Archeological Monitoring and Exhumations for the City of Austin's Oakwood Cemetery Chapel Restoration Project, Travis County, Texas

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Background

The Forensic Anthropology Center at Texas State (FACTS) was requested to analyze burials from the Oakwood Cemetery Chapel, built in 1914, located in Austin, Texas. These burials originate from what is referred to as the "Colored Grounds" section within the Oakwood Cemetery, established in 1839. The "Colored Grounds" is located in the southwest corner of Section 4 on Main Avenue and Navasota Street. This portion of Section 4 is referred to both as a "Potter's Field" and as the "Colored Grounds" (Amaterra Envrionmental Inc 2015:82). Both "strangers" and "paupers," as well as African Americans, were buried within this section. Further, it was common for poor European Americans to be buried within the Colored Grounds (Amaterra Envrionmental Inc 2015). Based on publicly available historical cemetery records, the "Colored Grounds" contains African Americans, European Americans, and Mexicans.

The goals of skeletal analysis for the burials excavated from the Oakwood Cemetery Chapel area were to 1) develop a biological profile including sex, age, biological affinity, and stature; 2) identify and describe any trauma and pathological conditions; and 3) provide a dental inventory and assessment of oral health. The methodological approach to each component of the biological profile varied based on the overall condition and availability of required skeletal material. The generation of biological profiles was challenging considering the majority of remains were moderately to highly fragmentary and encased in soil matrix. All soil was cleaned from the remains prior to any reconstruction and analyses. Once cleaning took place, the remains were carefully laid out in anatomical position and inventoried. For most individuals, the cranium required reconstruction in order to collect cranial measurements for estimation of biological affinity. Data were collected following procedures outlined in *Osteoware* (2012), developed by the Smithsonian Osteological Repatriation Laboratory, which includes collection procedures outlined in *Standards for Data Collection from Human Skeletal Remains* (Buikstra and Ubelaker 1994). A summary of the biological profiles is provided in Table 1.

Biological Profile Methods, Pathology, and Oral Health

Sex

The pelvis provides the best estimate of sex. The Klales, et al. (2012) revision of the Phenice (1969) method was utilized when enough features of the pubic and ischium were present. The ventral arc, ischopubic ramus ridge, and subpubic concavity are scored on a scale of 1–5, with 1 indicating female, 5 male, and 3 suggesting ambiguity. The Klales, et al. method uses ordinal logistic regression and provides a probability of the sex estimation. In burials that had partial or incomplete innominate bones, the postcranial skeleton was used for sex estimation as the postcranial skeleton provides the second best estimate of sex (Spradley and Jantz 2011). Population specific discriminant function formulae were used if enough measurements were present, as multivariate equations are more robust than univariate. However, if discriminant formulae were not possible due to incomplete measurements, univariate sectioning points were used. Cranial sex estimation was utilized if the cranium was the only indicator of sex present or to support sex estimates in cases where sex was ambiguous. Walker's (2008) modification of Acsádi's and Nemeskéri's (1970) cranial non-metric traits was used for cranial sex estimation.

Table 1: Biological profile summary of Oakwood Cemetery Chapel Burials

Burial	*Age Category*	*Age*	*Sex*	*Biological Affinity*	*Stature*
01	Adult	49.6–91.3	Male	Black	N/A
07	Adult	14.9–25	Male	Black	5'3" – 5'8"
08	Adult	24–48	Male	Black	5'3" – 5'8"
09	Adult	27.3–61.5	Female	Black	5'1" – 5'5"
11	Adult	32.5–85.7	Female	White	N/A
12	Adult	21.6–34	Female	White	4’6” – 5’0”
16	Adult	52–90.9	Male	Mexican	N/A
18	Adult	41–89.5	Male	Asian (Broad Estimation)	N/A
20	Adult	30.6–89	Male	Mexican	5’1” – 5’6”
21	Adult	29.3–84.5	Male	Mexican	5’1” – 5’7”
22	Adult	27.6–45	Male	White	N/A
23	Adult	26.6–43.9	Female	Mexican	N/A
25	Adult	21.3–39.6	Male	Mexican	5’1” – 5’7”
26	Adult	48.8–91.2	Male	Black	N/A
31	Adult	29.3–56.2	Male	White	5’5” – 5’8”
34	Adult	20.9–48.2	Male	Mexican	5'2” – 5'8"
35	Adult	middle to older adult	Male	White	N/A
36	Adult	20.2–28.4	Male	Black	5'2” – 5'7"
37	Adult	74.3–91.3	Male	Indeterminant	N/A
38	Adult	17.8–82.1	Male	Mexican	N/A
40	Adult	48.8–91.2	Male	White (Broad Estimation: European/Narrow)	N/A
04	Indeterminant	N/A	N/A	N/A	N/A
06	Infant	birth–1.7 months	N/A	N/A	N/A
10	Infant	36–56 weeks intrauterine	N/A	N/A	N/A
13	Infant	7.5–10.5 months	N/A	N/A	N/A
14	Infant	7.5–10.5 months	N/A	N/A	N/A
15	Infant	birth–1.5 months	N/A	N/A	N/A
19	Infant	36–56 weeks intrauterine	N/A	N/A	N/A
24	Infant	36–56 weeks intrauterine	N/A	N/A	N/A
28	Infant	36–56 weeks intrauterine	N/A	N/A	N/A
30	Infant	4.5–7.5 months	N/A	N/A	N/A
32	Infant	7.5–10.5 months	N/A	N/A	N/A
33	Infant	20–36 weeks intrauterine	N/A	N/A	N/A
39	Infant	36–56 weeks intrauterine	N/A	N/A	N/A
17	Juvenile	3.5–4.5 years	N/A	N/A	N/A
27	Juvenile	4.5–6.5 years	N/A	N/A	N/A

These cranial sex traits include the glabella, nuchal crest, mastoid process, supra-orbital margin, and mental eminence. Each trait is scored on scale of 1–5, with a score of 1 indicative of female, 5 indicative of male, and 3 suggestive of indeterminate. Walker's method uses logistic regression with a combination of traits to produce probability estimates of sex. If sex was not estimated using the cranium due to the presence and utility of other, more reliable features and a cranium was present, data were collected and archived.

Age

Adult age is best estimated from degenerative changes observed on the skeleton. Adult age was estimated using ADBOU (Boldsen, et al. 2002). Degenerative changes from the pubic symphysis and auricular surface along with degree of cranial suture closure were scored following Milner and Boldsen (2016) and entered into ADBOU. ADBOU uses transition analysis which produces maximum likelihood age estimates with 95% confidence intervals using documented priors. There were 12 infants and two juvenile skeletons within the Oakwood Cemetery Chapel burials. For the infants and juveniles, overall development of the skeleton, including epiphysial appearance and ossification, along with dental development and eruption were used to provide an age estimation.

Biological Affinity

Based on 3,153 digitized burial records from the Oakwood Cemetery, from 1866–1914, downloaded from the Austin Public Library, with the exception of only a few, African Americans, European Americans, and Mexicans were buried within the cemetery (Austin History Center). With this documentation, estimation of biological affinity used three groups that best matched the cemetery demographics: 19th Century American Black, 19th Century American White, and 20th Century Mexican. Based on 1850 US Census records, common terminology of the time included Black and White, terminology that is still used on the US Census (Pew Research Center 2019). The most frequently used method to estimate biological affinity is discriminant function analysis and craniometric data (cranial measurements). The program FORDISC 3.1 (Jantz and Ousley 2005) was used to run the analyses, modified by a custom craniometric database containing the three reference groups [(19th Century American Black (41 females and 59 males), 19th Century American White (22 females and 72 males), and 20th Century Mexican (50 females and 195 males)]. These groups were obtained from Spradley (2006) and the Forensic Anthropology Data Bank maintained at the University of Tennessee Department of Anthropology and use cranial measurements with definitions outlined in Howells (1973) (see Table 1). A 20th Century Mexican sample was chosen as there is no available or appropriate 19th Century Mexican sample. This Mexican sample is from Spradley (2013) and represents Mexican nationals that died near the US/Mexico border.

The majority of all adult skeletons had a highly fragmented craniofacial region, thus, for most individuals, vault measurements were heavily relied upon. In some cases, only a few measurements were present. In these cases, the ability of the measurements to correctly classify 75% or more of the reference groups into their correct group indicated that these particular

Table 2: Howells Cranial Measurements and Abbreviations

Abbreviation	*Measurement*	*Abbreviation*	*Measurement*
GOL	glabella-occipital	PAS	parietal subtense
NOL	nasion-occipital	PAF	parietal fraction
BNL	basion-nasion	OCC	occipital chord
BBH	basion-bregma	OCS	occipital subtense
WFB	minimum frontal breadth	OCF	occipital fraction
XCB	max cran br	FOL	foramen magnum length
XFB	max frontal br	FOB	foramen magnum breadth
ZYB	byzygomatic breadth	NAR	nasion radius
AUB	biauricular breadth	SSR	subspinale radius
ASB	biasterionic breadth	PRR	prosthion radius
BPL	basion-prosthion length	DKR	dacryon radius
NPH	nasion-prosthion height	ZOR	zygoorbitale radius
NLH	nasal height	FMR	frontomalare radius
JUB	bijugal breadth	EKR	ectoconchion radius
NLB	nasal breadth	ZMR	zygomaxillare radius
MAB	external palate breadth	AVR	M1 alveolar radius
MAL	external palate length	BRR	bregma radius
MDH	mastoid height	VRR	vertex radius
OBH	orbital height	LAR	lambda radius
OBB	orbital breadth	OSR	opisthion radius
DKB	interorbital br	BAR	basion radius
NDS	nasion-dacryon subtense	NAA	nasion angle
WNB	simotic chord	PRA	prosthion angle
SIS	simotic subtense	BAA	basion angle, nasion-prosthion
ZMB	bimaxillary br	NBA	nasion angle
SSS	zygo-maxillary subtense	BBA	basion angle, nasion-bregma
FMB	bifrontal breadth	BRA	Bregma angle
NAS	nasio-frontal subtense	SSA	zygomaxillary angle
EKB	bi-orbital breadth	NFA	nasio-frontal angle
DKS	dacryon subtense	DKA	dacryal angle
IML	inferior malar length	NDA	o-dacryal angle
XML	maximum malar length	SIA	simiotic angle
MLS	malar subtense	FRA	frontal angle
WMH	minimum malar height	PAA	parietal angle
SOS	supraorbital projection	OCA	occipital angle
GLS	glabella projection	RFA	radio-frontal angle
STB	bistephanic breadth	RPA	radio-parietal angle
FRC	frontal chord	ROA	radio-occipital angle, lambda-opisthion
FRS	frontal subtense	BSA	basal angle, prosthion-opishtion
FRF	frontal fraction	SBA	sub-bregma angle
PAC	parietal chord	SLA	sub-lambda angle

measurements had good discriminating power and, thus, could yield a good classification. If the reference group classification was lower than 75% but greater than random chance (33.3%) the estimation of affinity was qualified as 'moderate' or 'probable.' No classifications fell below random chance.

In cases where craniometrics could not be collected due to overall fragmentation, macromorphoscopic data were used in conjunction with a beta version of the MaMD Analytical Program v. 0.2 (Hefner 2018) which "uses artificial neural network to classify an unknown cranium into a reference group." Within MaMD, the American Black, American White, and Southwest Hispanic groups were selected for estimation purposes as they closely align with the reference groups used in the craniometric analysis. The American groups contain both 19th and 20th Century individuals. The Southwest Hispanic group differs slightly from the Mexican craniometric sample in that it consists of individuals who died near the US/Mexico border in Arizona. Not all of the individuals are identified; however, of the positively identified, approximately 90% are from Mexico (Anderson and Parks 2008). As with the craniometric data, the full suite of macromorphoscopic traits were not available due to fragmentation and, at times, only a few traits were utilized. As with the craniometric analyses, the ability of the traits to correctly classify the reference groups was used as an indicator to assess the strength of the overall classification.

In cases where craniometric and macromorphoscopic analysis was not possible, dental metric analysis was employed. Dental metrics, using a global reference data set in conjunction with random forest classification, were used to provide a broad-based geographic ancestry estimation using a freely available GUI provided by Kenyhercz, et al. (2019). The program contains African, European, and Asian reference groups. Because the only reference groups are continental, African, European, and Asian, a broad classification was made. In these instances, if the broad classification was African or European, these designations could be translated to probable American Black or probable American White.

Stature

Stature was estimated using FORDISC 3.1 which estimates stature "on the fly" using all possible measurements and linear regression (Jantz and Ousley 2005:33). In some cases, the remains were too fragmentary for stature estimation. Further, stature cannot be estimated in subadults as currently no methods exist. FORDISC provides a 95% prediction interval. The 19th Century cadaver statures were selected as the best reference for stature estimation due to the contemporaneous time period.

