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"A Past Rooted in Pain": Skeletal Trauma in the African Burial Ground

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“A Past Rooted in Pain”: Skeletal Trauma in the African Burial Ground

A thesis submitted in partial fulfillment of the requirement
for the degree of Bachelor of Arts in Anthropology from
The College of William and Mary

by

Jennifer Dutcher

Accepted for _____
(Honors, High Honors, Highest Honors)

Michael L. Blakey, Director

Frederick H. Smith

Jody L. Allen

Williamsburg, VA
April 16, 2009

**Out of the huts of history's shame
I rise
Up from a past that's rooted in pain
I rise
I'm a black ocean, leaping and wide,
Welling and swelling I bear in the tide.
Leaving behind nights of terror and fear
I rise
Into a daybreak that's wondrously clear
I rise
Bringing the gifts that my ancestors gave,
I am the dream and the hope of the slave.
I rise
I rise
I rise**

"Still I Rise" - Maya Angelou

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1. INTRODUCTION

History of the site

Though references to the New York African Burial Ground are extant in historical documents, the physical site itself was not located until 1989, during a government-funded excavation that took place prior to the construction of an office building. As human remains were uncovered at the site, the African descendant community demanded a cessation of the excavation, but their requests were not immediately dealt with. A drawn-out battle for the rights and respect owed to the interred began, pitting government contractors against the descendant community. Indeed, “there had not been such public outcry about the desecration of an African-American cemetery’s desecration since the Doctors’ Riots at the [New York African Burial Ground] and its adjacent pauper’s field in 1788” (Blakey 17). This ended only with a congressional order to halt both construction and excavation, and with the assembly of a scientific research team led by Dr. Michael Blakey (then of Howard University), which was assigned the task of analyzing and interpreting the remains that had been uncovered.

Despite its relative anonymity in present-day accounts, the burial ground had a substantial place in the history of both the city and the country at large. Up until the 1780s, the African Burial Ground was “still the...most important institution at the time” for the African community in New York (Perry, Howson and Holl 228). It was used throughout the eighteenth century as a place of interment for the city’s African population. However, it served a purpose beyond just a physical location; “the cemetery may well have taken on special significance,” one researcher writes, “for affirming that [the Africans] were human beings, for preserving cultures, and for maintaining a sense of hopefulness among New

York's African community," in a time when their humanity and identities were constantly subject to degradation by the majority Euro-American population (Blakey 5).

Written references to the burial ground appear as early as 1712, as in one chaplain's description of these burials, which were occurring "in the Common by those of their own country and complexion without the office, on the contrary the Heathenish rites are performed at the grave by their countrymen" (Sharpe, cited in Blakey 1). Given the early presence of nearby "African farms...and African lot holders," it has even been hypothesized that the cemetery may have been established as many as twenty to thirty years prior to this date, though no explicit written evidence is available (Howson, Bianco and Barto 49). However, there is a historically supported closing date for the cemetery affixed in 1794 (Blakey 5). In the course of its use, then, the burial ground survived executions, a war, and the establishment of a nation. The place itself may have had humble origins, bordered as it was by land grants given to blacks, not out of kindness or charity, but rather, "given to blacks served primarily as a buffer intended to forestall Native American reprisals against the Dutch" (African Burial Ground History Final Report 47); similarly, its continued 18th century use was allowed not because of a colonial respect for the African dead, but because "the land's remoteness for much of the period it was in use and its lack of commercial value until well into the eighteenth century discouraged any challenge to New York Africans simply taking over the site for their own use" (African Burial Ground History Final Report 7).

The nature of the place was one of African community, providing a shared locale for an oft-abused group, and allowing them to maintain a sense of dignity and cooperation.

Indeed,

New York's [African Burial Ground]...can be viewed as an important location in which human qualities and rights were

struggled for simply by virtue of careful, customary burial practices that no human society has been willing to do without. This act of assertion of humanity simultaneously represented resistance to the legitimation of slavery. (Blakey 6)

This is not to say that white laws and authority did not encroach on this African ‘safe space’. Despite African use of the burial ground throughout the 18th century, these individuals never owned titles or had legal rights to the land; instead, the deeds stayed within the Van Borsum family and their colonial heirs (African Burial Ground History Final Report 6-7). In addition, laws were passed prohibiting both night funerals and meetings of large groups, for fear of slave uprising and rebellions. These fears were perhaps not unwarranted, given events such as the 1712 slave revolt, after which participants were reportedly executed within the cemetery boundaries (Blakey 8). Even when slaves were not being denied legal or property rights, they were often denied basic human decency. This is best illustrated by the so-called Doctors’ Riots of 1788, which occurred specifically because slaves and their deceased were being treated as less than human. In this case, the Africans took rightful objection to medical students entering the burial ground “under the cover of the night and in the most wanton sallies of excess...[digging] up the bodies of the deceased friends and relatives of your Petitioners, carry[ing] them away, and without respect to age or sex, mangl[ing] their flesh out of a wanton curiosity and then expos[ing] it to Beasts and Birds” (Unfiled Papers of the Common Council, cited in Blakey 10). When the grave-robbing continued despite the warnings of the African population, riots ensued, and this violence contributed to the decision to close the cemetery six years later.

Geography of the cemetery

The burial ground itself is estimated to span nearly seven acres, though “the area investigated archaeologically covered 27,000 square feet...and the portion where burials were excavated comprised about 9,500 square feet” (Howson and Bianchi 87). The amorphous southern boundary makes strict demarcation between the burial ground and surrounding areas particularly difficult; however, it is hypothesized that the breadth of the cemetery extended from the modern-day Broadway (to the west) to the Collect Pond (east/northeast) (Howson, Bianco and Barto 44). The north/northeastern boundary was bordered by the Calk Hook farm, a land plot owned by the Rutgers family in the 18th century. In addition, the majority of the cemetery proper rested on a parcel of land which overlapped a 17th century land grant owned by Cornelius Van Borsum (termed the Van Borsum patent). Though this was initially set on a slope, the modern site rests on more even ground, with the historical shape somewhat visible in the form of nearby Elk Street (Howson and Bianchi 80).

A key feature of interest, and one crucial to this research project, is the evidence of a fence line running southwest to northeast, separating the Van Borsum patent (cemetery proper) and the Calk Hook farm located to the north. Historical documents support this interpretation; court proceedings from 1784, in attempting to establish ownership of a certain plot of land, speak of a tenant whose house had a “fence enclosing the burying ground,” whose family left the city after the 1776 invasion of New York, at which point “the British army took possession of the house and lot, and during the course of the war, and while under the dominion of the British, the house and fences were destroyed” (Howson and Bianchi 106). In addition, there are filled-in post holes in the archaeological record, though their irregularity suggests that more than one fence is represented (Howson and Bianchi 107).

Demography of the cemetery

During the initial excavation of the burial ground, the remains of 419 individuals were uncovered, though researchers estimate that the entire population of the six- to seven-acre cemetery could reach as high as 11,600 individuals (Howson and Bianchi 87). This population represents “the largest colonial archaeological sample of any ethnic group available for study in the Americas and the earliest African cemetery in the United States” (Blakey 17).

In the Archaeology Final Reports, researchers assigned each burial to one of four temporal categories: Early (probably pre-1735), Middle (1735-1760), Late-Middle (1760-1776), and Late (post-1776). A cursory glance at relative positions in the cemetery reveals interesting patterns. For example, nearly every burial above the fence line falls under the Late Group chronological designation, considered “available for burials in 1776 and...in use through at least 1787”(Howson et al. 125)). However, there are nearly-equal numbers of Late Group burials below the fence line, though they are intermixed with Early, Middle, and Late-Middle burials.

