As mentioned above, included in the WORD are a great number of bone measurements. The measurement that was chosen to represent growth in this study is adult maximum femur length of the left femur. This measurement was chosen because the lower-limb long-bones are among the fastest growing bones in the body and are therefore among those bones that are most susceptible to environmental influences (Eveleth and Tanner 1990 in Lewis 2002, 213). Of the lower-limb long-bones, the maximum length of the left femur was the most frequently taken measurement within the populations of this study. The maximum femur length was measured according to the standard put forth by Buikstra and Ubelaker (1994, 82) (Mikulski 2012, 19).

The data of the individuals for which this measurement was taken, was extracted from the database. This resulted in the table that was used to calculate the mean maximum femur length for the different populations and groups (appendix 2).

Two precautions have been taken in the comparison of growth, within and between the populations, in order to ensure the integrity of this study. Firstly, non-adult individuals were excluded, since the age estimation of these individuals is often based on long-bone length, which causes a cause-and-effect problem. Secondly, the individuals have been separated into males and females before being compared to one another. This has been done, because males are genetically predisposed to be taller than females (Mays 2010, 131). Furthermore, a study comparing male and female skeletal measurements found that femurs of male individuals are larger than femurs of female individuals even though the overall body size for both groups was nearly equal (Nieves *et al.* 2005, 351). Therefore, comparing adults without separating them into males and females, could cause skewed data, when the number of male or female individuals in one sex group is larger than the other.

3.4 Comparisons

Several comparisons have been made with the data. First of all, a comparison of the prevalence of enamel hypoplasia within each population was made. This was done between the male and female groups, as well as between the different age groups. Secondly, a comparison of the mean maximum femur length within each population was made. These comparisons were, again, made between both males and females and the different age groups. However, as mentioned above, the comparison between the age groups has only been executed using the age groups separated based on sex. Lastly, comparisons between the populations have been made. This was done on a population-wide level as well as on a group level. In other words, the overall prevalence of enamel hypoplasia of the entire populations were compared. Followed by comparisons of the prevalence of enamel hypoplasia and mean maximum femur length of the groups mentioned above.

3.4.1 Statistical analysis

The data has been statistically analysed using a number of statistical tests. Statistical analysis was only performed when the sample of the group or population was larger than five individuals.

The differences in prevalence of enamel hypoplasia have been statistically analysed using a Chi-squared (χ^2) test when the expected frequency of each population or group was larger than five individuals. When not all the expected frequencies were over five individuals, a Fisher's Exact Test (FET) was used.

The statistical significance of intra-populational differences in mean maximum femur length has been tested using an independent T-test (T-test) or Mann-Whitney U-test (MWU), depending on whether or not the data is normally distributed. For the inter-population comparison the data was analysed, based on the groups, using an analysis of variance (ANOVA), unless the data was not normally distributed, in which case independent T-tests and Mann-Whitney U-tests were used. In the case of a statistically significant result in the ANOVA test, the populations were compared separately using independent T-tests to find the source of the statistically significant difference.

Any differences observed have been considered to be statistically significant when the probability of coincidence is less than 5%, in other words $p<0.05$.

4 Materials

This chapter will begin with a discussion of the connection between burial grounds and the idea of status in London and how this connection has influenced the distribution of people between the different cemeteries that were present in post-medieval London. This broader context of burial in post-medieval London will be followed by more detailed descriptions of the cemeteries that are used in this study. Some general background will be given for each burial ground, as well as a summary of the excavations carried out on the burial ground and the studies that used (among others) the osteological information from these populations. Lastly, the demographic composition of each population is discussed.

4.1 Status and burial in post-medieval London

In early modern London, there was a massive pressure on burial grounds due to the rapid growth of the population as well as a string of epidemics dramatically increasing the number of burials needed (Harding 1998, 55). To alleviate the pressure that was building on parish cemeteries, the municipality opened the New Churchyard, which provided free burial grounds to those in need of it (Harding 1998, 55). Church parishes also opened new burial grounds of their own (Harding 1998, 55).

The growth in the amount of burial grounds resulted in London having three main types of burial grounds: parish burial grounds, convent burial grounds, and civic burial grounds (Harding 1998, 55). These three types might seem fairly equal, however in terms of desirability there was a clear hierarchy. The most desirable place of burial is inside the church itself, followed by burial in convent grounds. The burial ground directly next to the parish church are the next in line, followed by the parish burial grounds that are further away from the church. The least desirable burial place in post-medieval London was the New Churchyard, or the civic burial grounds (Harding 1998, 56).

In the post-medieval period, the idea of status shifted. The traditional idea of status obtained at birth was abandoned, rather, throughout the 17th century monetary wealth became a more important status symbol than family name (Harding 1998, 54). This growth of the importance of wealth can also be seen in the allocation of graves. The most desirable burial grounds were more expensive than the less desirable ones (Harding 1998, 57). Therefore, wealthier people, who also had more status in the society, were able to afford to be buried in crypts or the burial grounds near the parish church, whereas poorer people had to content with the burial grounds further away from the church or the New Churchyard.

However, not only poor parishioners but also so called “strangers”, or people that were not part of the parish, were buried in the less desirable burial grounds (Harding 1998, 60). It has been known to happen that wealthy individuals, such as travellers, immigrants or non-Christian people, were buried in the cemetery that was used for the poorest people in the parish (Harding 1998, 60), leading to a possible bias in the skeletal assemblage.

4.2 Cemetery introductions

Some of the trends that have been described above can also be found in the cemeteries used in this study. As discussed in the introduction, the two populations that will represent the high-status population of post-medieval London are Chelsea Old Chruch and St. Bride’s Fleet Street and the two populations representing the low-status population are St. Bride’s Lower Churchyard and Cross Bones burial ground (fig. 4). In the following introductions, the social and environmental circumstances of each cemetery will be discussed. Table 4, at the end of this chapter, shows an overview of the number of individuals per population.

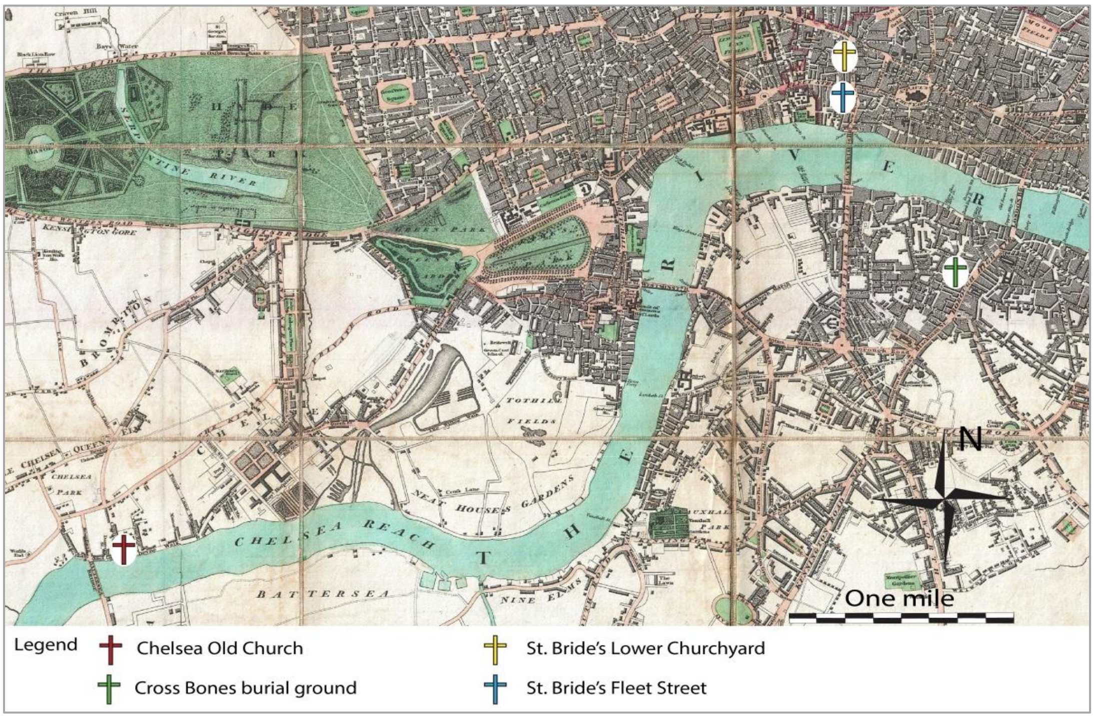

Figure 4: A map of the locations of the burial grounds included in this study (after Edward Mogg’s map of post-medieval London (commons.wikimedia.org)).

4.2.1 Chelsea Old Church

Chelsea is a London suburb that started as a riverside town which grew into the suburb that it is today, during the 18th and 19th century (Cowie *et al.* 2008, 13). Part of this growth was related to the fact that Chelsea became somewhat of a fashionable resort for richer Londoners in the 18th century (Cowie *et al.* 2008, 13). However, Chelsea was not only inhabited by rich people. Among the great houses and palaces of the elite were taverns and dwellings for artisans, farmers, and watermen (Cowie *et al.* 2008, 10).

The cemetery at Old Church Street served the parishioners of the parish of St. Luke's (Cowie *et al.* 2008, 19). Not only the suburb as a whole, but also the parish of St. Luke's and subsequently the churchyard in Old Church Street was comprised of a mixed status population for a considerable period (Cowie *et al.* 2008, 21). However, in 1736 a new cemetery was opened for St. Luke's parish at King's Road. From that moment on, only people of modest or high social status continued to be buried at Old Church Street (Cowie *et al.* 2008, 21). Therefore, in this study the population will be classified as a high-status population, but with the knowledge in mind that the cemetery of Chelsea Old Church is comprised of a population of mixed social status, with a far greater number of middle- and high-status individuals than low-status individuals.

Excavation and previous research

Throughout the year 2000 excavations were undertaken by the MoLAS at 2-4 Old Church Street, Chelsea, directly north of All Saints, Chelsea Old Church (Cowie *et al.* 2008, 1-2). During the excavation, features and artefacts were found from the prehistoric, Roman, Saxon, medieval and post-medieval period (Cowie *et al.* 2008, 5-15). Among the artefacts and features found were pottery, building materials, queries, pits, and burials (Cowie *et al.* 2008, 5-15). The results of the excavation were collected in a unpublished report of the Museum of London (Cowie 2002) and later the MoLAS released a publication on the excavation with special attention to the late 17th to 19th century burials (Cowie *et al.* 2008).

During the excavations, 290 burials were found some of which yielded the coffin and coffin plate as well as skeletal remains (Cowie *et al.* 2008, 21). Of the 290 burials, 198 individuals were recorded in the WORD (Cowie *et al.* 2008, 40), it is unclear what happened to the remaining 92 individuals. The information recorded in the WORD has been used for a number of studies. The sample was used, among others, in a study on identifying linear enamel hypoplasia (Hassett 2014) and the influence of vertebral morphology on the development of Schmorl's nodes (Plomp *et al.* 2012).

Demographic composition

As can be seen in figure 5 the distribution of male and female individuals in this population is fairly equal (37% females and 39% males). 17% of the population is non-adult and as can be seen in figure 6, there are almost as many younger adults (16%). By far the largest group in this population is that of the older adults which includes 60% of the population.

For the purposes of this study, not all individuals recorded in the WORD database can be used for analysis. As was described in the previous chapter, only individuals with 4 or more teeth have been included in the comparison of prevalence of enamel hypoplasia.

This population included 73 individuals who had 4 or more teeth present for examination of enamel hypoplasia. For the comparison of growth only individuals for whom the maximum femur length was recorded were included, which in this population is 91 individuals.

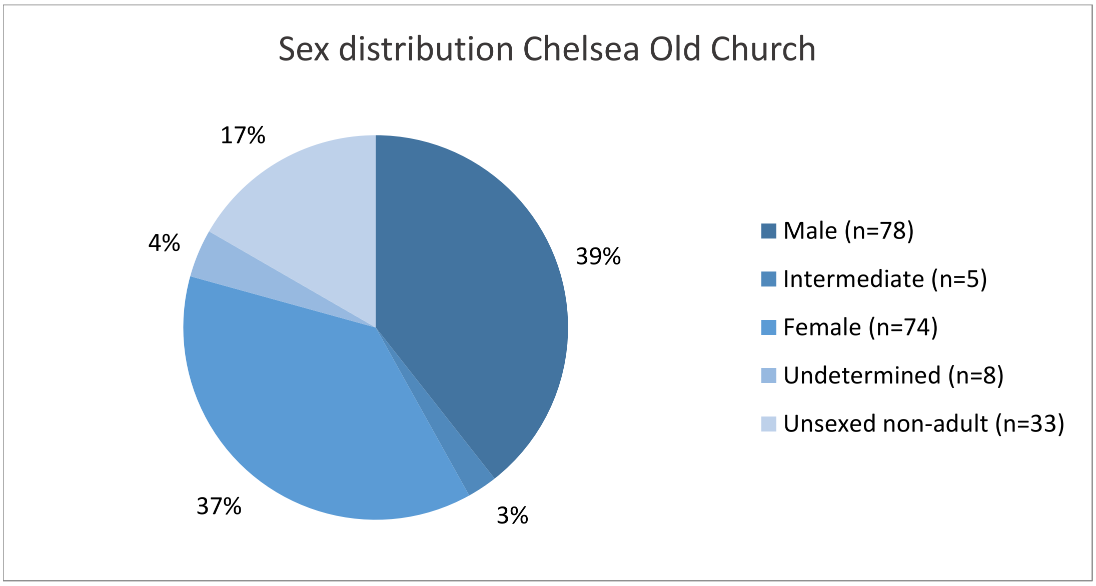

Figure 5: Distribution of age in the population of Chelsea Old Church.

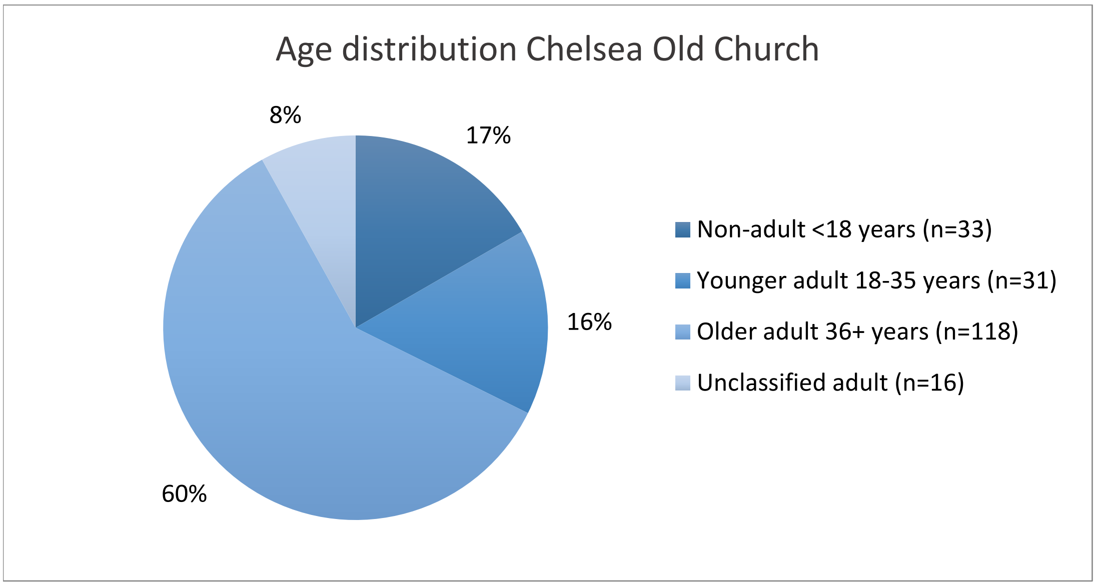

Figure 6: Distribution of sex in the population of Chelsea Old Church.

4.2.2 St. Bride's Fleet Street

St. Bride's Church, Fleet Street, London, has an eventful history. In 1666, the Fire of London destroyed many buildings among which St. Bride's Church on Fleet Street. After the fire, the seventh reincarnation of the church was built by Sir Christopher Wren, which was destroyed again in a 1940 bombing (Scheuer 1998, 100). During the construction in the late 1600's a crypt was added which was in use for nearly two centuries before being closed in the 1850's to assuage the public's fear of disease caused by the dead (Scheuer 1998, 100). Since the crypt was located inside the church, it was expensive to be buried inside the crypt. Therefore, people that were interred in the crypt were most likely wealthy and of a high social status (Scheuer 1998, 108).

Excavation and previous research

After the bombing of the church in 1940, the churchwardens asked for excavations to be undertaken at the church, since clearing up was necessary anyway, which provided an opportunity for excavations to be carried out as well (Harvey 1968, 63). The request was granted by the London Roman and Medieval Excavations Councils and the excavation was directed by Professor W.J. Grimes (Harvey 1968, 63). During the excavations many medieval and post-medieval coffins with skeletons were recovered as well as some Roman burials and the foundations of a Roman villa (Harvey 1968, 63). Remarkable about the skeletal remains is that a great number of them could be identified due to the great care that was taken by the church in their record keeping (Harvey 1968, 64).

A vast number of studies have been undertaken using the St. Bride's Crypt collection. Most of these studies focus on the testing or creation of age-at-death and sex estimation methods, since this collection includes individuals with known sex and age-at-death (e.g. Day and Pitcher Wilmott 1975; Gapert *et al.* 2009; Hassett 2011; Steel 1962). The collection was also used by Walker (1995) to examine and discuss possible biases when performing age-at-death and sex estimations. Other research using this collection includes the study of a possible suicide victim (Bowman *et al.* 1992) and a study into the factors that might affect the occurrence of non-metrical variation (Berry 1975).

Demographic composition

The crypt of St. Bride's Church held just under 300 individuals (Scheuer 1998, 100). However, not all individuals were recovered due to a number of circumstances (Scheuer 1998, 100). Eventually, of the almost 300 individuals, the osteological information of 214 individuals have been recorded in the WORD.

As can be seen in figure 7, there are roughly as many males in this population as there are females. The percentage of individuals for whom the sex is undetermined is very small in this populations, parly because, as can be seen in figure 8, there are very few non-adults in this population. By far the biggest age group in this population is that of the older adults (72%). Of the 214 individuals in this population, 162 have been included in the comparison of the prevalence of enamel hypoplasia and 138 have been included in the comparison of growth.

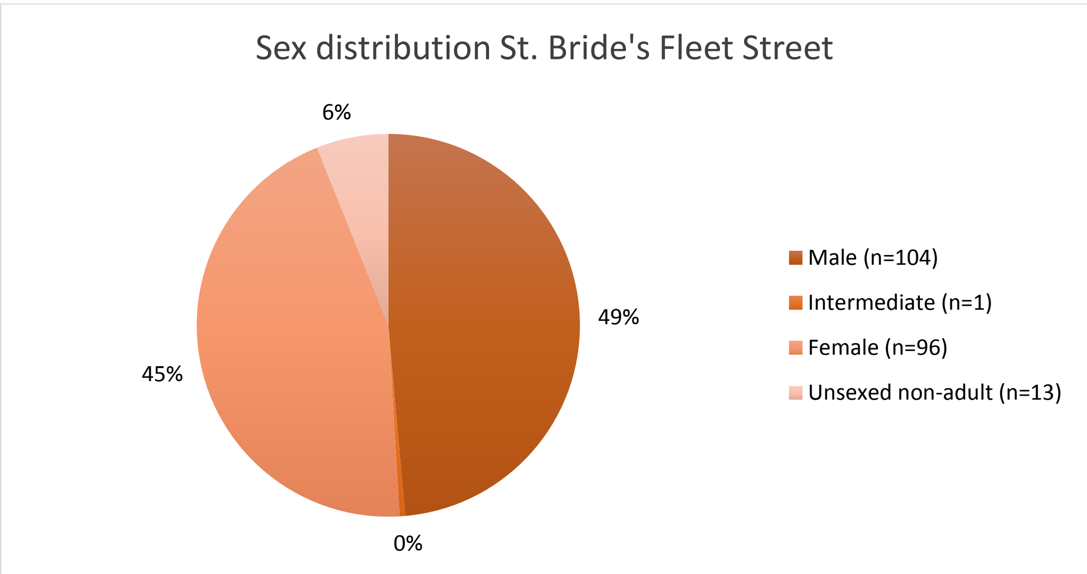

Figure 7: Distribution of sex in the population of St. Bride's Church Fleet Street.

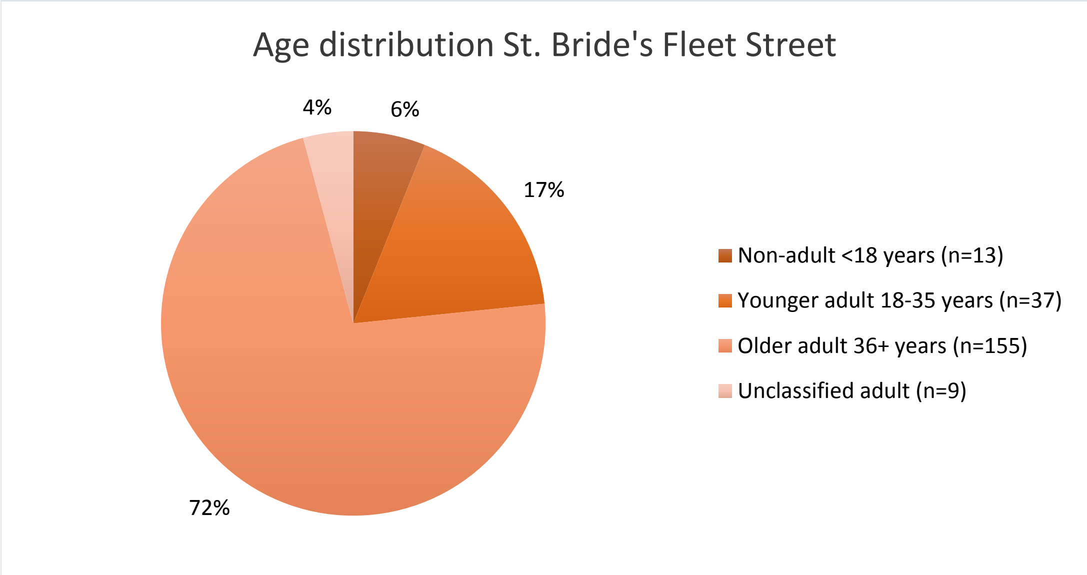

Figure 8: Distribution of age in the population of St. Bride's Church Fleet Street.

4.2.3 St. Bride's Lower Churchyard

St. Bride's Church was one of the many churches that were overflowing with demand for burial space. In response to this demand, a new burial ground was opened which probably dates from approximately 1770 to 1849 (Miles and Conheeney 2005 in Mant and Roberts 2015, 192). From that moment on the parish of St. Bride's Church counted three burial grounds: the crypt inside the church (see above), the churchyard next to the church itself and the lower churchyard in Farringdon Street (Miles 2012 in Mant and Roberts 2015, 191). It is this last churchyard that yielded the skeletal collection that is discussed here.

The lower churchyard was mainly used to bury the poorer inhabitants of the parish, such as lodgers, prisoners of the nearby Fleet prison, and workers from the Bridewell workhouse (www.museumoflondon.org.uk). Workhouses such as Bridewell were established to provide work and lodgings for the able-bodied, but they soon devolved into cheap lodgings for the poor and weakened (Porter 1994). In other words, the population of St. Bride's Lower Churchyard represents the low-status population of St. Bride's parish.

Excavation and previous research

The excavations at 75-82 Farrington Street, 20-30 St. Bride Street, London, took place in 1990 and were funded by the National Provident Institution (archive.museumoflondon.org.uk). On the site 606 burials were excavated, most of which were in wooden coffins (www.museumoflondon.org.uk). A great number of the burials were stacked on top of each other, some even up to eight burials on top of each other (archive.museumoflondon.

org.uk). Of the 606 burials found during the excavation, 544 were recorded in the WORD (www.museumoflondon.org.uk).

Since there are not as many identified individuals as in the previous two populations, there are not as many studies that have used this population. However, there are a small number of studies that have used this population. Among them are: a study into the possible association between social status and dental status (Mant and Roberts 2015) and a study comparing the prevalence of stress markers in medieval and post-medieval London (Watts 2015).

Demographic composition

Figure 9 shows that the percentage of male individuals (36%) is considerably larger than the percentage of female individuals (23%). The non-adult portion of this skeletal assembly is markedly larger (32% as shown in fig. 10) than that of the previous two populations. However, the share of older adults is, again, the largest of all the age categories (46%).

Of the 544 individuals in this skeletal assemblage, 128 individuals were included in the comparison of growth and 287 individuals were included in the comparison of the prevalence of enamel hypoplasia. The number of individuals that are included in the growth portion of this study is as low as it is partly because two-thirds of the population is non-adult, which excludes them.