Pathology and Trauma

Skeletal pathological indicators were identified via gross morphological assessment according to standardized methodology, terminology, and visual guidelines (Buikstra and Ubelaker 1994; Mann and Hunt 2012; Ortner 2003); dental/oral pathologies are described in the dental inventory and oral health section. Where skeletal elements were mostly intact, all bone surfaces were examined for the presence or absence of bone modification resulting from pathological changes, as opposed to postmortem taphonomic damage. In cases where the condition of skeletal elements

ranged from fragmentary to extremely fragmented, all fragments were individually assessed. Pathologies were categorized as present when they met any of the four criteria outlined by Ortner (2012): 1) abnormal bone formation, 2) abnormal absence of bone, 3) abnormal size, or 4) abnormal shape. The majority of skeletal pathologies found in bioarchaeological skeletal remains (and by extension, historical skeletal remains) involve osteoarthritis, infection, and trauma (Ortner 2003). As a result, even extremely fragmentary elements that might preferentially demonstrate these more common pathological categories were carefully examined (e.g., vertebral bodies for osteoarthritis, tibiae for periosteal or osteomyelitic infections, and limbs/cranial fragments for fractures and blunt force injuries, etc.).

Indicators of skeletal pathologies, or damage, were classified according to time of insult: antemortem, perimortem, or postmortem. Antemortem pathologies are characterized by healed or actively healing bone response at the site of injury, indicating the individual lived through the injury or disease process. Perimortem pathologies are those that are classified as occurring at or around the time of death and can be indicative of the cause of death. Postmortem damage occurs after an individual has already died, and thus is not a true pathology. Postmortem modification can result from diagenetic and environmental processes, such as depositional environment, animal scavenging, and other taphonomic agents, and as such, is not within the purview of analysis.

Overall, the health and illness histories of the Oakwood Cemetery Chapel individuals present with fewer skeletal pathologies than might be expected from a late 19th to early 20th century cemetery. However, the vast majority of human illnesses do not affect the skeleton, and even in cases of diseases capable of affecting the skeleton, only a small portion of them actually go on to modify the skeleton. A skeleton with no pathologies does not mean the individual did not suffer from a particular disease; it may simply mean that the individual died before the disease process had a chance to affect their bones (Wood, et al. 1992).

Dental Inventory and Oral Health

The dental inventories, wear, and assessments of oral health (e.g., recording of dental caries, calculus, abscesses, hypoplasias, antemortem tooth loss) were documented using *Osteoware* following documentation procedures outlined in Buikstra and Ubelaker (1994). The dentition was noted as present or absent and whether missing teeth were lost antemortem or postmortem. Individual teeth from the permanent and deciduous dentition are referred to using the universal numbering system (i.e., 1–32 for permanent or A–T for deciduous). Location of linear enamel hypoplasias were measured and the Cares Henriquez and Oxenham (2019) method was used to calculate hypoplastic age at formation from the anterior dentition. Hypoplasias are macroscopic enamel defects, resulting in lines or pits on the tooth with no enamel. Hypoplasias are generally thought to result from illness, disease, or weaning. Any unusual morphologies or habitual activity indicators were also noted during examination and included in the report.

Burial 01

General Description

This mostly complete skeleton represents a Black male, between 49.6 to 91.3 years of age at death, with an indeterminant stature.

Inventory and Condition of Remains

The remains of Burial 01 are mostly complete, with high fragmentation in the craniofacial, thoracic, and pelvic regions. Proximal and distal epiphyses of the long bones are fragmentary, however, the epiphyses of the femoral head remained in fair condition and were used in the sex estimation analyses. A full maxillary and mandibular dentition were available for dental analyses. In addition, the skull, along with portions of the pubic symphysis and auricular surface, were available for age estimation analysis.

Minimum Number of Individuals: One

The skeletal remains of Burial 01 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: Male

Sex was estimated based on the statistical evaluation of the pelvis, postcranial metrics, and cranial traits. The only portion of the pelvis available for sex estimation was the sciatic notch, which was assessed based on qualitative features outlined in Buikstra and Ubelaker (1994). The sciatic notch suggests probable male based on a slightly narrow width.

Following Spradley and Jantz (2011), postcranial sectioning points for American Blacks were used to estimate sex. Only sectioning points with classification accuracies greater than or equal to 80% were used. Sectioning points from the femoral head and tibia circumferences at nutrient foramen all suggest Burial 01 is male (see Table 2).

Table 2: Univariate sex estimation of Burial 01

Measurement	Sectioning Point	Burial 01	Classification Accuracy (%)	Estimated Sex
Femur max. head diameter	44	50	86	Male
Tibia circumference nutrient foramen	92	100	81	Male
Tibia max. diameter nutrient foramen	35	36	80	Male

Using Walker (2008), sex was estimated from fragments of the cranium, including the mastoid process (score=2), the supra-orbital margin (score=5), and the mental eminence of the mandible (score=4). Using the orbit and mental eminence, the Walker method provides a 100% probability of male. Based on methods found in Buikstra and Ubelaker (1994), presented by Spradley and Jantz (2011) and by Walker (2008), the estimated sex for Burial 01 is male.

Age: *49.6–91.3 years*
The auricular surface was the primary indicator evaluated for age estimation. Numerous features of the right and left auricular surfaces were scored, such as morphology, topography, and texture, following descriptions outlined in (Milner and Boldsen 2016). The auricular surface topography was flat to irregular while the morphology was flat without billows. The inferior surface texture showed microporosity. There were no fragments of the pubic symphysis or cranial sutures available for age estimation analysis.

Auricular surface scores were entered into ADBOU (Boldsen, et al. 2002). Burial 01 is estimated to be 49.6–91.3 years of age at death, with a maximum likelihood (point estimate) of 79.6 years. Overall, the joint surfaces appear free of osteoarthritis, suggesting Burial 01 is younger than the point estimate rendering the age estimation closer to 49–60.

Biological Affinity: *Black*
Although the cranium was fragmented, a total of ten measurements were available for analysis: FMB, FRC, FRS, GOL, MDH, NLB, PAC, PAS, WMH, and XCB. These craniometric measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 77.7% of the time, greater than chance alone. Burial 01 is most similar to the 19th Century American Black group with a posterior probability of 0.998 and a typicality of 0.05. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups (Jantz and Ousley 2005). Due to the number of available craniometric variables, the overall classification rate of reference groups, and the posterior and typicality probabilities, the overall group membership for Burial 01 is estimated as Black and represents a good classification.

Stature: *Indeterminate*
Due to the fragmentation of the remains, stature estimation was not possible.

Skeletal Pathology: *None*
The right tibia shows remodeling and a pronounced bulge at lateral midshaft with periosteal new bone formation externally; cortical flaking shows periosteal response sub-cortex. There is no obvious sign of a fracture callus; therefore, this is potentially a traumatic or infectious periostitis response. Mastoid sinuses on both right and left temporal bones are exposed, likely taphonomic in nature.

Trauma: *None*
No trauma was observed on Burial 01.

Dental Inventory and Oral Health
The maxilla is fragmentary and the mandible is mostly complete, missing the ascending rami. All teeth are fully developed, present, and can be fit into an alveolar socket with the exception of

teeth #22 and 23. Mild to moderate calculus is present on the overall dentition along with moderate dental wear and brown staining. Mild periodontal disease is noted. Shoveling is present on the maxillary central incisors. No dental caries or abscesses are noted. Tooth #20 is rotated distally. A linear enamel hypoplasia is present on tooth #1. Using the Cares Henriquez and Oxenham (2019) method, this hypoplasia corresponds to age at formation of 2.07 years of age.

Burial 04

General Description
This burial is represented by a few small bone fragments of a possible infant individual of indeterminant age, sex, biological affinity, and stature.

Inventory and Condition of Remains
The remains of Burial 04 are highly fragmentary, with only four small bone fragments present and encased in hard clay. Cleaning the clay from the remains would further fragment the already fragile and friable bone. Due to the extreme fragmentation of the remains, age, sex, biological affinity, and stature analyses were indeterminant.

Minimum Number of Individuals: *Indeterminant*
Due to the fragmentation of the skeletal elements, the minimum number of individuals could not be estimated.

Sex: *Indeterminant*
Due to the fragmentation of the skeletal elements, sex estimation is not possible.

Age: *Indeterminant*
Due to the fragmentation of the skeletal elements, age estimation is not possible.

Biological Affinity: *Indeterminant*
Due to the fragmentation of the skeletal elements, biological affinity estimation is not possible.

Stature: *Indeterminant*
Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Skeletal Pathology: *Indeterminant*
Due to the fragmentation of the skeletal elements, skeletal pathologies were not observed.

Trauma: *None*
No trauma was observed on Burial 04.

Dental Inventory and Oral Health
No dentition is present for observation or analysis.

Burial 06

General Description

This skeleton represents the fragmentary remains of an infant individual between birth and 1.67 months of age at death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains

The remains of Burial 06 are highly fragmentary, with extreme fragmentation in the region of the skull, limbs, and thorax. Due to the fragmentation of the remains, many analyses were indeterminant; however, two deciduous tooth crowns were available and used in the age estimation analysis.

Minimum Number of Individuals: One

The skeletal elements of Burial 06 represent one individual. All elements are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: Indeterminant

Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 06 has no complete long bones. Therefore, the sex was indeterminant.

Age: Birth ± .32 to 1.5 ± .17 months

For juvenile remains, age is estimated from the eruption and development of the available deciduous dentition. The only teeth available for Burial 06 were tooth B (deciduous maxillary right first molar crown) and a fragment of tooth F (left maxillary central incisor crown). Using AlQahtani, et al. (2010) for the development of the deciduous dentition, tooth B was less than one-fourth formed, indicating that the Burial 06 was a newborn ± .32 to 1.5 ± .17 months old at the time of death.

Biological Affinity: Indeterminant

Due to the fragmentation of the skeletal elements, biological affinity estimation is not possible.

Stature: Indeterminant

Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Skeletal Pathology: Indeterminant

Due to the fragmentation of the skeletal elements, skeletal pathologies are not possible.

Trauma: None

No trauma was observed on Burial 06.

Dental Inventory and Oral Health

Fragmentary tooth crowns are present for teeth F (left maxillary central incisor) and B (right maxillary first molar) with no pathological or traumatic modification.

Burial 07

General Description

This mostly complete skeleton represents a Black male, between 14.9 to 25 years of age at death, with an estimated stature of approximately 5'3" to 5'8". The cranium exhibits an autopsy cut and the right femur displays a healed fracture.

Inventory and Condition of Remains

The skeletal remains of Burial 07 are mostly complete, with exception of the craniofacial complex. The available skeletal remains are fragmentary with severe exfoliation of the cortical bone on most of the postcranial skeleton, consistent with historic burial taphonomy.

Minimum Number of Individuals: One

The skeletal remains of Burial 07 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: Male

The pelvis is the best indicator of sex, although it was too fragmented for observation. Therefore, sex was estimated using postcranial metrics following Spradley and Jantz (2011) and cranial non-metrics following Walker (2008).

For postcranial sex estimation, a multivariate equation and univariate sectioning points were used from Spradley and Jantz (2011) for American Blacks (see Biological Affinity section below). The clavicle was available for use in a multivariate discriminant function equation for the clavicle, resulting in a discriminant score of 4.66, indicating male, as scores above 0 are male and scores below 0 are female. The clavicle was the only element that could be used in a multivariate function; however, other single measurements were used in sectioning points that have a classification rate above 80% (see Table 3). Values above the sectioning point are considered male and values below are considered female.

Table 3: Univariate sex estimation of Burial 07

Measurement	Sectioning Point	Burial 07	Classification Rate (%)	Estimated Sex
Clavicle Maximum Length	150	155	93	Male
Humerus Head Diameter	44	46	86	Male
Humerus Epicondylar Breadth	60	63	86	Male
Ulna Maximum Length	271	282	83	Male

Assessment of cranial morphology indicates that Burial 07 lacks a prominent nuchal crest (score=3), has small mastoid processes (score=2), narrow but rounded orbital margin (score=3) and a flat (non-projecting) glabella region (score=1). Using these traits in Walker (2008), Burial 07 is most similar to females with a 95% probability based on a logistic regression equation using the glabella and mastoid process scores. Although the cranium indicates female, the skull

is the second-best estimator of sex. Superior to the cranium is the post-crania in the absence of the pelvis (Spradley and Jantz 2011). Based on the multivariate classification of the clavicle and the univariate classification from measurements from the clavicle, humerus, and ulna, and the overall robusticity of the postcranial skeleton, the sex of Burial 07 is estimated as male.

Age: *14.9–25 years*
Age was estimated through ossification of the clavicle, vertebral bodies, and sacrum. The right medial clavicle presents an unfused epiphyseal flake visible on approximately 50% of the sternal end. Using Langley-Shirley and Jantz (2010), the medial clavicle scored a 2, suggesting an age range of 14.9–28.5 with a 95% confidence interval for males. Additionally, the vertebral rings appear fused and youthful in appearance, suggesting early 20s. The sacral elements appear unfused suggesting less than 25 years of age (Schaefer, et al. 2009). Based on the preponderance of age indicates, it is most likely that Burial 07 is between 15–25 years of age, with a possible narrower age range of 20–25 years of age at death.