Despite larger numbers of women than men in census data taken before and after the war, men predominate in the burials found above the fence line. Perry et al have postulated that this is because “they were more likely than women to remain in, or flee to, the occupied town, and because they were volunteers or conscripts in the British army” (Perry, Howson and Holl 231). A remarkable number of these burials were also coffin-less, suggesting a lack of community ties with the dead, as there may have been no close kin or friends to provide a coffin and proper burial. This leads to the supposition that many of the males here were transients, brought to the city in various ways by the turmoil of the war (Perry, Howson and Holl 239-240). It is interesting to note that many believe additional burials took place during

the Revolutionary War, but that those were of “prisoners in the southern part of the ground by the British army during the occupation,” instead of enslaved (possibly transient) Africans (Howson and Bianchi 88). This is not visible in the archaeological record, however, as that part of the cemetery remains unexcavated. Yet this information could help to explain why Late group (Revolutionary War) burials so predominate above the fence line; if the British had both destroyed the existing fence at this point, and were burying hordes of people to the south of the burial ground, might not it make spatial sense for many graves of that time period to extend to the north, as though pushed out of the cemetery proper?

Research question

The question engaged with in this research is one of identity: who are the people interred above the fence line? In the African Burial Ground Final Reports, the archaeologists suggest that the interred are “black soldiers and refugees who became laborers for the British” (Perry, Howson and Holl 240). This explanation is supported by the fact of coffinless burials, sex-skewing, and fewer interments, all factors present above the fence line. However, we are left to inquire whether this hypothesis is supported by the skeletal data. This research attempts to contribute to the current knowledge regarding the identity of those laid to rest at the Burial Ground. Is there evidence that the burials above the fence line took place during the Revolutionary War, and thus, as African individuals in a war-torn city, they were more likely to have experienced violence? A series of topics may help to shed light on the subject, namely the presence or absence of violent fractures in the interred, and the comparison of these to earlier time periods. The skewed sex distribution apparent in the northern part of the cemetery lends itself to an interpretation of Revolutionary time period burials (Jackson et al. 150). This northern area most likely had limited use in the cemetery’s

history, since the amount of burials is sparse in comparison to those of the southern area. The spatial layout also provides clues; Howson et al write that “it is possible to discern rows oriented roughly north-south, probably along contours in the hillside... at least in the western half of the northern area, graves are angled fairly uniformly south of grid west” (Howson et al. 109). This stands in contrast to the southern burials, which are of a greater density and more variable layout, leading researchers to believe that the northern burials occurred during a specific time period. In light of this and other evidence, it is believed that the burials which appear above the fence line were interred after the British destroyed the existing fence in 1776.

The period of wartime occupation by the British “saw both a swollen black population and increased deaths” (Howson and Bianchi 87). This was also a time during which slaves are known to have worked as soldiers or laborers for the British. Given that the archaeologists believe that the above-fence-line burials date to the time of the Revolutionary War, the hypothesis in this study was that the individuals buried above the fence line were these same wartime laborers and transients, and as such, would show more evidence of violence on their remains. A subset of the hypothesis was that which was tested; namely, the assumption that *if* an individual were buried above the fence line rather than below it, *then* they were more likely to have one or more violent fractures. This was a product of their time; these pathologies are possibly indicative of a violent death, likely due to the chaos and upheaval of the time period, and the historical evidence of freed Africans enlisting in the British military. As it is military enlistment and employment that we are primarily interested in, this hypothesis rests heavily on evidence of violent fractures being found in males. However, it was also hypothesized that violent trauma would occur more frequently in both

sexes than previously expected, though more frequently in above-fence-line men than in above-fence-line women, given their possible status as transients, soldiers, and refugees.

Theoretical background

This study uses a biocultural perspective, attempting to see what these pathologies tell us about interpersonal violence among New York African Americans during the time that the cemetery was in use. When applied to human remains and past populations, the biocultural perspective is one which takes into account not just pathologies or abnormalities, but rather the whole history of a people; the social, economic, and environmental factors which could have caused the resultant pathologies are just as important as the features themselves. In a space such as the New York African Burial Ground, these factors play out in a number of different ways. As will later be shown, the individuals interred here were subject to harsh treatment, both physically and mentally; poor nutrition and access to sanitation; and were made to do hard and often degrading labor for little or no pay. Along with, and perhaps the cause of, these things was the fact that their social and economic status was one of second-class citizens at best. At worst, these individuals were denied humanity altogether. This created a continually self-perpetuating cycle of oppression; that is to say, the initial place they had been put into in the economy/power levels of society continued to impact both their treatment - and their subsequent reactions against such treatment - over the next centuries. Episodes of resistance played out, as we will see, in attempts to change their access to power; in working for the British during the war, for example, which could potentially have put them in harm's way for violence and illness. In this way, we see how necessary it is that every observed physical trauma or pathology be traced backwards until it can be accounted for in a cultural context. We must view these traumas - fractures, in our case - as indicative of larger

cultural influences, as a result of the slaves' relationship to the preexisting economy and those in power. The biocultural approach to archaeology and, by association, bioarchaeology, tends towards the descriptive rather than the more theoretical approaches that would be found in the cultural anthropology subfield, for example. At the same time, however, the perspective it provides is much more theoretical than that of forensic anthropology, which predominantly seeks to identify and analyze abnormalities and traumas. In giving voice to both the pathologies (biology) and the people themselves (culture), bioarchaeology and the biocultural method provide a well-rounded and humanistic approach to the mysteries of the past. It is this holistic approach that is most appropriate to the project at hand.

2. HISTORY

African New York pre-war

Today's schoolchildren are taught a form of history that sets up a dichotomy between North and South, Free and Slave, respectively, so many are often surprised to find that Africans were a commanding presence in New York City throughout the 18th century. However, the facts speak for themselves: New York City had the greatest concentration of Africans in the state, and "the [New York] African or African American population was at its peak in 1746, represented by 20.8% of the total population" (Wilson 41). By the time of the American Revolution, the African population was holding steady at over 14 percent of the city's total population (Berlin and Harris 114). Perhaps most important is the fact that these Africans were also, in fact, slaves, imported into the colony of New York to the tune of around 7,000 imports by between 1700 and 1774 (Berlin and Harris 61). This made New York City a hub of slavery, with its overall proportion of slaves second only to that found in Charleston, South Carolina (Berlin and Harris 60).

European and African racial tensions and outright oppression were established in the colonies long before the national tensions between white American colonists and British loyalists came into play. Colonial whites were cast in the parent role, with laws established to maintain control, as over an unruly teenager. One 1682 law demonstrates just this, as it prevented Africans "congregating together and engaging in sports and other activities without a pass. Apparently, such gatherings were especially troublesome on Sundays, while the owners of enslaved people were occupied with seeking absolution for their sins" (African Burial Ground History Final Report56). The image of the white man as exasperated parent, trying to establish order over a 'troublesome' population, is one that served to enforce the

racial divide. Indeed, in 1702, “the New York Assembly created laws which prohibited the assembly of more than three Africans...in public places” (Wilson 42). Along with laws against free transit, property ownership, and certain religious expression, restrictions such as these created a dichotomous tension in the eighteenth-century city, with whites (even indentured) on one side of the balance, and mistreated Africans (even freed) on the other.

As with any oppressed peoples, Africans were not content to take abuse, and often tried to fight back. Running away, or self-sought freedom, was often a solution as slaves took matters into their own hands. While it didn’t necessarily work, the action did make a statement:

African Americans negotiated with masters, bargained years of work for freedom, probed religious aversion to slavery among Protestant denominations to secure freedom, and, failing those methods, *voted with their feet by running away in growing numbers*. (Berlin and Harris 107-109, emphasis mine)

These flights continued even after the Revolution, when “enslaved blacks from the countryside ran away to the city, where they hoped to meld in among the anonymous masses and live lives of tenuous liberty” (Berlin and Harris 118). This topic will be touched on later, but for now it is important to note that these people continued attempts at self-agency throughout the 18th century.