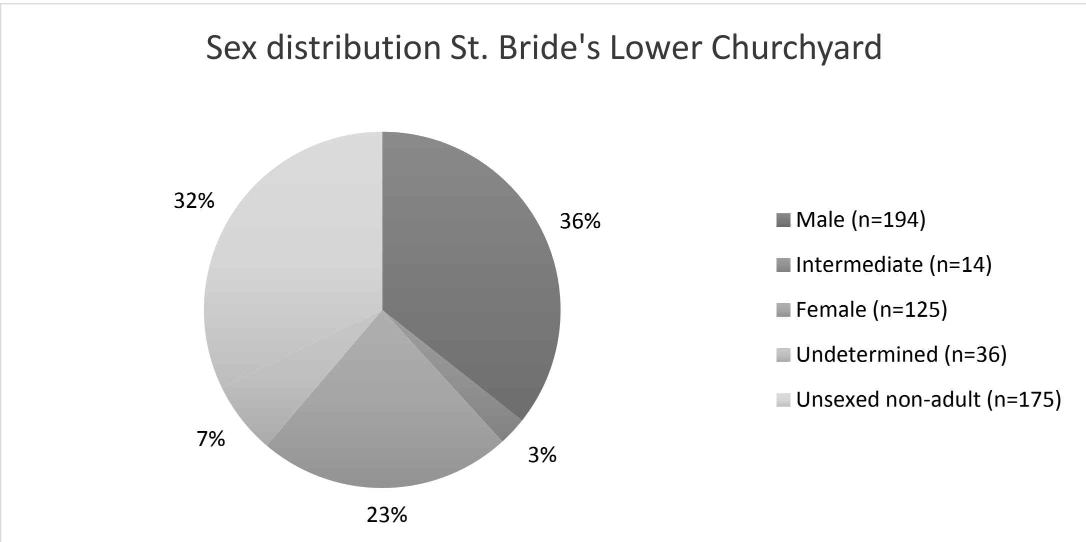

Figure 9: Distribution of sex in the population of St. Bride's Church Lower Churchyard.

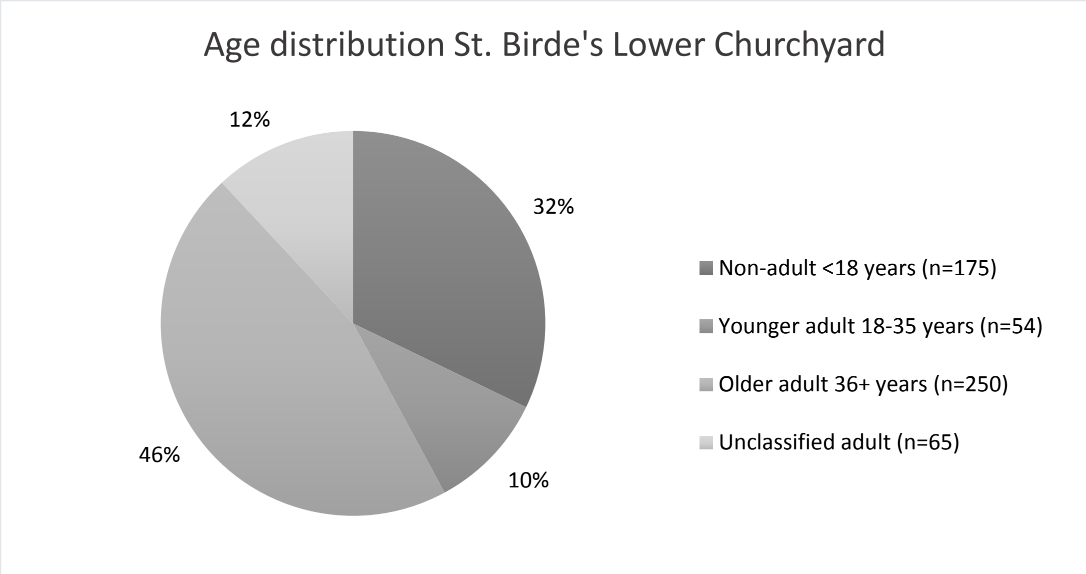

Figure 10: Distribution of age in the population of St. Bride's Church Lower Churchyard.

4.2.4 Cross Bones burial ground

Cross Bones burial ground was one of the burial grounds of the St. Saviours parish of Southwark, London. It was founded ca. 1620 and was 1000 square yards (Reeve 1998, 226). It is believed that the burial ground was first opened as a graveyard for prostitutes. Whether or not this is correct is uncertain, but it is clear that the cemetery served to poorest people of the parish of St. Saviour (www.museumoflondon.org.uk).

Excavation and previous research

Excavations carried out in 1992 revealed 160 burials, of which 148 were recorded in the WORD (archive.museumoflondon.org.uk). For some of the burials the (wooden) coffins were found as well as some fabrics. There were also some coffin plates found, but no names or other biographical information could be extracted from them (www.museumoflondon.org.uk).

There is a very minimal amount of archaeological research done using the information gained in the excavation of Cross Bones burial ground, nor using the information made available by the Museum of London. However, one example of a study that has used this population is a study by Watts (2015) comparing the prevalence of stress markers in medieval and post-medieval London.

Demographic composition

As figure 11 shows, the percentage of females in this population is much larger than that of the males. It also shows that 70% of this population is non-adult. Figure 12 shows that, of the adults in this population, the older adults far outnumber the younger adults.

Since there is such a small portion of the population that is adult, there is a very small number of individuals that can be used for the growth comparison, only 17 of the 148 individuals of this population. Luckily, there is a larger portion that can be used for the comparison of the prevalence of enamel hypoplasia. For this part of the study there are 66 individuals that fit the criteria stated in the previous chapter.

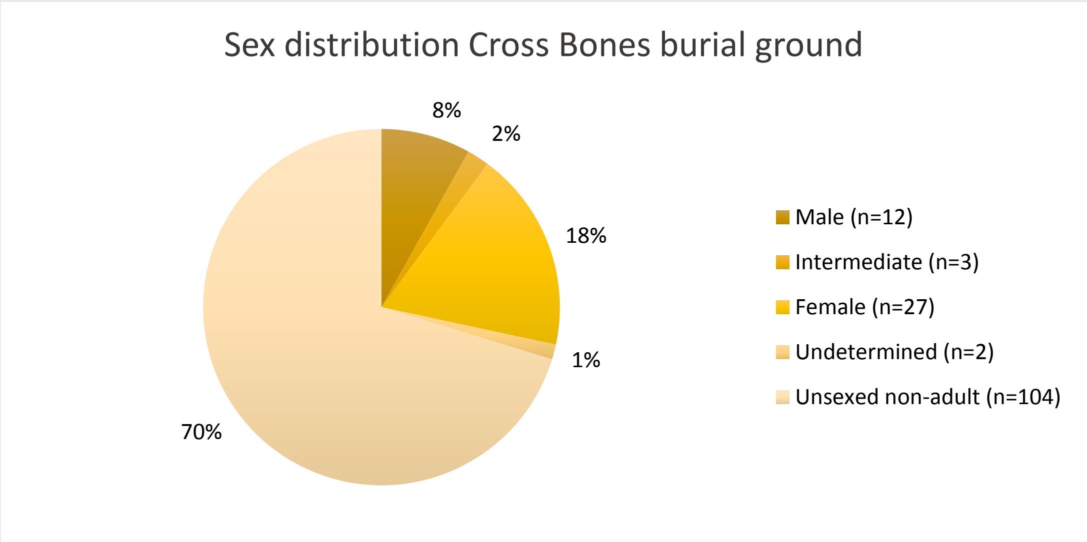

Figure 11: Distribution of sex in the population of Cross Bones burial ground.

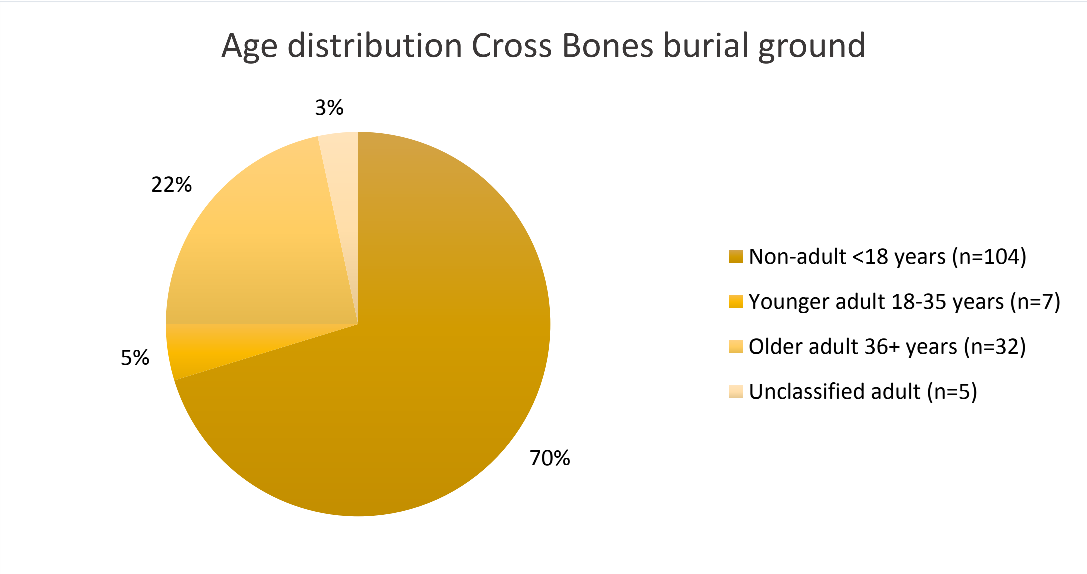

Figure 12: Distribution of age in the population of Cross Bones burial ground.

Table 4: Overview of the populations used in this study with the total number of individuals in the skeletal assembly, the number of individuals included in the growth study and the number of individuals included in the study of enamel hypoplasia (EH).

Cemetery	**Date (AD)**	**Status**	**Total number of individuals**	**Number of individuals growth**	**Number of individuals EH**
Chelsea Old Church	1700-1850	High	198	73	91
St Bride's Fleet Street	1676-1853	High	214	138	162
St Bride's Lower Churchyard	1770-1849	Low	544	128	287
Cross Bones burial ground	1598-1853	Low	148	17	66

5 Results

In this chapter, the results of the analysis will be presented. First, the results of the analysis of the prevalence of enamel hypoplasia will be presented, followed by the results of the growth comparisons. The chapter will conclude with a summary of the most notable differences and similarities within and between the populations.

5.1 Enamel hypoplasia

As was described in the methods chapter, the prevalence of enamel hypoplasia has been calculated for each population and each group within the different populations. The differences in prevalence of enamel hypoplasia within and between populations were then compared. The following section will discuss the results of these comparisons, looking first at each population separately for an intra-population comparison, followed by the inter-population comparison.

5.1.1 Intra-population comparisons of the prevalence of enamel hypoplasia

Chelsea Old Church

The overall prevalence of enamel hypoplasia in the population from Chelsea Old Church is 46.2%. As can be seen in table 5, there is very little difference in the prevalence of enamel hypoplasia between the males and females of Chelsea Old Church: 44.4% of the females display enamel hypoplasia and 51.2% of the males ($\chi^2(1)=0.352$, $p=0.553$, n=77). The difference between non-adults and adults is also very small. In the non-adult population, 41.7% of the individualsis affected by enamel hypoplaisa and the adults present with enamel hypoplasia in 46.8% of the individuals ($\chi^2(1)=0.112$, $p=0.380$, n=91).

Between the younger adults and older adults, there also does not seem to be a significant difference in prevalence of hypoplasia. However, once these groups are split into a female and male groups, there starts to be an interesting division. In the female group, the younger adults have a much lower prevalence of enamel hypoplasia (28.6%) than the older adults (52.4%). In contrast, in the male population, this is reversed. Here 80% of the younger adults present with enamel hypoplasia, whereas 41.4% of the older adults are affected by enamel hypoplasia. Although both these differences are not statistically significant, a clear trend is visible.

Table 5: Intra-population comparison of the prevalence of enamel hypoplasia (EH) within the population of Chelsea Old Church, with numbers, percentages and results of statistical analysis.

Group	Number of individuals	Individuals with EH		Statistical analysis		
		n	*%*	*X^2 value*	*df*	*p*
All individuals	91	42	46.2	-	-	-
Female	36	16	44.4	0.352	1	0.553
Male	41	21	51.2			
Non-adult	12	5	41.7	0.112	1	0.380
Adult	79	37	46.8			
Younger adult	25	12	48.0	0.027	1	0.870
Older adult	50	23	46.0			
Female younger adult	14	4	28.6	1.944	1	0.163
Female older adult	21	11	52.4			
Male younger adult	10	8	80.0	-	-	0.065*
Male older adult	29	12	41.4			

*Result of the Fisher's Exact test

St. Bride's Fleet Street

In the population of St. Bride's Fleet Street, 29.6% of the individuals considered in this study display enamel hypoplasia. As with the previous population, the females in the St. Bride's Fleet Street population present with less enamel hypoplasia than the males (25.4% and 30.4% respectively). However, again, the difference in prevalence is small and not statistically significant ($\chi^2(1)=0.496$, $p=0.494$, n=150).

There is a large difference in the prevalence of enamel hypoplasia among non-adults (54.6%) and adults (27.8%). However, important to note is that the sample size of the two groups is very different (11 non-adults and 151 adults). This difference in sample size probably contributes to the difference not being statistically significant ($\chi^2(1)=3.524$, $p=0.061$, n=162).

When looking more closely at the adult population, it becomes clear that the younger adults display more enamel hypoplasia than the older adults do (see table 6). Splitting this into the male and female population, one can see that in the male population the older adults present with more enamel hypoplasia, whereas in the female population the younger adults present with more enamel hypoplasia. Although all three of the differences described above are very interesting, they are not significant on a statistical level.

Table 6: Intra-population comparison of the prevalence of enamel hypoplasia (EH) within the population of St. Bride's Fleet Street, with numbers, percentages and results of statistical analysis.

Group	Number of individuals	Individuals with EH		Statistical analysis		
		n	*%*	X^2 *value*	*df*	*p*
All individuals	162	48	29.6	-	-	-
Female	71	18	25.4	0.469	1	0.494
Male	79	24	30.4			
Non-adult	11	6	54.6	3.514	1	0.061
Adult	151	42	27.8			
Younger adult	35	11	31.4	0.255	1	0.613
Older adult	111	30	27.0			
Female younger adult	17	6	35.3	1.281	1	0.258
Female older adult	51	11	21.6			
Male younger adult	18	6	27.8	0.126	1	0.723
Male older adult	59	19	32.2			

St. Bride's Lower Churchyard

The overall prevalence of enamel hypoplasia in the population from St. Bride's Lower Churchyard is 36.6%. The prevalence of enamel hypoplasia in the female population of St. Bride's Lower Churchyard is slightly lower (42.3%) than in the male population (50%). However, the more obvious differentiation in this population is that of the non-adults and the adults. The difference between these two groups is statistically significant ($\chi^2(1)=29.101$, $p<0.001$, n=287), with the prevalence for the non-adults being 12.9% and for the adults being 46.5%.

As can be seen in table 7, the difference between the prevalence of enamel hypoplasia in the younger adults (42.5%) and the older adults (49.6%) is fairly small. When these groups are divided into males and females, the difference remains the same.

Table 7: Intra-population comparison of the prevalence of enamel hypoplasia (EH) within the population of St. Bride's Lower Churchyard, with numbers, percentages and results of statistical analysis.

Group	Number of individuals	Individuals with EH		Statistical analysis		
		n	*%*	X^2 *value*	*df*	*p*
All individuals	287	105	36.6	-	-	-
Female	71	30	42.3	1.081	1	0.299
Male	122	61	50.0			
Non-adult	85	11	12.9	29.101	1	**<0.001**
Adult	202	94	46.5			
Younger adult	40	17	42.5	0.634	1	0.426
Older adult	139	69	49.6			
Female younger adult	20	7	35.0	0.797	1	0.372
Female older adult	47	22	46.8			
Male younger adult	19	10	52.6	0.014	1	0.906
Male older adult	88	45	51.1			

Cross Bones burial ground

In the population from Cross Bones burial ground, the overall prevalence of enamel hypoplasia is 50%. Table 8 shows that males at Cross Bones burial ground had a higher prevalence of enamel hypoplasia. 100% of males had enamel hypoplasia, whereas of the female population only 63.6% displayed enamel hypoplasia. However, it is important to note that the sample size is much larger for the female population (n=22) than that of the male population (n=9), probably contributing to the difference between the prevalence of enamel hypoplasia in the male and female population not to be statistically significant (p=0.068, n=27).

Similar to the previous site, the non-adults of Cross Bones burial ground have a statistically significant lower prevalence of enamel hypoplasia, 24.2%, when compared to the adults of this population, which is 75.8% ($\chi^2(1)=17.515$, $p<0.001$, n=66). Of the adult individuals, the younger adults present with more enamel hypoplasia, both in the overall populations of adults as well as when this population is divided into males and females. However, the sample size of the younger adults is relatively small (n=7), contributing to a result that is not statistically significant and when the population is divided into males and females, the sample size is too small to perform a statistical analysis. None the less, there appears to be a difference in prevalence of enamel hypoplasia between the younger adults and the older adults.

Table 8: Intra-population comparison of the prevalence of enamel hypoplasia (EH) within the population of Cross Bones burial ground, with numbers, percentages and results of statistical analysis.

Group	Number of individuals	Individuals with EH		Statistical analysis		
		n	*%*	*X^2 value*	*df*	*p*
All individuals	66	33	50.0	-	-	-
Female	22	14	63.6	-	-	0.068*
Male	9	9	100.0			
Non-adult	33	8	24.2	17.515	1	**<0.001**
Adult	33	25	75.8			
Younger adult	7	7	100.0	-	-	0.143*
Older adult	23	15	62.2			
Female younger adult	3	3	100.0	-	-	-
Female older adult	18	10	55.6			
Male younger adult	3	3	100.0	**	**	**
Male older adult	5	5	100.0			

*Result of the Fisher's Exact test
**not computed

5.1.2 Inter-population comparison of the prevalence of enamel hypoplasia

As figure 13 shows, the four populations vary a lot from one another in the prevalence of enamel hypoplasia. The following section of this chapter will discuss the inter-populations comparison in two parts. First, each cemetery is compared to the others. Next, the low-status populations (Cross Bones burial ground and St. Bride's Lower Churchyard) are combined into one population and the high-status populations (St. Bride's Fleet Street and Chelsea Old Church) are combined into one population. These totals were then compared to one another. Both types of comparisons were executed per group (males, females, non-adults, adults etcetera). In the following section, the one-on-one cemetery comparisons will be discussed first, followed by the comparison of the high-status and low-status populations.

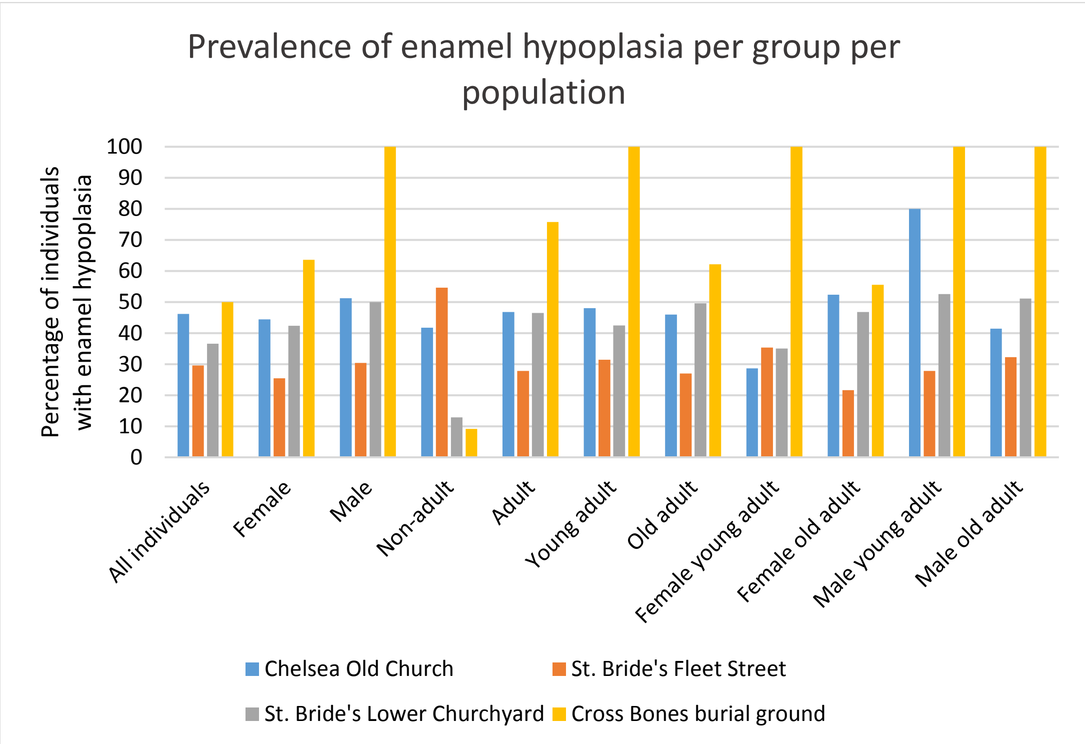

Figure 13: Prevalence of enamel hypoplasia per group per population.

Chelsea Old Church vs. St. Bride's Fleet Street

As can be seen in table 9, overall the population of Chelsea Old Church has a higher prevalence of enamel hypoplasia than the population of St. Bride's Fleet Street. When the prevalence of enamel hypoplasia of all individuals in both populations are compared with a χ^2-test the result is statistically significant ($\chi^2(1)=6.942$, $p=0.008$, n=90). When the populations are split into groups, there are only two groups in which the population of St. Bride's Fleet Street displays a higher prevalence. One of these groups is the non-adult population, where those of Chelsea Old Church have a prevalence of 41.7%, whereas the percentage for St. Bride's Fleet Street is 54.6%. However, since this translates into a difference of only one more individual in the St. Bride's Fleet Street population, the difference in prevalence between the two non-adult populations is not statistically significant. The other is the female younger adult population, where the St. Bride's Fleet Street populations has 6.7% more individuals with enamel hypoplasia. However, this difference is once again not statistically significant, which could, again, partly be caused by the difference in sample size.

For all the other groups in these populations, the Chelsea Old Church population displays a higher prevalence of enamel hypoplasia. As can be seen in table 9, of the differences between these groups, only the difference between the younger adults and the male

Table 9: Comparison of prevalence of enamel hypoplasia (EH) in Chelsea Old Church (COC) and St. Bride's Fleet Street (SBFS), with amounts, percentages and results of statistical analysis.

Group	Site	Number of individuals	Individuals with EH		Statistical analysis		
			n	*%*	*X^2 value*	*df*	*p*
All individuals	SBFS	162	48	29.6	6.942	1	**0.008**
	COC	91	42	46.2			
Non-adults	SBFS	11	6	54.6	0.381	1	0.537
	COC	12	5	41.7			
Adults	SBFS	151	42	27.8	8.321	1	**0.004**
	COC	79	37	46.8			
Younger adults	SBFS	35	11	31.4	1.694	1	0.193
	COC	25	12	48.0			
Older adults	SBFS	111	30	27.0	5.619	1	**0.018**
	COC	50	23	46.0			
Females	SBFS	71	18	25.4	4.017	1	**0.045**
	COC	36	16	44.4			
Female younger adults	SBFS	17	6	35.3	-	-	0.497*
	COC	14	4	28.6			
Female older adults	SBFS	51	11	21.6	6.655	1	**0.010**
	COC	21	11	52.4			
Males	SBFS	79	24	30.4	5.002	1	**0.025**
	COC	41	21	51.2			
Male younger adults	SBFS	18	6	27.8	-	-	**0.016***
	COC	10	8	80.0			
Male older adults	SBFS	59	19	30.5	7.717	1	0.397
	COC	29	12	41.4			

*Result of the Fisher's Exact test

older adults are not statistically significant. In other words, Chelsea Old Church not only has an overall significantly higher prevalence of enamel hypoplasia, but also in most groups this population has a statistically significantly higher percentage of individuals with enamel hypoplasia.

Chelsea Old Church vs. St. Bride's Lower Churchyard

Overall, the population of Chelsea Old Church has a higher prevalence of enamel hypoplasia than the population of St. Bride's Lower Churchyard. As can be seen in table 10, this remains true for most groups when the populations are divided into groups. However, there is only one group for which the difference between the populations is statistically significant. Of the two non-adult populations Chelsea Old Church displays a prevalence of enamel hypoplasia 41.7%, whereas the St. Bride's Lower Churchyard population only has a prevalence of 12.9%, which is a statistically significant difference ($\chi^2(1)=6.299$, $p=0.012$, n=16).

Table 10: Comparison of prevalence of enamel hypoplasia (EH) in Chelsea Old Church (COC) and St. Bride's Lower Churchyard (SBLC), with amounts, percentages and results of statistical analysis.

Group	Site	Number of individuals	Individuals with EH		Statistical analysis		
			n	*%*	*X^2 value*	*df*	*p*
All individuals	SBLC	287	105	36.59	2.662	1	0.103
	COC	91	42	46.15			
Non-adults	SBLC	85	11	12.94	6.299	1	**0.012**
	COC	12	5	41.67			
Adults	SBLC	202	94	46.53	0.002	1	0.964
	COC	79	37	46.84			
Younger adults	SBLC	40	17	42.50	0.188	1	0.664
	COC	25	12	48.00			
Older adults	SBLC	139	69	49.64	0.195	1	0.659
	COC	50	23	46.00			
Females	SBLC	71	30	42.25	0.047	1	0.829
	COC	36	16	44.44			
Female younger adults	SBLC	20	7	35.00	-	-	1.000
	COC	14	4	28.57			
Female older adults	SBLC	47	22	46.81	0.180	1	0.671
	COC	21	11	52.38			
Males	SBLC	122	61	50.00	0.018	1	0.893
	COC	41	21	51.22			
Male younger adults	SBLC	19	10	52.63	-	-	0.234
	COC	10	8	80.00			
Male older adults	SBLC	88	45	51.14	0.831	1	0.362
	COC	29	12	41.38			

The only three groups in which the prevalence of enamel hypoplasia is higher in the St. Bride's Lower Churchyard population, are: the older adults, the female younger adults and the male older adults. For all three of these groups, the difference in prevalence between the two populations is, however, not statistically significant.