Biological Affinity: *Black*
Although the cranium of Burial 07 was fragmented, a total of 11 measurements were available for analysis: DKB, FMB, FRC, FRS, GOL, MDH, NLB, PAC, PAS, WMH, and XCB, representing three facial and eight vault measurements. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 81% of the time, greater than chance alone. Burial 07 is most similar to the 19th Century American Black group with a posterior probability of 0.998 and a typicality of 0.12. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups. Due to the number of available craniometric variables, the overall classification rate of reference groups, and the posterior and typicality probabilities, the overall group membership for Burial 07 is estimated to be American Black and represents a good classification.

Stature: *5'3" to 5'8"*
Stature was estimated using FORDISC 3.1 (Jantz and Ousley 2005) and all available postcranial measurements from the clavicle, scapula, humerus, ulna, tibia, and calcaneus. The 19th Century cadaver stature option for Black males was selected to generate the stature estimation. The measurements with the highest correlation to stature were the humerus and tibia maximum length with an R-square of .756. Using these measurements, the stature for Burial 07 is estimated to be between 63.3 to 69.1 inches or 5'3" to 5'8".

Skeletal Pathology: *Cranial autopsy and healed femoral fracture*
Burial 07 had a cranial autopsy, resulting in a full circumferential cut that removed the calotte. Healed fracture of the right femur at midshaft (mid-1/3–107 cm inferior to neck in anterior aspect). As a result, bone is shortened in length by about 3.8 cm (1½ inches). The fracture is diagonal with displacement of distal shaft joined by associated callus on the posterior side. Abundant healing and remodeling are present across all surfaces (including ends of the fractured

shafts, which have been sealed off by cortical bone). The degree of remodeling indicates some duration passed between initial injury and death. Schmorl's nodes are located on thoracic vertebrae seven through twelve and the first lumbar.

Trauma: *None*
No trauma was observed on Burial 07.

Dental Inventory and Oral Health
The maxilla is fragmentary and the mandible is fragmented, but mostly complete. The majority of teeth are present, fully developed, and in occlusion. Tooth #7 was lost postmortem and tooth #8 was coded as unobservable as the portion of the maxilla containing this tooth is missing postmortem. Tooth #10 is peg shaped. Staining is present on the maxillary and mandibular anterior dentition. The overall dentition shows little to moderate signs of wear, with no dental caries. Hypoplastic pitting was noted on tooth #22.

Burial 08

General Description
This mostly complete skeleton represents a Black male, between 24 to 48 years of age at death, with an estimated stature of approximately 5'3" to 5'8".

Inventory and Condition of Remains
The remains of Burial 08 exhibit high fragmentation in the region of the craniofacial complex, thorax, and pelvis. Although some skeletal elements were fragmentary, portions of the post-crania and dentition were complete and available for analyses.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 08 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
Although the pelvis is the best indicator for sex, the os coxae were too fragmentary for observation. Therefore, sex was estimated using postcranial metrics following Spradley and Jantz (2011), cranial non-metrics following Walker (2008), and a multivariate analysis of the cranial measurements.

The only skeletal element available for discriminant function analysis was the humerus which scored a 5.67, indicative of male (see Table 4). Because only one postcranial bone was available for multivariate analysis, additional univariate sectioning points, which included measurements from the femur, tibia, and humerus, were used. Only classifications with accuracies greater than 80% were reviewed. The sectioning points from the femur, tibia, and humerus show ambiguity in the sex estimation for Burial 08 (see Table 5).

Table 4: Multivariate sex estimation of Burial 08

Bone	Score	Classification Accuracy (%)	Estimated Sex
Humerus	5.67	94	Male

Table 5. Univariate sex estimation of Burial 08

Measurement	Sectioning Point	Burial 08	Classification Accuracy (%)	Estimated Sex
Femur max. head diameter	44	48	86	Male
Humerus epicondylar breadth	60	59	86	Female
Humerus head diameter	44	47	86	Male
Femur ant-post subtroch diameter	27	26	83	Female
Humerus maximum length	325	323	81	Female
Tibia diameter of nutrient foramen	35	38	80	Male

Using Walker (2008), sex was estimated from fragments of the skull, including the nuchal crest (score=3), mastoid process (score=2), orbital margin (score=3), and mental eminence (score=4). Walker (2008) uses discriminant function analysis to estimate sex based on features of the skull. Using the features listed above, the Walker method provides a 99% probability of male.

Because of the ambiguity in postcranial sex estimation, a multivariate analysis using cranial measurements was preformed, comparing Burial 08 to males and females of the 19th Century Black and White and 20th Century Mexican reference groups. Burial 08 was most similar to 19th Century Black males with a posterior probability of .471, followed by 19th Century White males with a posterior probability of .221, suggesting that Burial 08 is most similar to males.

Although the postcranial measurements indicate ambiguity, the overall results from the discriminant function analysis of the humerus, the results of the Walker (2008) method, and the multivariate analysis of the cranial measurements, estimate Burial 08 as male.

Age: *24–48 years*

The auricular surface and cranial sutures were the primary indicators evaluated for age estimation. Only two features of the auricular surface could be scored along with one cranial suture, following descriptions outlined in Milner and Boldsen (2016). There were no fragments of the pubic symphysis available for analysis. All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 08 is estimated to be 48.5–110 years of age at death, with a maximum likelihood (point estimate) of 79.6 years. However, the fusion line is still apparent, although faint, on the right distal radius suggesting an age around 24 years (Schaefer 2008). Based on the lack of degenerative, arthritic changes and the fact that only three features were available for scoring following Milner and Boldsen, Burial 08 is likely younger than the mid-point age estimate provided through ADBOU. When considering the faint fusion line on the radius in conjunction with lack of degenerative skeletal changes, and the ADBOU estimate, Burial 08 is estimated to be 24–48.

Biological Affinity: *Black*
Although the cranium of Burial 08 was fragmented, a total of eight measurements were available for analysis: GOL, MDH, OCC, OCS, PAC, WMH, and XCB. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 78.6% of the time, greater than chance alone. Burial 08 is most similar to the 19th Century American Black group with a posterior probability of .627 and a typicality of 0.6. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups (Ousley and Jantz 2005: 96).

Although the reference group classifies correctly at a high percentage, the posterior probability is below 0.70. Burial 08 is most similar to the 19th Century American Black group, but the estimation is considered tentative.

Stature: *5'3" to 5'8"*
Stature was estimated using FORDISC 3.1 (Jantz and Ousley 2005) and all available postcranial measurements from the humerus, ulna, femur, and tibia using the 19th Century cadaver statures for Black males' option. The measurement with the highest correlation to stature was the humerus maximum length with an R-square of .670. Using this measurement, the stature for Burial 08 is estimated to be between 63.0 to 69.0 inches, or 5'3" to 5'8".

Skeletal Pathology: *None*
No pathologies were observed on Burial 08.

Trauma: *None*
No trauma was observed on Burial 08.

Dental Inventory and Oral Health
The maxilla and mandible are fragmented but mostly complete. All teeth are present and can be fitted into an alveolar socket except for tooth #1, due to postmortem loss of the alveolus. Burial 08 has generalized calculus on the entire dentition. The maxillary and mandibular first molars, teeth #3, 14, 19, and 30 have significant wear, with little to moderate wear on the remaining dentition. No dental caries or abscesses are present, although moderate periodontal disease is present. Linear enamel hypoplasias are observed on teeth #6, 7, and 10, and linear vertical grooves are located on teeth #22 and 27. Using the Cares Henriquez and Oxenham (2019) method, these hypoplasias correspond to age at formation between 1.8–2.7 years of age.

Burial 09

General Description

This mostly complete skeleton represents a Black female, between 27.3 to 61.5 years of age at death, with an estimated stature of approximately 5'1" to 5'5". Two healed episodes of blunt force trauma are noted above each eye orbit.

Inventory and Condition of Remains

Burial 09 has major fragmentation of the craniofacial complex and minor fragmentation in the region of the thorax, pelvis, and distal limbs. Proximal and distal epiphyses of the long bones were mostly complete and were used in the analyses of sex and stature. The skull, along with small portions of the pubic symphysis, the auricular surface, and cranial sutures, were available for age estimation analysis.

Minimum Number of Individuals: One

The skeletal remains of Burial 09 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: Female

The pelvis is the best estimator of sex and Burial 09 has a complete pelvis, therefore, sex was estimated based on statistical evaluation of the non-metric traits of the pelvis following Klales, et al. (2012). The Klales method is modified from Phenice (1969), which provides a posterior probability of sex based on logistic regression analysis of ordinal scores. The subpubic concavity, the medial ishio-pubic ramus, and the ventral arc all scored as three, which estimated the sex of Burial 09 as female with a posterior probability of 0.78. Due to a posterior probability under 0.80, measurements from the postcranial skeleton were also used for sex estimation.

Multivariate discriminant function formulae for American Blacks (Spradley and Jantz 2011) were used in lieu of sectioning points for Burial 09 due to good preservation and complete measurements available from multiple skeletal elements. Discriminant function scores for the humerus, clavicle, and femur are all suggestive of female (see Table 6).

Based on the pelvis and postcranial discriminant function formulae, Burial 09 is estimated as female.

Table 6: Multivariate sex estimation of Burial 09

Bone	Score	Classification Accuracy (%)	Estimated Sex
Humerus	-4.40	94	Female
Clavicle	-1.95	93	Female
Femur	-2.476	92	Female

Age: *27.3–61.5 years*
The auricular surface, pubic symphysis, and cranial sutures were the primary indicators evaluated for age estimation. Numerous features of the pubic symphysis and auricular surface were scored, such as morphology and topography, following descriptions outlined in (Milner and Boldsen 2016). Cranial sutures were scored as to whether they were open, fused, partially fused or completely obliterated. Burial 09 had cranial sutures that were open, juxtaposed, punctuated, or obliterated, indicating a wide age range. The right auricular surface showed slight osteophytic lipping along with minor degenerative joint disease in the lower spine. Portions of the pubic symphysis were damaged, so only available features were scored.

All traits were entered into the ADBOU program (Boldsen, et al. 2002). Burial 09 is estimated to be 27.3–61.5 years of age at death, with a maximum likelihood (point estimate) of 39.7 years.

Although antemortem tooth loss is evident, the joint surfaces of Burial 09 do not exhibit arthritic changes and the vertebrate exhibit only minimal concavity. Both suggest an age closer to the point estimate.

Biological Affinity*: Black*
Although the cranium was fragmented, a total of 12 measurements were available for analysis: FRC, FRS, GOL, IML, MDH, NOL, OCC, OCS, PAC, PAS, XCB, and XML. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 63.4% of the time, greater than chance alone. Burial 09 is most similar to the 19th Century American Black group with a posterior probability of 0.82 and a typicality of 0.05. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups (Jantz and Ousley 2005).

While the posterior probability was over 80% for the classification of Black, the overall classification of the reference groups was only 63.4%. While greater than chance alone, the classification is lower than 75% rendering the classification estimate for Burial 09 a moderate classification.

Stature: *5’1” to 5’5”*
Stature was estimated using FORDISC 3.1 (Jantz and Ousley 2005) and all available postcranial measurements with the 19th Century cadaver stature for Black females’ option. The measurements with the highest correlation to stature were clavicle maximum length, femur bicondylar length, and femur maximum length, with an R-square of 0.781. Using these measurements, the stature for Burial 09 is estimated to be between 62 to 66 inches or 5’1” to 5’5”.

Skeletal Pathology**:** *None*
No pathologies were observed on Burial 09.

Trauma: *Healed blunt force trauma to anterior cranial vault*
Burial 09 exhibits a healed fracture defect on the right side of frontal superior to eye orbit, indented with evidence of healing on the ectocranial surface, modified endocranially. This defect is located approximately 20 mm from glabella and is approximately 30 mm long. Also noted is a possible healed blunt force depressed fracture on the left side of the frontal superior to the left orbit. This depression is small and circular, located approximately 40 mm superior to the inner left superior eye orbit. The right and left acetabula of the femora demonstrate acetabular notches, which are not pathologies but are normal anatomical variants (Mann and Hunt 2012).

Dental Inventory and Oral Health
The maxilla is fragmented and the mandible is complete. Teeth #1, 2, 24, and 25 were lost postmortem. Teeth #5, 14, 17–19, and 29–32 were lost antemortem. Teeth #15 and 16 have no associated alveolar bone, therefore, it is indeterminate if they were lost antemortem or postmortem. Little wear is noted on available teeth. Tooth #3 has a carious lesion that destroyed the crown and presents radicular hypercementosis on the roots. Tooth #4 has a carious lesion on the buccal surface near the cemento-enamel junction and tooth #21 has a carious lesion at the cemento-enamel junction on the facial surface. Mesial-interproximal carious lesions are noted on teeth #7 and 10, although tooth #24 is a postmortem loss with periodontal abscessing. Linear enamel hypoplasias are noted on teeth #6 and 26. Using the Cares Henriquez and Oxenham (2019) method, measurements of the hypoplasias indicate that age at formation occurred between 2.2–2.7 years of age.

Burial 10

General Description
This skeleton represents the highly fragmentary remains of an infant individual between 36–56 weeks intrauterine at time of death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains
The remains of Burial 10 present extreme fragmentation in the region of the long bones and craniofacial complex. Many skeletal elements were unavailable for analyses, however, the right and left pars petrosa were available and used for age estimation.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 10 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*
Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in infants, however, Burial 10 has no complete long bones.