Uprisings were also a threat, as they would be with any long-term oppression. One of the key events prior to the American Revolution was the Slaves’ Conspiracy of 1741. Frightened by an outbreak of ten fires in less than three weeks, city officials were quick to place the blame on black arsonists, “acting as part of a vast conspiracy that seemed to involve just about every slave in the city”. As a result, hundreds of Africans were arrested, and one

hundred of these were burned at the stake, hanged, or sold into slavery in the Caribbean (Slavery in New York, 85).

Common trials, however, often lead to common bonds, and the African population in New York City was able to maintain a sense of community despite the best efforts of the whites, “[seeking] out other African people for news, companionship, and love, which they found all over the city” (Berlin and Harris 75). Even strict prohibitions against travel at night and familial interactions were skirted, albeit creatively:

Will, a slave sold to New York from Antigua, walked across the city every evening to spend the night with his wife until the captain of the watch, Cornelius Van Horne, decided to stop him. ‘Mr. *Van Horn* would not allow him to come to his Wife,’ Will complained, and ‘would not allow a Candle.’ Undaunted, Will made a makeshift torch to find his way through the city at night, ducking behind buildings when the watch approached. (Berlin and Harris 68)

These overarching community ties were perhaps best exemplified in the burial practices of African New York. Though the Africans themselves hailed from a number of different locations, both on the African continent and in the West Indies, they drew together to form common traditions. Indeed, the excavation of this cemetery revealed

burials [that] are remarkably uniform, with more than 90 percent of the remains placed in coffins, shrouded, and laid out with head-to-west orientation. All were placed on their backs and most were individual burials. This sameness suggests that the ethnically diverse Africans shared agreed-upon traditions that had been created by drawing on the similarities of many African customs and adapting to the circumstances they found in New York. (African Burial Ground History Final Report 183)

Despite a lack of familial or spatial ties to the New York African community, it appears that social and ethnic ties were sufficient to allow the interment of transient Africans from all corners of the Diaspora, in such a culturally-important place. This speaks to the

community identity and quest for solidarity against an oppressive power, which permeated the African Diaspora.

African New York at the time of the Revolutionary War

Wartime occupation of New York City by the British forces provided a new opportunity for African freedom. Russell and Hodges speak of African ‘self-emancipation’ that occurred during the war, with blacks fleeing slavery in increasing numbers and “readily [finding] employment in shipyards, ropewalks, and chandleries” (Berlin and Harris 95). Nor was this issue contained to the city; elsewhere in the colonies, African recruitment was also a problem for the Patriots. At the beginning of the war, in 1775, Virginia’s Loyalist governor Lord Dunmore offered freedom to slaves who chose to fight for the British, and many took him up on just this promise (Berlin and Harris 96). Indeed, a prime example of African participation in the Revolutionary War can be found in the formation of the Black Pioneer company:

“In 1776 General Henry Clinton commissioned the Black Pioneers. Led by white officers, New York’s Black Pioneers joined companies established in the Carolinas and Virginia. The New York Black Pioneers included three sergeants, three corporals, and thirty-two privates. The Pioneers served as guards, pilots, spies, and interpreters. They also proved to be capable horsemen, hunters, and drummers, and they performed a variety of fatigue work. Within a few months of their muster, the New York unit assisted the carpenters in building fortifications to defend the city” (Berlin and Harris 98-99)

There were many benefits to working in such a regiment; chief among these were regular wages and clothing, as well as opportunities for social advancement and even freedom. British military work was available outside of an organized capacity, as well. “In addition to the Pioneers,” Russell and Hodges write, “slaves and free black guerrilla rangers

followed the 'Army and Flag.' Raiding enemy territory, they secured much-needed live-stock and food for the British garrison in New York City and, upon occasion, returned with captured Patriot militiamen and politicians. Black rangers were also stationed as sentries and controlled blockhouses at key points along the Hudson River. They served as auxiliaries to British and Loyalist regiments. A handful of black pilots guided warships along the treacherous coasts and water-ways that surrounded New York" (Berlin and Harris 99). Even after the war, most British continued to offer support, ordering "that the Black Pioneers remain on the British payroll until the fall of 1783 and provid[ing] for continued payments after their arrival in Nova Scotia and Jamaica...[it was] recommended that upon arrival in Nova Scotia, each Pioneer should receive twenty acres of land" (Berlin and Harris 106).

To be certain, there were inherent contradictions in slave treatment by the British. While they rewarded colonial defectors with wages, titles, and freedom, these same benefits were not extended to their own slaves. Loyalist slaves were expected to stay faithful to their masters without reaping any rewards, and throughout the war, the British continued "buying and selling enslaved people...[and] even indignantly advertising for the return of fugitives," all the while rewarding and protecting slaves from the opposing side (Berlin and Harris 101). Additionally, as with many wartime promises, the pledge of land and payment in post-war Nova Scotia was one that seemed to fall short; Russell and Hodges relate that the Nova Scotian plots assigned to the Black Pioneers were "rocky and barren...they lived in tents, huts, and in the holds of transport ships, barely surviving the harsh Canadian winter" (Berlin and Harris 108). Though perhaps not destitute to this extent, the lives of freedmen and women in Revolutionary New York could hardly be called comfortable. However, previously unheard of opportunities were beginning to become available. Though

employment prospects continued to be mostly in menial and grueling labor, these same enterprises were now suddenly yielding independent wages and even vestiges of equality; “initially, the British quartermasters paid black laborers less than white ones, but as wartime labor shortages worsened, African Americans demanded – and received – the same wages as did whites. Others found good jobs for private businesses” (Berlin and Harris 101). The more fortunate Africans even found employment in private businesses, or jobs that provided them with training in lucrative trades (Berlin and Harris 101).

Perhaps most important was the change in treatment as the escaped Africans moved from American colonial control to that of the British. Russell and Hodges relate two events that best illustrate this change in social standing for Africans among the British:

The British officers arrested a white Loyalist, Micah Williams, for kicking Quamino, a black carriage driver, upon Quamino’s complaint. Quamino dropped his charge only after Williams publicly apologized. Likewise, when the father of an American prisoner complained that black children ‘grossly insulted him’ as he was marched through the streets, British officers simply ignored the charge. In the old days, the black children would have faced the whipping post. (Berlin and Harris 103)

That the black Loyalists were being treated with even this modicum of decency speaks volumes about the value the British army placed on amassing sheer numbers of people on their side of the war against the upstart colonists.

Despite this providential turn of events, however, many of the benefits of siding with the British in the war could last only insofar as the British were in control. After the American victory in 1783, “slaveholders from all over the continent flooded into New York City to reclaim their property. In addition to those African men and women who had escaped to New York, the British – evacuating St. Augustine, Charleston, and Yorktown – had

deposited thousands of former slaves in the city” (Berlin and Harris 104). Some of these black Loyalists fled the country to other British territories; those who were left found themselves at the mercy of the newly appointed American leaders. “General George Washington, the American commander and a substantial slaveholder,” Russell and Hodges write, “regarded the black men and women under British protection as stolen property whose return was guaranteed by the Treaty of Paris” (Berlin and Harris 104-105).

With the final withdrawal of the British occupation came another debate. An ideological struggle broke out between the colonists, on the one hand, who viewed the New York Africans as stolen property, and the remaining British, on the other hand, many of whom were determined to stay loyal to their promises of manumission. The resulting compromise was a decision to allow around 3000 Africans to leave the colonies with the British, under the condition that their “ages, former residences, owners (if applicable),...dates of enlistment in British service, [and] general physical descriptions of each individual,” along with their method of liberation [Russell and Hodges list “birth, manumission, or flight” as the three predominant causes], all be listed in a document known as “The Book of Negroes” (Berlin and Harris 106).