Chelsea Old Church vs. Cross Bones burial ground

Comparing Chelsea Old Church to Cross Bones burial ground, we find only one instance where Chelsea Old Church has a higher prevalence of enamel hypoplasia than the Cross Bones burial ground population. However, both overall and in most groups, the difference between the two populations is fairly small and not statistically significant.

As can be seen in table 11, there are four groups where the difference between the two populations is statistically significant. However, for three of these groups (the younger adults, the males and the male older adults) the sample from Cross Bones burial ground is very small. Of the four groups with a statistically significant difference between the prevalence of enamel hypoplasia, only the sample size of the complete adult population

Table 11: Comparison of prevalence of enamel hypoplasia (EH) in Chelsea Old Church (COC) and Cross Bones burial ground (CB), with amounts, percentages and results of statistical analysis.

Group	Site	Number of individuals	Individuals with EH		Statistical analysis		
			n	*%*	*X^2 value*	*df*	*p*
All individuals	CB	66	33	50.0	0.227	1	0.634
	COC	91	42	46.2			
Non-adults	CB	33	8	24.2	-	-	0.285*
	COC	12	5	41.7			
Adults	CB	33	25	75.8	7.879	1	**0.005**
	COC	79	37	46.8			
Younger adults	CB	7	7	100.0	-	-	**0.025***
	COC	25	12	48.0			
Older adults	CB	23	15	65.2	2.331	1	0.127
	COC	50	23	46.0			
Females	CB	22	14	63.6	2.014	1	0.156
	COC	36	16	44.4			
Female younger adults	CB	3	3	100.0	-	-	-
	COC	14	4	28.6			
Female older adults	CB	18	10	55.6	0.039	1	0.843
	COC	21	11	52.4			
Males	CB	9	9	100.0	-	-	**0.006***
	COC	41	21	51.2			
Male younger adults	CB	3	3	100.0	-	-	-
	COC	10	8	80.0			
Male older adults	CB	5	5	100.0	-	-	**0.022***
	COC	29	12	41.4			

*Result of the Fisher's Exact test

is fairly large. Therefore, the results of the first three these statistically significant comparisions could be considered to be less reliable, while the last can be considered to be more reliable.

The only group where Chelsea Old Church has a higher prevalence of enamel hypoplasia than Cross Bones burial ground is the non-adult group. 41.7% of the non-adult individuals from Chelsea Old Church present with enamel hypoplasia, whereas this is only 24.2% in the Cross Bones burial ground population. However, this difference is not statistically significant (p=0.285, n=13).

St. Bride's Fleet Street vs. St. Bride's Lower Churchyard

Of the two populations from the parish of St. Bride's Church, the low-status population (St. Bride's Lower Churchyard) displays the highest prevalence of enamel hypoplasia. However, as can be seen in table 12, the difference between the two populations as a whole is fairly small and not statistically significant.

Table 12: Comparison of prevalence of enamel hypoplasia (EH) in St. Bride's Fleet Street (SBFS) and St. Bride's Lower Churchyard (SBLC), with amounts, percentages and results of statistical analysis.

Group	Site	Number of individuals	Individuals with EH		Statistical analysis		
			n	*%*	*X^2 value*	*df*	*p*
All individuals	SBLC	287	105	36.6	0.230	1	0.135
	SBFS	162	48	29.6			
Non-adults	SBLC	85	11	12.9	-	-	**0.004***
	SBFS	11	6	54.6			
Adults	SBLC	202	94	46.5	12.786	1	**<0.001**
	SBFS	151	42	27.8			
Younger adults	SBLC	40	17	42.5	0.978	1	0.323
	SBFS	35	11	31.4			
Older adults	SBLC	139	69	49.6	13.194	1	**<0.001**
	SBFS	111	30	27.0			
Females	SBLC	71	30	42.3	4.532	1	**0.033**
	SBFS	71	18	25.4			
Female younger adults	SBLC	20	7	35.0	0.000	1	0.985
	SBFS	17	6	35.3			
Female older adults	SBLC	47	22	46.8	6.977	1	**0.008**
	SBFS	51	11	21.6			
Males	SBLC	122	61	50.0	7.563	1	**0.006**
	SBFS	79	24	30.4			
Male younger adults	SBLC	19	10	52.6	2.369	1	0.124
	SBFS	18	6	27.8			
Male older adults	SBLC	88	45	51.1	5.150	1	**0.023**
	SBFS	59	19	30.5			

*Result of the Fisher's Exact test

When the populations are divided into groups, there are only two instances where the Fleet Street population has a higher percentage of individuals with enamel hypoplasia: the non-adults and the female younger adults. The difference between the non-adult populations is statistically significant (p=0.004, n=96), but the difference between the female younger adults is not (χ^2(1)=0.000, p=0.985, n=37).

Of the differences between the groups where the prevalence of enamel hypoplasia is higher for the Lower Churchyard population, six are statistically significant and two are not. The groups for which the percentage of individuals from the Lower Churchyard is statistically significantly higher than that of the Fleet Street population are: the adults, the older adults, the females, the female older adults, the males and the male older adults.

St. Bride's Fleet Street vs. Cross Bones burial ground

As can be seen in table 13, the population from Cross Bones burial ground has a statistically significantly higher prevalence of enamel hypoplasia than the St. Bride's Fleet

Table 13: Comparison of prevalence of enamel hypoplasia (EH) in St. Bride's Fleet Street (SBFS) and Cross Bones burial ground (CB), with amounts, percentages and results of statistical analysis.

Group	Site	Number of individuals	Individuals with EH		Statistical analysis		
			n	*%*	*X² value*	*df*	*p*
All individuals	CB	66	33	50.0	8.496	1	**0.004**
	SBFS	162	48	29.6			
Non-adults	CB	33	8	24.2	-	-	0.132*
	SBFS	11	6	54.6			
Adults	CB	33	25	75.8	26.884	1	**<0.001**
	SBFS	151	42	27.8			
Younger adults	CB	7	7	100.0	-	-	**0.001***
	SBFS	35	11	31.4			
Older adults	CB	23	15	65.2	12.458	1	**<0.001**
	SBFS	111	30	27.0			
Females	CB	22	14	63.6	10.907	1	**0.001**
	SBFS	71	18	25.4			
Female younger adults	CB	3	3	100.0	-	-	-
	SBFS	17	6	35.3			
Female older adults	CB	18	10	55.6	7.259	1	**0.007**
	SBFS	51	11	21.6			
Males	CB	9	9	100.0	-	-	**<0.001***
	SBFS	79	24	30.4			
Male younger adults	CB	3	3	100.0	-	-	-
	SBFS	18	6	27.8			
Male older adults	CB	5	5	100.0	-	-	**0.006***
	SBFS	59	19	30.5			

*Result of the Fisher's Exact test

Street population. This is not only true for the overall population, but also for almost all the groups.

The only group where the population of St. Bride's Fleet Street has a higher percentage of individual with enamel hypoplasia than the Cross Bones burial ground population is the non-adult group. 54.6% of the non-adult population of St. Bride's Fleet Street displays enamel hypoplasia, whereas only 24.2% of the non-adults of Cross Bones burial ground displays the defect. Although this seems like a large difference, it is not statistically significant (*p*=0.132, n=44), which could be partly due to the large difference in sample size.

St. Bride's Lower Churchyard vs. Cross Bones burial ground

Table 14 shows that Cross Bones burial ground has a higher prevalence of enamel hypoplasia than St. Bride's Lower Churchyard in each group. However, not all of these differences in prevalence are statistically significant. The differences that are statistically significant are those between the overall populations ($\chi^2(1)=4.055$, $p=0.044$, n=138), the

Table 14: Comparison of prevalence of enamel hypoplasia (EH) in St. Bride's Lower Churchyard (SBLC) and Cross Bones burial ground (CB), with amounts, percentages and results of statistical analysis.

Group	Site	Number of individuals	Individuals with EH		Statistical analysis		
			n	*%*	*X*^{2} *value*	*df*	*p*
All individuals	CB	66	33	50.0	4.055	1	**0.044**
	SBLC	287	105	36.5			
Non-adults	CB	33	8	24.2	2.247	1	0.134
	SBLC	85	11	12.9			
Adults	CB	33	25	75.7	9.691	1	**0.002**
	SBLC	202	94	46.5			
Younger adults	CB	7	7	100.0	-	-	**0.009***
	SBLC	40	17	42.5			
Older adults	CB	23	15	65.2	1.918	1	0.166
	SBLC	139	69	49.6			
Females	CB	22	14	63.6	3.081	1	0.079
	SBLC	71	30	42.2			
Female younger adults	CB	3	3	100.0	-	-	-
	SBLC	20	7	35.0			
Female older adults	CB	18	10	55.5	0.398	1	0.528
	SBLC	47	22	46.8			
Males	CB	9	9	100.0	-	-	**0.003***
	SBLC	122	61	50.0			
Male younger adults	CB	3	3	100.0	-	-	-
	SBLC	19	10	52.6			
Male older adults	CB	5	5	100.0	-	-	0.059*
	SBLC	88	45	51.1			

*Result of the Fisher's Exact test

adult populations ($\chi^2(1)=9.691$, $p=0.002$, n=235), the younger adults populations (p=0.009, n=47) and the male populations ($p=0.003$, n=127).

Low-status vs. high-status

Grouping the Chelsea Old Church and St. Bride's Fleets Street populations, and the St. Bride's Lower Churchyard and Cross Bones burial ground populations, together into the high-status and low-status populations, results in the prevalence of enamel hypoplasia presented in figure 14 and table 15. The table shows that, taking all individuals into account, the low-status population displays a higher prevalence of enamel hypoplasia. Not only in a comparison considering all individuals, but also in most of the groups, the high-status population has a lower prevalence of enamel hypoplasia. As can be seen in table 15, not all these comparisons result in a statistically significant difference. Nonetheless, there is a very clear trend of less enamel hypoplasia in the high-status population.

The only group in which the high-status population has a higher prevalence of enamel hypoplasia is the non-adult group. Here, the difference in prevalence between the high-status population (47.8%) and the low-status population (16.1%) is statistically significant ($\chi^2(1)=11.566$, $p=0.001$, n=141). This group is also the reason that the difference between all individuals of both populations is not statistically significant. Since the non-adults of

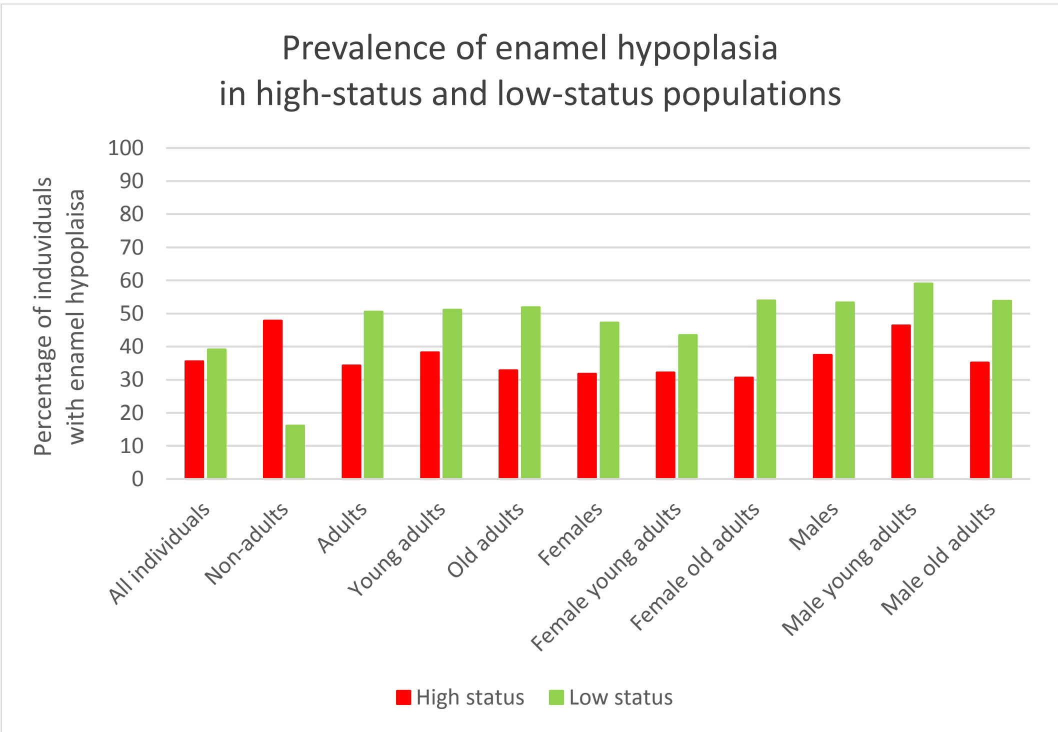

Figure 14: Prevalence of enamel hypoplasia in high-status and low-status populations

Table 15: *Comparison of prevalence of enamel hypoplasia (EH) in the low-status and high-status populations, with amounts, percentages and results of statistical analysis.*

Group	Status	Number of individuals	Individuals with EH		Statistical analysis		
			n	*%*	X^2 *value*	*df*	*p*
All individuals	Low	353	138	39.1	0.778	1	0.378
	High	253	90	35.6			
Non-adults	Low	118	19	16.1	11.566	1	**0.001**
	High	23	11	47.8			
Adults	Low	235	119	50.6	12.617	1	**<0.001**
	High	230	79	34.4			
Younger adults	Low	47	24	51.1	1.734	1	0.188
	High	60	23	38.3			
Older adults	Low	162	84	51.9	11.850	1	**0.001**
	High	161	53	32.9			
Females	Low	93	44	47.3	5.048	1	**0.025**
	High	107	34	31.8			
Female younger adults	Low	23	10	43.5	0.713	1	0.399
	High	31	10	32.3			
Female older adults	Low	65	32	53.9	4.989	1	**0.026**
	High	72	22	30.6			
Males	Low	131	70	53.4	6.406	1	**0.011**
	High	120	45	37.5			
Male younger adults	Low	22	13	59.1	0.791	1	0.374
	High	28	13	46.4			
Male older adults	Low	93	50	53.8	6.283	1	**0.012**
	High	88	31	35.2			

the low-status population make up 33.4% of the population, and has a very low prevalence of enamel hypoplasia, the overall prevalence of enamel hypoplasia is reduced significantly compared to the high-status population.

5.2 Growth

Similar to enamel hypoplasia, growth is first compared within populations and then between populations. As with the comparison of enamel hypoplasia, the low-status and high-status populations were grouped together for the last comparison. The following section of this chapter will discuss the comparison of growth, first within and then between populations. As was discussed in chapter 3, this section of the analysis will only consider the adult individuals of the populations.

5.2.1 Intra-population comparison of mean femur length

Chelsea Old Church

As expected, the males within the population of Chelsea Old Church are statistically significantly larger than females, with mean femur lengths of 451.78 mm and 427.59 mm respectively ($t(69)=-4.680$, $p<0.001$, n=71). When these groups are divided into younger adults and older adults, one can see that in the female population the younger adults are larger, whereas in the male population the older adults are larger. As can be seen in table 16, the last two differences are not statistically significant.

Table 16: Intra-population comparison of prevalence of mean femur length within the population of Chelsea Old Church, with number of individuals (n), mean femur length and results of statistical analysis.

Group	n	Mean femur length (in mm)	Statistical analysis			
			Test	*Value*	*df*	*p*
Female	34	427.59	T-test	-4.680	69	**<0.001**
Male	37	451.78				
Female younger adult	6	436.67	T-test	1.345	32	0.188
Female older adult	28	425.64				
Male younger adult	8	440.00	T-test	-1.573	35	0.125
Male older adult	29	455.03				

St. Bride's Fleet Street

As can be seen in table 17, the males of St. Bride's Fleet Street have femurs that are approximately 37 mm longer than those of the females which makes for a statistically significant difference ($t(136)=-9.017$, $p<0.001$, n=138). Dividing the males and females into younger adults and older adults, shows that in both groups the younger adults have a larger mean femur length. However, the difference between younger and older adults in the male population is much smaller than in the female population, where the difference is statistically significant ($t(67)=2.030$, $p=0.046$).

Table 17: Intra-population comparison of prevalence of mean femur length within the population of St. Bride's Fleet Street, with number of individuals (n), mean femur length and results of statistical analysis.

Group	n	Mean femur length (in mm)	Statistical analysis			
			Test	*Value*	*df*	*p*
Female	69	417.07	T-test	-9.017	136	**<0.001**
Male	69	453.87				
Female younger adult	15	427.00	T-test	2.030	67	**0.046**
Female older adult	54	414.31				
Male younger adult	12	454.00	T-test	0.019	67	0.985
Male older adult	57	453.84				

St. Bride's Lower Churchyard

Similar to the previous two populations, the males of the population of St. Bride's Lower Churchyard are statistically significantly larger than the females, with mean femur lengths of 448.70 mm and 416.02 mm respectively ($t(119)=-7.364$, $p<0.001$, n=121). As can be seen in table 15, the results of the comparison of the adult populations are the exact opposite of those of St. Bride's Fleet Street. In the St. Bride's Lower Churchyard population, the femurs of the older adults, in both the male and female group, are a few millimetres longer. However, as can be seen in table 18, the difference are not statistically significant.

Table 18: Intra-population comparison of prevalence of mean femur length within the population of St. Bride's Lower Churchyard, with number of individuals (n), mean femur length and results of statistical analysis.

Group	n	Mean femur length (in mm)	Statistical analysis			
			Test	*Value*	*df*	*p*
Female	55	416.02	T-test	-7.364	119	**<0.001**
Male	66	448.70				
Female younger adult	15	415.47	MWU*	247.500	-	0.630
Female older adult	40	416.22				
Male younger adult	14	447.43	T-test	-0.216	64	0.830
Male older adult	52	449.04				

*MWU = Mann-Whitney U test

Cross Bones burial ground

Due to the low number of individuals with the femur completely intact, there are very few measurements from the population of Cross Bones burial ground that could be compared. Therefore, no statistical analysis has been performed for this population and the means of this population could be poor representation of the population. However, it can still be remarked that the differences in femur length between males (μ=454.88 mm) and females (μ=427.05 mm) is considerable (circa 28 mm). As can be seen in table 19, the difference between younger adults and older adults, in both the male and female group, is much larger than the difference between these groups in the other populations.

Table 19: Intra-population comparison of prevalence of mean femur length within the population of Cross Bones burial ground, with number of individuals (n), mean femur length and results of statistical analysis.

Group	n	Mean femur length (in mm)	Statistical analysis			
			Test	*Value*	*df*	*p*
Female	11	427.05	-	-	-	-
Male	4	454.88				
Female younger adult	1	411.50	-	-	-	-
Female older adult	9	431.61				
Male younger adult	1	442.50	-	-	-	-
Male older adult	3	459.00				

5.2.2 Inter-population comparison of mean femur length

Since the nature of the tests that have been used to compare the mean femur lengths is different from those used to compare the prevalence of enamel hypoplasia, the presentation of the results of the comparison of growth between populations will be different from that of the inter-population comparison of enamel hypoplasia.

In the following section, the results of the inter-population comparison of mean femur length will be discussed per group (females, males, female younger adults, etcetera). This will be done for all populations at once, as opposed to the comparison of enamel hypoplasia, which was discussed per comparison of two populations. This section will finish with the comparison of the high-status and low-status populations.

Shown in figure 15 is that, of the female populations, Chelsea Old Church has the largest mean femur length, followed by Cross Bones burial ground, St. Bride's Fleet Street and lastly St. Bride's Lower Churchyard. As can be seen in table 20, there is a statistically significant result for the ANOVA test of these populations ($F(3, 165)=2.781$, $p=0.043$, $n=169$). When looking at the results of the separate T-tests for these populations (see table 21), one can see that this statistically significant result comes from the difference between St. Bride's Lower Churchyard ($\mu=416.02$ mm) and Chelsea Old Church ($\mu=427.59$ mm) as well as the difference between St. Bride's Fleet Street ($\mu=417.07$ mm) and Chelsea Old Church. There seems to be no statistically significant difference between Cross Bones burial ground and the other populations.

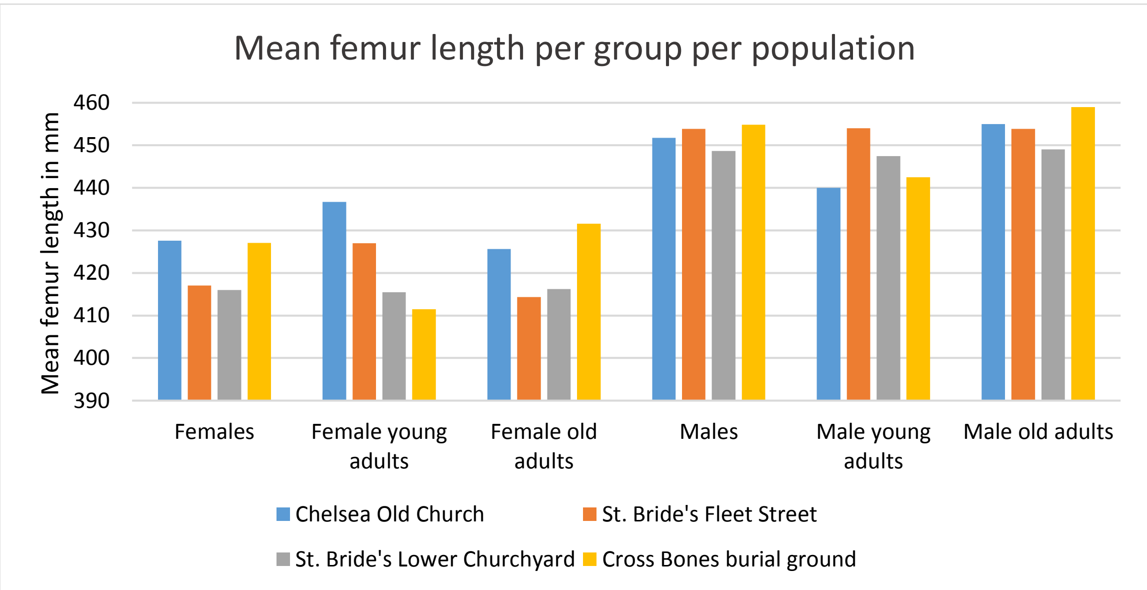

Figure 15: Mean femur length per group per population.

Table 20: Results of ANOVA-tests for inter-population comparison of the mean femur length in groups.

Group	Site	n	Mean femur length (in mm)	Statistical analysis			
				df between groups	*df within groups*	*Value*	*p*
Females	CB	11	427.05	3	165	2.781	**0.043**
	SBLC	55	416.02				
	SBFS	69	417.07				
	COC	34	427.59				
Female younger adults	CB	1	411.50	-	-	-	-
	SBLC	15	415.47				
	SBFS	15	427.00				
	COC	6	436.67				
Female older adults	CB	9	431.61	3	127	3.043	**0.031**
	SBLC	40	416.22				
	SBFS	54	414.31				
	COC	28	425.64				
Males	CB*	4	454.88	2	169	0.723	0.487
	SBLC	66	448.70				
	SBFS	69	453.87				
	COC	37	451.78				
Male younger adults	CB*	1	442.50	2	31	0.679	0.514
	SBLC	14	447.43				
	SBFS	12	454.00				
	COC	8	440.00				
Male older adults	CB*	3	459.00	2	140	1.623	0.201
	SBLC	52	449.04				
	SBFS	57	453.84				
	COC	29	455.03				

*Site is not included in statistical analysis due to low number of individuals

Table 21: Results of the inter-population comparison of mean femur lengths of the female adults.

Site	n	Mean femur length (in mm)	Statistical analysis			
			Test	*Value*	*df*	*p*
CB	11	427.05	T-test	1.453	64	0.151
SBLC	55	416.02				
CB	11	427.05	T-test	1.444	78	0.153
SBFS	69	417.07				
CB	11	427.05	T-test	-0.087	43	0.931
COC	34	427.59				
SBLC	55	416.02	T-test	-0.255	122	0.799
SBFS	69	417.07				
SBLC	55	416.02	T-test	-2.405	87	**0.018**
COC	34	427.59				
SBFS	69	417.07	T-test	-2.409	101	**0.018**
COC	34	427.59				

When separating the female populations into female younger adults and female older adults, one can see that there are no statistically significant differences between the female younger adult populations (see table 22). However, between the female older adults the ANOVA test shows that there is a statistically significant difference (F(3, 127)=3.043, p=0.031, n=141). The separate T-tests, of which the results can be found in table 23, reveal that this statistically significant difference can be found between the Cross Bones burial ground (μ=431.61 mm) and St. Bride's Fleet Street (μ=414.31 mm), and between St. Bride's Fleet Street and Chelsea Old Church (μ=425.64 mm).