Age: *36–56 weeks intrauterine*
Due to the extreme fragmentation of Burial 10, only the pars petrosa of the temporal were available for age estimation. Size and formation of the pars petrosa were compared to a fetal donor which was 36 weeks intrauterine. The pars petrosa of Burial 10 was slightly larger than the fetal donor. Therefore, a broad age range of 36–56 weeks intrauterine was estimated.

Biological Affinity: *Indeterminant*
Because of the fragmentation of the remains and lack of available biological affinity techniques for infant remains, biological affinity for Burial 10 is indeterminant.

Stature: *Indeterminant*
Because of the fragmentation of the remains and lack of available stature techniques for infant remains, stature for Burial 10 is indeterminant.

Skeletal Pathology: *None*
No pathologies were observed on Burial 10.

Trauma: *None*
No trauma was observed on Burial 10.

Dental Inventory and Oral Health
No dentition is present for observation.

Burial 11

General Description
This fragmentary skeleton represents a White female, between 32.5 to 85.7 years of age at death, with an indeterminant stature, and a possible shroud pin stain on the anterior portion of the frontal bone.

Inventory and Condition of Remains
Burial 11 exhibits high fragmentation of the thorax, pelvis, and proximal and distal ends of the long bones. The cranium was reconstructed after cleaning, and some of the maxillary and mandibular dentition was available for analyses, although most of the mandible was edentulous. The skull and measurements from the post-crania were the only elements available for sex estimation.

Green staining is located on the anterior portion of the frontal bone. This staining most likely results from a copper shroud pin stain (Morris 1981).

Minimum Number of Individuals: *One*
The skeletal remains of Burial 11 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Female*
Due to the highly fragmented pelvis and post crania, sex was estimated from cranial non-metric and metric analysis.

Following Walker (2008), Burial 11 was scored as having a slight nuchal crest (score=2), small mastoid (score=2), sharp orbital margins (score=2), and a non-projecting glabella (score=1), with a prominent mental eminence (score=4). The scores using Walker's six discriminant functions classified Burial 11 as both male and female (see Table 7). However, the resulting classifications that have both high accuracy and high probabilities (glabella, mastoid, mental eminence and glabella, mastoid) suggest that Burial 11 is female.

Table 7: Sex Estimation of Burial 11 using Walker's Discriminant function formula

Estimation	Probability Male	Probability Female	Accuracy	Variables in Analysis
Female	0.31	0.69	88/86	Glabella, mastoid, mental eminence
Female	0.05	0.95	85/83	Glabella, mastoid
Male	0.52	0.48	87/82	Glabella, mental eminence
Male	0.88	0.12	70/78	Mental eminence, mastoid
Male	0.97	0.03	78/78	Supra-orbital, mental eminence
Female	0.31	0.69	77/83	Nuchal crest, mastoid

Using FORDISC 3.1 (Jantz and Ousley 2005), Burial 11 was compared to both males and females of all reference groups (19th Century American Blacks and Whites and 20th Century Mexicans). Burial 11 is most similar to American White females with a posterior probability of 0.630, followed by American Black females with a posterior probability of 0.259, suggesting Burial 11 is most similar to females than males.

Based on the discriminant function analyses of cranial nonmetric and metric traits, Burial 11 is estimated as female.

Age: *32.5–85.7 years*
Many of the age indicators from the skeleton were fragmentary or unobservable. Only three of the cranial sutures were scored following the descriptions outlined in Milner and Boldsen (2016), the sagittal obelica, lamdoidal asterica, and zygomaticomaxillary.

The suture scores were entered into the ADBOU (Boldsen, et al. 2002). Burial 11 is estimated to be 32.5 to 85.7 years of age at death, with a maximum likelihood (point estimate) of 32.5 years.

Biological Affinity: *White*
Although the cranium of Burial 11 was fragmented, a total of nine measurements were available for analysis: ASB, FMB, FRC, GOL, OCC, OCS, PAC, WMH, and XCB. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 74% of the time, greater than chance alone. Burial 11 is

most similar to the 19th Century American White group with a posterior probability of 0.76 and a typicality of 0.13. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups (Ousley and Jantz 2005:96).

Based on the overall classification rate of reference groups, and high posterior and typicality probabilities, Burial 11 is estimated as White.

Stature: *Indeterminant*
Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Skeletal Pathology: *None*
No pathologies were observed on Burial 11.

Trauma: *None*
No trauma was observed on Burial 11.

Dental Inventory and Oral Health
The maxilla is fragmentary, and the mandible is mostly complete. Most of the dentition is missing antemortem or unobservable. The only teeth present are #6, 7, and 21–27 and they are fully developed. Teeth #1–3 and 11–16 are scored as unobservable as there is no associated alveolar bone. Teeth #4, 5, 8–10, 17–20, and 28–32 are missing antemortem with active or full resorption. Tooth #18 is represented by root fragments only. Teeth #19, 20, 27, and 28 are also represented by roots and with total crown destruction. Slight to moderate wear is noted on the anterior dentition. Dental caries are noted on teeth #6 and 21–22. Tooth #6 exhibits a distal interproximal carious pit, tooth #7 exhibits a carious lesion on the facial surface superior to the CEJ, tooth #21 exhibits mesial and distal interproximal carious lesions, and tooth #22 exhibits an interproximal pit at the cemento-enamel junction. Moderate dental calculus is present on the anterior dentition, especially marked on the lingual surface. Periodontal disease is extreme, with the posterior dentition exhibiting active and complete resorption. Two linear vertical hypoplasias are noted on tooth #27.

Burial 12

General Description
This mostly complete skeleton represents a White female, between 21.6 to 34 years of age at death, with an estimated stature of approximately 4’6” to 5’0”.

Inventory and Condition of Remains
The remains of Burial 12 have a highly fragmented craniofacial region and some fragmentation in the thoracic and pelvic region. Proximal and distal epiphyses of the long bones are in good condition and were used in the analysis of sex. Parts of the cranial vault were reconstructed after

cleaning and a nearly complete set of adult maxillary and mandibular dentition were available for dental analyses. In addition, the auricular surface was available for age estimation analysis.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 12 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Female*
Although the pelvis was fragmentary, the sciatic notch and the auricular surface were used to estimate sex. The sciatic notch and auricular surface were assessed based on qualitative features as outlined in Buikstra and Ubelaker (1994). The sciatic notch is semi-wide, the auricular surface is raised, and a well-defined pre-auricular sulcus is present. Both the sciatic notch and auricular surface indicate a probable female.

Post-cranial sex was estimated based on available postcranial measurements following Spradley and Jantz (2011) criteria for American Whites. Multivariate formulae are preferred over sectioning points, however, Burial 12 only had enough complete, non-estimated measurements for one discriminant function (DF) formula using the clavicle. Therefore, several sectioning points were also used to bolster the estimation. For discriminant scores, values above zero are estimated male and values below zero, female. The DF score for the clavicle was -7.47 with a classification accuracy of 94%. For sectioning points, values above the sectioning point are estimated as male, while values below the sectioning point are estimated as female. Sectioning points from the femur, humerus, and clavicle (see Table 8) also provide a sex estimation of female. There were not enough features present on the skull to use Walker's sex estimation formulae. However, the supra-orbital margin scored a three and the glabella projection a one, suggestive of female.

Based on morphological observations of the pelvis and postcranial estimation of sex and the overall gracility of the remains, Burial 12 is estimated as a female.

Table 8: Univariate sex estimation of Burial 12

Measurement	Sectioning Point	Burial 12	Classification Accuracy (%)	Estimated Sex
Femur Head Diameter	45	42	88	Female
Humerus Head Diameter	46	40	83	Female
Clavicle	148	124	82	Female

Age: *21.6–34 years*
Because of the fragmentation of the cranium and pubic symphysis, the right and left auricular surface were the only indicators evaluated for age estimation. Numerous features of the right and left auricular surfaces were scored, such as morphology, topography, texture, and posterior iliac exostoses following descriptions outlined in (Milner and Boldsen 2016). Auricular surface topography displayed either a median elevation, an undulating appearance, or both

characteristics. The morphology was less than one-third covered by billows and flat. The inferior surface texture was smooth. Posterior iliac exostoses were smooth, rounded, or both.

All auricular surface traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 12 is estimated to be 21.6–34 years of age at death, with a maximum likelihood (point estimate) of 21.6 years. Additionally, the fusion is incomplete for the first and second sacral segments, indicating that Burial 12 is a younger individual and closer in age to the point estimate of 21.6 years.

Biological Affinity: *White*
Although the cranium was fragmented, a total of 11 measurements were available for analysis: ASB, FMB, FRC, FRS, GOL, IML, NOL, PAC, PAS, XCB, and XML. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 70.6% of the time, greater than chance alone. Burial 09 is most similar to the 19th Century American White group with a posterior probability of 0.76 and a typicality of 0.30. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups.

Even though the posterior probability is high, the classification of reference groups is 70%. While greater than chance alone, the classification is lower than 75% rendering Burial 12 a moderate classification.

Stature: *4'6" to 5'0"*
Stature was estimated with FORDISC 3.1 (Jantz and Ousley 2005) and all available postcranial measurements using the 19th Century cadaver stature for White females option. The measurements with the highest correlation to stature were the femur, humerus, and radius maximum lengths, with an R-square of 0.733. The stature for Burial 12 is estimated to be between 55.2 to 60.3 inches, or 4'6" to 5'0".

Skeletal Pathology: *None*
No pathologies were observed on Burial 12.

Trauma: *None*
No trauma was observed on Burial 12.

Dental Inventory and Oral Health
The maxilla is highly fragmented although the mandible is complete. The majority of the dentition is complete; however, no information is available for teeth #5–8, as associated alveolar bone is missing postmortem. Teeth #29–30 are missing postmortem, although periodontal abscessing is present in the alveolus with bone loss and resorption present. Generalized dental calculus is present on most of the dentition. A cementum pearl is located on tooth #11 and a supernumerary tooth is located superior to the apex of Tooth #9. Dental caries are noted on the

disto-occlusal surface of tooth #19 and the occlusal surface of #32. Enamel hypoplasias are noted on teeth #9, 11, 21, 22, and 24. Using the Cares Henriquez and Oxenham (2019) method, measurements of the hypoplasias indicate that age at formation occurred between 1.3–5.8 years of age.

Burial 13

General Description
This skeleton represents an infant, approximately 7.5 ± .18 to 10.5 ± .24 months old at time of death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains
The remains of Burial 13 are fragmentary. Extreme fragmentation was present in the craniofacial complex, limbs, and thorax. However, some large portions of the cranium and a complete deciduous dentition was available for analysis.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 13 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*
Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 13 has no complete long bones.

Age: *7.5 ± .18 to 10.5 ± .24 months*
For juvenile remains, age is estimated from the eruption and development of the available deciduous dentition. Using the methods outlined by AlQahtani, et al. (2010), development and eruption of the deciduous dentition was noted. Further, teeth A, B, K, and L (the maxillary right and mandibular left first and second molars) were unerupted, however, the alveolar bone disintegrated upon cleaning. Based on overall development and eruption, Burial 13 is estimated as 7.5 ± .18 to 10.5 ± .24 months of age at death.

Biological Affinity**:** *Indeterminant*
Because of the fragmentation of the remains and lack of available biological affinity techniques for infant remains, biological affinity for Burial 13 is indeterminant.

Stature: *Indeterminant*
Because of the fragmentation of the remains and lack of available stature techniques for infant remains, stature for Burial 13 is indeterminant.

Skeletal Pathology: *None*
No pathologies were observed on Burial 13.

Trauma: *None*
No trauma was observed on Burial 13.

Dental Inventory and Oral Health
The maxilla and mandible are not present; however, all deciduous teeth are present. The upper right molars (#A and B) and the lower left molars (#K and L) were unerupted. Incomplete crown development was noted for maxillary and mandibular second molars (#A, J, K, and T). All other crowns are complete, but roots are damaged and can't be scored. No pathology noted on crowns.

Burial 14

General Description
This skeleton represents the highly fragmentary remains of an infant that was 7.5 ± 0.18 to 10.5 ± 0.24 months of age at death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains
The skeletal remains of Burial 14 were encased in compact soil, making cleaning and analyses difficult to attain. Cleaning of the remains would further fragment the existing skeletal elements, so they were left within the soil to maintain the integrity of the remains and to gather information for the skeletal inventory. The cranium, craniofacial complex, pelvis, thorax, and limbs were completely fragmentary. However, a mostly complete deciduous dentition was present.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 14 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*
Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however Burial 14 has no complete long bones.

Age: *7.5 ± 0.18 to 10.5 ± 0.24 months*
For juvenile remains, age is estimated from the eruption and development of the available deciduous dentition. The dentition for Burial 14 was mostly complete. Using the methods outlined by (AlQahtani, et al. 2010), development and eruption of the deciduous dentition was noted. Teeth D–G and N–Q (the deciduous maxillary and mandibular incisors) had roots that were broken post-mortem and this indicator was used to narrow down the age range. However, teeth A, B, I, J, K, L, S, and T (the deciduous maxillary and mandibular molars) showed no signs of root formation, only crown completeness. Because of this, Burial 14 was estimated as 7.5 ± 0.18 to 10.5 ± 0.24 months of age at death.