For those freed Africans who remained in the New York, however, liberty was often denied them; after 1783, “New York’s republican government quickly reinstalled colonial laws that undergirded the institution of chattel bondage, putting slavery on a firm legal footing...many [freedmen] found themselves impoverished and subject to new demeaning racial restrictions” (Berlin and Harris 107). The fight for equality was an uphill battle of which there are still repercussions today.

3. BIOLOGY

While this study looks at fracture type and prevalence in the burial ground for indications of violence, it is important to remember that fractures and pathologies do not necessarily tell the whole story; indeed, in one contemporary clinical study, Buitrago-Téllez writes, “soft-tissue injuries were up to seven times more frequent than fractures in large series of craniofacial cases” (Buitrago-Téllez et al. 651-668). However, fractures, especially those associated with potential violence, can give us a sense of the social and mechanical stresses that slaves were under.

Fractures - violent vs. accidental

The construct of ‘violence’ in this study was operationalized through five separate criteria, each of which has been proposed in the scientific literature as a valid indicator of violent, rather than accidental, fractures. It is reasonable, then, to hypothesize that an individual with a greater number of these indicators is more likely to have experienced what we are calling “violence”. As with any scientific study, the presence of multiple confirmative variables lends more support to a theory than the presence of just one would. For example, in her analysis of parry fractures from the Late Archaic Period of West Tennessee, Smith makes the claim that “a violent aetiology for mid-shaft fractures becomes more tenable when potentially corroborative craniofacial injury data are considered” (Smith 85).

For this reason, the current study on the fractures present in the African Burial Ground took the following form: firstly, comparisons of violent versus accidental fractures were culled from the available literature. These comparisons were then operationalized into variables which could be statistically tested. The variables were as follows, each suggestive

of violence: centrally located fractures, craniofacial fractures, ulnar fractures (potential parry fractures), perimortem fractures, and multiple fractures (per individual). Each of these criteria were supported by previous research; for example, one recent study combines multiple criteria when describing “the traditional skeletal indicators of nonlethal interpersonal violence [as being] (cranial injury, forearm fracture, and multiple injury)” (Judd 92). These will be discussed individually below.

While these traits often result from violent interactions, their presence is only useful to anthropologists when it can be interpreted through the lens of historical data. Without this, these pathologies remain merely descriptive observations providing little evidence to support a conclusion. Judd reminds us again of the importance of cultural context, using the example of parry fractures : “a parry fracture observed in the archaeological context can only be a ‘possible’ parry injury,” she writes, “as the ultimate mechanism, on which the definition of the parry fracture rests, will never be known” (Judd 1661). As with any of the fractures found in the African Burial Ground, the background intent for their occurrence can only be hypothesized, but these various traits such as placement of fractures and state of healing can help to inform the historical data.

Location of Injury

Allen’s 2007 contemporary clinical study of domestic violence provides a great deal of data about indicators of violence, rather than those that indicate an accidental injury. Though the African Burial Ground data occurs in a different time period and is not thought to be the result of domestic altercations, contemporary clinical studies can provide a good parallel since the physical results of injury are likely to be the same; for example, a fracture

received while parrying a blow will manifest physically in the same way, regardless of whether the intent behind it was domestic violence or interpersonal combat.

One key element of the clinical study run by Allen et al was an observation of locational trends. Most importantly, it was found that “centrally located injuries [head, neck, and torso] are most likely to result from abuse, whereas wounds to the extremities [arms and legs] are more likely to be associated with accidents” (Allen, Novak and Bench 809-809). Additionally, they determined that “injury locations tend to divide into two probability groups, one of major and the other of minor significance. Injuries of major significance are the neck (front and back) and the face; injuries of minor significance are the body (front of the torso and back) and the back of the head” (Allen, Novak and Bench 811). If it appears with other criteria, we may likely attribute this locational observation to violence.

Craniofacial Fractures

While Judd, Courville, Allen, and Smith all suggest cranial injury as indicative of violence, Smith goes even farther by including the facial bones in this designation (Judd), (Smith 84). The stage is also set in the contemporary clinical study, where it is noted that contemporary clinical studies of domestic violence have indicated that “trauma to the teeth...orbital fractures...and fractures of the mandible, zygomatic complex and nasal bones” are indicative of violence (Allen, Novak and Bench 802). For our purposes, taking a cue from Allen et al, we designated ‘craniofacial’ as affecting any of the following bones: nasal, maxilla, zygomatic, mandible, frontal, parietal, temporal, and occipital (Allen, Novak and Bench 802). In commenting on Courville’s 1967 study on ‘Cranial Injuries in Prehistoric Man,’ Ortner notes that he “reaches a similar conclusion with respect to cranial

injuries in antiquity, noting that most wounds and fractures of the skull are ‘blows of malicious intent’” (Ortner 141).



*Figure 3.1. Burial 278, right temporal bone, showing lateral green bone fractures (craniofacial)
(Institute for Historical Biology, College of William and Mary)*

It is important to keep in mind the limitations of comparing a contemporary model to a historical one. In the Allen study, patterns and correlations appeared regarding the age of the victim and the cause of fractures. “A higher percentage of the victims of abuse are young” the study found, “and older women are more likely to have received their injuries by accident” (Allen, Novak and Bench 808). While many other studies have found similar results on physical location of injuries as correlated to intent as that of the Allen study, the result regarding age is one where I hypothesized that the African Burial Ground data would

differ. Because of historic cultural patterns such as predominantly male involvement in military work, as well as the overwhelming majority of females as victims in contemporary domestic abuse cases, this is one area where the historical data is most likely to deviate from the domestic violence model. This provides a good example of the limitations of cross-temporal comparisons; scientific data is only informative insofar as it is ultimately placed and interpreted in its own cultural context.

Parry Fractures

The findings of Allen et al are supported by other studies, making their criteria a good rule of thumb. However, an obvious exception to the central/extremities trend is the case of parry fractures, ulnar injuries which are the result of a defensive ‘parry’ to stave off a blow to the head, with the force coming diagonally downwards from above onto the victim’s forearm. Dr. Margaret Judd has given us some of the most detailed work on parry fractures.

By way of explanation, she writes:

The definition of a parry fracture is dependent upon its mechanism, that is, a direct blow to the forearm sustained when the arm is raised to protect the head; except for this etiology, isolated ulna fractures are rare...in this position the ulna receives the full force of the blow as it is superficial to the radius. *The radius may also break if the force is excessive, although this is uncommon clinically.* (Judd 1661, emphasis mine)

In a personal communication with the author, she again allows that “both bones could be involved but often only the ulna is fractured” (Judd, 2008, personal communication).

However, in her official criteria for identifying this pathology, she gives prominence to an absence of radial involvement (Judd 1658). Researchers Lovejoy and Heiple also define

parry fractures as “simple midshaft fractures without radial involvement” (Lovejoy and Heiple 532).



Figure 3.2. Burial 63, right ulna (arrow) and radius, showing distal fractures. (Institute for Historical Biology, College of William and Mary)

For this study on the fracture incidence in the African Burial Ground, an ulnar fracture was considered significant in the identification of parry fractures, rather than a radial fracture alone, following Judd’s statement that the “ulna is exposed to an incoming force rather [than] the radius so that it absorbs the brunt of the blow” (Judd, 2008, personal communication). However, radial involvement in concurrence with an ulnar fracture was considered as additional support for an indication of violence, in keeping with Smith’s assertion that “mid-shaft fractures of the ulna *or radius and ulna* are usually interpreted as consequences of

interpersonal violence” (Smith 84, emphasis mine). Therefore, the ulnar fractures were considered quantitatively, while the accompanying radial fractures contributed to the qualitative analysis.