Table 22: Results of the inter-population comparison of mean femur lengths of the female younger adults.

Site	n	Mean femur length (in mm)	Statistical analysis			
			Test	*Value*	*df*	*p*
CB	1	411.50	-	-	-	-
SBLC	15	415.47				
CB	1	411.50	-	-	-	-
SBFS	15	427.00				
CB	1	411.50	-	-	-	-
COC	6	436.67				
SBLC	15	415.47	MWU*	95.500	-	0.486
SBFS	15	427.00				
SBLC	15	415.47	MWU*	22.500	-	0.080
COC	6	436.67				
SBFS	15	427.00	T-test	-1.003	19	0.329
COC	6	436.67				

*MWU = Mann-Whitney U test

Table 23: Results of the inter-population comparison of mean femur lengths of the female older adults.

Site	n	Mean femur length (in mm)	Statistical analysis			
			Test	*Value*	*df*	*p*
CB	9	431.61	T-test	1.858	47	0.069
SBLC	40	416.22				
CB	9	431.61	T-test	2.279	61	**0.026**
SBFS	54	414.31				
CB	9	431.61	T-test	0.925	35	0.361
COC	28	425.64				
SBLC	40	416.22	T-test	0.403	92	0.688
SBFS	54	414.31				
SBLC	40	416.22	T-test	-1.783	66	0.079
COC	28	425.64				
SBFS	54	414.31	T-test	-2.368	80	**0.020**
COC	28	425.64				

Of the male populations, that of Cross Bones burial ground has the highest mean femur length, however this population is very small (n=4) and therefore had to be excluded from the statistical analysis. The second largest mean femur length is that of the St. Bride's Fleet Street population, followed by Chelsea Old Church and the mean femur length of the males of St. Bride's Lower Churchyard is the smallest. The difference in mean femur length between these three populations varies between circa 5 mm and circa 2 mm, which is not statistically significant.

Splitting the group into younger adult males and older adult males, the order of the populations changes. As can be seen in table 20, the younger adult males of St. Bride's Fleet Street have the highest mean femur length, followed by St. Bride's Lower Churchyard, Cross Bones burial ground, and lastly Chelsea Old Church. For the older adult males, the Cross Bones burial ground has the highest mean femur length, followed by Chelsea Old Church, St. Bride's Fleet Street, and lastly St. Bride's Lower Churchyard. However, the ANOVA tests show that there is no statistically significant difference between Chelsea Old Church, St. Bride's Fleet Street and St. Bride's Lower Churchyard. For both the younger adult and the older adult males, the Cross Bones burial ground population was excluded from the ANOVA test due to the low number of individuals.

High-status vs. low-status

Figure 16 shows the mean femur lengths of all the groups when the high-status and low-status populations are combined. For almost all the groups, the high-status population has a higher mean femur length than the low-status population, with the difference varying from circa 1 mm to circa 14 mm. However, as can be seen in table 24, none of these differences are statistically significant.

The one group where the low-status population has a higher mean femur length is the female younger adults. The difference in mean for this group is very small: just over 1 mm. This difference, as the others, is also not statistically significant.

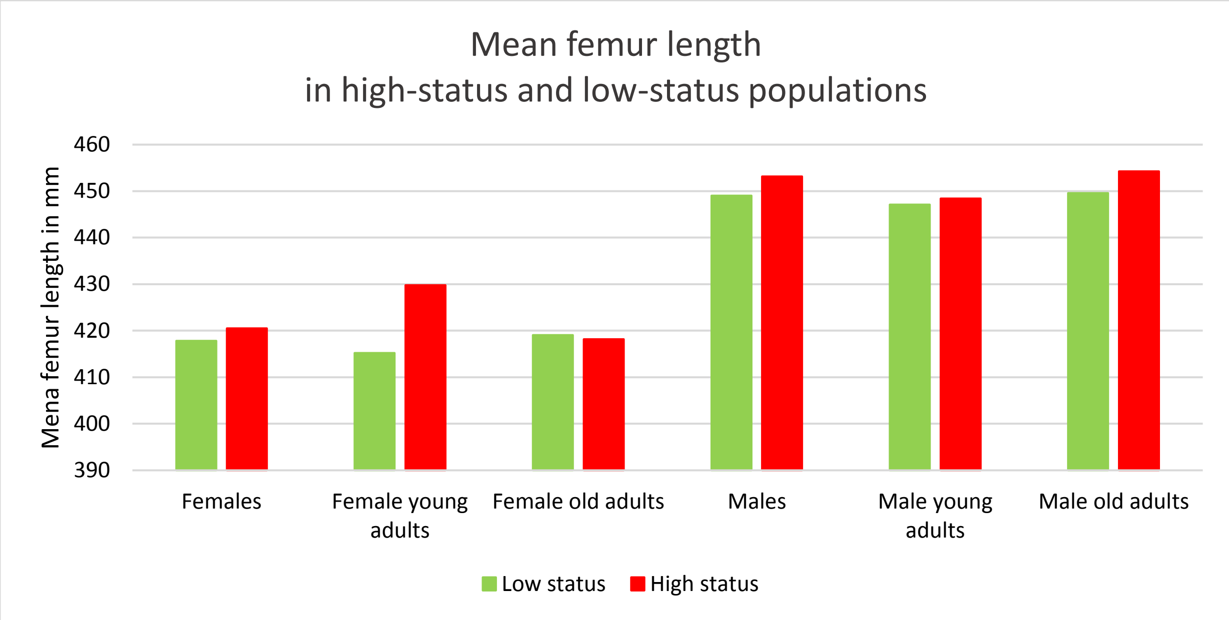

Figure 16: Mean femur length in high-status and low-status populations.

Table 24: Results of the comparison of the mean femur lengths of the high-status and the low-status populations.

Group	Status	n	Mean femur length (in mm)	Statistical analysis			
				Test	*Value*	*df*	*p*
Females	Low	66	417.86	T-test	-0.773	167	0.441
	High	103	420.54				
Female younger adults	Low	16	415.22	MWU*	122.000	-	0.158
	High	21	429.76				
Female older adults	Low	49	419.05	T-test	0.220	129	0.826
	High	82	418.18				
Males	Low	70	449.05	T-test	-1.063	174	0.289
	High	106	453.14				
Male younger adults	Low	15	447.10	T-test	-0.145	33	0.885
	High	20	448.40				
Male older adults	Low	55	449.58	T-test	-1.089	139	0.278
	High	86	454.24				

*MWU = Mann-Whitney U test

5.3 Summary

In summary, in the intra-population comparisons of the prevalence of enamel hypoplasia, it was shown that in all four population the males had a higher percentage of individuals with enamel hypoplasia than the females. Comparing prevalence in non-adults to adults showed that only in the St. Bride's Fleet Street population the non-adults had a higher prevalence of enamel hypoplasia. When the populations were split into younger adults and older adults, the younger adults of Cross Bones burial ground and St. Bride's Fleet Street had a higher prevalence of enamel hypoplasia, whereas in the St. Bride's Lower Churchyard and Chelsea Old Church population the adults had a higher prevalence. When the younger and older adults where divided into males and females there was no overall pattern. Only the differences between the non-adults and adults of Cross Bones burial ground, and the non-adults and adults from St. Bride's Lower Churchyard were statistically significant.

Comparing the populations to each other, it is clear that the Cross Bones burial ground population displays the highest prevalence of enamel hypoplasia of all four populations. In most of the comparisons between the other three populations, Chelsea Old Church has the highest percentage of individuals with enamel hypoplasia. The populations of the parish of St. Bride's Church display the lowest prevalence of enamel hypoplasia, with the Lower Churchyard population displaying a higher prevalence than the Fleet Street population. Between the populations there were a lot of statistically significant differences in prevalence of enamel hypoplasia.

In the intra-population comparison of growth, it was shown that in all populations the mean femur length of the males was statistically significantly larger than those of the females. It was also shown that, when comparing the younger adults to the older adults, only the younger adults of the St. Bride's Fleet Street population had a larger mean femur length. Furthermore, it was found that in the two low-status populations the female older adults were larger, whereas in the two high-status populations the female younger adults were larger. Finally, in the intra-population comparison is was found that only the male younger adults of St. Bride's Fleet Street were larger than the male older adults.

For the inter-population comparison of growth, there were very few statistically significant results. Only in the female and female older adult populations where there statistically significant differences. With, in both instances, the Chelsea Old Church and Cross bones burial ground populations being the two populations with the larger mean femur length and both St. Bride's Church parish populations having shorter mean femur lengths. Overall there does not seem to be a ranking of the mean femur lengths which is consistent in all groups.

For the comparison of the high-status population to the low-status population there was a very clear result in both methods. In the comparison of growth, the high-status population had a consistently larger mean femur length, accept for in one group (the female older adults), and in the comparison of the prevalence of enamel hypoplasia this population had a consistently lower prevalence of enamel hypoplasia, accept for in the non-adult group. Even though the results of the tests for growth were not statistically significant and a large number of results of the tests in the compassion of prevalence of enamel hypoplasia were, it is still interesting that there is such a clear divide in these results.

6 Discussion

The aim of this thesis was to compare the occurance of non-specific physical stress in high-status and low-status populations from post-medieval London. The results presented in the previous chapter show that there is not a straight forward pattern in the amount and severity of non-specific stress in post-medieval London. Rather, some unepected trends were found in the data, namely: the population of St. Bride's Fleet Street is an outlier in the comparison of non-adults and adults, the males in all four popualtions show a higher prevalence of non-specific stress, and lastly, there seems to be no clear distintion in the experienced non-specific stress between high-status and low-status populations. These trends will be further discussed in this chapter.

The chapter will start with a number of general notes on the interpretation of the presented data, followed by a discussion of the abovementioned trends. The chapter will conclude with a discussion of the limitations of the methods that were used in this thesis.

6.1 Notes on the interpretation of the data

Before the interpretation of the results of this thesis can be discussed in depth, there are a number of cautionary notes that have to be made about the interpretation of growth and the prevalence of enamel hypoplasia, as non-specific stress markers.

As was explained in chapter 2, enamel hypoplasia forms, and growth can be stunted, when an individual experiences physical stress. Therefore, it can be argued that the more enamel hypoplasia an individual displays, and the shorter an individual is, the higher the level of stress an individual experienced. However, other factors and nuances have to be taken into account when interpreting the results.

First of all, as with any osteoarchaeological research, note must be taken of the osteological paradox. Part of this paradox is that the response of bone tissue and tooth enamel may take longer than the cause of the physical stress allows (Wood *et al.* 1992, 344). In other words, the individual might die before the physical stress, causing the death, has had time to effect the bone and enamel tissue. In this case, a population with a lower rate of enamel hypoplasia might be the population that experienced more stress. Or in other words, the stress in this population may have been so severe that the individuals experiencing the stress died before the stress could cause the formation of non-specific stress markers. Although the hypothetical interpretation above is an extreme one, it is not impossible and as Wood *et al.* argue one must always look at an osteological dataset with a healthy dose of skepticism and multiple possible interpretations of the data must be considered before a conclusion is drawn (Wood *et al.* 1992, 357). Regarding research of non-specific stress markers in archaeological populations, the most common interpretation is that the more stress markers are present in an individual or population, the higher the level of stress (e.g. King *et al.* 2005; Ogden *et al.* 2007; Starling *et al.* 2007). A justification of this choice is, generally, not provided. However, since this interpretation seems to be the consensus within the field of osteoarchaeology, in this thesis the general interpretation of 'more non-specific stress markers equals more stress' will be accepted, with the note that each comparison on its own might need a more nuanced approach.

Furthermore, when comparing groups of different age categories, one must realise that both non-specific stress markers used in this research are the result of childhood stress. Therefore, what is being compared is not the amount of physical stress experienced around the age-at-death, but rather the age at which the individuals in a certain population, with certain amount of stress during their childhood, die.

6.2 Trends in the data

As mentioned above, there are a number of interesting trends that can be seen in the growth data the prevalence of enamel hypoplasia in the four populations studied here.

6.2.1 Non-adult vs. adult: why is St. Bride's Fleet Street different?

Unfortunately, the results of the comparison of prevalence of enamel hypoplasia in the non-adult populations cannot be combined with the analysis of the mean femur length for these populations, since the mean femur length of the non-adults could not be used in this study. Therefore, any interpretation concerning the non-adult populations will have to be checked using other methods of non-specific stress estimation. However, as mentioned above, the comparisons the prevalence of enamel hypoplasia in adult and non-adult populations did yield an interesting result that needs to be addressed.

In three of the four populations studied in this thesis, the adults display a higher prevalence of enamel hypoplasia than the non-adults. The only population where this is not the case is the population of St. Bride's Fleet Street, where the non-adults display a higher prevalence of the defect. Furthermore, the non-adult population of St. Bride's Fleet Street is also the one with the highest prevalence of enamel hypoplasia when compared to the three other non-adult populations.

A possible contributing factor to the difference in prevalence of enamel hypoplasia in the non-adult populations is the fact that there was no discrimination between primary and permanent dentition; both were included in this study. This could have affected the results for the non-adult populations because, as some studies have found, permanent dentition generally displays a higher prevalence of enamel hypoplasia than primary dentition (Robles *et al.* 2013; Seow *et al.* 2011). As can be seen in fig. 17, a count of the number of non-adult individuals with deciduous dentition versus the number of non-adult individuals with permanent dentition shows that the share of non-adult individuals with permanent dentition is considerably larger in the population from St. Bride's Fleet Street than in the others. Moreover, the population with the lowest percentage of non-adults with permanent dentition, Cross Bones burial ground, is also the population with the lowest prevalence of enamel hypoplasia among the non-adult population. Needless to say, correlation does not automatically constitute causation, but in this case there is a high degree of plausibility that the ratio of non-adult individuals with deciduous versus permanent dentition influences the prevalence of enamel hypoplasia in the non-adult populations over all. Therefore, it is unlikely that the results of the comparison of the different non-adult populations and the comparison of non-adult vs. adult popualtions signify a difference in non-specific stress, but rather, that they signify a compositional bias of the sample.

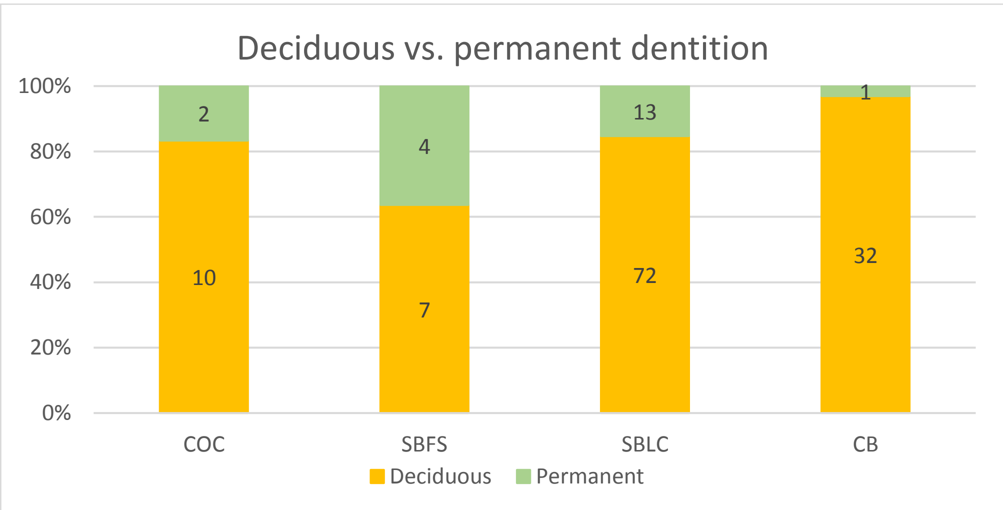

Figure 17: Counts of the number of non-adult individuals with deciduous dentition and permanent dentition for each population (x-axis), expressed in percentages (y-axis) and absolute numbers (data labels).

6.2.2 Did males in post-medieval London have more non-specific stress?

When the males and females of each of the populations are compared with one another, a trend can be observed: the males of all the populations had a (slightly) higher prevalence of enamel hypoplasia than the females. Thus, it is likely that the males from post-medieval London experienced (slightly) more non-specific stress than the females. Since this trend is present in all four popualtions, status does not seem to be a factor in the experienced non-specific stress of males or females. The cause of the visible trend must, therefore, be found elsewere. There are two perspectives from which this difference could be interpreted: the social aspect and the biological aspect.

The social aspect

From a social point of view, the lower amount of non-specific stress in the female populations could mean that female children were better cared for than males. Some studies have shown that in households were the female (mother or grandmother) has the most bargaining power over the distribution of the resources of the family, the females (daughters and granddaughters) experienced less nutritional stress (i.e. Duflo 2003; Sahn and Stifel 2002). Thus, one interpretation of the data could be that the women in the households of Chelsea Old Church, St. Brides parish and Cross Bones burial ground were instrumental in the distribution of the nutritional resources.

However, studies into resource allocation in post-medieval London show that this model most likely does not apply here (Horrell and Oxley 2012; Humphries 2013). Rather, there was a so-called 'male breadwinner' model in which the breadwinner (who was usually male) would get the most food and more nutritious food, while the non-breadwinners received less food and of a lower nutritional value (Horrell and Oxley 2012, 1375). Thus, it seem unlikely that a social explanation can account for the higher prevalence of non-specific stress among males in the four populations in this study. However, social mechanisms cannot be completely discounted as contributing factors to the observed trend.

The biological aspect

Aside from a social aspect, there is also possible biological explanation for the difference in non-specific stress between males and females. Firstly, it seems that the male-female trend found in this thesis is not restricted to these four populations, but rather might be present in all of post-medieval London. A study by Teague and collegues on the prevalence of enamel hypoplasia among a post-medieval population from the Almshouse burial ground in Southwark, London, found similar results as this thesis: males had a higher prevalence of enamel hypoplasia than females (Teague *et al*. 2013 in Henderson *et al.* 2014, 591). In an isotopic study on the same population, Henderson *et al.* (2014, 589) found that there is a small but significant difference between the $\delta^{13}C$ and $\delta^{15}N$ between the males and females, which the authors cannot explain, with for example significant nutritional differences, but most likely has to do with the stress responses.

When trying to explain this dichotomy between male and female stress responses, one might look at a study on infant mortality by Naeye *et al.* (1971) who found that male infants are more likely to die than female infants. The authors found no specific disease that can be linked to the higher death rate in the male infants, thus leading to the (tentative) conclusion that there is an inherent biological, health related, disadvantage in being male (Naeye *et al.* 1971, 905). In a review of the connection between hormones and the immune response, Bouman *et al.* (2005) demonstrate that the female immune response may be better than that of males due to differences in hormones and hormone levels.

The results from the four abovementioned studies all point at a general picture in which females are biologically less likely to experience (non-specific) stress than males and when they do, the immune response is better, leading to a lower severity of the stress. Thus, it seems likely that the higher prevalence of non-specific stress in males in the populations from post-medieval London stems from the biological differences between males and females.

6.2.3 Does high-status equal good health?

When looking at the environmental and social circumstances of the four populations in this study, one would expect the population of Chelsea Old Church to have the lowest prevalence of enamel hypoplasia and the higher mean femur length, since this population was located more in the toward the countryside than the city, which could mean the air was cleaner. Furthermore, as described in chapter 4, this population is considered to consist of middle and high-status individuals and one would expect individuals with more financial means, and better access to food and health care, to have less (pronounced) physical stress. After Chelsea Old Church, one would expect the population of St. Bride's Fleet Street to have the lowest prevalence of non-specific physical stress, since this is the other high-status population in this study.

Of the two low-status populations, it is harder to make a hypothetical assumption of the levels of stress, since the circumstances of both populations are similar in a number of ways, but there are some minor differences. Both the population from St. Bride's Lower Churchyard and Cross Bones burial ground were located in industrial areas (Watts 2015, 571), thus both populations would have been dealing with polluted air. The clearest distinction between the two populations is the reason the burial grounds were first opened and subsequently the difference in the individuals that were buried there.

The Cross Bones burial ground was first opened as a graveyard for prostitutes and later was used to bury most of the paupers from the parish of St. Saviour (www.museumoflondon.org.uk). St. Bride's Lower Churchyard, on the other hand, was established because the burial grounds of the parish of St. Bride's Church were overflowing. Thus, not only paupers were buried in this churchyard, but also workers from the nearby workhouse and prisoners (www.museumoflondon.org.uk). Therefore, although the difference between the two burial grounds is very minor, it might result in the prevalence of non-specific stress being higher in the population from Cross Bones burial ground since this population is of a slightly lower status than the population from the St. Bride's Lower Churchyard.

However, the results from the comparison of the four populations show a very different pattern than expected. The comparison of the prevalence of enamel hypoplasia for all individuals in the populations shows that, as expected, the population of Cross Bones burial ground indeed does have the highest prevalence of this defect. However, this is followed by the population of Chelsea Old Church, which would make it the second most 'stressed' population as opposed to the least stressed. Of the populations from the parish of St. Bride's Church, the high-status population (St. Bride's Fleet Street) has the lowest overall prevalence of enamel hypoplasia and the low-status population (St. Bride's Lower Churchyard) has a higher overall prevalence of enamel hypoplasia. This overall pattern seems to contradict the expectations, but it also becomes muddier when growth is taken into account.

Muddying the water with the growth data

When looking at the growth data for the different groups in the four populations, the first thing that becomes clear is that there seem to be no significant differences in mean femur length between the male populations from the four sites. This inferres that, even though there may be a difference in the prevalence of non-specific stress, this difference is not visible in the adult bone length, meaning that there is enough room for catch-up growth in each population. Secondly, in the comparison of the female populations, it is clear that the populations of Chelsea Old Church and Cross Bones burial ground have not only very similar mean femur lengths, but that they are also statistically significantly higher than those of St. Bride's Fleet Street and St. Bride's Lower Churchyard. This would suggest that the St. Bride's Fleet Street population in fact experienced more non-specific stress, or suffered more long term effects of the stress, than the others, as opposed to the least of the four.

As mentioned before, the growth data represents the culmination of a long developmental period, whereas enamel hypoplasia is the result of a short(er) period of non-specific physical stress. Thus, it is possible that the results from these two analyses show that although the population from St. Bride's Fleets Street experienced the least amount of stress, this population did not have the support system to catch up on growth. The populations from Chelsea Old Church and Cross Bones burial ground, on the other hand, experienced more stress, but also had more opportunity to catch up on growth.

The counterintuitive results of the comparisons of the prevalence of enamel hypoplasia and growth in these four populations raise the question: does high-status equal good health? The short answer to which seems to be 'no', but there must be an explanation as to why not.

Possible cause for the results

In their study of the health of children in post-medieval London, Newman and Gowland found that the non-adults from Cross Bones burial ground and Chelsea Old Church had similar, unexpected, low growth parameters (Newman and Gowland 2017, 224). The authors hypothesise that this similarity in poor health is the result of two different mechanisms: fashionable childcare practices in the wealthy population caused stunted development, while in the lower classes this was caused by economic pressure (Newman and Gowland 2017, 227). The economic pressures mentioned in this study, are pressures such as poor excess to (nutritious) food and accelerating the weaning process so the mother can go back to work (Newman and Gowland 2017, 225). With fashionable childcare practices, the authors mean choices such as keeping children indoors, leading to vitamin D deficiencies, and not breastfeeding (as much) because it is deemed unfashionable or inconvenient (Newman and Gowland 2017, 225).

A well-documented example of 'fashionable' child-care practices in post-medieval London, is the practice of wet-nursing (Fildes 1988, 79). Infants of wealthy parents were often not breastfed by its mother, but rather, the child was send to a wet-nurse who was usually located in the countryside (Fildes 1988, 79). Thus, any non-specific stress markers that developed in this nursing period would be reflective of conditions that are not comparable those of infants growing up in the city. Furthermore, if the wet-nurse was less wealthy and had a lower health-status than the infant's parents, this would directly affect the infant as well, possibly leading to a higher prevalence of non-specific stress.

It seems likely that these economic pressures and fashionable childcare practices did contribute to the seemingly equal health status of the population from Chelsea Old Church and the two low-status populations, but it does not explain why the population from St. Bride's Fleet Street appears to experience significantly less non-specific stress compared to Chelsea Old Church. There are two possible explanations for this phenomenon: the population from St. Bride's Fleet Street was wealthy, but they were not (as) concerned with being fashionable, or there is a bias in the composition of the sample.

Detailed accounts of the childcare practices in the parish of St. Bride's Church, as well as in the other populations, are necessary to be able to affirm or contradict the first hypothesis. Unfortunately, although there are general accounts of the social history and childcare practices in post-medieval London as a whole (e.g. Bucholz and Ward 2012; Humphries 2013; Porter 1994), no detailed research into the economic and social situation in the specific parishes has been done.

Possible bias in the sample

There are two groups which, if over represented, can cause a bias in the datasets resulting in a higher prevalence of non-specific stress in the overall population. Firstly, as can be read in the paragraph on the non-adult vs. adult comparison, a larger percentage of individuals with permanent dentition can cause a bias in the comparison of enamel hypoplasia. Secondly, as can be read in the paragraph on the male vs. female comparison, a larger percentage of males can cause a compositional bias in the sample as well.