Biological Affinity: *Indeterminant*
Because of the fragmentation of the remains and lack of available biological affinity techniques for subadult remains, biological affinity for Burial 14 is indeterminant.

Stature: *Indeterminant*
Because of the fragmentation of the remains and lack of available stature techniques for subadult remains, stature for Burial 14 is indeterminant.

Skeletal Pathology: *Indeterminant*
Burial 14 is too fragmented for observation of skeletal pathologies.

Trauma**:** *None*
No trauma was observed on Burial 14.

Dental Inventory and Oral Health
The deciduous dentition is almost complete, only lacking the mandibular canines (M and R), postmortem loss. Tooth A, left maxillary second molar, is fragmentary. There is no alveolar bone as the entire skull is fragmentary. There are no permanent teeth found with these remains. Development based on the crown and root formation cannot be scored because of postmortem destruction, although the incisors indicate some root development.

Burial 15

General Description:
This skeleton represents the fragmentary remains of an infant individual between birth ± 0.32 to 1.5 ± 0.17 months of age at death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains:
The skeletal remains of Burial 15 are fragmentary, with the majority of the cranium and craniofacial complex fragmented post-mortem. However, the right and left sides of the mandibular body were present with deciduous dentition unerupted in the alveolar bone, aiding in age estimation.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 15 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*
Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 15 has no complete long bones.

Age: *Birth ± 0.32 to 1.5 ± 0.17 months*
For juvenile remains, age is estimated from
the eruption and development of the available deciduous dentition. The dentition for Burial 15 was mostly fragmentary, however, teeth N and O (left deciduous mandibular central and lateral incisors) were visible in the alveolar bone of the mandible. Using the methods outlined by AlQahtani, et al. (2010), development and eruption of the deciduous dentition was noted. Teeth N and O were unerupted in the mandible with the crowns 3/4 complete. Because the mandibular incisors were unerupted, Burial 15 was estimated to be newborn ± 0.32 to 1.5 ± 0.17 months of age at death.

Biological Affinity: *Indeterminant*
Because of the fragmentation of the remains and lack of available biological affinity techniques for subadult remains, biological affinity for Burial 15 is indeterminant.

Stature: *Indeterminant*
Because of the fragmentation of the remains and lack of available stature techniques for subadult remains, stature for Burial 15 is indeterminant.

Skeletal Pathology: *None*
No pathologies were observed on Burial 15.

Trauma: *None*
No trauma was observed on Burial 15.

Dental Inventory and Oral Health
No dentition is present for observation or analysis.

Burial 16

General Description
This mostly complete skeleton represents a Mexican male, between 52 and 90.9 years of age at death, with an indeterminant stature. A healed fracture is noted on the left first metatarsal.

Inventory and Condition of Remains
The remains of Burial 16 are mostly complete, although fragmentary in the craniofacial complex. Additionally, there is high fragmentation in the region of the thorax and pelvis. Proximal and distal epiphyses of the long bones are also fragmentary. The maxilla was fragmentary, and the mandible was completely edentulous, leaving few teeth for analyses.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 16 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
Because of the fragmentation of the pelvis, sex was estimated using the postcranial skeleton and the cranium.

Post-cranial sex was estimated based on available measurements following Spradley, et al. (2015) criteria for Mexican Hispanics. Although multivariate formulae are preferred over sectioning points, Burial 16 does not have enough measurements for discriminant function formulae. Therefore, sectioning points were used for available measurements. Values above the sectioning point are estimated as male, while values below the sectioning point are estimated as female. Sectioning points from the tibia and humerus (see Table 9) provide a sex estimation of male.

Tibia circumference at nutrient foramen and humerus least circumference at mid-shaft were the only available postcranial measurements for sex estimation, both with a reported accuracy of 83%. Based on these measurements falling above the sectioning point, Burial 16 is estimated as male.

Sexually dimorphic cranial traits defined in Buikstra and Ubelaker (1994) included the mastoid process (score=3), the supra-orbital margin (score=3), nuchal crest (score=2) and the glabella prominence (score=3). These scores were used in the Walker (2008) logistic regression equations to estimate sex based on features of the skull. Using the glabella and mastoid scores, the Walker method provides an estimation of male with a probability of 0.84.

Based on the postcranial sectioning points, the logistic regression of cranial trait scores, and the overall robustness, Burial 16 is estimated as male.

Table 9: Univariate sex estimation of Burial 16

Measurement	Sectioning Point	Burial 16	Classification Accuracy (%)	Estimated Sex
Tibia Ant./Post. Diameter Nutrient Foramen	31	34	83	Male
Humerus Least Circumference at Midshaft	56	60	83	Male

Age: *52–90.9 years*
The auricular surface and cranial sutures were the primary indicators evaluated for age estimation. The sagittal suture of the cranium and the auricular surface were the only features present to score, such as morphology and topography, following descriptions outlined in Milner and Boldsen (2016).

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 16 is estimated to be 52 to 90.9 years of age at death, with a maximum likelihood (point estimate) of 76.8 years. Further, the mandible for Burial 16 is completely edentulous, suggestive of an age range close to the point estimate.

Biological Affinity: *Mexican*
The cranium was highly fragmented resulting in too few cranial measurements for analysis. However, four macromorphoscopic features were available for observation and statistical analysis. These macromorphoscopic traits were utilized in the MaMD program by Hefner (2018). Traits scored include the inferior nasal aperture (3), malar tubercle (0), posterior zygomatic tubercle (0), and zygomaticomaxillary suture course (0). Using reference groups comprised of American Blacks and Whites and Southwest Hispanics in the MaMD program, Burial 16 is most similar to Southwest Hispanics with a posterior probability of 1.0. The posterior probability indicates the probability of group membership based on the unknown belonging to one of the reference groups. The reference group overall classification is 75% and the posterior probability of the classification is 1.0. The overall morphology of the cranial vault is short and broad which is also consistent with Hispanic crania.

Based on the high posterior probability and the overall classification of the reference groups, Burial 16 is classified as Mexican and is a good classification. The Southwest Hispanic reference group MaMD is comprised mostly of migrants that died in Arizona attempting to cross the U.S./Mexico border. According to Anderson (2008), 90% of migrant deaths in Arizona are from Mexico, therefore, the label Mexican is utilized for this estimation.

Stature: *Indeterminant*
Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Skeletal Pathology: *Healed fracture*
The first left metatarsal exhibits bone formation and remodeling present at the distal portion (phalanx articulation), with healed fracture present at proximal end. Slight osteoarthritic lipping is noted on the superior and inferior vertebral bodies.

Trauma: *None*
No trauma was observed on Burial 16.

Dental Inventory and Oral Health
The maxilla is fragmentary and the mandible is almost complete. The entire mandibular dentition was lost antemortem, in addition to maxillary teeth #8 and 9, all with full resorption. A large portion of the maxilla is missing postmortem resulting in no information for teeth #1–3, 6, 7, and 13–16. Only teeth #4, 5, and 10–12 are present and exhibit moderate wear. Teeth #4 and 5 exhibit interproximal mesial and distal caries and teeth #11 and 12 exhibit interproximal distal caries. Hypoplasias are present on teeth #11 and 12. Using the Cares Henriquez and Oxenham (2019) method, measurements of the hypoplasias indicate that age at formation occurred between 2.8–4.4 years of age.

Burial 17

General Description

This mostly fragmentary skeleton represents a juvenile between 3.5 ± 0.48 to 4.5 ± 0.58 years of age at death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains

The remains of Burial 17 are highly fragmentary. Only portions of the cranial vault, the dentition, four long bones and seven rib fragments are present. Both the permanent and deciduous dentition were present and available for age estimation.

Minimum Number of Individuals: *One*

The skeletal remains of Burial 17 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*

Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 17 has no complete long bones.

Age: *3.5 ± .48 to 4.5 ± .58*

For juvenile remains, age is estimated from the eruption and development of the available deciduous and permanent dentition. The deciduous dentition for Burial 17 was mostly complete, with permanent crowns available for analysis. Using the methods outlined by AlQahtani, et al. (2010), development of the deciduous and permanent dentition was noted. All deciduous teeth had root formation, however, most of the roots were fragmented post-mortem; therefore, crown formation was the focus of the analysis. All deciduous crowns were completely formed. Additionally, the crowns of teeth #3, 14, 23–26, and 30 were completely formed. However, these crowns were not in the alveolar bone, and this did not allow for eruption estimations to be made. However, tooth 27 was present in the alveolar bone, allowing for dental eruption estimation. Based on the crown formation and eruption of the dentition, Burial 17 is estimated as 3.5 ± 0.48 to 4.5 ± 0.58 years of age at death.

Biological Affinity: *Indeterminant*

Currently, it is not considered good practice to estimate biological affinity of juveniles. While it is possible to get a broad-based biological affinity estimation using dental metrics from the permanent dentition, Burial 17 only has too few permanent teeth for a reliable estimation attempt.

Stature: *Indeterminant*

Because of the fragmentation of the remains and lack of available stature techniques for juvenile remains, stature for Burial 17 is indeterminant.

Skeletal Pathology: *None*
No pathologies were observed on Burial 17.

Trauma: *None*
No trauma was observed on Burial 17.

Dental Inventory and Oral Health
Burial 17 is characterized by a mixed dentition. The maxilla is fragmentary although the mandible is mostly complete. All deciduous teeth are present except C–G. Tooth A is scored as root 1/4 complete, B is root 1/2 complete, P is root apex 1/2 closed, and K and L are root 3/4 complete. The remainder of the teeth are scored as unobservable due to postmortem destruction. Permanent teeth #3, 9, 14, 19, 22–27, and 30 are present. Teeth #19, 23–26, and 30 are scored as crown 3/4 complete and teeth #22 and 27 are scored as crown 1/2 complete. The maxillary permanent teeth cannot be scored due to postmortem damage. No dental caries are noted on any teeth and no hypoplasias are noted on the permanent dentition.

Burial 18

General Description
This mostly complete skeleton represents a Broad Estimation Asian male, 41 to 89.5 years of age at death, with an indeterminant stature.

Inventory and Condition of Remains
The remains of Burial 18 are highly fragmented in the craniofacial complex, pelvis, and thorax. The long bones were mostly complete, with some post-cranial measurements available for sex estimation. Additionally, the permanent dentition was mostly complete.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 18 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
The only pelvic trait available for sex estimation was the greater sciatic notch which scored as intermediate (score=3) as outlined in Buikstra and Ubelaker (1994). Due to the ambiguity of this trait's score, sex was estimated based on postcranial metrics and cranial nonmetric traits. Post-cranial sex was estimated based on available measurements following criteria for Mexican Hispanics from Spradley, et al. (2015). Although multivariate formulae are preferred over sectioning points, Burial 18 does not have enough measurements for discriminant function formulae. Therefore, sectioning points were used for available, non-estimated, measurements. Values above the sectioning point are estimated as male, while values below the sectioning point are estimated as female. Sectioning points from the humerus and tibia (see Table 10) provide a sex estimation of male.

Sexually dimorphic traits of the cranium were scored according to Buikstra and Ubelaker (1994) and utilized in a logistic regression following Walker (2008). Cranial traits include the nuchal crest (score=4), mastoid process (score=3), orbital margin (score=4), glabella (score=4) and mental eminence (score=3). Walker (2008) uses logistic regression to estimate sex based on features of the skull. Using the features listed above, the Walker method provides a 99% probability of male.

Based on the univariate sex estimation of the humerus and tibia, as well as the statistical evaluation of nonmetric traits, Burial 18 is estimated as male.

Table 10: Univariate sex estimation of Burial 18

Measurement	Sectioning Point	Burial 18	Classification Accuracy (%)	Estimated Sex
Humerus Epicondylar Breadth	56	63	84	Male
Tibia Ant./Post. Diameter Nutrient Foramen	31	38	83	Male

Age: *41–89.5 years*

The right auricular surface and the zygomaticomaxillary suture were the primary indicators used for age estimation. Cranial suture closure and the morphology, topography, and texture of the auricular surface were scored following descriptions outlined in (Milner and Boldsen 2016). The auricular surface topography was flat to irregular. Morphology of the auricular surface was also flat. The inferior texture displayed smoothness and microporosity, while the posterior iliac exostoses were smooth or rounded. Cranial sutures were scored as to whether they were open, fused, partially fused or completely obliterated. Burial 18 had a zygomaticomaxillary suture that was juxtaposed.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 18 is estimated to be 41 to 89.5 years of age at death, with a maximum likelihood (point estimate) of 73.2 years.

Biological Affinity: *Broad Estimation Asian*

There are too few cranial measurements and nonmetric traits for statistical biological affinity estimation. Therefore, dental metrics, using a global data set in conjunction with random forest classification, were used to provide a broad-based geographic ancestry estimation using a freely available GUI provided by Kenyhercz, et al. (2019). The program contains African, European, and Asian reference groups and Burial 18 was compared to all reference groups with pooled sex. The analysis suggests that Burial 18 is most similar to Asians with a posterior probability of 0.634, followed Europeans with a posterior of 0.322. The results suggest that the individual is more similar to Asians than Europeans and is not similar to Africans.