Timing of Fractures

Perimortem fractures are those that occur at or around the time of death. There are potential issues with distinguishing perimortem trauma from pre-mortem trauma that occurred close to the time of death, since “visible signs of healing are not evident, either microscopically or macroscopically, until 10-14 days after traumatic injuries” (Liston and Baker 30). Other studies have found that “some individuals [display] evidence for an osseous reaction within as little as seven days following the trauma” (Sauer 322). This means that unhealed fractures have the potential to be perimortem, provided that they were incurred within a week of death. However, while pre-mortem fractures may or may not have begun healing (thus with an unhealed sample representing only a certain fraction of the total), we know for certain that perimortem fractures did not (the unhealed sample in this case representing 100% of all perimortem fractures). In this way, it can be assumed that many of the unhealed fractures we see in archaeological remains are perimortem, and thus occurred quite close to death, before they were given any chance at all to begin healing.



*Figure 3.3. Burial 25, right radius, showing a proximal perimortem spiral fracture.
(Institute for Historical Biology, College of William and Mary)*

Because of this, it is often assumed that these fractures were the cause, or at the very least related to the cause, of death. It is important to note that, in some cases, healed fractures may still be indicative of death. “It is possible,” one scholar writes, “...that a lethal injury led to death, say, from infection a week or more later. Such an event would extend the definition of perimortem” (Sauer 330). This is a more flexible interpretation of ‘perimortem’ than that generally used in bioarchaeology. While it does take into account cultural (environmental) factors, as bioarchaeology often seeks to do, this type of interpretation would leave us unable to statistically compare the factors in question. For this reason, we discounted any notion of ‘healed perimortem’ fractures in the statistical analysis, concentrating only on those that were dichotomously ‘healed’ and ‘unhealed’.

Making an assumption of violence is more difficult. Just as in life, fractures can occur for any number of reasons, among these defensive injuries, purposeful malice, or even accidental damage. The location of fractures can yield clues as to their type, however, as can their frequency or shape. However, a fracture itself is nothing more than a bone injury unless there is an historical and contextual background that helps to explain its presence. For this reason, bioarchaeologists turn to the written and archaeological records for help, and analyze other features of the skeleton and its host population for evidence of disease, labor, and mortality. All of these things can give clues as to the social and economic conditions of the time and location at which these subjects died.

Prevalence of Fractures

When one individual shows multiple fractures, either accrued during one incident or even over the course of their life, this expression may often be indicative of violent intent or action. Researchers have found that “the presence of multiple fractures of the same or various stages of healing may be indicative of repeated physical abuse,” at least in contemporary studies of child abuse (Chaney 469). This assumption may reasonably be extended to include adults, both contemporary and historical. There is evidence outside of contemporary clinical studies, as well; when looking at the historical record, Judd lists one of “the traditional skeletal indicators of nonlethal interpersonal violence [as being]...multiple injury” (Judd 92). Evidence of such injuries appears at many sites, and in many cases these “high rate[s] of fractures...[are indicative of] conflict” (Torres-Rouff and Junqueira 67). This is a theme commonly repeated in both contemporary and historical studies.

4. METHODOLOGY AND RESULTS

Methodology

The results of the 1991-1992 African Burial Ground excavations are all contained in a large database, with gradations and pathologies coded in accordance with the *Standards for Data Collection From Human Skeletal Remains* (Standards for Data Collection from Human Skeletal Remains). In this research, use of SPSS software allowed for statistical comparison free from researcher bias, and yielded quantitative data which could then be interpreted through a cultural lens, in keeping with the stated theoretical perspective.

Before statistical analysis of the data could begin, it was necessary to select a robust sample for analysis. To this end, fractures coded ambiguously for sex or state of healing were discounted. In the coding of the African Burial Ground database, fracture types are listed alternately as ‘fracture healed’ (“FRAC”), ‘perimortem fracture’ (“FRPM”), and ‘perimortem fracture, ambiguous’ (“FRPA”). For the purposes of this study, FRPAs were discounted, because there was the potential that these fractures could be due to post-mortem disturbance, from animals, nature, or excavations, among other things. For this reason, only healed fractures (considered, here, premortem), and unhealed fractures that could definitively be determined to be perimortem, were included in the analysis.

TABLE 4.1. Presence of Indicators of Violence

BURIAL NO.	ULNA	CENTRAL	MULTIPLE	PERI	CRANIO-FACIAL
25.00	Present	Present	Present	Present	Present
32.00		Present			
37.00			Present		
51.00		Present			Present
63.00	Present		Present		
89.00	Present	Present	Present	Present	
97.00	Present		Present	Present	
104.00		Present		Present	
107.00	Present	Present		Present	Present
119.00	Present				
132.00		Present	Present		
135.00		Present	Present	Present	Present
137.00	Present	Present	Present	Present	Present
158.00		Present			Present
171.00	Present	Present	Present	Present	Present
180.00		Present	Present	Present	Present
181.00		Present	Present		
192.00	Present				
195.00		Present		Present	
197.00		Present	Present	Present	
199.10		Present			
204.00		Present			
205.00	Present	Present	Present	Present	Present
210.00		Present	Present		
230.00		Present			Present
241.00		Present	Present	Present	
259.00		Present	Present	Present	
271.00	Present				
278.00	Present	Present	Present	Present	Present
299.00		Present	Present		
342.00		Present			
354.00		Present		Present	Present
364.00			Present		
369.00		Present			
379.00		Present	Present		
380.00	Present		Present		
415.00		Present			
420.20		Present			

Data

Analysis was done in two stages; firstly, via exploratory data analysis, and secondly, with quantitative statistical testing. Initial exploratory data (see Table 4.1, as well as EDA 8.1, 8.2, 8.3, and 8.4 in the 'Figures' section) suggested that the average number of indicators of violence per individual might be higher above the fence line than below it. T-tests were used to evaluate this hypothesis. All of these independent samples t-tests were evaluated using Drennan's method of interpreting statistical probability, in which a probability of .06 renders the null hypothesis 'fairly unlikely'. In each case, statistical analysis was restricted to individuals with a known sex (male or female) and age. In the African Burial Ground, those individuals who survived past the age of two then had a life expectancy of 30.38 years, with a slightly longer average expected for males than for females (Rankin-Hill et al. 299). In order to account for this in the statistical testing, age was restricted to 'adults,' in this case considered those 15 years of age and older. This followed the example of the skeletal biology team from the initial excavation.

The first research question investigated whether there was a statistically significant difference in the average number of violent indicators per individual. This initial test was run using only individuals who had at least one fracture that met the operationalized criteria (e.g., location, plurality) for violence. Table 4.1 lists each of these individuals, and demonstrates which of the criteria they meet. Of these people, five individuals were removed from our analysis, given that they had either a sub-adult (and, concurrently, unknown sex) or unknown age assignment. The latter was often due to poor preservation, and this exclusion allowed us to be certain that we were looking at a robust sample of well-preserved individuals, of a

known age and sex. Indeed, sex was coded as either ‘male’ or ‘female’; indeterminants were removed from the analysis.

TABLE 4.2. Average number of violent indicators based on fence line designation (all time periods; only violent fractures)

Group Statistics					
Fence line Designation		N	Mean	Std. Deviation	Std. Error Mean
Number of violent indicators	above the fence line	14	2.7857	1.42389	.38055
	below the fence line	19	2.1053	1.24252	.28505

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of violent indicators	Equal variances assumed	.607	.442	1.462	31	.154	.68045	.46550	-.26895	1.62985
	Equal variances not assumed			1.431	25.812	.164	.68045	.47547	-.29725	1.65815

Using these criteria, an independent-samples t-test (Table 4.2) was run, with $\alpha = .05$. Equal variances were assumed for the data, based on the results of Levene’s Test of Variance. The mean number of violent indicators per individual was 2.79 for the fourteen individuals found above the fence line, and 2.11 indicators for the nineteen individuals found below the fence

line. Statistical testing revealed that this was not a statistically significant difference ($t = 1.462$, $p = .154$, $df = 31$, $n_1 = 14$, and $n_2 = 19$).