Regarding the possible bias of over- or underrepresentation of individuals with permanent dentition, it seems that this cannot explain the exception of the low amount of non-specific stress in the St. Bride's Fleet Street population. The population of St. Bride's Fleet Street has by far the highest percentage of individuals with permanent dentition (circa 95%) when compared to the others (Chelsea Old Church c. 88%, St. Bride's Lower Churchyard c. 67%, Cross Bones burial ground c. 50%). Thus, if the difference between St. Bride's Fleet Street and the others were caused by the share of individuals with permanent dentition vs the share of individuals with deciduous teeth, this population would actually have the highest prevalence of enamel hypoplasia, not the lowest.

The second possible sample bias is an over- or underrepresentation of males, compared to females, in the population. This bias can only cause a problem in the comparison of the overall prevalence of enamel hypoplasia, since the groups are split into males and females for the comparison of growth. When looking at the ratio of males vs. females that were included into this comparison, however, it seems that an overrepresentation of females was not the cause of the low prevalence of non-specific stress in the population of St. Bride's Fleet Street, since the male/female ratio is nearly 50/50 in this population. Nor does it seem that this possible bias can explain the high prevalence of non-specific stress in the population of Cross Bones burial ground, since the male/female ratio in this population is c. 29/71. However, this ratio may be a misrepresentation since there are a lot of unsexed individuals in this population.

In conclusion, it seems that the possible biases in the sample are not present to such an extent that they fully can explain the results of the comparison of the prevalence of enamel hypoplasia in the overall populations. Thus, it seems likely that the social explanation discussed above is the major contributor leading to the results presented here. However, this hypothesis needs to be tested through a more detailed account of the economic and social situation in the different populations in this study, which, at present, has not been done and is beyond the scope of this thesis.

6.3 Limitations of the methods

As with all research, the methods used in this study have characteristics that can limit and influence the results of the study. First of all, there are inherent problems when assessing health in past populations through their skeletal remains, one of which is that there is a faulty assumption of stationarity (Wood *et al.* 1992, 344). A studied cemetery is not always the result of a population being buried in the same area that they have lived all their live. Rather, people in the past moved between different areas and might not die and be buried in the same location that they spend their live. Thus, in the context of this study, one must be conscious of the possibility that some of the people buried in the studied cemeteries did not grow up in that area.

6.3.1 Limitations of enamel hypoplasia

Another limitation that could have affected the results of this thesis is that teeth with enamel hypoplasia are more susceptible to caries (Slayton *et al.* 2001, 32). Therefore, if there were any dietary differences between the populations that negatively affected the prevalence of caries it could obscure the prevalence of enamel hypoplasia, since any teeth with enamel hypoplasia would have a greater chance of developing caries, which would 'hide' the enamel hypoplasia.

6.3.2 Limitations of growth

As Pinhasi *et al.* (2013) observe, there is a lot of variation in the results of various studies that use growth as a method to estimate levels of (non-specific) stress in archaeological samples. One of the possible reasons they put forth to account for this variation is the lack of a precise understanding of the effects of different stressors on bone growth (Pinhasi *et al.* 2013, 133). Therefore, it would be possible that non-specific stress did occur, but did not have an effect on the long-bone growth. Following this reasoning, it is possible that the individuals in one of the populations studied in this thesis actually experienced more physical stress than the individuals in the other populations, but that this stress did not affect the long-bone growth and could not be observed in this study. Therefore, it is important that any study on non-specific stress compares populations based on more parameters than just growth, which has been the case in this thesis.

A more specific limitation of the way in which growth was studied in this thesis is that males and females could not be compared. This is not necessarily problematic, but it does mean that the results of the comparison of non-specific stress in the male and female populations is not very reliable, since only one non-specific stress marker could be assessed.

7 Conclusions and suggestions for further research

The aim of this thesis has been to compare the amount and severity of non-specific stress in high-status and low-status populations from post-medieval London. This has been done by comparing the prevalence of two non-specific stress markers (enamel hypoplasia and growth) in order to answer the following research question:

> *What is the influence of status on the prevalence of (non-specific) stress in post-medieval London and how does this relate to age and sex?*

The research question was divided into two sub-questions: (1) what are the differences in the prevalence of non-specific stress markers between the sexes and different age groups within four separate populations in post-medieval London? and (2) how does the prevalence of non-specific stress markers, in the populations as a whole and between the different age groups and the sexes, in the low-status population compare to the high-status population of post-medieval London? These questions were answered by studying four populations from post-medieval London: Chelsea Old Church (high-status), St. Bride's Fleet Street (high-status), St. Bride's Lower Churchyard (low-status), and Cross Bones burial ground (low-status). The conclusions of the research will be presented here, followed by a number of suggestions for further research.

7.1 Intra-population trends

In the intra-population comparisons, two trends were observed. The first trend was that in all four cemeteries the male population seems to display a higher prevalence of non-specific stress than the female population. The most likely cause for this is that males are biologically more prone to physical stress and have a worse immune response to stress than females. In other words, it is unlikely that this trend is the result of social mechanisms.

The second trend that was observed in the results, is that in three of the four populations (Chelsea Old Church, St. Bride's Lower Churchyard and Cross Bones burial ground) the adults had a higher prevalence of enamel hypoplasia than the non-adults, while in the population from St. Bride's Fleet Street the opposite is true. This coincides with the prevalence of enamel hypoplasia within the non-adult population, which is by far highest in the population of St. Bride's Fleet Street. This juxtaposition seems to be correlated to the fact that the share of individuals with permanent dentition, which are more prone to enamel hypoplasia, is much higher in the (non-adult) population of St. Bride's Fleet Street than in the three other populations.

In conclusion, it seems that the significant differences or trends within the populations of post-medieval London are, at least in large part, due to biological factors, as opposed to social or economic differences between the relevant groups.

7.2 High-status does not mean good health

When the two high-status populations and the two low-status populations are viewed as one, there seems to be a clear conclusion to the research question: the high-status population of post-medieval London experienced less (severe) non-specific stress than the low-status population. However, as mentioned in the previous chapter, the reality is more nuanced than this.

The results of the comparison of prevalence of enamel hypoplasia in the separate populations showed that the population of St. Bride's Fleet Street experienced the lowest amount of stress, while the comparison of growth showed that the populations of Chelsea Old Church and Cross Bones burial ground suffered the least in terms of long-term consequences. However, it must be mentioned that only a few of the differences were statistically significant and that it would be more correct to conclude that there were only minor differences in the prevalence of non-specific stress in the four populations studied in this thesis.

The reason for this lack of clear differences seems to be of a social nature. On one hand, the high-status population made 'fashionable' childcare choices that had a negative effects on the health of children. While on the other hand, there were economic pressures for individuals in the low-status populations that caused the children to experience non-specific stress. These two mechanisms seem to balance each other out in terms of the resulting non-specific physical stress that can be observed in the deceased individuals.

7.3 Suggestions for further research

As with any research, there are still many questions that remain unanswered with regard to the relationship between status and non-specific stress in post-medieval London, thus, providing several avenues of possible further research.

One of the possibilities that has not been explored in this thesis, is the comparison of the four populations based on other non-specific stress markers such as mortality patterns, cribra orbitalia and chronic maxillary sinusitis. By comparing the four populations on other markers of (non-specific) stress, any of the interpretations and conclusions presented in this thesis could be elaborated upon.

Furthermore, the way in which enamel hypoplasia was studied in this thesis is relatively one-dimensional. Only the presence or absence of enamel hypoplasia was incorporated and properties such as severity and age at the time of stress were not taken into account. This means that only very limited conclusions can be drawn about non-specific stress in the studied populations. Although the study of chronology and severity of enamel hypoplasia is not without its problems (Hillson 2008, 305; King *et al.* 2005, 548), this avenue of research might still add an interesting layer to the comparison of non-specific stress in high-status and low-status populations. More specifically, it might be able to offer a more nuanced picture of the differences in non-specific stress in the four populations that were studied in this thesis.

Furthermore, during the writing of this thesis it became clear that there is very little information available on the individual cemeteries. A lot has been written on the general social, economic, and environmental situation of post-medieval London, but these works do not go into detail about the cemeteries and parishes that were present in London at the time. As discussed in the previous chapter, this lack of cemetery-specific information means that hypotheses formulated after (bio)archaeological research cannot be supported or contradicted with a high degree of detail. Only speculation based on general historical accounts can be performed. Therefore, it is important that more detailed research on the social, economic, and environmental situation of specific cemeteries and parishes is done.

Apart from further research on the populations from post-medieval London, it is important that more research is done on the effects of social and economic status on non-specific stress and how these two can be understood in an archaeological context. As was mentioned in chapter 2, non-specific stress in archaeological populations is still a field of research that could be expanded upon, especially with regard to status differences.

Abstract

The aim of this thesis is to study the influence of status on the prevalence of non-specific stress in post-medieval London. This is researched by comparing the prevalence of two non-specific stress markers in and between two high-status populations (Chelsea Old Church and St. Bride's Fleet Street) and two low-status populations (St. Bride's Lower Churchyard and Cross Bones burial ground) from post-medieval London. The non-specific stress markers that were used in the comparisons were the prevalence of enamel hypoplasia and growth (through mean femur length).

The high-status and low-status populations were compared on their own as well as together, combining Chelsea Old Church and St. Bride's Fleet Street into one high-status population and St. Bride's Lower Churchyard and Cross Bones burial ground into one low-status population. The four populations, as well as the aggregated populations, were divided into several age groups and the two sexes for (statistical) comparison.

In the results it was found that over all, the high-status population of post-medieval London had less (severe) non-specific stress, but that when the populations were studied separately and divided into groups, the results became more nuanced. It was shown that the population from St. Bride's Fleet Street experienced the least (severe) non-specific stress, the population from Cross Bones burial ground experienced the most (severe) non-specific stress and the populations from Chelsea Old Church and St. Bride's Lower Churchyard experienced a similar amount (and severity) of stress.

Samenvatting

Het doel van deze scriptie is het onderzoeken van de invloed van status op niet-specifieke stress in post-middeleeuws Londen. Dit is onderzocht middels vergelijkingen van twee niet-specifieke stress indicatoren binnen en tussen twee hoge status populaties (Chelsea Old Church en St. Bride’s Fleet Street) en twee lage status populaties (St. Bride’s Lower Churchyard en Cross Bones burial ground) uit post-middeleeuws Londen. De twee niet-specifieke stress indicatoren, die zijn gebruikt voor de vergelijkingen, zijn de verhouding van glazuurhypoplasie en groei (door middel van de gemiddelde lengte van de femur).

The hoge status en lage status populaties zijn zowel apart als samengevoegd vergeleken, waarbij de populaties van Chelsea Old Church en St. Bride’s Fleet Street zijn samengevoegd tot één hoge status populatie en de populaties van St. Bride’s Lower Churchyard en Cross Bones burial ground zijn samengevoegd tot één lage status populatie. Zowel de vier afzonderlijke populaties, als de twee gecombineerde populaties, zijn voor de vergelijkingen verdeeld in verscheidene leeftijdscategorieën en de twee seksen.

Uit de resultaten van de vergelijkingen bleek dat, in het algemeen, de hoge status populatie minder last had van niet-specifieke stress, echter, dit beeld werd genuanceerder wanneer de individuele populaties en verschillende groepen werden vergeleken. Uit deze vergelijkingen bleek namelijk dat de populatie van St. Bride’s Fleet Street het minste last had van niet-specifieke stress, dat de populatie van Cross Bones burial ground het meeste last had van niet-specifieke stress en dat de populaties van Chelsea Old Church en St. Bride’s Lower Churchyard een vergelijkbare hoeveelheid niet-specifieke stress ervaarde.

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Appendix I: Basic information of all individuals included in the analysis of the prevalence of enamel hypoplasia.

Table 1: Basic information of all individuals of Chelsea Old Church included in the analysis of the prevalence of enamel hypoplasia.

Cemetery	**Context**	**Sex**	**Age**	**Number of teeth present**	**Number of teeth with EH**
Chelsea Old Church	18	Female	Adult 36-45 years	29	2
Chelsea Old Church	19	Female	Adult >46 years	18	0
Chelsea Old Church	20	Male	Adult 36-45 years	19	1
Chelsea Old Church	31	Female	Adult 36-45 years	8	2
Chelsea Old Church	35	Male	Adult >46 years	13	0
Chelsea Old Church	47	Male	Adult 18-25 years	30	1
Chelsea Old Church	92	Female	Adult 18-25 years	6	0
Chelsea Old Church	100	Male	Adult 36-45 years	5	0
Chelsea Old Church	104	Female	Adult 36-45 years	9	1
Chelsea Old Church	143	Male	Adult >46 years	8	0
Chelsea Old Church	147	Male	Adult >46 years	5	0
Chelsea Old Church	154	Male?	Adult >46 years	5	5
Chelsea Old Church	157	Male	Adult 36-45 years	28	0
Chelsea Old Church	161	Female	Adult 18-25 years	27	0
Chelsea Old Church	193	Female	Adult 36-45 years	27	4
Chelsea Old Church	198	Male	Adult 36-45 years	25	10
Chelsea Old Church	206	Female	Unclassified adult	27	8
Chelsea Old Church	230	Unsexed non-adult	Non-adult 6-11 years	16	15
Chelsea Old Church	232	Female	Adult 26-35 years	31	3
Chelsea Old Church	238	Unsexed non-adult	Non-adult 12-17 years	20	3
Chelsea Old Church	248	Female	Adult >46 years	22	11
Chelsea Old Church	253	Male?	Adult >46 years	4	2
Chelsea Old Church	258	Male?	Adult 26-35 years	21	11
Chelsea Old Church	269	Unsexed non-adult	Non-adult 1-6 months	4	0
Chelsea Old Church	277	Male?	Unclassified adult	17	5
Chelsea Old Church	281	Male	Adult 26-35 years	16	5
Chelsea Old Church	285	Male	Adult 36-45 years	18	3
Chelsea Old Church	297	Female?	Unclassified adult	1	1
Chelsea Old Church	315	Unsexed non-adult	Non-adult 1-5 years	12	0
Chelsea Old Church	323	Male	Adult 36-45 years	11	1
Chelsea Old Church	339	Male	Adult 36-45 years	14	0
Chelsea Old Church	347	Unsexed non-adult	Non-adult 1-5 years	2	0
Chelsea Old Church	349	Male	Adult 18-25 years	27	13
Chelsea Old Church	353	Female	Adult 26-35 years	22	11
Chelsea Old Church	359	Male	Adult 36-45 years	18	4
Chelsea Old Church	363	Female	Adult 18-25 years	27	1
Chelsea Old Church	392	Female	Adult 18-25 years	25	0
Chelsea Old Church	411	Male	Adult 36-45 years	4	0
Chelsea Old Church	419	Female	Adult >46 years	6	0

Chelsea Old Church	446	Female	Adult >46 years	6	1
Chelsea Old Church	453	Male	Adult >46 years	26	3
Chelsea Old Church	460	Male	Adult 18-25 years	26	3
Chelsea Old Church	485	Male	Adult >46 years	12	8
Chelsea Old Church	490	Unsexed non-adult	Non-adult 6-11 years	18	4
Chelsea Old Church	496	Male	Adult >46 years	19	1
Chelsea Old Church	502	Intermediate	Adult >46 years	1	0
Chelsea Old Church	505	Female	Adult 26-35 years	23	0
Chelsea Old Church	509	Female?	Adult >46 years	11	2
Chelsea Old Church	511	Intermediate	Adult 26-35 years	25	0
Chelsea Old Church	516	Male	Adult >46 years	16	1
Chelsea Old Church	523	Female	Adult >46 years	9	2
Chelsea Old Church	527	Male	Adult >46 years	16	4
Chelsea Old Church	532	Male?	Adult 36-45 years	27	0
Chelsea Old Church	534	Female	Adult 18-25 years	25	1
Chelsea Old Church	544	Male?	Adult >46 years	11	0
Chelsea Old Church	552	Female	Adult >46 years	8	0
Chelsea Old Church	567	Female	Adult 26-35 years	18	0
Chelsea Old Church	579	Unsexed non-adult	Non-adult 12-17 years	26	13
Chelsea Old Church	583	Female?	Adult 36-45 years	28	0
Chelsea Old Church	593	Male	Adult >46 years	3	0
Chelsea Old Church	608	Female	Unclassified adult	3	1
Chelsea Old Church	612	Female	Adult >46 years	7	3
Chelsea Old Church	622	Male	Adult >46 years	3	1
Chelsea Old Church	641	Male	Adult 26-35 years	32	8
Chelsea Old Church	646	Male?	Adult >46 years	21	7
Chelsea Old Church	654	Male	Adult >46 years	21	0
Chelsea Old Church	668	Male	Adult >46 years	14	1
Chelsea Old Church	675	Male?	Unclassified adult	18	0
Chelsea Old Church	697	Female?	Adult >46 years	3	1
Chelsea Old Church	701	Male	Adult >46 years	2	1
Chelsea Old Church	709	Male	Adult 18-25 years	31	7
Chelsea Old Church	713	Male	Adult >46 years	1	0
Chelsea Old Church	722	Female	Adult >46 years	7	0
Chelsea Old Church	750	Male	Adult >46 years	4	0
Chelsea Old Church	754	Female	Adult 18-25 years	22	1
Chelsea Old Church	782	Male	Adult 36-45 years	17	7
Chelsea Old Church	788	Unsexed non-adult	Non-adult 1-5 years	9	0
Chelsea Old Church	790	Female?	Adult 18-25 years	12	2
Chelsea Old Church	792	Female	Adult >46 years	6	0
Chelsea Old Church	802	Female	Adult >46 years	15	0
Chelsea Old Church	805	Male	Adult 36-45 years	20	9
Chelsea Old Church	812	Female	Adult >46 years	3	0
Chelsea Old Church	819	Male	Adult >46 years	6	0
Chelsea Old Church	824	Unsexed non-adult	Non-adult 6-11 years	14	0
Chelsea Old Church	829	Unsexed non-adult	Non-adult 7-11 months	5	0

Chelsea Old Church	841	Female	Adult >46 years	18	14
Chelsea Old Church	856	Male	Adult 26-35 years	13	5
Chelsea Old Church	867	Male	Adult 26-35 years	11	5
Chelsea Old Church	885	Female	Adult 26-35 years	22	1
Chelsea Old Church	918	Female	Adult >46 years	17	0
Chelsea Old Church	926	Male?	Unclassified adult	1	0
Chelsea Old Church	970	Unsexed non-adult	Non-adult 1-5 years	10	0
Chelsea Old Church	976	Undeterminable	Unclassified adult	10	1
Chelsea Old Church	980	Female	Adult >46 years	23	11
Chelsea Old Church	990	Female?	Adult 26-35 years	13	3
Chelsea Old Church	994	Male	Adult 36-45 years	24	3
Chelsea Old Church	1001	Female	Adult 18-25 years	17	0
Chelsea Old Church	1016	Female	Adult >46 years	8	2
Chelsea Old Church	1018	Male	Adult 26-35 years	21	1
Chelsea Old Church	1023	Female	Adult 36-45 years	21	7
Chelsea Old Church	1051	Unsexed non-adult	Non-adult 1-5 years	13	0
Chelsea Old Church	1071	Male?	Adult 36-45 years	1	0
Chelsea Old Church	1085	Unsexed non-adult	Non-adult 6-11 years	29	4

Table 2: Basic information of all individuals of St. Bride's Fleet Street included in the analysis of the prevalence of enamel hypoplasia.

Cemetery	**Context**	**Sex**	**Age**	**Number of teeth present**	**Number of teeth with EH**
St. Bride's Fleet Street	1	Undeterminable	Non-adult 12-17 years	22	0
St. Bride's Fleet Street	2	Male	Adult 26-35 years	27	7
St. Bride's Fleet Street	3	Undeterminable	Non-adult 6-11 years	13	0
St. Bride's Fleet Street	4	Undeterminable	Non-adult 1-5 years	1	0
St. Bride's Fleet Street	5	Undeterminable	Non-adult 12-17 years	25	5
St. Bride's Fleet Street	6	Undeterminable	Non-adult 1-5 years	10	0
St. Bride's Fleet Street	7	Female	Adult >46 years	17	1
St. Bride's Fleet Street	8	Female	Adult 36-45 years	20	0
St. Bride's Fleet Street	9	Undeterminable	Non-adult 1-5 years	12	0
St. Bride's Fleet Street	10	Female	Adult 18-25 years	26	6
St. Bride's Fleet Street	11	Male	Adult 36-45 years	26	0
St. Bride's Fleet Street	12	Male	Adult 26-35 years	31	1
St. Bride's Fleet Street	13	Female	Adult 36-45 years	28	2
St. Bride's Fleet Street	14	Male	Adult 26-35 years	26	4
St. Bride's Fleet Street	15	Male?	Adult 26-35 years	8	0
St. Bride's Fleet Street	16	Female	Adult >46 years	2	0
St. Bride's Fleet Street	17	Female	Adult >46 years	12	0
St. Bride's Fleet Street	18	Undeterminable	Non-adult 12-17 years	27	8
St. Bride's Fleet Street	20	Male	Adult >46 years	1	0
St. Bride's Fleet Street	21	Undeterminable	Non-adult 1-5 years	1	0
St. Bride's Fleet Street	22	Undeterminable	Non-adult 6-11 years	17	6
St. Bride's Fleet Street	27	Undeterminable	Non-adult 6-11 years	11	0
St. Bride's Fleet Street	28	Male	Adult >46 years	3	1
St. Bride's Fleet Street	29	Male	Adult >46 years	26	3
St. Bride's Fleet Street	31	Female	Adult 26-35 years	18	0
St. Bride's Fleet Street	33	Female	Adult >46 years	18	7
St. Bride's Fleet Street	43	Female	Adult 18-25 years	13	2
St. Bride's Fleet Street	44	Female	Adult 26-35 years	25	0
St. Bride's Fleet Street	45	Female	Adult >46 years	5	0
St. Bride's Fleet Street	46	Undeterminable	Non-adult 12-17 years	25	7
St. Bride's Fleet Street	47	Male	Adult >46 years	3	0
St. Bride's Fleet Street	48	Undeterminable	Non-adult 6-11 years	16	9
St. Bride's Fleet Street	49	Undeterminable	Non-adult 6-11 years	10	4
St. Bride's Fleet Street	50	Male	Adult 18-25 years	16	1
St. Bride's Fleet Street	51	Male	Adult 18-25 years	28	1
St. Bride's Fleet Street	52	Female	Adult 18-25 years	26	0
St. Bride's Fleet Street	54	Female	Adult 26-35 years	18	0
St. Bride's Fleet Street	55	Male?	Adult 18-25 years	16	0
St. Bride's Fleet Street	57	Female?	Unclassified adult	26	0
St. Bride's Fleet Street	58	Male	Adult >46 years	22	0
St. Bride's Fleet Street	59	Male	Adult >46 years	27	0
St. Bride's Fleet Street	60	Male	Adult 18-25 years	1	0
St. Bride's Fleet Street	61	Male	Adult 18-25 years	25	1
St. Bride's Fleet Street	62	Female?	Adult 26-35 years	26	6

St. Bride's Fleet Street	63	Female	Adult 26-35 years	9	0
St. Bride's Fleet Street	64	Male	Adult 36-45 years	26	0
St. Bride's Fleet Street	65	Male	Adult 26-35 years	11	3
St. Bride's Fleet Street	66	Female	Adult >46 years	6	0
St. Bride's Fleet Street	67	Male	Adult 18-25 years	23	0
St. Bride's Fleet Street	68	Male	Adult 26-35 years	18	0
St. Bride's Fleet Street	69	Female	Adult 26-35 years	23	9
St. Bride's Fleet Street	70	Male	Adult 18-25 years	29	2
St. Bride's Fleet Street	71	Male	Adult >46 years	25	8
St. Bride's Fleet Street	72	Female	Adult 18-25 years	24	0
St. Bride's Fleet Street	73	Male	Adult 26-35 years	24	0
St. Bride's Fleet Street	74	Female	Adult 26-35 years	20	0
St. Bride's Fleet Street	75	Male	Adult 18-25 years	20	1
St. Bride's Fleet Street	78	Male	Adult >46 years	8	0
St. Bride's Fleet Street	81	Male	Adult 26-35 years	25	4
St. Bride's Fleet Street	82	Female?	Unclassified adult	4	1
St. Bride's Fleet Street	84	Male	Adult >46 years	20	9
St. Bride's Fleet Street	85	Male	Adult >46 years	22	0
St. Bride's Fleet Street	86	Male	Adult >46 years	22	10
St. Bride's Fleet Street	87	Male	Unclassified adult	17	1
St. Bride's Fleet Street	88	Female	Adult >46 years	3	2
St. Bride's Fleet Street	91	Male	Adult >46 years	2	0
St. Bride's Fleet Street	93	Female	Adult >46 years	12	1
St. Bride's Fleet Street	96	Female	Adult >46 years	11	2
St. Bride's Fleet Street	97	Female	Adult >46 years	8	2
St. Bride's Fleet Street	98	Female	Adult 36-45 years	8	1
St. Bride's Fleet Street	99	Female	Adult >46 years	14	0
St. Bride's Fleet Street	100	Male	Adult 36-45 years	23	0
St. Bride's Fleet Street	101	Female	Adult >46 years	18	1
St. Bride's Fleet Street	102	Male	Adult >46 years	24	11
St. Bride's Fleet Street	103	Female	Adult 36-45 years	11	0
St. Bride's Fleet Street	104	Female	Adult >46 years	2	0
St. Bride's Fleet Street	105	Male	Adult >46 years	2	1
St. Bride's Fleet Street	106	Female	Adult 36-45 years	15	0
St. Bride's Fleet Street	107	Male	Adult >46 years	18	2
St. Bride's Fleet Street	108	Male	Adult 36-45 years	13	2
St. Bride's Fleet Street	110	Male	Adult >46 years	29	0
St. Bride's Fleet Street	111	Female?	Unclassified adult	16	2
St. Bride's Fleet Street	112	Male	Adult >46 years	22	1
St. Bride's Fleet Street	113	Female	Adult >46 years	14	0
St. Bride's Fleet Street	114	Male	Adult >46 years	27	0
St. Bride's Fleet Street	115	Male	Adult 26-35 years	10	0
St. Bride's Fleet Street	117	Female	Adult >46 years	12	1
St. Bride's Fleet Street	118	Male	Adult >46 years	10	0
St. Bride's Fleet Street	119	Male	Adult 26-35 years	21	0
St. Bride's Fleet Street	121	Female	Adult >46 years	6	0
St. Bride's Fleet Street	122	Female	Adult 26-35 years	18	1
St. Bride's Fleet Street	123	Female	Adult >46 years	16	0
St. Bride's Fleet Street	124	Male	Adult >46 years	19	1