The overall reference group classification was 97.6%, well above random chance. However, the posterior probability is less than 75%. Therefore, both the broad and narrow estimations should be considered probable.

Stature: *Indeterminant*
Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Skeletal Pathology**:** *None*
Burial 18 is fragmented and friable with cortical destruction that obscures identification of potential pathological features; none were noted on identifiable fragments.

Trauma: *None*
No trauma was observed on Burial 18.

Dental Inventory and Oral Health
The maxillary and mandibular bone is fragmentary and incomplete, as a result, a portion of the dentition was unobservable due to loss of the alveolus. Teeth #2, 4, 6–9, 11, 12, 17, 18, 20–24, 26–29, 31, and 32 are present and fully developed. Tooth #30 was lost antemortem. The remaining teeth have no associated alveolus. Then anterior maxillary dentition and mandibular right posterior dentition wear scores indicate moderate dental wear. The mandibular left dentition has less wear than the right indicating an asymmetric wear pattern. Tooth #2 has an occlusal pit (caries lesion) in the beginning stages. Tooth #4 has an occlusal pit that has destroyed 1/4 of the surface. Tooth #9 exhibits abscessing the alveolar socket, although the tooth is still present. Moderate periodontal disease is noted based on resorption of the alveolar bone. Tooth #23, 24, and 26 each exhibit one linear enamel hypoplasia. Using the Cares Henriquez and Oxenham (2019) method, measurements of the hypoplasias indicate that age at formation occurred between 2.5–2.6 years of age.

Burial 19

General Description
This skeleton represents the fragmentary remains of an infant individual between 36–56 intrauterine weeks old at death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains
Burial 19 was highly fragmentary, with many skeletal elements missing post-mortem. The cranium, long bones, thorax, pelvis, and dentition were all highly fragmentary.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 19 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*
Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in infants, however, Burial 19 has no complete long bones.

Age: *36–56 weeks intrauterine*
Due to the extreme fragmentation of Burial 19, only the pars petrosa of the temporal were available for age estimation. Size and formation of the pars petrosa were compared to a fetal donor that was 36 weeks intrauterine. The pars petrosa of Burial 19 was slightly larger than the fetal donor. Therefore, a broad age range of 36–56 weeks intrauterine was estimated.

Biological Affinity: *Indeterminant*
Currently, it is not considered good practice to estimate biological affinity of infants. While it is possible to get a broad-based biological affinity estimation using dental metrics from the permanent dentition, Burial 19 only has too few permanent teeth for a reliable estimation attempt.

Stature: *Indeterminant*
Because of the fragmentation of the remains and lack of available stature techniques for infant remains, stature for Burial 19 is indeterminant.

Skeletal Pathology: *None*
No pathologies were observed on Burial 19.

Trauma: *None*
No trauma was observed on Burial 19.

Dental Inventory and Oral Health
No teeth are present for inventory or analysis.

Burial 20

General Description
This skeleton represents the remains of a Mexican male, between 30.6 to 89 years of age at death, with an estimated stature of approximately 5’1” to 5’6”.

Inventory and Condition of Remains
Most of the skeleton is severely fragmented, including the facial, thoracic, and pelvic regions. The long bones are primarily represented by shafts. However, the femoral heads and distal epiphyses of the humerii were available for the analysis of sex.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 20 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
The pelvis was too fragmented for sex estimation. Therefore, post-cranial sex was estimated based on available measurements following criteria for Mexican Hispanics from Spradley, et al. (2015). Using a multivariate equation, the ulna provided a sex estimation of male (see Table 11).

Because only one bone was available for estimation, cranial traits were also used. The Walker (2008) method provided conflicting and ambiguous results (see Table 12). Therefore, using the custom reference data in FORDISC 3.1 (Jantz and Ousley 2005), Burial 20 was compared against 19th Century Black and White and 20th Century Mexican males and females for a multivariate estimation of sex through cranial measurements (see Biological Affinity section below for measurements utilized). The results indicate that Burial 20 is most similar to males, specifically Mexican males, with a posterior probability of 0.477, followed by American White males with a posterior probability 0.223. Further, Burial 20 is most distant from all females, as judged by the rank order of Mahalanobis distances.

Based on the multivariate estimation of sex from the ulna and cranial measurements, Burial 20 is estimated as male.

Table 11: Multivariate sex estimation of Burial 20

Bone	Score	Classification Accuracy (%)	Estimated Sex
Ulna	3.92	81	Male

Table 12: Sex Estimation of Burial 20 using Walker's Discriminant function formula

Estimation	Probability Male	Probability Female	Accuracy	Variables in Analysis
Female	0.22	0.78	70/84	Mental eminence, mastoid
Male	0.67	0.33	78/78	Orbit, mental eminence
Female	0.31	0.69	77/83	Nuchal crest, mastoid

Age: *30.6–89 years*
Due to the fragmentation of the remains, only the right and left auricular surfaces and cranial sutures were available to estimate age following Milner and Boldsen (2016). The auricular surface topography displayed a median elevation or was flat to irregular. The morphology was less than one-third covered by billows and/or flat. The inferior surface texture was smooth and had some microporosity. Cranial sutures were scored as to whether they were open, fused, partially fused, or completely obliterated. Coronal pterica was partially obliterated and punctuated. Sagittal obelica was juxtaposed and partially obliterated. Lamdoidal asterica was juxtaposed. Zygomaticomaxillary sutures were punctuated and obliterated.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 20 is estimated to be 30.6 to 89 years of age at death, with a maximum likelihood (point estimate) of 69.6 years.

The maxilla is completely edentulous, however, there is little arthritic and/or degenerative change on most joint surfaces suggesting that Burial 20's age is likely between the lower estimate to the mid-point.

***Biological Affinity**: Mexican*
Although the cranium was fragmented, a total of nine measurements were available for analysis: ASB, AUB, MDH, OCC, OSC, PAC, PAS, WMH, and XCB. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 77% of the time, greater than chance alone. Burial 20 is most similar to the Mexican group with a posterior probability of 0.67 and a typicality of 0.89. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups.

With the posterior probability of 0.67 and the classification of reference groups at 77%, the overall classification for Burial 20 is considered moderately strong.

***Stature:** 5'1" to 5'6"*
Stature was estimated using FORDISC 3.1 (Jantz and Ousley 2005) and all available postcranial measurements using the 19th Century cadaver stature reference data for "any" group, as only population specific criteria exist for American Blacks and Whites. The measurements with the highest correlation to stature were calcaneus maximum length and ulna physiological length, with an R-square of 0.623. The stature for Burial 20 is estimated to be between 61.3 to 68.0 inches or 5'1" to 5'6".

***Skeletal Pathology:** Osteoarthritis*
Osteoarthritic lipping is noted on the first and second lumbar vertebrae.

***Trauma:** None*
No trauma was observed on Burial 20.

Dental Inventory and Oral Health
The anterior portion of the maxilla was present and indicative that Teeth #5–12 were lost antemortem to complete resorption. Teeth #1–4 and 13–16 have no associated alveolar bone and are coded as unobservable due to postmortem loss of alveolar bone. The mandible is complete, and the majority of teeth are present with the exception of teeth #18, 22, 25, and 31, which were lost antemortem as evidenced by complete alveolar resorption. The teeth that are present are developmentally complete. Moderate dental wear is noted on the mandibular dentition. Dental caries are present on #17 and 32, both teeth exhibit moderate pits at the facial cemento-enamel junction. Burial 20 exhibits extreme periodontal disease, over 3/4 of all roots are exposed, resorption is active, and teeth are held in place largely by soft tissue attachments. Mild to moderate calculus is apparent on all teeth; incisors have calculus build up on lingual surface. Dental wear is minimal to moderate. One linear enamel hypoplasia is noted on the lower right

canine (#27). Using the Cares Henriquez and Oxenham (2019) method, measurements of the hypoplasia indicate that age at formation occurred at approximately 3.5 years of age.

Burial 21

General Description
This mostly complete skeleton represents a Mexican male, between 29.3 to 84.5 years of age at death, with an estimated stature of approximately 5'1" to 5'7".

Inventory and Condition of Remains
The remains of Burial 21 are mostly complete, with fragmentation in the craniofacial, thoracic, and pelvic regions. Fragmentation and cortical flaking are consistent with historical burial taphonomy.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 21 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
Although the pelvis was fragmentary, the sciatic notch was available for the analysis of sex. However, this feature scored as ambiguous (score=3). Because of the ambiguity of the greater sciatic notch, post-cranial sex was estimated based on available postcranial measurements following the criteria for Mexican Hispanics in Spradley, et al. (2015).

Multivariate formulae are preferred over sectioning points and Burial 21 had enough complete measurements for three discriminant function (DF) formulae using the clavicle, humerus, and radius (Spradley, et al. 2015). For DF scores, values above zero are estimated male and values below zero, female. All DF scores for Burial 21 were above zero (see Table 13) providing a sex estimate of male.

Table 13: Multivariate sex estimation of Burial 21

Bone	Score	Classification Accuracy (%)	Estimated Sex
Clavicle	0.52	89	Male
Humerus	3.42	87	Male
Radius	7.55	90	Male

Using Walker (2008), sex was also estimated from fragments of the cranium, including the nuchal crest (score=2), mastoid process (score=3), supra-orbital margin (score=4), glabella (score=4), and mental eminence (score=3). Walker (2008) uses logistic regression to estimate sex based on a combination of these features. Using the glabella, mastoid, and mental eminence sex is estimated as male with a probability of .97.

Based on the postcranial estimation of sex, Burial 21 is estimated as a male.

Age: *29.3–84.5 years*
Due to the fragmentation of the remains, only the auricular surface and cranial sutures were available to estimate age to estimate age following Milner and Boldsen (2016). The right and left side auricular surface topography, morphology, inferior surface texture and superior posterior iliac exostoses were scored. The auricular surface topography displayed a median elevation and was flat to irregular. The morphology showed that the surface was less than one-third covered by billows and flat in some areas. The inferior surface texture was smooth while the superior posterior iliac exostoses was smooth and had rounded exostoses. Cranial sutures were scored as to whether they were open, fused, partially fused or completely obliterated. Coronal pterica was punctuated, sagittal obelica was obliterated, interpalatine was obliterated, and the zygomaticomaxillary suture was juxtaposed.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 21 is estimated to be 29.3 to 84.5 years of age at death, with a maximum likelihood (point estimate) of 55.1 years.

Biological Affinity: *Mexican*
Although the cranium was fragmented, a total of 7 measurements were available for analysis: PAC, MAB, PAS, XCB, FMB, FRS, and FRC. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 76% of the time, greater than chance alone. Burial 21 is most similar to the 19th Century American White group with a posterior probability of 0.79 and a typicality of 0.25. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups (Jantz and Ousley 2005).

Burial 21 has a high posterior probability is high and the classification of reference groups is greater than 75%, providing a strong classification.

Stature: 5’1” to 5’7”
Stature was estimated using FORDISC 3.1 (Jantz and Ousley 2005) and all available postcranial measurements using the 19th Century cadaver stature reference data for “Any” group, as only population specific criteria exist for Blacks and Whites. The measurements with the highest correlation to stature were the humerus and radius maximum lengths with an R-square of 0.733. The stature for Burial 21 is estimated to be between 61.0 to 68.3 inches, or 5’1” to 5’7”.

Skeletal Pathology: *Mandibular hypoplasia*
The mandible is asymmetric, with the left side higher at the body than the right, lateral to the mental symphysis. Burial 21 does not appear to have affected biomechanical functions of chewing. This is likely a congenital condition known as unilateral mandibular hypoplasia (Barnes 2012). Schmorl’s nodes are noted on thoracic vertebra 7–12. The left talus exhibits os trigonum, a detached posterior tubercle resulting in a separate bone/ossicle (Mann and Hunt 2012).

Trauma: *None*
No trauma was observed on Burial 21.

Dental Inventory and Oral Health
The maxilla and mandible are complete and only tooth #28 is missing, antemortem. As the maxilla and mandible were present and complete, teeth were observed in occlusion. There is no dental crowding, all teeth are in full occlusion. The maxillary central incisors exhibit shoveling and mild winging. Mild dental wear is noted on the anterior maxillary and mandibular dentition. Burial 21 exhibits no dental caries and minimal calculus. Tooth #27 displays periodontal abscessing with bone loss. Teeth #22 and 27 each exhibit a linear enamel hypoplasia. Using the Cares Henriquez and Oxenham (2019) method, measurements of the hypoplasias indicate that age at formation occurred between 3.0–3.5 years of age.

Burial 22

General Description
This mostly complete skeleton represents a White male, between 27.6 to 45 years of age at death, with an indeterminant stature.

Inventory and Condition of Remains
The remains of Burial 22 are incomplete, with high fragmentation in the craniofacial, thoracic, and pelvic regions. Proximal and distal epiphyses of the long bones are also fragmentary. A full set of adult maxillary and mandibular dentition were available for dental analyses.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 22 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
The only portion of the pelvis available for sex estimation was the greater sciatic notch, which was assessed based on qualitative features outlined in Buikstra and Ubelaker (1994). The sciatic notch suggests probable male based on a slightly narrow width. Due to the fragmentation of the remainder of the pelvis, sex was estimated from the postcranial skeleton and statistical evaluation of nonmetric cranial traits.