TABLE 4.3. Percent of individuals with at least one violent indicator based on fence line designation (all time periods; individuals with any fractures)

		Group Statistics			
Late Vs. Collapsed Early		N	Mean	Std. Deviation	Std. Error Mean
Presence of violent indicators	above the fence line	18	.7778	.42779	.10083
	below the fence line	24	.7917	.41485	.08468

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Presence of violent indicators	Equal variances assumed	.045	.834	-.106	40	.916	-.01389	.13108	-.27882	.25104
	Equal variances not assumed			-.105	36.147	.917	-.01389	.13167	-.28090	.25312

However, these data were only applicable insofar as individuals of *all time periods* and with *at least one indicator of violence* were considered. In addition, Table 4.2 yielded only an absolute frequency, that is, net numbers of N. In order to obtain a clearer picture of the populations as a whole, a relative frequency needed to be obtained. All individuals with

fractures were included, regardless of whether or not they met any of the five established criteria for violence. When this was taken into account, the frequency of ‘violence’ as it appeared in the entire above-fence-line population versus below-fence-line population could be shown. However, a t-test (Table 4.3) again yielded no statistically significant difference between the appearance of what we termed ‘violence’ above versus below the fence line ($t = -.106$, $p = .916$, $df = 40$, $n_1 = 18$, and $n_2 = 24$).

TABLE 4.4. Percent of individuals with at least one violent indicator based on time period (“Early” vs. Late periods, individuals with any fractures)

Group Statistics					
Late Vs. Collapsed		N	Mean	Std. Deviation	Std. Error Mean
Early					
Presence of violent indicators	Collapsed Early	17	.5882	.50730	.12304
	Late	32	.8438	.36890	.06521

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Presence of violent indicators	Equal variances assumed	11.982	.001	-2.022	47	.049	-.25551	.12640	-.50979	-.00124
	Equal variances not assumed			-1.835	25.225	.078	-.25551	.13925	-.54218	.03115

Given that the hypothesis dealt primarily with the Late burials, the tests were then modified to compare this time period to the earlier ones. The three earlier periods – Early, Middle, and Late-Middle (which collectively covered the foundation of the burial ground through 1776) – were collapsed into one chronological category termed “Collapsed Early,” which could then be compared to our established ‘Late’ period (1776-closure of burial ground).

A relative frequency was sought, with the result being that there was no statistically significant difference between the two periods (see Table 4.4). It is interesting to note however, that, though not statistically significant based on Drennan’s criteria of .06, the resultant 7.8 percent probability comes closer to being significant than perhaps any other test run, and even closer when equal variances are assumed (4.9 percent). This information led to the next logical step in testing the hypothesis, which was to narrow the sample to just those individuals buried in the Late period, in order to see if any differences in violence became visible above and below the fence line.

An independent sample t-test, exploring the average number of violent indicators (absolute frequency) based on fence line designation, was run. The results are listed in Table 4.5. Though this case compared only those with violent fractures, and only individuals in the Late period, and even though the number of fractures with violent indicators was over a third higher above the fence line than below it, the results were still not significant, yielding an especially high probability of .110.

TABLE 4.5. Average number of violent indicators based on fence line designation
(Late period; only violent fractures)

Group Statistics					
Fence line Designation		N	Mean	Std. Deviation	Std. Error Mean
Number of violent indicators	above the fence line	14	2.7857	1.42389	.38055
	below the fence line	9	1.8889	.92796	.30932

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of violent indicators	Equal variances assumed	2.224	.151	1.668	21	.110	.89683	.53757	-.22112	2.01477
	Equal variances not assumed			1.829	20.975	.082	.89683	.49041	-.12311	1.91676

A change in measurement from absolute frequency to relative frequency (this time taking into account the entire population of individuals with fractures, violent or not), however, *did* make a difference. Though the number of individuals expressing violence above the fence line was double that below, in this latest test (Table 4.6), the relative frequency methods (measuring percentage of a total population) balanced this out. The resultant probability was .042 ($t = 2.204$, $p = .042$, $df = 25$, $n_1 = 18$, and $n_2 = 9$). While weak, it appeared that there was a statistically significant difference. Oddly enough, these results appeared to contradict the hypothesis, as the difference leaned in favor of those below

the fence line, seemingly suggesting that those below suffered greater violence than those above. Interestingly, every Late period individual buried below the fence line had at least one violent indicator, a likely contributor to the skewed results. The weak probability discovered can perhaps be attributed to the smaller number of individuals buried below the fence line.

TABLE 4.6. Percent of individuals with at least one violent indicator based on fence line designation (Late period; individuals with any fractures)

Group Statistics

Fence Line Designation		N	Mean	Std. Deviation	Std. Error Mean
Presence of violent indicators	above the fence line	18	.7778	.42779	.10083
	below the fence line	9	1.0000	.00000	.00000

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Presence of violent indicators	Equal variances assumed	18.667	.000	-1.543	25	.135	-.22222	.14402	-.51883	.07439
	Equal variances not assumed			-2.204	17.000	.042	-.22222	.10083	-.43496	-.00949

This difference, however small, was completely erased when the tests were further constrained to Late period *males*, the initial subjects of our research. Tests for both absolute

and relative frequency were conclusive, demonstrating no statistically significant difference in violence above and below the fence line.

TABLE 4.7. Average number of violent indicators based on fence line designation (Late period males; only violent fractures)

Group Statistics					
Fence line Designation		N	Mean	Std. Deviation	Std. Error Mean
Number of violent indicators	above the fence line	9	2.7778	1.48137	.49379
	below the fence line	5	2.0000	1.00000	.44721

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of violent indicators	Equal variances assumed	1.992	.184	1.040	12	.319	.77778	.74756	-.85102	2.40657
	Equal variances not assumed			1.167	11.300	.267	.77778	.66620	-.68378	2.23934

Table 4.7 shows the results of the independent samples t-test meant to compare the average number of violent indicators based on fence line designation, which took into account Late period males with only violent fractures (rather than all Late period males with fractures). The test yielded a very high probability that there was no difference in average number of

violent indicators per individual between the two locations ($t = 1.040$, $p = .319$, $df = 12$, $n_1 = 9$, and $n_2 = 5$).

TABLE 4.8. Percent of individuals with at least one violent indicator based on fence line designation (Late period males; individuals with any fractures)

Group Statistics					
Late Vs. Collapsed		N	Mean	Std. Deviation	Std. Error Mean
Early					
Presence of violent indicators	above the fence line	12	.7500	.45227	.13056
	below the fence line	5	1.0000	.00000	.00000

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Presence of violent indicators	Equal variances assumed	13.235	.0020	-1.213	15	.244	-.25000	.20616	-.68941	.18941
	Equal variances not assumed			-1.915	11.000	.082	-.25000	.13056	-.53736	.03736

A test for relative frequency, using the same subjects (Late period males) also demonstrated no statistically significant difference, though the probability of this null hypothesis being supported was much lower than it was for the absolute frequency test. Table 4.8 outlines the results for the relative frequency test, which sought to compare the

percent of Late period males expressing any traits of violence, based on their location in the burial ground.

It is also interesting to note that a statistically significant difference did not appear between the average number of violent indicators in Late period females above and below the fence line ($t = .278$, $p = .783$, $df = 25$, $n1 = 16$, and $n2 = 11$), nor even between Late period undetermined above and below the fence line (used here only for the sake of qualitative comparison, as they were discounted from the rest of our statistics) ($t = 1.435$, $p = .164$, $df = 24$, $n1 = 25$, and $n2 = 13$).

6. CONCLUSION

What do these results tell us? Reflecting on our hypothesis that individuals with a greater number of ‘violent’ indicators are more likely to have experienced violence, and extending this to an assumption that individuals who lived through wartime were more likely to encounter violence, we drew the conclusion that the individuals who lived through wartime were more likely to have a higher average number of ‘violent’ indicators per person. While the Late period burials (that is, post-1776, around the time of the Revolutionary War) include scores of individuals on either side of the fence line, previous researchers have hypothesized that those buried above the fence line were transients, often men, who worked for the British during the war. It stands to reason, then, that these same individuals would have a higher average number of violent indicators than their counterparts below the fence line.