St. Bride's Fleet Street	125	Male	Adult 36-45 years	18	0
St. Bride's Fleet Street	126	Female	Adult >46 years	19	0
St. Bride's Fleet Street	128	Female	Adult >46 years	8	0
St. Bride's Fleet Street	129	Female	Adult >46 years	1	0
St. Bride's Fleet Street	130	Female	Adult >46 years	10	2
St. Bride's Fleet Street	131	Male	Adult >46 years	16	1
St. Bride's Fleet Street	132	Male	Adult >46 years	6	0
St. Bride's Fleet Street	133	Female	Adult >46 years	12	0
St. Bride's Fleet Street	134	Female	Adult >46 years	4	3
St. Bride's Fleet Street	136	Male	Adult >46 years	1	0
St. Bride's Fleet Street	137	Male	Adult >46 years	7	0
St. Bride's Fleet Street	138	Male	Unclassified adult	4	0
St. Bride's Fleet Street	139	Male	Adult >46 years	9	0
St. Bride's Fleet Street	140	Male	Adult 36-45 years	19	0
St. Bride's Fleet Street	141	Male	Adult >46 years	14	1
St. Bride's Fleet Street	143	Male	Adult >46 years	20	1
St. Bride's Fleet Street	144	Female	Adult 36-45 years	28	0
St. Bride's Fleet Street	145	Male	Adult >46 years	10	2
St. Bride's Fleet Street	146	Female	Adult >46 years	19	2
St. Bride's Fleet Street	147	Female	Adult 26-35 years	19	6
St. Bride's Fleet Street	148	Female	Adult 26-35 years	16	1
St. Bride's Fleet Street	150	Male	Adult >46 years	14	3
St. Bride's Fleet Street	152	Female	Adult 36-45 years	18	0
St. Bride's Fleet Street	153	Female	Adult 36-45 years	28	1
St. Bride's Fleet Street	154	Female	Adult 36-45 years	20	1
St. Bride's Fleet Street	155	Male	Adult >46 years	6	0
St. Bride's Fleet Street	156	Female	Adult 36-45 years	8	0
St. Bride's Fleet Street	157	Male	Adult >46 years	3	0
St. Bride's Fleet Street	158	Male	Adult >46 years	6	2
St. Bride's Fleet Street	159	Female	Adult >46 years	2	0
St. Bride's Fleet Street	161	Male	Adult >46 years	1	0
St. Bride's Fleet Street	163	Female	Unclassified adult	1	0
St. Bride's Fleet Street	164	Male	Adult >46 years	13	2
St. Bride's Fleet Street	165	Female	Adult >46 years	5	0
St. Bride's Fleet Street	166	Male	Adult >46 years	5	1
St. Bride's Fleet Street	167	Female	Adult >46 years	2	1
St. Bride's Fleet Street	168	Female	Adult >46 years	13	9
St. Bride's Fleet Street	169	Male	Adult >46 years	3	0
St. Bride's Fleet Street	170	Male	Adult 36-45 years	15	0
St. Bride's Fleet Street	171	Male	Adult 36-45 years	26	4
St. Bride's Fleet Street	172	Female	Adult >46 years	2	0
St. Bride's Fleet Street	173	Male	Adult >46 years	1	1
St. Bride's Fleet Street	174	Female	Adult >46 years	3	0
St. Bride's Fleet Street	177	Female	Adult 26-35 years	27	1
St. Bride's Fleet Street	178	Female	Adult 36-45 years	18	0
St. Bride's Fleet Street	179	Male	Adult >46 years	21	0
St. Bride's Fleet Street	180	Male	Adult >46 years	8	0
St. Bride's Fleet Street	181	Male	Adult >46 years	19	0
St. Bride's Fleet Street	182	Female	Adult >46 years	8	1

St. Bride's Fleet Street	183	Male	Adult >46 years	16	5
St. Bride's Fleet Street	184	Female	Adult >46 years	3	0
St. Bride's Fleet Street	185	Female	Adult >46 years	6	0
St. Bride's Fleet Street	186	Female	Adult >46 years	17	0
St. Bride's Fleet Street	187	Female	Adult >46 years	2	1
St. Bride's Fleet Street	190	Female	Adult >46 years	6	0
St. Bride's Fleet Street	191	Male	Adult 36-45 years	32	4
St. Bride's Fleet Street	192	Male	Adult >46 years	12	0
St. Bride's Fleet Street	193	Intermediate	Adult >46 years	15	0
St. Bride's Fleet Street	195	Male	Adult >46 years	12	1
St. Bride's Fleet Street	196	Male	Adult >46 years	11	3
St. Bride's Fleet Street	197	Male	Adult >46 years	4	1
St. Bride's Fleet Street	198	Male	Adult >46 years	19	6
St. Bride's Fleet Street	199	Male	Adult >46 years	6	0
St. Bride's Fleet Street	200	Female	Adult >46 years	12	0
St. Bride's Fleet Street	201	Male	Adult >46 years	26	0
St. Bride's Fleet Street	202	Female	Adult >46 years	20	2
St. Bride's Fleet Street	203	Female	Adult 18-25 years	23	1
St. Bride's Fleet Street	209	Female	Adult 36-45 years	21	0
St. Bride's Fleet Street	210	Male	Adult >46 years	8	0
St. Bride's Fleet Street	211	Female	Adult >46 years	19	0
St. Bride's Fleet Street	212	Male	Adult >46 years	15	2
St. Bride's Fleet Street	213	Male	Adult >46 years	6	0
St. Bride's Fleet Street	214	Female	Adult 36-45 years	17	0
St. Bride's Fleet Street	215	Female	Adult >46 years	22	0
St. Bride's Fleet Street	218	Male	Adult >46 years	19	0
St. Bride's Fleet Street	219	Female	Adult >46 years	14	0
St. Bride's Fleet Street	220	Female	Adult >46 years	10	0
St. Bride's Fleet Street	221	Male	Adult >46 years	13	2
St. Bride's Fleet Street	222	Male	Adult >46 years	15	4
St. Bride's Fleet Street	224	Male	Adult >46 years	19	1
St. Bride's Fleet Street	225	Female	Adult 26-35 years	26	2
St. Bride's Fleet Street	226	Male	Adult 36-45 years	23	0
St. Bride's Fleet Street	227	Female	Adult 36-45 years	17	3
St. Bride's Fleet Street	228	Female	Adult >46 years	17	0
St. Bride's Fleet Street	229	Female	Adult >46 years	1	0
St. Bride's Fleet Street	230	Female	Adult >46 years	3	2
St. Bride's Fleet Street	232	Female	Adult >46 years	14	0
St. Bride's Fleet Street	233	Male	Adult >46 years	17	0
St. Bride's Fleet Street	234	Male	Adult >46 years	14	0
St. Bride's Fleet Street	235	Female	Adult >46 years	24	1
St. Bride's Fleet Street	236	Female	Adult >46 years	15	2
St. Bride's Fleet Street	239	Male	Adult 26-35 years	30	0
St. Bride's Fleet Street	240	Male	Adult >46 years	9	0
St. Bride's Fleet Street	241	Female	Adult >46 years	6	0
St. Bride's Fleet Street	244	Male	Adult >46 years	5	0

Table 3: Basic information of all individuals of St. Bride's Lower Churchyard included in the analysis of the prevalence of enamel hypoplasia.

Cemetery	**Context**	**Sex**	**Age**	**Number of teeth present**	**Number of teeth with EH**
St. Bride's Lower Churchyard	1055,1	Male	Unclassified adult	14	1
St. Bride's Lower Churchyard	1058	Male	Adult 26-35 years	12	6
St. Bride's Lower Churchyard	1116	Male	Adult 36-45 years	25	7
St. Bride's Lower Churchyard	1119	Female	Adult >46 years	10	3
St. Bride's Lower Churchyard	1123	Female	Adult >46 years	1	0
St. Bride's Lower Churchyard	1124	Unsexed non-adult	Non-adult 6-11 years	10	0
St. Bride's Lower Churchyard	1125	Male	Adult >46 years	22	3
St. Bride's Lower Churchyard	1126	Male?	Adult 36-45 years	19	3
St. Bride's Lower Churchyard	1137	Unsexed non-adult	Non-adult 1-5 years	17	0
St. Bride's Lower Churchyard	1149	Unsexed non-adult	Non-adult 1-5 years	18	0
St. Bride's Lower Churchyard	1151	Female	Adult >46 years	11	2
St. Bride's Lower Churchyard	1152	Female	Adult >46 years	12	10
St. Bride's Lower Churchyard	1153	Unsexed non-adult	Non-adult 1-5 years	13	0
St. Bride's Lower Churchyard	1154	Unsexed non-adult	Non-adult 6-11 years	21	0
St. Bride's Lower Churchyard	1155	Male	Adult 36-45 years	16	0
St. Bride's Lower Churchyard	1168	Unsexed non-adult	Non-adult 6-11 years	26	0
St. Bride's Lower Churchyard	1170	Male	Adult >46 years	6	0
St. Bride's Lower Churchyard	1172	Male?	Unclassified adult	1	0
St. Bride's Lower Churchyard	1174	Female	Adult >46 years	3	0
St. Bride's Lower Churchyard	1179	Unsexed non-adult	Non-adult 1-5 years	19	0
St. Bride's Lower Churchyard	1183	Male	Unclassified adult	30	0
St. Bride's Lower Churchyard	1184	Male	Adult >46 years	5	0
St. Bride's Lower Churchyard	1187	Unsexed non-adult	Non-adult 1-5 years	17	0
St. Bride's Lower Churchyard	1188	Female	Unclassified adult	21	2
St. Bride's Lower Churchyard	1189	Unsexed non-adult	Non-adult 1-5 years	13	0
St. Bride's Lower Churchyard	1199	Female	Adult 36-45 years	26	0
St. Bride's Lower Churchyard	1202	Unsexed non-adult	Non-adult 12-17 years	25	0
St. Bride's Lower Churchyard	1203	Female	Adult >46 years	22	0
St. Bride's Lower Churchyard	1204	Unsexed non-adult	Non-adult 12-17 years	27	0
St. Bride's Lower Churchyard	1207	Female	Adult 26-35 years	26	0
St. Bride's Lower Churchyard	1209	Male?	Adult 36-45 years	18	1
St. Bride's Lower Churchyard	1215	Female?	Adult 36-45 years	30	0
St. Bride's Lower Churchyard	1216	Unsexed non-adult	Non-adult 1-5 years	11	0
St. Bride's Lower Churchyard	1218	Unsexed non-adult	Non-adult 6-11 years	15	0
St. Bride's Lower Churchyard	1221	Female	Adult >46 years	8	5
St. Bride's Lower Churchyard	1222	Unsexed non-adult	Non-adult 1-6 months	4	0
St. Bride's Lower Churchyard	1228	Unsexed non-adult	Non-adult 7-11 months	19	0
St. Bride's Lower Churchyard	1236	Unsexed non-adult	Non-adult 1-5 years	20	0
St. Bride's Lower Churchyard	1238	Unsexed non-adult	Non-adult 1-5 years	18	2
St. Bride's Lower Churchyard	1240	Unsexed non-adult	Non-adult 1-5 years	19	0
St. Bride's Lower Churchyard	1242	Unsexed non-adult	Non-adult 1-5 years	18	0
St. Bride's Lower Churchyard	1244,1	Male	Unclassified adult	27	0

St. Bride's Lower Churchyard	1247	Male	Adult 36-45 years	29	11
St. Bride's Lower Churchyard	1248	Unsexed non-adult	Non-adult 1-5 years	20	0
St. Bride's Lower Churchyard	1251	Male	Adult >46 years	16	1
St. Bride's Lower Churchyard	1259	Male	Unclassified adult	14	5
St. Bride's Lower Churchyard	1263	Undeterminable	Unclassified adult	2	0
St. Bride's Lower Churchyard	1265	Unsexed non-adult	Non-adult 1-5 years	18	5
St. Bride's Lower Churchyard	1267	Unsexed non-adult	Non-adult 1-5 years	7	0
St. Bride's Lower Churchyard	1269	Female	Adult >46 years	2	2
St. Bride's Lower Churchyard	1275	Unsexed non-adult	Non-adult perinatal	7	0
St. Bride's Lower Churchyard	1278	Female	Adult 26-35 years	28	7
St. Bride's Lower Churchyard	1288	Male	Adult >46 years	15	8
St. Bride's Lower Churchyard	1290	Male	Adult 26-35 years	26	10
St. Bride's Lower Churchyard	1291	Female	Adult >46 years	25	4
St. Bride's Lower Churchyard	1292	Male?	Adult 36-45 years	5	1
St. Bride's Lower Churchyard	1296	Unsexed non-adult	Non-adult 6-11 years	4	1
St. Bride's Lower Churchyard	1298	Male	Adult 26-35 years	27	2
St. Bride's Lower Churchyard	1312	Male	Adult 36-45 years	23	1
St. Bride's Lower Churchyard	1318	Unsexed non-adult	Non-adult 1-5 years	14	1
St. Bride's Lower Churchyard	1320	Male?	Unclassified adult	16	8
St. Bride's Lower Churchyard	1326	Female	Adult >46 years	1	1
St. Bride's Lower Churchyard	1328	Unsexed non-adult	Non-adult 1-5 years	16	0
St. Bride's Lower Churchyard	1336	Female	Adult 36-45 years	15	1
St. Bride's Lower Churchyard	1338	Male	Adult 36-45 years	8	4
St. Bride's Lower Churchyard	1350	Male?	Adult >46 years	2	1
St. Bride's Lower Churchyard	1352	Female	Adult >46 years	28	10
St. Bride's Lower Churchyard	1355	Female	Adult 26-35 years	16	0
St. Bride's Lower Churchyard	1357	Unsexed non-adult	Non-adult 12-17 years	19	19
St. Bride's Lower Churchyard	1358	Unsexed non-adult	Non-adult 1-5 years	4	4
St. Bride's Lower Churchyard	1362	Male	Unclassified adult	9	0
St. Bride's Lower Churchyard	1362,1	Unsexed non-adult	Non-adult 1-5 years	2	0
St. Bride's Lower Churchyard	1366	Female?	Adult >46 years	17	11
St. Bride's Lower Churchyard	1367	Unsexed non-adult	Non-adult 1-5 years	18	0
St. Bride's Lower Churchyard	1373	Female?	Adult >46 years	22	4
St. Bride's Lower Churchyard	1374	Male?	Unclassified adult	3	0
St. Bride's Lower Churchyard	1376	Female	Adult 26-35 years	9	0
St. Bride's Lower Churchyard	1379	Unsexed non-adult	Non-adult 1-5 years	8	0
St. Bride's Lower Churchyard	1384	Unsexed non-adult	Non-adult 1-5 years	14	0
St. Bride's Lower Churchyard	1386	Female	Adult 18-25 years	13	0
St. Bride's Lower Churchyard	1390	Male	Adult 36-45 years	16	2
St. Bride's Lower Churchyard	1393	Unsexed non-adult	Non-adult 6-11 years	11	8
St. Bride's Lower Churchyard	1394	Unsexed non-adult	Non-adult 1-5 years	18	0
St. Bride's Lower Churchyard	1396	Male	Unclassified adult	14	6
St. Bride's Lower Churchyard	1406	Unsexed non-adult	Non-adult 1-5 years	4	0
St. Bride's Lower Churchyard	1408	Male	Adult >46 years	32	0
St. Bride's Lower Churchyard	1409	Female	Adult >46 years	10	0
St. Bride's Lower Churchyard	1413	Unsexed non-adult	Non-adult 1-5 years	20	0

St. Bride's Lower Churchyard	1419	Unsexed non-adult	Non-adult 1-5 years	7	0
St. Bride's Lower Churchyard	1420	Male	Adult 36-45 years	20	5
St. Bride's Lower Churchyard	1422	Female	Adult 36-45 years	12	5
St. Bride's Lower Churchyard	1426	Intermediate	Unclassified adult	7	1
St. Bride's Lower Churchyard	1428	Female?	Adult 36-45 years	7	2
St. Bride's Lower Churchyard	1431	Unsexed non-adult	Non-adult 6-11 years	20	0
St. Bride's Lower Churchyard	1434	Unsexed non-adult	Non-adult 1-5 years	18	0
St. Bride's Lower Churchyard	1437	Unsexed non-adult	Non-adult 1-5 years	13	0
St. Bride's Lower Churchyard	1441,1	Male	Unclassified adult	23	15
St. Bride's Lower Churchyard	1443	Unsexed non-adult	Non-adult 7-11 months	11	0
St. Bride's Lower Churchyard	1446	Unsexed non-adult	Non-adult 6-11 years	21	1
St. Bride's Lower Churchyard	1447	Unsexed non-adult	Non-adult 1-5 years	17	0
St. Bride's Lower Churchyard	1449	Male	Adult 36-45 years	26	15
St. Bride's Lower Churchyard	1454	Male	Adult 36-45 years	19	0
St. Bride's Lower Churchyard	1456	Male	Adult 26-35 years	7	0
St. Bride's Lower Churchyard	1460	Unsexed non-adult	Non-adult 1-5 years	13	0
St. Bride's Lower Churchyard	1463	Unsexed non-adult	Non-adult 1-5 years	2	2
St. Bride's Lower Churchyard	1465	Unsexed non-adult	Non-adult 1-5 years	14	0
St. Bride's Lower Churchyard	1474	Female?	Adult 36-45 years	24	0
St. Bride's Lower Churchyard	1478	Unsexed non-adult	Non-adult 1-5 years	9	0
St. Bride's Lower Churchyard	1481	Unsexed non-adult	Non-adult 1-5 years	3	0
St. Bride's Lower Churchyard	1483	Male	Adult >46 years	15	2
St. Bride's Lower Churchyard	1490	Unsexed non-adult	Non-adult 6-11 years	18	0
St. Bride's Lower Churchyard	1494	Unsexed non-adult	Non-adult 1-5 years	12	0
St. Bride's Lower Churchyard	1495	Female	Adult >46 years	15	13
St. Bride's Lower Churchyard	1498	Unsexed non-adult	Non-adult 1-5 years	20	0
St. Bride's Lower Churchyard	1500	Male	Adult >46 years	4	4
St. Bride's Lower Churchyard	1501	Unsexed non-adult	Non-adult 1-5 years	1	0
St. Bride's Lower Churchyard	1503	Male	Adult >46 years	9	0
St. Bride's Lower Churchyard	1505	Intermediate	Unclassified adult	19	9
St. Bride's Lower Churchyard	1507	Unsexed non-adult	Non-adult 1-5 years	17	0
St. Bride's Lower Churchyard	1511	Unsexed non-adult	Non-adult perinatal	4	0
St. Bride's Lower Churchyard	1515	Male	Adult >46 years	6	0
St. Bride's Lower Churchyard	1517	Unsexed non-adult	Non-adult 1-5 years	6	0
St. Bride's Lower Churchyard	1519	Female	Adult 26-35 years	25	1
St. Bride's Lower Churchyard	1521	Male	Adult >46 years	18	2
St. Bride's Lower Churchyard	1526	Male	Adult 26-35 years	19	16
St. Bride's Lower Churchyard	1528	Unsexed non-adult	Non-adult 1-5 years	7	0
St. Bride's Lower Churchyard	1533	Unsexed non-adult	Non-adult 1-5 years	13	0
St. Bride's Lower Churchyard	1537	Unsexed non-adult	Non-adult 1-5 years	18	0
St. Bride's Lower Churchyard	1539	Unsexed non-adult	Non-adult 6-11 years	14	0
St. Bride's Lower Churchyard	1546	Male	Adult 36-45 years	4	0
St. Bride's Lower Churchyard	1547	Female?	Adult >46 years	14	0
St. Bride's Lower Churchyard	1551	Unsexed non-adult	Non-adult 1-5 years	21	0
St. Bride's Lower Churchyard	1558	Male	Adult 36-45 years	21	1
St. Bride's Lower Churchyard	1560	Unsexed non-adult	Non-adult 1-5 years	18	0

St. Bride's Lower Churchyard	1562	Unsexed non-adult	Non-adult 1-5 years	14	0
St. Bride's Lower Churchyard	1563	Male	Adult 36-45 years	22	7
St. Bride's Lower Churchyard	1564	Intermediate	Adult 26-35 years	11	0
St. Bride's Lower Churchyard	1566	Unsexed non-adult	Non-adult 1-5 years	6	0
St. Bride's Lower Churchyard	1578	Male	Adult 36-45 years	21	6
St. Bride's Lower Churchyard	1584	Unsexed non-adult	Non-adult 1-5 years	8	0
St. Bride's Lower Churchyard	1586	Female	Adult 26-35 years	18	1
St. Bride's Lower Churchyard	1589	Male	Adult >46 years	22	9
St. Bride's Lower Churchyard	1591	Male	Adult 36-45 years	18	6
St. Bride's Lower Churchyard	1601	Unsexed non-adult	Non-adult 1-5 years	13	0
St. Bride's Lower Churchyard	1608	Male	Adult >46 years	2	0
St. Bride's Lower Churchyard	1610	Female	Adult >46 years	7	0
St. Bride's Lower Churchyard	1611	Female	Adult 26-35 years	6	0
St. Bride's Lower Churchyard	1616	Unsexed non-adult	Non-adult 1-5 years	2	0
St. Bride's Lower Churchyard	1617	Male	Adult 18-25 years	24	5
St. Bride's Lower Churchyard	1621	Male?	Adult >46 years	20	1
St. Bride's Lower Churchyard	1623	Unsexed non-adult	Non-adult 1-5 years	12	0
St. Bride's Lower Churchyard	1629	Unsexed non-adult	Non-adult 1-5 years	13	0
St. Bride's Lower Churchyard	1631	Unsexed non-adult	Non-adult perinatal	3	0
St. Bride's Lower Churchyard	1635	Male	Adult >46 years	17	0
St. Bride's Lower Churchyard	1637	Female	Adult >46 years	5	0
St. Bride's Lower Churchyard	1641	Female	Adult 36-45 years	22	2
St. Bride's Lower Churchyard	1647	Unsexed non-adult	Non-adult 1-5 years	13	0
St. Bride's Lower Churchyard	1649	Female?	Adult 36-45 years	11	3
St. Bride's Lower Churchyard	1651	Male	Adult >46 years	13	1
St. Bride's Lower Churchyard	1653	Female	Adult 26-35 years	22	5
St. Bride's Lower Churchyard	1655	Intermediate	Adult 36-45 years	20	2
St. Bride's Lower Churchyard	1669	Male?	Adult >46 years	14	1
St. Bride's Lower Churchyard	1673	Male	Adult 36-45 years	25	5
St. Bride's Lower Churchyard	1675	Undeterminable	Unclassified adult	4	0
St. Bride's Lower Churchyard	1682	Unsexed non-adult	Non-adult 6-11 years	22	13
St. Bride's Lower Churchyard	1683	Male	Adult 26-35 years	12	2
St. Bride's Lower Churchyard	1691	Female	Adult >46 years	4	1
St. Bride's Lower Churchyard	1693	Unsexed non-adult	Non-adult 12-17 years	27	6
St. Bride's Lower Churchyard	1701	Unsexed non-adult	Non-adult 1-5 years	2	0
St. Bride's Lower Churchyard	1703	Female	Adult 36-45 years	21	0
St. Bride's Lower Churchyard	1709	Female?	Adult >46 years	21	0
St. Bride's Lower Churchyard	1711	Female?	Adult 36-45 years	14	0
St. Bride's Lower Churchyard	1716	Intermediate	Adult >46 years	13	0
St. Bride's Lower Churchyard	1719	Male?	Adult >46 years	8	0
St. Bride's Lower Churchyard	1721	Unsexed non-adult	Non-adult 1-5 years	16	0
St. Bride's Lower Churchyard	1727	Male	Adult 36-45 years	23	1
St. Bride's Lower Churchyard	1739	Male	Adult >46 years	24	2
St. Bride's Lower Churchyard	1741	Female	Adult >46 years	5	5
St. Bride's Lower Churchyard	1743	Male	Adult 36-45 years	16	3
St. Bride's Lower Churchyard	1751	Male	Adult 36-45 years	16	0