Following Spradley and Jantz (2011), postcranial sectioning points for American Whites were used to estimate sex. Only sectioning points with classification accuracies greater to or equal to 80% were used. Postcranial measurements from the humerus, femur, and tibia were available for estimation and suggest that Burial 22 is male (see Table 14).

Using Walker (2008), sex was estimated from fragments of the cranium, including the nuchal crest (score =3), mastoid process (score = 2), supra-orbital margin (score = 4), and glabella

(score = 4). Walker (2008) uses logistic regression to estimate sex based on a combination of these features. Using the glabella and mastoid, sex is estimated as male with a probability of .85.

Based on Spradley and Jantz (2011), the greater sciatic notch morphology, and the Walker (2008) method, the estimated sex for Burial 22 is male.

Table 14: Univariate sex estimation of Burial 22

Measurement	Sectioning Point	Burial 22	Classification Accuracy (%)	Estimated Sex
Femur max. head diameter	45	53	88	Male
Humeral epicondylar breadth	60	64	87	Male
Tibia circumference nutrient foramen	92	104	81	Male

Age: *27.6–45 years*

Due to the fragmentation to the skeletal remains, only the middle surface morphology of the right and left auricular surfaces and all cranial sutures were available for age estimation analysis. The middle surface morphology and cranial sutures were scored as scored as outlined in Milner and Boldsen (2016). The auricular surface morphology was less than one-third covered by billows. Cranial sutures were scored as to whether they were open, fused, partially fused or completely obliterated. Coronal pterica was juxtaposed, sagittal obelica, zygomaticomaxillary, and interpalatine sutures were punctuated and obliterated, and lamdoidal asterica was juxtaposed. The cranial sutures on Burial 22 were juxtaposed, punctuated, and obliterated.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 22 is estimated to be 27.6–45 years of age at death, with a maximum likelihood (point estimate) of 27.6 years.

Additionally, little to no degenerative changes were seen on the skeletal elements suggesting that Burial 22 is likely close to the point estimate for age.

Biological Affinity: *American White*

Although the cranium was fragmented, a total of ten measurements were available for analysis: ASB, BBH, FRC, GOL, NLB, OBH, OCC, PAC, WMH, and XCB. These craniometric measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 90.3% of the time, greater than chance alone. Burial 22 is most similar to the 19th Century American White group with a posterior probability of 0.959 and a typicality of 0.60. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that he unknown belongs to any of the reference groups.

Due to the number of available craniometric variables, the overall classification rate of reference groups, and the posterior and typicality probabilities, the overall group membership for Burial 22 is estimated to be American White and represents a strong classification.

Stature: *Indeterminant*
Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Skeletal Pathology**:** *None*
No pathologies were observed on Burial 22.

Trauma: *None*
No trauma was observed on Burial 22.

Dental Inventory and Oral Health
The maxillary bone is fragmentary and incomplete, however, teeth associated with the missing alveolar bone are present. The mandible is fragmentary although mostly complete. Teeth #3, 4, 7, and 9 are missing antemortem. Tooth #8 is present; however, the crown and root are fragmented, postmortem. Teeth #12–15 are present with no associated alveolar bone as it was lost postmortem. Tooth #16 is missing and unobservable. Tooth #21 is missing from the mandibular dentition postmortem; the remainder of the mandibular dentition is present. Tooth #15 has a large carious lesion on the distolingual cusp, although signs of moderate wear are present on the remaining and occlusal surface. Tooth #31 also has a large carious lesion located on the distolingual and occlusal surface. Tooth #26 has a carious lesion on the mesial interproximal and labial surface. Mild dental wear is noted on the majority of the dentition, the maxillary anterior dentition exhibits the most wear (moderate) and the left maxillary and mandibular molars have greater wear scores than the right, indicating an asymmetrical wear pattern. Hypercementosis is noted on teeth# 18 and 30. No hypoplasia or periodontal disease is observed.

Burial 23

General Description
This mostly complete skeleton represents a probable Mexican female, between 26.6 to 43.9 years of age at death, with an indeterminant stature.

Inventory and Condition of Remains
The remains of Burial 23 are mostly complete, with high fragmentation in the craniofacial and thoracic regions. Although the craniofacial region was fragmentary, a mostly complete set of maxillary and mandibular dentition were available for analysis.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 23 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Female*
Sex was estimated from nonmetric features of the innominate and statistical evaluation of cranial nonmetric traits. The only portion of the pelvis available for observation was the greater sciatic

notch, which was assessed based on qualitative features outlined in Buikstra and Ubelaker (1994). The sciatic notch is wide and is suggestive of female.

As Burial 23 was estimated as Mexican, only a limited number of postcranial sectioning points are available for comparison to Hispanic reference groups. Therefore, sex from the postcranial elements could not be estimated, thus the cranial non-metric traits were used for analysis.

Using Walker (2008), sex was estimated from fragments of the cranium, including the nuchal crest (score=1), mastoid process (score=1), the supra-orbital margin (score=1), glabella (score=1) and the mental eminence of the mandible (score=2). Walker (2008) uses discriminant function analysis to estimate sex based on features of the skull. Using the glabella, mastoid, and mental eminence, the Walker method provides a 0.99 probability of female.

Based on available pelvic and cranial traits, Burial 23 is estimated as female.

Age: *26.6–43.9 years*
Due to the fragmentation to the skeletal remains, only the right and left auricular surfaces and two sutures, the sagittal obelica and lamdoidal asterica, were available for the estimation of age. All characteristics were scored as outlined in Milner and Boldsen (2016). The superior demiface topography displayed a median elevation and was flat to irregular. The morphology was less than one-third covered by billows or flat without billows. Posterior iliac exostoses were smooth or rounded. Cranial sutures were scored as to whether they were open, fused, partially fused or completely obliterated. The cranial sutures on Burial 23 were open.

All traits were entered into the ADBOU program (Boldsen, et al. 2002). Burial 23 is estimated to be 26.6–43.9 years of age at death, with a maximum likelihood (point estimate) of 26.6 years. Based on the state of the auricular surface, fusion lines on the vertebrae, and eruption of teeth 17 and 32, Burial 23 is most likely closer in age to the point estimate.

In addition to these scores, fusion lines on the annular rings of the vertebrae were still visible. Further, the medial epiphysis of the left clavicle appears to be fusing or in fusion, and teeth 17 and 32 are unerupted from the alveolar bone, with the apex for the root of tooth 17 still open.

Biological Affinity: *Probable Mexican*
Although the cranium was fragmented, a total of four measurements were available for analysis. These craniometric measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 46% of the time, greater than chance alone. Burial 23 is most similar to the Mexican group with a posterior probability of 0.72 and a typicality of 0.36. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that he unknown belongs to any of the reference groups (Jantz and Ousley 2005).

Due to the limited number of available craniometric variables, the overall classification rate of reference groups, and the posterior and typicality probabilities, the overall group membership for Burial 23 is estimated as Mexican and represents a probable classification.

Stature: *Indeterminant*
Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Skeletal Pathology**:** *None*
No pathologies were observed on Burial 23.

Trauma: *None*
No trauma was observed on Burial 23.

Dental Inventory and Oral Health
The maxilla is fragmentary although mostly complete and the mandible is complete. All teeth are present with the exception of tooth #5, missing postmortem. Teeth #17 and 32 are present with associated alveolar bone and are unerupted, therefore a dental radiograph was taken to assess root development to assist with aging (see age section above). The associated alveolar bone is not present for teeth #1, 2, and 16. Tooth #30 has a carious buccal pit located superior to the CEJ. There is little to no wear on the entire dentition, no abscesses or periodontal disease is noted. Linear enamel hypoplasias observed are on teeth #22, 23, and 27. Using the (Cares Henriquez and Oxenham 2019) method, measurements of the hypoplasias indicate that age at formation occurred between 2.5–4.5 years of age.

Burial 24

General Description
This skeleton represents the remains of an infant individual between 36–56 intrauterine weeks old at death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains
The skeletal elements of Burial 24 are fragmentary, with high fragmentation in the craniofacial and limb regions.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 24 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*
Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 24 has no complete long bones.

Age: *36–56 weeks intrauterine*
Due to the extreme fragmentation of Burial 24, only the pars petrosa of the temporal were available for age estimation. Size and formation of the pars petrosa were compared to fetal donors which were 36 weeks intrauterine. The pars petrosa of Burial 24 was slightly larger than the fetal donor. Therefore, a broad age range of 36–56 weeks intrauterine was estimated.

Biological Affinity: *Indeterminant*
Currently, it is not considered good practice to estimate biological affinity of subadults. While it is possible to get a broad-based biological affinity estimation using dental metrics from the permanent dentition, Burial 24 only has too few permanent teeth for a reliable estimation attempt.

Stature: *Indeterminant*
Because of the fragmentation of the remains and lack of available stature techniques for subadult remains, stature for Burial 24 is indeterminant.

Skeletal Pathology: *None*
No skeletal pathologies were observed on Burial 24.

Trauma: *None*
No trauma was observed on Burial 24.

Dental Inventory and Oral Health
Three tiny tooth fragments are present. One fragment can be identified as a deciduous maxillary right first molar. The other fragments likely represent a deciduous incisor—arch, number, and side not possible due to fragmentation—and possibly a deciduous canine or molar fragment—its small size does not permit further classification. It is not possible to code the development of the deciduous molar due to postmortem fragmentation.

Burial 25

General Description
This mostly complete skeleton represents a Mexican male, between 21.3 and 39.6 years of age at death, with an estimated stature of approximately 5’1” to 5’7”.

Inventory and Condition of Remains
The remains of Burial 25 are mostly complete, with high fragmentation in the region of the thorax and pelvis. The cranium and mandible, although fragmentary, were reconstructed after cleaning. Proximal and distal epiphyses of the long bones are fragmentary; however, the epiphyses remained in good condition and were used in the analyses.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 25 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
Sex was estimated from the pelvis, post-cranial measurements, and cranial non-metric traits. Using the non-metric traits of the pelvis, sex was estimated based on statistical evaluation of the os coxae following Klales, et al. (2012), modified from Phenice (1969), which provides a posterior probability of sex based on logistic regression of ordinal scores. The subpubic concavity scored a five, the medial ishio-pubic ramus scored a four, and the ventral arc scored a five. All pelvic features were indicative of male with a 100% probability.

For postcranial sex estimation, multivariate discriminant function formulae for Hispanics (Spradley, et al. 2015) were used in lieu of sectioning points for Burial 25 due to good preservation and complete measurements from multiple skeletal elements. Multivariate formulae are preferred over sectioning points, and Burial 25 had enough complete measurements for two discriminant function (DF) formulae using the tibia and calcaneus. For DF scores, values above zero are estimated male and values below zero, female. DF scores for the tibia and calcaneus for Burial 25 were above zero (see Table 15) providing a sex estimate of male.

Non-metric traits of the skull were also scored following Walker (2008). Walker (2008) uses discriminant function analysis to estimate sex based on features of the skull. The cranial traits scored as four or higher, with a posterior probability of .99 for male.

Based on the pelvis and the overall skeletal morphology, including the skull, Burial 25 is estimated to be male.

Table 15: Multivariate sex estimation of Burial 25

Bone	**Score**	**Classification Accuracy** (%)	**Estimated Sex**
Tibia	5.232	91	Male
Calcaneus	5.004	82	Male

Age: 21.3–39.6
The skull, along with small portions of the right and left pubic symphysis and auricular surfaces were available for age estimation analysis. Numerous features of the pubic symphysis and auricular surface, such as morphology and topography, and cranial suture closure, were scored following descriptions outlined in Milner and Boldsen (2016). The auricular surface topography was flat, while the morphology less than one-third covered by billows and/or flat. Symphyseal relief had soft, shallow and residual billowing. The texture of the symphyseal face was coarse-grained, while the dorsal symphyseal margin had complete flattening.

Cranial sutures were scored as to whether they were open, fused, partially fused or completely obliterated. Coronal pterica, zygomaticomaxillary were juxtaposed. The sagittal obelica and lamdoidal asterica sutures were open and juxtaposed.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 25 is estimated to be 21.3 to 39.6 years of age at death, with a maximum likelihood (point estimate) of 29.4 years.

Biological Affinity: *Mexican*
A total of 21 measurements were available for analysis due to the completeness of the cranium. These craniometric measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 90% of the time, greater than chance alone. Burial 25 is most similar to the Mexican group with a posterior probability of 0.96 and a typicality of 0.64. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that he unknown belongs to any of the reference groups (Jantz and Ousley 2005).

Based on the overall classification rate of reference groups and the posterior and typicality probabilities, the overall group membership for Burial 25 is estimated as Mexican and represents a strong classification.

Stature: *5'1" to 5'7"*
Stature was estimated using FORDISC 3.1 (Jantz and Ousley 2005) and all available postcranial measurements with reference data from "Any" group. The measurements with the highest correlation to stature were calcaneus maximum length and tibia condylo-malleolar length, with an R-square of 0.684. The stature for Burial 25 is estimated to be between 62.1 to 68.4 inches or 5'1" to 5'7".