However, for each of the tests, the answers were consistent: there were no statistically significant differences between the average number of indicators of violence in individuals buried above the fence line versus those buried below it. Considering that this conclusion held even when the Late group alone was tested, this seems to disprove the initial hypothesis. The results suggest that there was not a substantial increase in violence experienced by Africans during the Revolutionary War. This was true for males as well as for females.

The question that must be asked, then, is where else an individual might face violence and trauma, if not during wartime. A biocultural perspective helps to shed light on the topic. For example, we know that enslaved Africans faced trauma at all ages, throughout the historical course of slavery. This is poignantly illustrated by the findings of the African Burial Ground’s skeletal biology team, which state that “there were...seven children,

biologically aged from four to eight years, who exhibited hypertrophic attachment – three of whom also had at least one enthesopathy and one who also had arthritis...these individuals are a clear example that enslaved children in New York City engaged in strenuous physical activities” (Goode-Null, Shujaa and Rankin-Hill 511). If we discount the unknowable soft-tissue injuries, we still find a host of other traumas such as these on the skeleton. All speak to the abuse of a population. Osteophytosis can indicate gradual mechanical stress; taken with the cranial fractures, however, these disorders and injuries could be illustrative of violence enacted against the people interred here, either through struggle, execution, or other means of violent death. Pathologies such as Schmorl’s nodes demonstrate that slaves were also regularly under grueling work-loads and mechanical stress, carrying heavy items or subject to hard labor on a consistent basis. Wilczak et al write that “trauma or acute stress is a generally accepted causative factor in the development of osteoarthritis...there are two significant etiological possibilities in terms of assessing the labor intensity of a population: direct responses to loading that was experienced during normal levels of activity or initiation due to traumatic injury” (Wilczak et al. 404). The non-fracture trauma the Africans experienced was degenerative, the result of years of labor and abuse. Indeed, “the high frequency of cervical osteophytosis compared to that in the lower back, is...compelling evidence for the impact of strenuous labor on the vertebral column” (Wilczak et al. 412). In sum:

Diverse activities have been suggested as contributing factors to the development of cervical osteophytosis, including compression of the neck during milking, extension of the neck during fruit picking, and use of a tumpline for carrying loads on the back...Correlations between carrying loads on the head...Loading of the shoulders as well as the head can place stress on the neck, particularly when the lower cervical and thoracic vertebrae are involved. (Wilczak et al. 414)

Osteoarthritis was also extremely prevalent in the burial ground sample: “high levels of osteoarthritis in this sample suggest participation in labor involving bending and rotation of the spine or indirect stress to the back through limb muscles that directly attach to vertebrae....Stress in the lower back occurs during many general types of arduous physical labor including carrying, bending and lifting, as well as dragging heavy objects” (Wilczak et al. 415). Nor were the slaves free from other diseases; the Skeletal Biology team found that many suffered from diseases such as rickets, and nutritional stresses such as porotic hyperostosis (a “metabolic disruption resulting from nutritional inadequacy”) (Null et al. 359).

Other sources tell equally heart-wrenching stories, of violence rather than merely mechanical stress. Certain individuals show high incidences of specific traumas which, taken together, show a high likelihood of interpersonal violence either within the African community itself or between the individuals buried here and the citizens of the city as a whole. In the Skeletal Biology Final Report of the African Burial Ground, the authors relate the case of Burial 25:

What is described here is a young woman who had been shot and who had also received blunt force trauma to the face (a rifle butt would customarily have been used to finish a shooting victim), a “spiral” or oblique fracture of the lower right arm just above the wrist...caused by simultaneous twisting and pulling. These fractures by virtue of their beveled form and dark color are consistent with the fracture of living bone and were definitely not caused by the excavation. The small trace of new bone and of adjacent inflammatory response suggests that this woman lived for some short period, no more than a few days, after she was beaten. Her left arm also shows evidence of perimortem trauma but with less certainty than her other fractures exhibit. (Wilczak et al. 458)

While the numbers in our study may not support our thesis of increased violence during wartime, it is cases like these that leave us with a haunting impression. Perhaps we see no increase during *wartime* because of the severe trauma already faced by enslaved Africans at all points in their lives. For white Europeans and colonists, the war may have been a dangerous time to be a laborer, subject as workers were to stress, repetitive injuries, and harsh conditions. But this could hardly have been new to the African workers, as they'd unfortunately dealt with these same traumas throughout their lives. The fractures discovered in the course of this study span age groups, sex groups, and time periods. Our hypothesis proved incorrect, most likely because of a lack of biocultural knowledge on the part of the researcher. When taken into account with the daily mechanical stresses from labor, the abuses from 'masters,' and nutritional deficiencies from neglect on the part of those who could provide nutrition, it becomes clear that violence and danger were things that these individuals dealt with every day of their lives.