St. Bride's Lower Churchyard	1755	Female	Adult 26-35 years	16	5
St. Bride's Lower Churchyard	1757	Female	Adult >46 years	10	0
St. Bride's Lower Churchyard	1761	Male	Unclassified adult	17	1
St. Bride's Lower Churchyard	1763	Male	Adult >46 years	21	12
St. Bride's Lower Churchyard	1767	Male	Adult 18-25 years	24	3
St. Bride's Lower Churchyard	1771	Intermediate	Adult >46 years	1	0
St. Bride's Lower Churchyard	1773	Unsexed non-adult	Non-adult 1-5 years	12	0
St. Bride's Lower Churchyard	1779	Male?	Adult >46 years	14	5
St. Bride's Lower Churchyard	1783	Male	Adult >46 years	30	11
St. Bride's Lower Churchyard	1785	Male	Adult >46 years	28	4
St. Bride's Lower Churchyard	1787	Female?	Adult 26-35 years	23	0
St. Bride's Lower Churchyard	1789	Unsexed non-adult	Non-adult 12-17 years	25	2
St. Bride's Lower Churchyard	1791	Unsexed non-adult	Non-adult 6-11 years	18	6
St. Bride's Lower Churchyard	1793	Female	Adult 36-45 years	23	2
St. Bride's Lower Churchyard	1797	Male	Adult >46 years	1	0
St. Bride's Lower Churchyard	1799	Female	Adult 36-45 years	24	1
St. Bride's Lower Churchyard	1805	Female	Adult >46 years	6	4
St. Bride's Lower Churchyard	1809	Female	Adult 36-45 years	20	0
St. Bride's Lower Churchyard	1815	Unsexed non-adult	Non-adult 1-5 years	16	0
St. Bride's Lower Churchyard	1819	Male	Adult 18-25 years	22	0
St. Bride's Lower Churchyard	1825	Male	Adult 36-45 years	1	1
St. Bride's Lower Churchyard	1827	Male	Adult >46 years	11	0
St. Bride's Lower Churchyard	1845	Male	Adult 26-35 years	25	0
St. Bride's Lower Churchyard	1849	Unsexed non-adult	Non-adult 1-6 months	4	0
St. Bride's Lower Churchyard	1855	Male	Unclassified adult	21	10
St. Bride's Lower Churchyard	1860	Male	Adult 26-35 years	21	0
St. Bride's Lower Churchyard	1862	Male	Adult >46 years	9	1
St. Bride's Lower Churchyard	1864	Unsexed non-adult	Non-adult 1-5 years	3	2
St. Bride's Lower Churchyard	1868	Male	Adult >46 years	12	0
St. Bride's Lower Churchyard	1872	Male	Adult 36-45 years	31	4
St. Bride's Lower Churchyard	1874	Female	Adult >46 years	2	0
St. Bride's Lower Churchyard	1879	Male	Adult 36-45 years	18	5
St. Bride's Lower Churchyard	1881	Male	Adult 36-45 years	14	0
St. Bride's Lower Churchyard	1883	Male	Adult >46 years	20	3
St. Bride's Lower Churchyard	1885	Male	Adult 36-45 years	5	3
St. Bride's Lower Churchyard	1887	Female	Adult >46 years	9	1
St. Bride's Lower Churchyard	1893	Female	Adult 18-25 years	28	16
St. Bride's Lower Churchyard	1895	Female	Adult >46 years	4	3
St. Bride's Lower Churchyard	1899	Female	Adult 36-45 years	9	0
St. Bride's Lower Churchyard	1905	Male	Adult >46 years	26	0
St. Bride's Lower Churchyard	1909	Unsexed non-adult	Non-adult 1-5 years	1	0
St. Bride's Lower Churchyard	1913	Female	Adult >46 years	2	2
St. Bride's Lower Churchyard	1915	Unsexed non-adult	Non-adult 1-5 years	15	0
St. Bride's Lower Churchyard	1919	Intermediate	Adult >46 years	9	5
St. Bride's Lower Churchyard	1925	Male	Adult 26-35 years	31	1
St. Bride's Lower Churchyard	1932	Male	Adult 36-45 years	22	7

St. Bride's Lower Churchyard	1934	Female	Adult 26-35 years	15	0
St. Bride's Lower Churchyard	1936	Female?	Unclassified adult	19	1
St. Bride's Lower Churchyard	1938	Male	Adult 18-25 years	12	1
St. Bride's Lower Churchyard	1946	Female	Adult 36-45 years	1	0
St. Bride's Lower Churchyard	1957	Male	Adult 36-45 years	15	2
St. Bride's Lower Churchyard	1959	Male	Adult >46 years	7	0
St. Bride's Lower Churchyard	1961	Male	Unclassified adult	14	8
St. Bride's Lower Churchyard	1965	Intermediate	Unclassified adult	21	0
St. Bride's Lower Churchyard	1967	Male	Adult 36-45 years	6	2
St. Bride's Lower Churchyard	1970	Male?	Unclassified adult	6	1
St. Bride's Lower Churchyard	1972	Male	Adult 36-45 years	9	3
St. Bride's Lower Churchyard	1988	Unsexed non-adult	Non-adult 6-11 years	12	4
St. Bride's Lower Churchyard	1991	Male	Adult >46 years	4	0
St. Bride's Lower Churchyard	1995	Female	Adult 18-25 years	23	0
St. Bride's Lower Churchyard	1999	Male	Adult 26-35 years	19	2
St. Bride's Lower Churchyard	2001	Male	Adult >46 years	24	1
St. Bride's Lower Churchyard	2003	Unsexed non-adult	Non-adult perinatal	1	0
St. Bride's Lower Churchyard	2011	Male	Adult >46 years	9	0
St. Bride's Lower Churchyard	2015	Male	Adult 36-45 years	32	0
St. Bride's Lower Churchyard	2019	Unsexed non-adult	Non-adult perinatal	1	0
St. Bride's Lower Churchyard	2021	Unsexed non-adult	Non-adult 1-5 years	6	0
St. Bride's Lower Churchyard	2023	Male	Adult >46 years	12	2
St. Bride's Lower Churchyard	2035	Male	Unclassified adult	27	0
St. Bride's Lower Churchyard	2037	Male	Adult 36-45 years	22	4
St. Bride's Lower Churchyard	2043	Male	Adult 36-45 years	10	0
St. Bride's Lower Churchyard	2049	Female	Adult 36-45 years	26	7
St. Bride's Lower Churchyard	2053	Male?	Adult >46 years	4	0
St. Bride's Lower Churchyard	2055	Female	Adult >46 years	17	0
St. Bride's Lower Churchyard	2058	Male	Adult 26-35 years	10	0
St. Bride's Lower Churchyard	2059	Male?	Unclassified adult	3	0
St. Bride's Lower Churchyard	2061	Male	Adult 36-45 years	29	7
St. Bride's Lower Churchyard	2063	Undeterminable	Unclassified adult	3	0
St. Bride's Lower Churchyard	2065	Female?	Adult >46 years	3	2
St. Bride's Lower Churchyard	2069	Unsexed non-adult	Non-adult 1-5 years	6	0
St. Bride's Lower Churchyard	2071	Female?	Adult 26-35 years	12	0
St. Bride's Lower Churchyard	2073	Female	Adult >46 years	6	0
St. Bride's Lower Churchyard	2075	Male	Adult >46 years	17	0
St. Bride's Lower Churchyard	2077	Male	Adult >46 years	10	2
St. Bride's Lower Churchyard	2081	Male	Adult 36-45 years	11	3
St. Bride's Lower Churchyard	2085	Female	Adult 36-45 years	10	0
St. Bride's Lower Churchyard	2087	Unsexed non-adult	Non-adult 1-5 years	19	0
St. Bride's Lower Churchyard	2101	Unsexed non-adult	Non-adult 12-17 years	22	13
St. Bride's Lower Churchyard	2105	Female	Adult >46 years	1	0
St. Bride's Lower Churchyard	2107	Male	Adult 18-25 years	21	0
St. Bride's Lower Churchyard	2109	Male	Adult >46 years	27	5
St. Bride's Lower Churchyard	2111	Male	Adult >46 years	23	3

St. Bride's Lower Churchyard	2114	Unsexed non-adult	Non-adult 12-17 years	13	0
St. Bride's Lower Churchyard	2116	Female	Adult >46 years	4	2
St. Bride's Lower Churchyard	2120	Male	Adult >46 years	2	0
St. Bride's Lower Churchyard	2124	Male	Adult 26-35 years	26	6
St. Bride's Lower Churchyard	2126	Male	Adult >46 years	2	1
St. Bride's Lower Churchyard	2128	Unsexed non-adult	Non-adult 1-5 years	14	0
St. Bride's Lower Churchyard	2130	Male?	Adult >46 years	10	0
St. Bride's Lower Churchyard	2132	Female	Adult >46 years	4	1
St. Bride's Lower Churchyard	2134	Female	Adult 26-35 years	22	4
St. Bride's Lower Churchyard	2138	Male	Adult >46 years	3	1
St. Bride's Lower Churchyard	2144	Female	Adult 26-35 years	26	0
St. Bride's Lower Churchyard	2146	Unsexed non-adult	Non-adult 12-17 years	5	0
St. Bride's Lower Churchyard	2148	Male	Adult 36-45 years	22	0
St. Bride's Lower Churchyard	2150	Male	Unclassified adult	3	0
St. Bride's Lower Churchyard	2156	Intermediate	Adult >46 years	1	0
St. Bride's Lower Churchyard	2158	Female	Adult >46 years	14	5
St. Bride's Lower Churchyard	2161	Female	Adult 26-35 years	15	0
St. Bride's Lower Churchyard	2164	Male	Adult 36-45 years	23	7
St. Bride's Lower Churchyard	2165	Male	Adult 26-35 years	19	4
St. Bride's Lower Churchyard	2169	Unsexed non-adult	Non-adult 1-5 years	13	0
St. Bride's Lower Churchyard	2171	Female	Adult 26-35 years	2	2
St. Bride's Lower Churchyard	2173	Unsexed non-adult	Non-adult 7-11 months	2	0
St. Bride's Lower Churchyard	2175	Undeterminable	Adult >46 years	1	0
St. Bride's Lower Churchyard	2177	Unsexed non-adult	Non-adult perinatal	3	0
St. Bride's Lower Churchyard	2185	Intermediate	Unclassified adult	3	2
St. Bride's Lower Churchyard	2189	Male	Adult >46 years	22	3
St. Bride's Lower Churchyard	2191	Male?	Adult >46 years	1	0
St. Bride's Lower Churchyard	2193	Male	Adult >46 years	20	2
St. Bride's Lower Churchyard	2195	Male	Adult >46 years	16	1
St. Bride's Lower Churchyard	2199	Female	Adult 26-35 years	18	3
St. Bride's Lower Churchyard	2201	Female?	Unclassified adult	9	1
St. Bride's Lower Churchyard	2203	Male	Adult 36-45 years	1	0
St. Bride's Lower Churchyard	2205	Male	Adult >46 years	1	0
St. Bride's Lower Churchyard	2207	Male	Adult >46 years	27	0
St. Bride's Lower Churchyard	2212	Unsexed non-adult	Non-adult 1-5 years	6	0
St. Bride's Lower Churchyard	2214	Female	Adult >46 years	2	0
St. Bride's Lower Churchyard	2220	Male	Adult >46 years	5	0
St. Bride's Lower Churchyard	2223	Female	Adult 26-35 years	20	2
St. Bride's Lower Churchyard	2233	Female	Adult >46 years	4	2
St. Bride's Lower Churchyard	2236	Male	Adult 26-35 years	26	0
St. Bride's Lower Churchyard	2237	Female	Adult 36-45 years	1	0
St. Bride's Lower Churchyard	2241	Unsexed non-adult	Non-adult 1-5 years	4	0
St. Bride's Lower Churchyard	2249	Female?	Unclassified adult	5	0
St. Bride's Lower Churchyard	2251	Male	Adult >46 years	29	0
St. Bride's Lower Churchyard	2253	Male	Adult >46 years	23	6
St. Bride's Lower Churchyard	2255	Female	Adult 36-45 years	16	0

St. Bride's Lower Churchyard	2261	Unsexed non-adult	Non-adult 1-5 years	15	0
St. Bride's Lower Churchyard	2263	Male	Adult 36-45 years	15	0
St. Bride's Lower Churchyard	2272	Male	Adult 36-45 years	5	0
St. Bride's Lower Churchyard	2274	Male	Adult >46 years	3	1
St. Bride's Lower Churchyard	2276	Intermediate	Adult >46 years	4	1
St. Bride's Lower Churchyard	2278	Unsexed non-adult	Non-adult 1-6 months	3	0
St. Bride's Lower Churchyard	2284,1	Male?	Adult 36-45 years	1	1
St. Bride's Lower Churchyard	2286	Unsexed non-adult	Non-adult 1-5 years	3	0
St. Bride's Lower Churchyard	2288	Intermediate	Unclassified adult	2	0
St. Bride's Lower Churchyard	2296	Male	Adult >46 years	20	4
St. Bride's Lower Churchyard	2298	Female	Adult >46 years	4	0
St. Bride's Lower Churchyard	2300,1	Male	Unclassified adult	12	0
St. Bride's Lower Churchyard	2300,2	Male?	Unclassified adult	18	1
St. Bride's Lower Churchyard	2302	Male?	Adult 26-35 years	3	0
St. Bride's Lower Churchyard	2313	Male	Adult >46 years	7	1
St. Bride's Lower Churchyard	2314	Male	Adult 36-45 years	20	5
St. Bride's Lower Churchyard	2340	Male	Adult 36-45 years	10	0
St. Bride's Lower Churchyard	2342	Male	Adult >46 years	2	0
St. Bride's Lower Churchyard	2353	Female	Adult 36-45 years	17	0
St. Bride's Lower Churchyard	2366	Male	Adult 36-45 years	12	3
St. Bride's Lower Churchyard	2383	Female	Adult 36-45 years	21	4

Table 4: Basic information of all individuals of Cross Bones burial ground included in the analysis of the prevalence of enamel hypoplasia.

Cemetery	Context	Sex	Age	Number of teeth	Number of teeth with EH
Cross Bones	1	Male	Adult 36-45 years	2	0
Cross Bones	2	Male	Adult 18-25 years	22	4
Cross Bones	6	Male	Adult 36-45 years	19	11
Cross Bones	7	Unsexed non-adult	Non-adult 1-5 years	15	0
Cross Bones	9	Male?	Unclassified adult	2	1
Cross Bones	11	Male	Adult 36-45 years	5	3
Cross Bones	17	Unsexed non-adult	Non-adult 1-5 years	10	0
Cross Bones	22	Unsexed non-adult	Non-adult 1-5 years	14	0
Cross Bones	24	Female	Adult 36-45 years	18	1
Cross Bones	26	Female?	Adult >46 years	18	0
Cross Bones	28	Female?	Adult 26-35 years	10	4
Cross Bones	32	Female?	Adult 36-45 years	14	0
Cross Bones	38	Unsexed non-adult	Non-adult 1-5 years	11	0
Cross Bones	40	Unsexed non-adult	Non-adult 1-5 years	3	0
Cross Bones	46	Male?	Adult 18-25 years	17	6
Cross Bones	48	Female?	Adult >46 years	4	2
Cross Bones	50,1	Unsexed non-adult	Non-adult 1-5 years	12	1
Cross Bones	50,2	Unsexed non-adult	Non-adult 1-6 months	9	0
Cross Bones	52	Female	Adult >46 years	5	5
Cross Bones	54	Intermediate	Adult 26-35 years	32	2
Cross Bones	56	Female	Adult 36-45 years	10	3
Cross Bones	58	Unsexed non-adult	Non-adult 7-11 months	6	0
Cross Bones	60	Intermediate	Unclassified adult	9	4
Cross Bones	62	Female?	Adult >46 years	9	0
Cross Bones	64	Female	Adult >46 years	6	3
Cross Bones	67	Unsexed non-adult	Non-adult 6-11 years	17	10
Cross Bones	71	Unsexed non-adult	Non-adult 1-5 years	3	0
Cross Bones	72	Female	Adult >46 years	5	0
Cross Bones	78	Unsexed non-adult	Non-adult 1-5 years	14	2
Cross Bones	80	Unsexed non-adult	Non-adult 1-5 years	19	1
Cross Bones	83	Unsexed non-adult	Non-adult 1-5 years	9	2
Cross Bones	86	Unsexed non-adult	Non-adult 1-5 years	3	2
Cross Bones	89	Female	Unclassified adult	29	5
Cross Bones	90,1	Unsexed non-adult	Non-adult 7-11 months	16	0
Cross Bones	91	Female?	Adult 36-45 years	13	4
Cross Bones	96	Female?	Adult 36-45 years	6	5
Cross Bones	96,1	Unsexed non-adult	Non-adult 1-5 years	7	0
Cross Bones	98	Unsexed non-adult	Non-adult 1-5 years	19	1
Cross Bones	99	Female	Adult 18-25 years	19	17
Cross Bones	100	Female?	Adult 36-45 years	14	5
Cross Bones	101	Female	Adult >46 years	7	1
Cross Bones	102	Unsexed non-adult	Non-adult 1-5 years	12	2
Cross Bones	106,1	Unsexed non-adult	Non-adult 1-5 years	17	12
Cross Bones	106,2	Unsexed non-adult	Non-adult 1-5 years	5	0

Cross Bones	107	Unsexed non-adult	Non-adult 1-5 years	13	0
Cross Bones	108,1	Unsexed non-adult	Non-adult 1-5 years	17	0
Cross Bones	108,2	Unsexed non-adult	Non-adult 1-5 years	3	0
Cross Bones	109,1	Unsexed non-adult	Non-adult 7-11 months	14	0
Cross Bones	109,2	Unsexed non-adult	Non-adult 1-6 months	12	1
Cross Bones	110	Unsexed non-adult	Non-adult 7-11 months	3	0
Cross Bones	111	Unsexed non-adult	Non-adult 1-5 years	16	1
Cross Bones	114	Male?	Adult >46 years	1	1
Cross Bones	116	Female?	Adult 36-45 years	12	7
Cross Bones	118	Female	Adult 36-45 years	13	5
Cross Bones	119	Male	Adult 36-45 years	9	4
Cross Bones	121	Unsexed non-adult	Non-adult 1-5 years	12	5
Cross Bones	124	Unsexed non-adult	Non-adult 6-11 years	13	1
Cross Bones	127	Unsexed non-adult	Non-adult 1-5 years	8	0
Cross Bones	132	Unsexed non-adult	Non-adult 1-5 years	19	0
Cross Bones	133	Unsexed non-adult	Unclassified non-adult	5	1
Cross Bones	134	Unsexed non-adult	Non-adult 1-5 years	13	0
Cross Bones	136	Female	Adult 36-45 years	25	11
Cross Bones	138	Unsexed non-adult	Non-adult 7-11 months	5	0
Cross Bones	139	Unsexed non-adult	Non-adult 1-5 years	15	3
Cross Bones	140	Female	Adult 26-35 years	8	6
Cross Bones	147,1	Unsexed non-adult	Non-adult 7-11 months	3	0
Cross Bones	153	Unsexed non-adult	Non-adult 12-17 years	26	9
Cross Bones	155	Male	Adult 36-45 years	13	9
Cross Bones	157	Female	Adult >46 years	2	0
Cross Bones	161	Male	Unclassified adult	15	9
Cross Bones	164	Unsexed non-adult	Non-adult 1-5 years	6	0
Cross Bones	165	Female?	Adult 36-45 years	11	1
Cross Bones	167	Male?	Adult 26-35 years	22	7
Cross Bones	171	Male?	Adult 36-45 years	6	3
Cross Bones	173	Unsexed non-adult	Non-adult 1-5 years	18	1
Cross Bones	175	Female?	Adult >46 years	10	1

Appendix II: Basic information of all individuals included in the analysis of growth

Table 1: Basic information of all individuals of Chelsea Old Church included in the analysis of growth.

Cemetery	Context	Sex estimation	Age estimation	Max femur length in mm
Chelsea Old Church	19	FEMALE	ADULT >46 YEARS	439
Chelsea Old Church	20	MALE	ADULT 36-45 YEARS	473
Chelsea Old Church	31	FEMALE	ADULT 36-45 YEARS	424
Chelsea Old Church	35	MALE	ADULT >46 YEARS	450
Chelsea Old Church	39	FEMALE	ADULT 36-45 YEARS	401
Chelsea Old Church	43	MALE	ADULT >46 YEARS	442
Chelsea Old Church	47	MALE	ADULT 18-25 YEARS	466
Chelsea Old Church	92	FEMALE	ADULT 18-25 YEARS	403
Chelsea Old Church	104	FEMALE	ADULT 36-45 YEARS	426
Chelsea Old Church	143	MALE	ADULT >46 YEARS	443
Chelsea Old Church	147	MALE	ADULT >46 YEARS	492
Chelsea Old Church	152	FEMALE	ADULT >46 YEARS	449
Chelsea Old Church	154	MALE?	ADULT >46 YEARS	444
Chelsea Old Church	161	FEMALE	ADULT 18-25 YEARS	440
Chelsea Old Church	232	FEMALE	ADULT 26-35 YEARS	434
Chelsea Old Church	258	MALE?	ADULT 26-35 YEARS	410
Chelsea Old Church	261	MALE?	ADULT 36-45 YEARS	440
Chelsea Old Church	274	FEMALE	ADULT >46 YEARS	416
Chelsea Old Church	281	MALE	ADULT 26-35 YEARS	476
Chelsea Old Church	323	MALE	ADULT 36-45 YEARS	440
Chelsea Old Church	339	MALE	ADULT 36-45 YEARS	436
Chelsea Old Church	392	FEMALE	ADULT 18-25 YEARS	426
Chelsea Old Church	407	FEMALE	ADULT >46 YEARS	400
Chelsea Old Church	432	MALE	ADULT >46 YEARS	471
Chelsea Old Church	436	FEMALE	ADULT >46 YEARS	437
Chelsea Old Church	446	FEMALE	ADULT >46 YEARS	398
Chelsea Old Church	462	MALE	ADULT 36-45 YEARS	453
Chelsea Old Church	474	FEMALE	ADULT >46 YEARS	439
Chelsea Old Church	483	FEMALE	ADULT >46 YEARS	442
Chelsea Old Church	485	MALE	ADULT >46 YEARS	466
Chelsea Old Church	494	MALE	ADULT >46 YEARS	477
Chelsea Old Church	502	INTERMEDIATE	ADULT >46 YEARS	467
Chelsea Old Church	507	MALE	ADULT 26-35 YEARS	460
Chelsea Old Church	516	MALE	ADULT >46 YEARS	479
Chelsea Old Church	523	FEMALE	ADULT >46 YEARS	408
Chelsea Old Church	525	MALE	ADULT >46 YEARS	484
Chelsea Old Church	527	MALE	ADULT >46 YEARS	446
Chelsea Old Church	552	FEMALE	ADULT >46 YEARS	419
Chelsea Old Church	562	UNDETERMINABLE	UNCLASSIFIED ADULT	438
Chelsea Old Church	583	FEMALE?	ADULT 36-45 YEARS	446
Chelsea Old Church	587	FEMALE	ADULT >46 YEARS	425
Chelsea Old Church	600	FEMALE	ADULT 36-45 YEARS	439

Chelsea Old Church	654	MALE	ADULT >46 YEARS	423
Chelsea Old Church	668	MALE	ADULT >46 YEARS	471
Chelsea Old Church	697	FEMALE?	ADULT >46 YEARS	443
Chelsea Old Church	716	FEMALE	ADULT >46 YEARS	459
Chelsea Old Church	730	FEMALE	ADULT 36-45 YEARS	402
Chelsea Old Church	744	MALE	ADULT 36-45 YEARS	423
Chelsea Old Church	754	FEMALE	ADULT 18-25 YEARS	451
Chelsea Old Church	759	MALE	ADULT >46 YEARS	458
Chelsea Old Church	782	MALE	ADULT 36-45 YEARS	409
Chelsea Old Church	790	FEMALE?	ADULT 18-25 YEARS	466
Chelsea Old Church	792	FEMALE	ADULT >46 YEARS	421
Chelsea Old Church	802	FEMALE	ADULT >46 YEARS	433
Chelsea Old Church	805	MALE	ADULT 36-45 YEARS	440
Chelsea Old Church	812	FEMALE	ADULT >46 YEARS	423
Chelsea Old Church	836	MALE	ADULT 36-45 YEARS	422
Chelsea Old Church	841	FEMALE	ADULT >46 YEARS	445
Chelsea Old Church	856	MALE	ADULT 26-35 YEARS	411
Chelsea Old Church	918	FEMALE	ADULT >46 YEARS	409
Chelsea Old Church	948	MALE	ADULT >46 YEARS	481
Chelsea Old Church	980	FEMALE	ADULT >46 YEARS	437
Chelsea Old Church	994	MALE	ADULT 36-45 YEARS	485
Chelsea Old Church	1004	MALE	ADULT 36-45 YEARS	472
Chelsea Old Church	1016	FEMALE	ADULT >46 YEARS	432
Chelsea Old Church	1018	MALE	ADULT 26-35 YEARS	450
Chelsea Old Church	1021	MALE	ADULT >46 YEARS	483
Chelsea Old Church	1023	FEMALE	ADULT 36-45 YEARS	406
Chelsea Old Church	1059	MALE	ADULT 26-35 YEARS	448
Chelsea Old Church	1068	MALE	ADULT 26-35 YEARS	399
Chelsea Old Church	1071	MALE?	ADULT 36-45 YEARS	436
Chelsea Old Church	1126	FEMALE	ADULT >46 YEARS	400
Chelsea Old Church	1157	MALE	ADULT >46 YEARS	457

Table 2: Basic information of all individuals of St. Bride's Fleet Street included in the analysis of growth.

Cemetery	**Context**	**Sex estimation**	**Age estimation**	**Max femur length in mm**
St. Brides Fleet Street	2	MALE	ADULT 26-35 YEARS	429
St. Brides Fleet Street	7	FEMALE	ADULT >46 YEARS	425
St. Brides Fleet Street	8	FEMALE	ADULT 36-45 YEARS	404
St. Brides Fleet Street	10	FEMALE	ADULT 18-25 YEARS	425
St. Brides Fleet Street	11	MALE	ADULT 36-45 YEARS	417
St. Brides Fleet Street	13	FEMALE	ADULT 36-45 YEARS	385
St. Brides Fleet Street	14	MALE	ADULT 26-35 YEARS	461
St. Brides Fleet Street	16	FEMALE	ADULT >46 YEARS	392
St. Brides Fleet Street	17	FEMALE	ADULT >46 YEARS	406
St. Brides Fleet Street	20	MALE	ADULT >46 YEARS	436
St. Brides Fleet Street	26	FEMALE?	ADULT 36-45 YEARS	422
St. Brides Fleet Street	28	MALE	ADULT >46 YEARS	419
St. Brides Fleet Street	29	MALE	ADULT >46 YEARS	428
St. Brides Fleet Street	31	FEMALE	ADULT 26-35 YEARS	413
St. Brides Fleet Street	33	FEMALE	ADULT >46 YEARS	436
St. Brides Fleet Street	43	FEMALE	ADULT 18-25 YEARS	413
St. Brides Fleet Street	44	FEMALE	ADULT 26-35 YEARS	424
St. Brides Fleet Street	45	FEMALE	ADULT >46 YEARS	404
St. Brides Fleet Street	50	MALE	ADULT 18-25 YEARS	450
St. Brides Fleet Street	51	MALE	ADULT 18-25 YEARS	410
St. Brides Fleet Street	54	FEMALE	ADULT 26-35 YEARS	432
St. Brides Fleet Street	56	MALE?	ADULT >46 YEARS	485
St. Brides Fleet Street	58	MALE	ADULT >46 YEARS	462
St. Brides Fleet Street	59	MALE	ADULT >46 YEARS	451
St. Brides Fleet Street	61	MALE	ADULT 18-25 YEARS	464
St. Brides Fleet Street	67	MALE	ADULT 18-25 YEARS	446
St. Brides Fleet Street	68	MALE	ADULT 26-35 YEARS	428
St. Brides Fleet Street	69	FEMALE	ADULT 26-35 YEARS	441
St. Brides Fleet Street	72	FEMALE	ADULT 18-25 YEARS	403
St. Brides Fleet Street	73	MALE	ADULT 26-35 YEARS	486
St. Brides Fleet Street	74	FEMALE	ADULT 26-35 YEARS	460
St. Brides Fleet Street	75	MALE	ADULT 18-25 YEARS	473
St. Brides Fleet Street	76	FEMALE	ADULT >46 YEARS	418
St. Brides Fleet Street	77	FEMALE	ADULT 18-25 YEARS	424
St. Brides Fleet Street	79	MALE	ADULT >46 YEARS	460
St. Brides Fleet Street	81	MALE	ADULT 26-35 YEARS	480
St. Brides Fleet Street	83	FEMALE	ADULT >46 YEARS	412
St. Brides Fleet Street	84	MALE	ADULT >46 YEARS	414
St. Brides Fleet Street	86	MALE	ADULT >46 YEARS	412
St. Brides Fleet Street	88	FEMALE	ADULT >46 YEARS	388
St. Brides Fleet Street	89	FEMALE	ADULT >46 YEARS	453
St. Brides Fleet Street	90	MALE	ADULT >46 YEARS	460
St. Brides Fleet Street	94	MALE	ADULT >46 YEARS	460
St. Brides Fleet Street	98	FEMALE	ADULT 36-45 YEARS	402

St. Brides Fleet Street	101	FEMALE	ADULT >46 YEARS	416
St. Brides Fleet Street	102	MALE	ADULT >46 YEARS	442
St. Brides Fleet Street	103	FEMALE	ADULT 36-45 YEARS	395
St. Brides Fleet Street	104	FEMALE	ADULT >46 YEARS	442
St. Brides Fleet Street	106	FEMALE	ADULT 36-45 YEARS	421
St. Brides Fleet Street	107	MALE	ADULT >46 YEARS	467
St. Brides Fleet Street	108	MALE	ADULT 36-45 YEARS	384
St. Brides Fleet Street	109	FEMALE	ADULT >46 YEARS	428
St. Brides Fleet Street	110	MALE	ADULT >46 YEARS	454
St. Brides Fleet Street	112	MALE	ADULT >46 YEARS	457
St. Brides Fleet Street	113	FEMALE	ADULT >46 YEARS	418
St. Brides Fleet Street	114	MALE	ADULT >46 YEARS	465
St. Brides Fleet Street	118	MALE	ADULT >46 YEARS	465
St. Brides Fleet Street	119	MALE	ADULT 26-35 YEARS	445
St. Brides Fleet Street	120	FEMALE	ADULT >46 YEARS	414
St. Brides Fleet Street	121	FEMALE	ADULT >46 YEARS	400
St. Brides Fleet Street	122	FEMALE	ADULT 26-35 YEARS	445
St. Brides Fleet Street	124	MALE	ADULT >46 YEARS	439
St. Brides Fleet Street	125	MALE	ADULT 36-45 YEARS	458
St. Brides Fleet Street	127	MALE?	ADULT >46 YEARS	420
St. Brides Fleet Street	128	FEMALE	ADULT >46 YEARS	420
St. Brides Fleet Street	129	FEMALE	ADULT >46 YEARS	372
St. Brides Fleet Street	130	FEMALE	ADULT >46 YEARS	467
St. Brides Fleet Street	133	FEMALE	ADULT >46 YEARS	399
St. Brides Fleet Street	134	FEMALE	ADULT >46 YEARS	395
St. Brides Fleet Street	137	MALE	ADULT >46 YEARS	446
St. Brides Fleet Street	139	MALE	ADULT >46 YEARS	516
St. Brides Fleet Street	141	MALE	ADULT >46 YEARS	455
St. Brides Fleet Street	143	MALE	ADULT >46 YEARS	464
St. Brides Fleet Street	145	MALE	ADULT >46 YEARS	515
St. Brides Fleet Street	147	FEMALE	ADULT 26-35 YEARS	421
St. Brides Fleet Street	148	FEMALE	ADULT 26-35 YEARS	400
St. Brides Fleet Street	149	MALE	ADULT >46 YEARS	431
St. Brides Fleet Street	151	FEMALE	ADULT >46 YEARS	404
St. Brides Fleet Street	152	FEMALE	ADULT 36-45 YEARS	412
St. Brides Fleet Street	153	FEMALE	ADULT 36-45 YEARS	419
St. Brides Fleet Street	154	FEMALE	ADULT 36-45 YEARS	416
St. Brides Fleet Street	156	FEMALE	ADULT 36-45 YEARS	441
St. Brides Fleet Street	157	MALE	ADULT >46 YEARS	441
St. Brides Fleet Street	158	MALE	ADULT >46 YEARS	457
St. Brides Fleet Street	159	FEMALE	ADULT >46 YEARS	431
St. Brides Fleet Street	164	MALE	ADULT >46 YEARS	438
St. Brides Fleet Street	167	FEMALE	ADULT >46 YEARS	421
St. Brides Fleet Street	168	FEMALE	ADULT >46 YEARS	363
St. Brides Fleet Street	169	MALE	ADULT >46 YEARS	473
St. Brides Fleet Street	170	MALE	ADULT 36-45 YEARS	426
St. Brides Fleet Street	174	FEMALE	ADULT >46 YEARS	430
St. Brides Fleet Street	175	FEMALE	ADULT >46 YEARS	407

St. Brides Fleet Street	176	MALE	ADULT >46 YEARS	467
St. Brides Fleet Street	177	FEMALE	ADULT 26-35 YEARS	466
St. Brides Fleet Street	178	FEMALE	ADULT 36-45 YEARS	422
St. Brides Fleet Street	179	MALE	ADULT >46 YEARS	433
St. Brides Fleet Street	180	MALE	ADULT >46 YEARS	431
St. Brides Fleet Street	182	FEMALE	ADULT >46 YEARS	419
St. Brides Fleet Street	183	MALE	ADULT >46 YEARS	459
St. Brides Fleet Street	185	FEMALE	ADULT >46 YEARS	453
St. Brides Fleet Street	187	FEMALE	ADULT >46 YEARS	438
St. Brides Fleet Street	188	MALE?	ADULT >46 YEARS	433
St. Brides Fleet Street	191	MALE	ADULT 36-45 YEARS	462
St. Brides Fleet Street	192	MALE	ADULT >46 YEARS	486
St. Brides Fleet Street	197	MALE	ADULT >46 YEARS	445
St. Brides Fleet Street	198	MALE	ADULT >46 YEARS	484
St. Brides Fleet Street	199	MALE	ADULT >46 YEARS	473
St. Brides Fleet Street	200	FEMALE	ADULT >46 YEARS	421
St. Brides Fleet Street	201	MALE	ADULT >46 YEARS	471
St. Brides Fleet Street	202	FEMALE	ADULT >46 YEARS	423
St. Brides Fleet Street	203	FEMALE	ADULT 18-25 YEARS	409
St. Brides Fleet Street	204	FEMALE	ADULT >46 YEARS	390
St. Brides Fleet Street	205	MALE	ADULT >46 YEARS	470
St. Brides Fleet Street	206	MALE	ADULT >46 YEARS	422
St. Brides Fleet Street	207	MALE	ADULT >46 YEARS	475
St. Brides Fleet Street	208	FEMALE	ADULT >46 YEARS	434
St. Brides Fleet Street	209	FEMALE	ADULT 36-45 YEARS	431
St. Brides Fleet Street	212	MALE	ADULT >46 YEARS	435
St. Brides Fleet Street	213	MALE	ADULT >46 YEARS	457
St. Brides Fleet Street	214	FEMALE	ADULT 36-45 YEARS	395
St. Brides Fleet Street	215	FEMALE	ADULT >46 YEARS	427
St. Brides Fleet Street	218	MALE	ADULT >46 YEARS	449
St. Brides Fleet Street	219	FEMALE	ADULT >46 YEARS	381
St. Brides Fleet Street	220	FEMALE	ADULT >46 YEARS	420
St. Brides Fleet Street	222	MALE	ADULT >46 YEARS	497
St. Brides Fleet Street	223	FEMALE	ADULT >46 YEARS	403
St. Brides Fleet Street	224	MALE	ADULT >46 YEARS	515
St. Brides Fleet Street	225	FEMALE	ADULT 26-35 YEARS	429
St. Brides Fleet Street	226	MALE	ADULT 36-45 YEARS	488
St. Brides Fleet Street	227	FEMALE	ADULT 36-45 YEARS	376
St. Brides Fleet Street	228	FEMALE	ADULT >46 YEARS	446
St. Brides Fleet Street	229	FEMALE	ADULT >46 YEARS	376
St. Brides Fleet Street	230	FEMALE	ADULT >46 YEARS	440
St. Brides Fleet Street	231	MALE	ADULT >46 YEARS	474
St. Brides Fleet Street	234	MALE	ADULT >46 YEARS	422
St. Brides Fleet Street	239	MALE	ADULT 26-35 YEARS	476
St. Brides Fleet Street	243	MALE	ADULT >46 YEARS	457
St. Brides Fleet Street	244	MALE	ADULT >46 YEARS	447

Table 3: Basic information of all individuals of St. Bride's Lower Churchyard included in the analysis of growth.

Cemetery	**Context**	**Sex estimation**	**Age estimation**	**Max femur length in mm**
St. Brides Lower Churchyard	1055	MALE	ADULT 26-35 YEARS	447
St. Brides Lower Churchyard	1061	MALE?	ADULT 36-45 YEARS	416
St. Brides Lower Churchyard	1116	MALE	ADULT 36-45 YEARS	469
St. Brides Lower Churchyard	1119	FEMALE	ADULT >46 YEARS	399
St. Brides Lower Churchyard	1123	FEMALE	ADULT >46 YEARS	439
St. Brides Lower Churchyard	1127	FEMALE?	ADULT >46 YEARS	435
St. Brides Lower Churchyard	1139	UNDETERMINABLE	ADULT >46 YEARS	414
St. Brides Lower Churchyard	1151	FEMALE	ADULT >46 YEARS	379
St. Brides Lower Churchyard	1166	FEMALE	ADULT 26-35 YEARS	444
St. Brides Lower Churchyard	1200	MALE	ADULT >46 YEARS	428
St. Brides Lower Churchyard	1203	FEMALE	ADULT >46 YEARS	419
St. Brides Lower Churchyard	1209	MALE?	ADULT 36-45 YEARS	412
St. Brides Lower Churchyard	1221	FEMALE	ADULT >46 YEARS	398
St. Brides Lower Churchyard	1247	MALE	ADULT 36-45 YEARS	439
St. Brides Lower Churchyard	1278	FEMALE	ADULT 26-35 YEARS	425
St. Brides Lower Churchyard	1281	FEMALE	ADULT >46 YEARS	462
St. Brides Lower Churchyard	1292	MALE?	ADULT 36-45 YEARS	430
St. Brides Lower Churchyard	1338	MALE	ADULT 36-45 YEARS	450
St. Brides Lower Churchyard	1343	FEMALE	ADULT >46 YEARS	396
St. Brides Lower Churchyard	1345	MALE	ADULT >46 YEARS	477
St. Brides Lower Churchyard	1350	MALE?	ADULT >46 YEARS	434
St. Brides Lower Churchyard	1352	FEMALE	ADULT >46 YEARS	446
St. Brides Lower Churchyard	1355	FEMALE	ADULT 26-35 YEARS	425
St. Brides Lower Churchyard	1360	FEMALE	ADULT >46 YEARS	404
St. Brides Lower Churchyard	1369	FEMALE	ADULT >46 YEARS	397
St. Brides Lower Churchyard	1376	FEMALE	ADULT 26-35 YEARS	409
St. Brides Lower Churchyard	1380	UNDETERMINABLE	UNCLASSIFIED ADULT	464
St. Brides Lower Churchyard	1390	MALE	ADULT 36-45 YEARS	465
St. Brides Lower Churchyard	1409	FEMALE	ADULT >46 YEARS	414
St. Brides Lower Churchyard	1415	MALE	ADULT 26-35 YEARS	425
St. Brides Lower Churchyard	1417	FEMALE	ADULT >46 YEARS	468
St. Brides Lower Churchyard	1422	FEMALE	ADULT 36-45 YEARS	379
St. Brides Lower Churchyard	1439	MALE	ADULT >46 YEARS	459
St. Brides Lower Churchyard	1474	FEMALE?	ADULT 36-45 YEARS	422
St. Brides Lower Churchyard	1495	FEMALE	ADULT >46 YEARS	414
St. Brides Lower Churchyard	1500	MALE	ADULT >46 YEARS	453
St. Brides Lower Churchyard	1509	FEMALE	ADULT 36-45 YEARS	380
St. Brides Lower Churchyard	1519	FEMALE	ADULT 26-35 YEARS	437
St. Brides Lower Churchyard	1521	MALE	ADULT >46 YEARS	440
St. Brides Lower Churchyard	1525	MALE	ADULT >46 YEARS	416
St. Brides Lower Churchyard	1526	MALE	ADULT 26-35 YEARS	448
St. Brides Lower Churchyard	1543	MALE	ADULT >46 YEARS	412
St. Brides Lower Churchyard	1547	FEMALE?	ADULT >46 YEARS	424
St. Brides Lower Churchyard	1563	MALE	ADULT 36-45 YEARS	445

St. Brides Lower Churchyard	1564	INTERMEDIATE	ADULT 26-35 YEARS	427
St. Brides Lower Churchyard	1578	MALE	ADULT 36-45 YEARS	435
St. Brides Lower Churchyard	1589	MALE	ADULT >46 YEARS	478
St. Brides Lower Churchyard	1591	MALE	ADULT 36-45 YEARS	438
St. Brides Lower Churchyard	1606	MALE	ADULT >46 YEARS	482
St. Brides Lower Churchyard	1608	MALE	ADULT >46 YEARS	448
St. Brides Lower Churchyard	1634	FEMALE?	ADULT 36-45 YEARS	436
St. Brides Lower Churchyard	1635	MALE	ADULT >46 YEARS	458
St. Brides Lower Churchyard	1637	FEMALE	ADULT >46 YEARS	392
St. Brides Lower Churchyard	1653	FEMALE	ADULT 26-35 YEARS	433
St. Brides Lower Churchyard	1669	MALE?	ADULT >46 YEARS	403
St. Brides Lower Churchyard	1703	FEMALE	ADULT 36-45 YEARS	423
St. Brides Lower Churchyard	1709	FEMALE?	ADULT >46 YEARS	399
St. Brides Lower Churchyard	1711	FEMALE?	ADULT 36-45 YEARS	447
St. Brides Lower Churchyard	1727	MALE	ADULT 36-45 YEARS	428
St. Brides Lower Churchyard	1745	MALE	ADULT >46 YEARS	481
St. Brides Lower Churchyard	1755	FEMALE	ADULT 26-35 YEARS	399
St. Brides Lower Churchyard	1757	FEMALE	ADULT >46 YEARS	421
St. Brides Lower Churchyard	1763	MALE	ADULT >46 YEARS	486
St. Brides Lower Churchyard	1767	MALE	ADULT 18-25 YEARS	486
St. Brides Lower Churchyard	1771	INTERMEDIATE	ADULT >46 YEARS	399
St. Brides Lower Churchyard	1781	FEMALE	ADULT >46 YEARS	410
St. Brides Lower Churchyard	1797	MALE	ADULT >46 YEARS	466
St. Brides Lower Churchyard	1809	FEMALE	ADULT 36-45 YEARS	409
St. Brides Lower Churchyard	1819	MALE	ADULT 18-25 YEARS	466
St. Brides Lower Churchyard	1827	MALE	ADULT >46 YEARS	445
St. Brides Lower Churchyard	1831	MALE	ADULT 36-45 YEARS	445
St. Brides Lower Churchyard	1845	MALE	ADULT 26-35 YEARS	448
St. Brides Lower Churchyard	1862	MALE	ADULT >46 YEARS	460
St. Brides Lower Churchyard	1885	MALE	ADULT 36-45 YEARS	469
St. Brides Lower Churchyard	1887	FEMALE	ADULT >46 YEARS	420
St. Brides Lower Churchyard	1893	FEMALE	ADULT 18-25 YEARS	355
St. Brides Lower Churchyard	1905	MALE	ADULT >46 YEARS	450
St. Brides Lower Churchyard	1925	MALE	ADULT 26-35 YEARS	464
St. Brides Lower Churchyard	1938	MALE	ADULT 18-25 YEARS	455
St. Brides Lower Churchyard	1952	FEMALE	ADULT 36-45 YEARS	433
St. Brides Lower Churchyard	1957	MALE	ADULT 36-45 YEARS	449
St. Brides Lower Churchyard	1972	MALE	ADULT 36-45 YEARS	467
St. Brides Lower Churchyard	1983	FEMALE?	ADULT >46 YEARS	418
St. Brides Lower Churchyard	1995	FEMALE	ADULT 18-25 YEARS	434
St. Brides Lower Churchyard	1999	MALE	ADULT 26-35 YEARS	468
St. Brides Lower Churchyard	2006	UNDETERMINABLE	UNCLASSIFIED ADULT	409
St. Brides Lower Churchyard	2009.1	FEMALE	ADULT 26-35 YEARS	408
St. Brides Lower Churchyard	2015	MALE	ADULT 36-45 YEARS	442
St. Brides Lower Churchyard	2031	MALE	ADULT 36-45 YEARS	490
St. Brides Lower Churchyard	2049	FEMALE	ADULT 36-45 YEARS	389
St. Brides Lower Churchyard	2055	FEMALE	ADULT >46 YEARS	405
St. Brides Lower Churchyard	2061	MALE	ADULT 36-45 YEARS	433

St. Brides Lower Churchyard	2071	FEMALE?	ADULT 26-35 YEARS	432
St. Brides Lower Churchyard	2077	MALE	ADULT >46 YEARS	422
St. Brides Lower Churchyard	2085	FEMALE	ADULT 36-45 YEARS	442
St. Brides Lower Churchyard	2105	FEMALE	ADULT >46 YEARS	395
St. Brides Lower Churchyard	2107	MALE	ADULT 18-25 YEARS	417
St. Brides Lower Churchyard	2109	MALE	ADULT >46 YEARS	455
St. Brides Lower Churchyard	2120	MALE	ADULT >46 YEARS	460
St. Brides Lower Churchyard	2122	FEMALE	ADULT >46 YEARS	405
St. Brides Lower Churchyard	2124	MALE	ADULT 26-35 YEARS	466
St. Brides Lower Churchyard	2126	MALE	ADULT >46 YEARS	470
St. Brides Lower Churchyard	2130	MALE?	ADULT >46 YEARS	436
St. Brides Lower Churchyard	2134	FEMALE	ADULT 26-35 YEARS	438
St. Brides Lower Churchyard	2140	MALE	ADULT 26-35 YEARS	474
St. Brides Lower Churchyard	2144	FEMALE	ADULT 26-35 YEARS	370
St. Brides Lower Churchyard	2148	MALE	ADULT 36-45 YEARS	466
St. Brides Lower Churchyard	2161	FEMALE	ADULT 26-35 YEARS	414
St. Brides Lower Churchyard	2164	MALE	ADULT 36-45 YEARS	477
St. Brides Lower Churchyard	2165	MALE	ADULT 26-35 YEARS	396
St. Brides Lower Churchyard	2183	UNDETERMINABLE	ADULT 36-45 YEARS	440
St. Brides Lower Churchyard	2193	MALE	ADULT >46 YEARS	495
St. Brides Lower Churchyard	2199	FEMALE	ADULT 26-35 YEARS	409
St. Brides Lower Churchyard	2203	MALE	ADULT 36-45 YEARS	469
St. Brides Lower Churchyard	2216	FEMALE	ADULT 36-45 YEARS	407
St. Brides Lower Churchyard	2233	FEMALE	ADULT >46 YEARS	466
St. Brides Lower Churchyard	2243	MALE	ADULT 36-45 YEARS	440
St. Brides Lower Churchyard	2263	MALE	ADULT 36-45 YEARS	464
St. Brides Lower Churchyard	2269	MALE	ADULT >46 YEARS	418
St. Brides Lower Churchyard	2274	MALE	ADULT >46 YEARS	475
St. Brides Lower Churchyard	2276	INTERMEDIATE	ADULT >46 YEARS	415
St. Brides Lower Churchyard	2298	FEMALE	ADULT >46 YEARS	426
St. Brides Lower Churchyard	2300	FEMALE?	ADULT 36-45 YEARS	372
St. Brides Lower Churchyard	2304	MALE	ADULT >46 YEARS	410
St. Brides Lower Churchyard	2332	FEMALE	ADULT 36-45 YEARS	430
St. Brides Lower Churchyard	2353	FEMALE	ADULT 36-45 YEARS	429
St. Brides Lower Churchyard	2366	MALE	ADULT 36-45 YEARS	395
St. Brides Lower Churchyard	2378	MALE	ADULT 26-35 YEARS	404

Table 4: Basic information of all individuals of Cross Bones burial ground included in the analysis of growth.

Cemetery	**Context**	**Sex estimation**	**Age estimation**	**Max femur length in mm**
Cross Bones	1	MALE	ADULT 36-45 YEARS	466.5
Cross Bones	11	MALE	ADULT 36-45 YEARS	487
Cross Bones	24	FEMALE	ADULT 36-45 YEARS	426
Cross Bones	28	FEMALE?	ADULT 26-35 YEARS	411.5
Cross Bones	32	FEMALE?	ADULT 36-45 YEARS	445
Cross Bones	44	FEMALE?	ADULT 36-45 YEARS	431
Cross Bones	54	INTERMEDIATE	ADULT 26-35 YEARS	427
Cross Bones	56	FEMALE	ADULT 36-45 YEARS	451.5
Cross Bones	60	INTERMEDIATE	UNCLASSIFIED ADULT	438.5
Cross Bones	89	FEMALE	UNCLASSIFIED ADULT	401.5
Cross Bones	100	FEMALE?	ADULT 36-45 YEARS	405
Cross Bones	114	MALE?	ADULT >46 YEARS	423.5
Cross Bones	136	FEMALE	ADULT 36-45 YEARS	436
Cross Bones	137	FEMALE?	ADULT >46 YEARS	416
Cross Bones	165	FEMALE?	ADULT 36-45 YEARS	436
Cross Bones	167	MALE?	ADULT 26-35 YEARS	442.5
Cross Bones	175	FEMALE?	ADULT >46 YEARS	438