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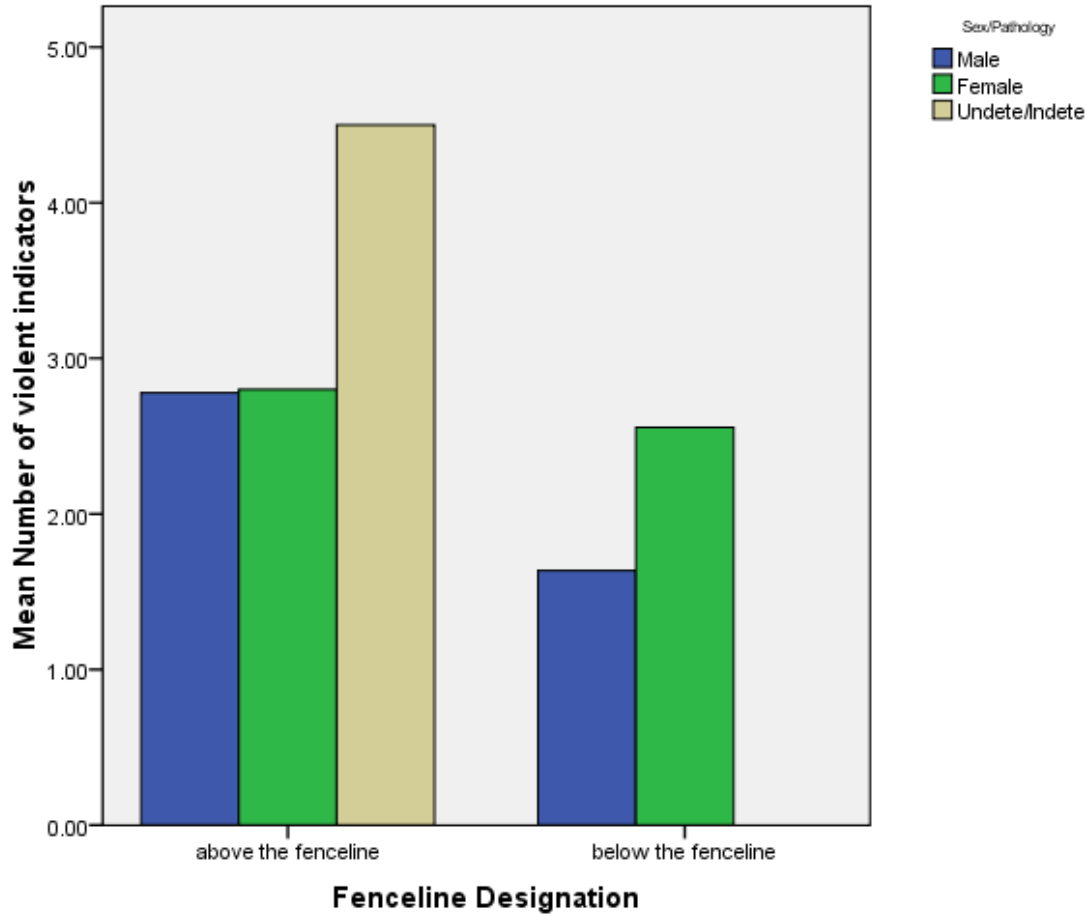
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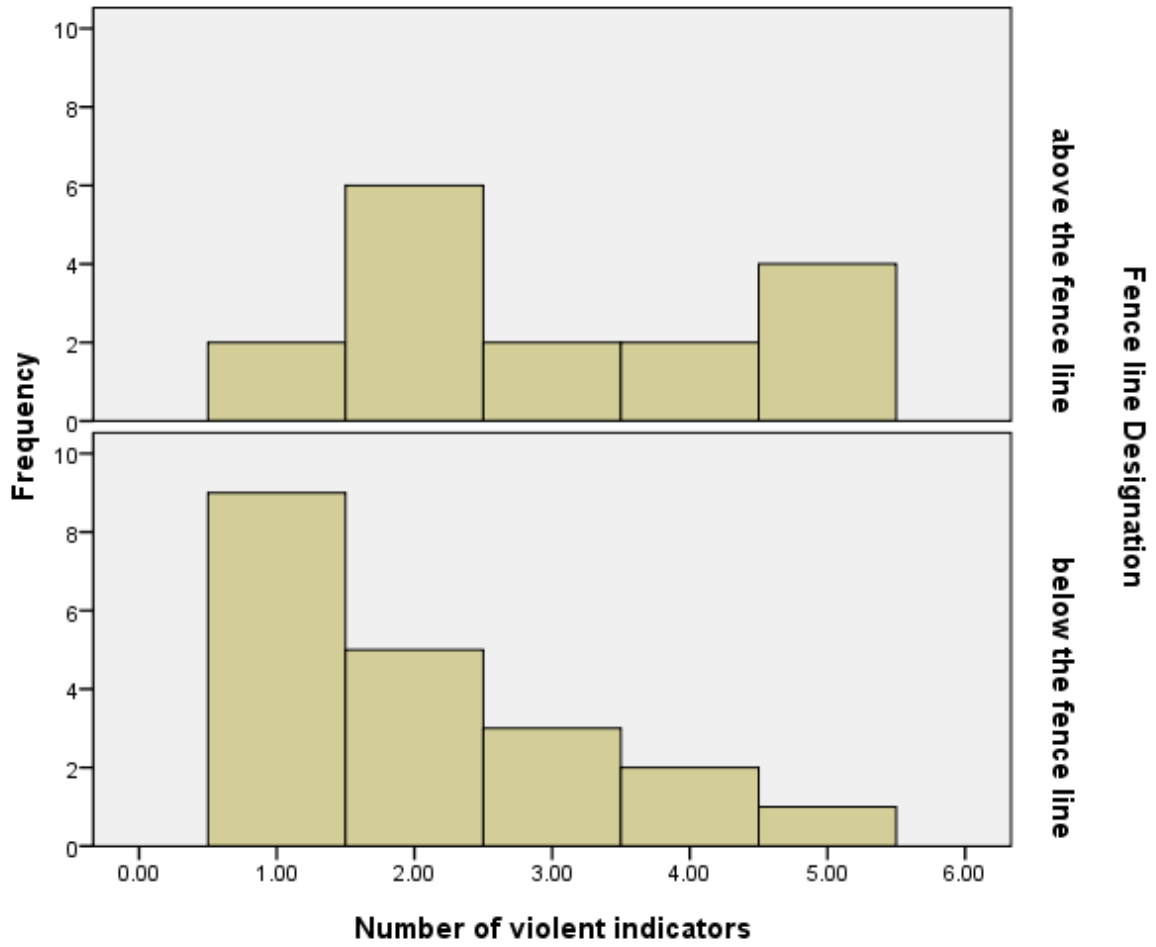
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8. FIGURES

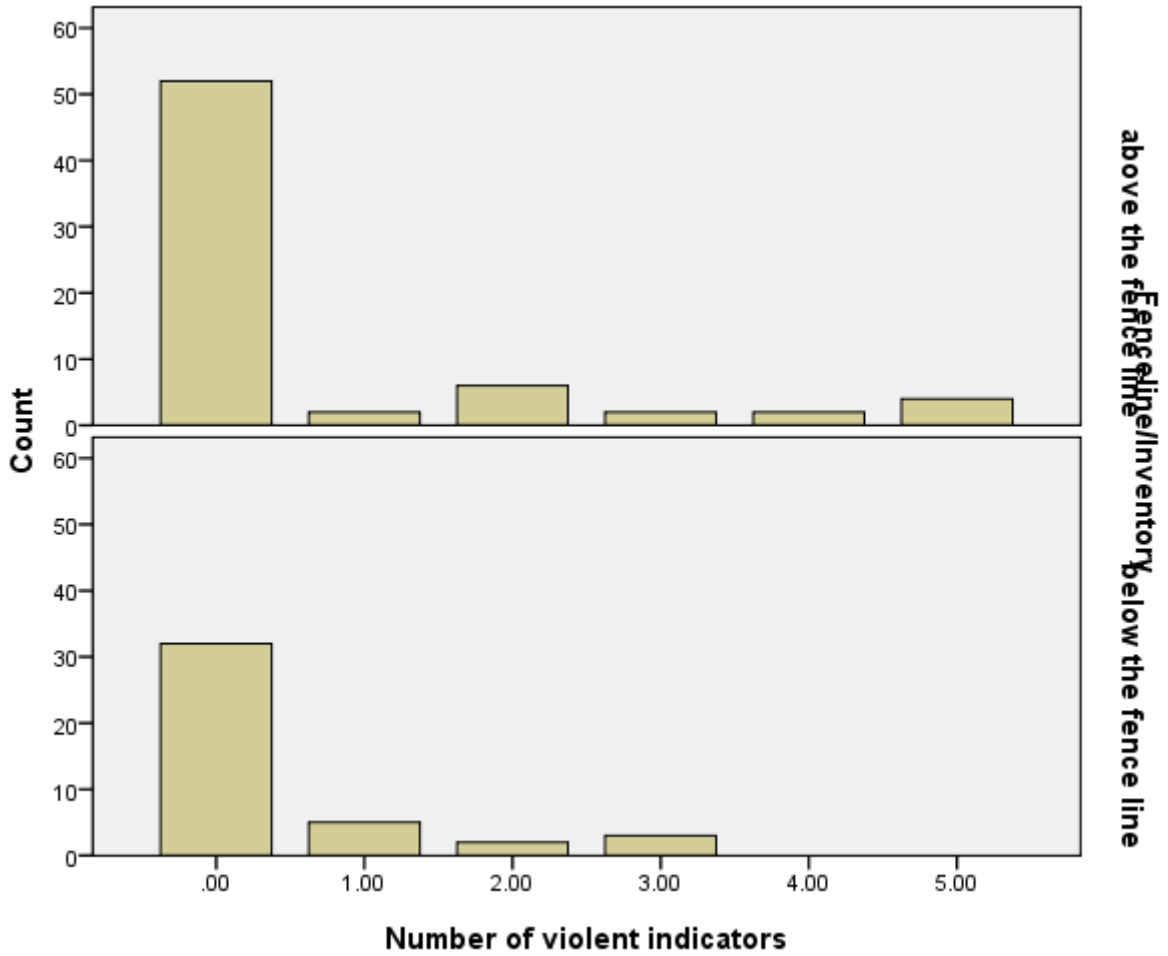
EDA 8.1. Average number of violent indicators by sex and location



EDA 8.2. Number of violent indicators per individual based on fence line location



EDA 8.3. *Number of violent indicators per (LATE PERIOD) individual based on fence line location*



EDA 8.4. Average number of violent indicators per (LATE PERIOD) individual based on fence line location