Skeletal Pathology: *Extreme robusticity*
Extremely robust muscle attachments are present on the posterior femora along the linea aspera superiorly and laterally. This region is an attachment locality for a number of leg muscles, including the vastus lateralis and medialis, adductors longus, brevis, and magnus, and the short head of biceps femoris. The tibiae also show robust muscle attachments in the area of the nutrient foramina, a region that houses muscle attachment sites for the tibialis posterior and other muscles. These robust muscle markings on both the femora and tibiae may reflect a habitual occupational activity such as horse riding (Djukic, et al. 2018) or some other type of repetitive activity involving the legs.

Trauma: *None*
No trauma was observed on Burial 25.

Dental Inventory and Oral Health

The maxillary and mandible are present and in good condition. All teeth are present and fit into their alveolar socket except for tooth #1 as the maxillary alveolus was lost postmortem. Overall, the dentition is in good condition, fully developed and in occlusion, with minimal wear, mild periodontal disease, and no carious lesions or abscesses. Mild dental calculus is noted on the majority of the dentition. Teeth #7 and 9 are small and peg like. Teeth #5, 8, 9, 11, 22, 23, 25, 26, and 27 exhibit enamel hypoplasias. Teeth #11, 22, and 27 have multiple hypoplasias. Using the Cares Henriquez and Oxenham (2019) method, measurements of the hypoplasias indicate that age at formation occurred between 1.9–4.38 years of age.

Burial 26

General Description

This mostly complete skeleton represents a Black male, between 48.8 to 91.2 years of age at death, with an indeterminant stature. A pipe notch is noted in the dentition.

Inventory and Condition of Remains

The remains of Burial 26 are mostly complete, with high fragmentation in the craniofacial complex, and the thoracic an pelvic regions. Proximal and distal epiphyses of the long bones are fragmentary; however, the epiphyses remain in good condition and were used in the analyses.

Minimum Number of Individuals: *One*

The skeletal remains of Burial 26 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*

The only portion of the pelvis available for sex estimation was the sciatic notch, which was assessed based on qualitative features outlined in Buikstra and Ubelaker (1994). The sciatic notch presents ambiguous traits for sex.

Because of the ambiguity and fragmentation of the pelvic traits, postcranial sectioning points for American Blacks were used to estimate sex following Spradley and Jantz (2011). Only sectioning points with classification accuracies greater than or equal to 80% were used. Postcranial measurements from the humerus, femur, and tibia (see Table 16) also provide ambiguity as to sex.

In addition to the pelvis and post crania, sex was estimated from fragments of the cranium, using Walker (2008), including the nuchal crest (score=3), mastoid process (score=3), the supra-orbital margin (score=1), and the mental eminence of the mandible (score=4). Walker uses discriminant function analysis to estimate sex based on features of the skull. Using the mastoid and mental eminence, the Walker method provides a 97% probability of male and the orbit and mental eminence provide a 92% probability of male.

Table 16: Univariate sex estimation of Burial 26

Measurement	Sectioning Point	Burial 26	Classification Accuracy	Estimated Sex
Humeral head diameter	44	41	86	Female
Femur head diameter	44	46	86	Male
Femur subtrochanteric ant/post	27	28	83	Male
Tibia diameter at nutrient foramen	35	33	80	Female

Additionally, a craniometric multivariate analysis of sex was performed in FORDISC 3.1(Jantz and Ousley 2005). The cranial measurements were compared to all reference groups, both male and female. Burial 26 classified as most similar to American Black males, followed by American White males, with combined posterior probabilities equaling 0.747, indicating that multivariate craniometric analysis suggests Burial 26 is most similar to males.

Based on methods presented by Walker (2008) and the multivariate analysis of cranial measurements, Burial 26 is estimated as male.

Age: *48.8–91.2 years*
Due to the fragmentation to the skeletal remains, only the right and left auricular surface, and two sutures, the sagittal obelica and lamdoidal asterica, were available for age estimation analysis. All characteristics were scored as outlined in Milner and Boldsen (2016). The auricular surface topography was flat to irregular. The morphology was also flat. Cranial sutures were scored as to whether they were open, fused, partially fused or completely obliterated. The available cranial sutures on Burial 26 were open.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 26 is estimated to be 48.8–91.2 years of age at death, with a maximum likelihood (point estimate) of 76.6 years. Based on the lack of dental wear and degenerative changes seen on the skeleton, Burial 26 is most likely closer in age to the lower end of the age range.

Biological Affinity: *Black*
Although the cranium of Burial 26 was fragmented, a total of eight measurements were available for analysis: ASB, FRS, GOL, MDH, OCC, OCS, PAC, and PAS representing vault measurements. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 75% of the time, greater than chance alone. The results suggest that Burial 26 is most similar to the 19th Century American Whites, followed by American Blacks with respective posterior probabilities of 0.428 and 0.339 and typicalities of 0.16 and 0.24. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that he unknown belongs to any of the reference groups (Ousley and Jantz, 2005: 96).

Because the posterior probabilities are below .5 and both similar to one another, indicating that Burial 26 could be either White or Black, postcranial biological affinity estimation was utilized in FORDISC 3.1 (Jantz and Ousley 2005) using the forensic Black and White male reference groups. A total of nine measurements were available for analysis: FEMHDD, FEMSAP, FEMSTV, HUMHDD, TIBCIR, TIBNFT, TIBNFX, ULNDVD, and ULNTVD. The reference groups correctly classified 76.5% of the time, greater than chance alone. The results suggest that Burial 26 is most similar to the 19th Century American Blacks with a posterior probability of 0.86 and a typicality of 0.38.

Although the craniometric analysis provided ambiguous results, the postcranial analysis provides a strong classification of American Black.

Stature: *Indeterminant*
Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Skeletal Pathology: *None*
No pathologies were observed on Burial 26.

Trauma: *None*
No trauma was observed on Burial 26.

Dental Inventory and Oral Health
The maxillary bone is highly fragmentary and only a few teeth could be observed in the alveolus. Only tooth #10 is missing as is the associated alveolar bone, therefore it was scored as unobservable. The mandible is complete and all mandibular teeth are present. All present teeth are complete, fully developed, and in occlusion. Minimal wear is noted on the entire dentition. Teeth #4, 5, 14, and 28 have dental caries. Teeth #4, 8, and 28 have distal interproximal pits and #14 has a mesial interproximal pit. Mild calculus is observed on the entire dentition and is especially noticeable on the lingual surface of the incisors. The dentition also exhibits mild periodontal disease. An unaligned array of hypoplastic pits is noted on tooth #22. Circular wear is noted on teeth #22 and 23 that corresponds to wear on teeth #11 and 12. This type of wear is characteristic of a pipe notch.

Burial 27

General Description
The mostly complete skeleton represents a juvenile between 4.5 ± .58 to 6.5 ± .57 years of age at death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains
The remains of Burial 27 are fragmentary, with high fragmentation in the region of the craniofacial complex, thorax, pelvis, and limbs. Although fragmentary, deciduous and permanent dentition were available for age estimation.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 27 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*
Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 27 has no complete long bones.

Age: *4.5 ± 0.58 to 6.5 ± 0.57 years*
For juvenile remains, age is estimated from the eruption and development of the available deciduous and permanent dentition. The deciduous dentition for Burial 27 was mostly complete, with permanent crowns also available for analysis. Using the methods outlined by AlQahtani, et al. (2010), development of the deciduous and permanent dentition was noted. All deciduous teeth had root formation, however, most of the roots were fragmented post-mortem. Therefore, crown formation was the focus of the analysis. All deciduous crowns were completely formed. Additionally, the permanent mandibular first molar crowns were completely formed, with one-fourth of the formed root present, although the roots were broken post-mortem. These crowns were not in the alveolar bone, not allowing for eruption estimations to be made. Based on the crown and root formation of the deciduous and permanent dentition, Burial 27 is estimated as 4.5 ± .58 to 6.5 ± .57 years of age at death.

Biological Affinity: *Indeterminant*
Currently, it is not considered good practice to estimate biological affinity of subadults. While it is possible to get a broad-based biological affinity estimation using dental metrics from the permanent dentition, Burial 27 only has too few permanent teeth for a reliable estimation attempt.

Stature: *Indeterminant*
Because of the fragmentation of the remains and lack of available stature techniques for subadult remains, stature for Burial 27 is undetermined.

Skeletal Pathology: *None*
No pathologies were observed on Burial 27.

Trauma: *None*
No trauma was observed on Burial 27.

Dental Inventory and Oral Health
The deciduous dentition is present and complete along with some of the permanent mandibular dentition. There is no associated alveolar bone with the maxilla. However, a portion of the anterior and right body of the mandibular alveolar bone is present and was radiographed. Teeth #19 and 30 are present and loose. Radiographs of the mandible fragment indicate that teeth #25–

29 are also present, still in development, and unerupted. Teeth #22–24 are also present, still in development, and loose with no associated alveolar bone. The crown of tooth #22 is over 2/4 complete. Teeth #23–26 have complete crown development. The crown of tooth #27 is 3/2 complete and for teeth #28 and 29, the crowns are 1/4 and 1/2 complete, respectively. For teeth #17 and 32, the crowns are complete with some root development. Most deciduous incisor and canine roots are complete, however, postmortem damage prevents assessment of development root development on the remainder of the deciduous dentition. It is apparent that all crowns are complete, and the roots that are present, most were likely complete prior to taphonomic damage.

Carious lesions are present on tooth C (deciduous maxillary right canine) and teeth K and L (mandibular left first and second molar). Tooth C presents a beginning pit on the distal crown surface. Tooth L a smooth surface lesion on the distal crown. Tooth K has a small pit on the mesial crown and a large lesion with destruction of the distal, facial, and occlusal crown surface. The permanent dentition has no lesions, abscesses, or evidence of hypoplasia.

Burial 28

General Description

This burial represents the remains of a possible infant individual between 36–56 intrauterine weeks old at death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains

The remains of Burial 28 are highly fragmentary. In addition, hard clay encompasses many of the remaining skeletal elements, hindering analyses.

Minimum Number of Individuals: *One*

The skeletal remains of Burial 28 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*

Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 28 has no complete long bones

Age: *36–56 weeks intrauterine*

Due to the extreme fragmentation of Burial 28, only the pars petrosa of the temporal were available for age estimation. Size and formation of the pars petrosa were compared to a fetal donor which was aged at 36 weeks intrauterine. The pars petrosa of Burial 28 was slightly larger than the fetal donor. Therefore, a broad age range of 36–56 weeks intrauterine was estimated.

Biological Affinity: *Indeterminant*

Currently, it is not considered good practice to estimate biological affinity of subadults. While it is possible to get a broad-based biological affinity estimation using dental metrics from the

permanent dentition, Burial 28 only has too few permanent teeth for a reliable estimation attempt.

Stature: *Indeterminant*
Because of the fragmentation of the remains and lack of available stature techniques for subadult remains, stature for Burial 28 is undetermined.

Skeletal Pathology: *None*
No pathologies were observed on Burial 28.

Trauma: *None*
No trauma was observed on Burial 28.

Dental Inventory and Oral Health
No dentition was available for inventory or oral health analysis.

Burial 30

General Description
This skeleton represents an infant between of 4.5 ± 0.18 to 7.5 ± 0.18 months of age at death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains
The remains of Burial 30 are incomplete, with high fragmentation in the region of the craniofacial complex, thorax, and pelvis. Although fragmentary, a partially complete deciduous dentition was available for analyses.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 30 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*
Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 30 has no complete long bones.

Age: *4.5 ± .18 to 7.5 ± .18 months*
For juvenile remains, age is estimated from the eruption and development of the available deciduous and permanent dentition. The deciduous dentition for Burial 30 was fragmentary, with only three maxillary incisors, one mandibular canine, and two mandibular molars present. There was also an unidentifiable molar fragment available, however, fragmentation made this tooth unusable for age estimation. Using the methods outlined in the London Atlas AlQahtani, et al. (2010), development of the deciduous dentition was noted. All deciduous tooth crowns were

three-fourths to fully complete. There was no root formation on any deciduous teeth. Based on the crown formation of the deciduous, Burial 30 is estimated as 4.5 ± 0.18 to 7.5 ± 0.18 months of age at death.

Biological Affinity: *Indeterminant*
Currently, it is not considered good practice to estimate biological affinity of subadults. While it is possible to get a broad-based biological affinity estimation using dental metrics from the permanent dentition, Burial 30 only has too few permanent teeth for a reliable estimation attempt.

Stature: *Indeterminant*
Because of the fragmentation of the remains and lack of available stature techniques for subadult remains, stature for Burial 30 is undetermined.

Skeletal Pathology: *None*
No pathologies were observed on Burial 30.

Trauma: *None*
No trauma was observed on Burial 30.

Dental Inventory and Oral Health
The deciduous dentition is represented teeth D, E, (deciduous maxillary right central and lateral incisor), Q (deciduous mandibular right lateral incisor), N (left canine), T (right second molar), and L and K (left first and second molar). Only crowns are present and while some are damaged postmortem, others suggest that all crowns are still in development and not yet complete. The maxillary incisors and mandibular left first molar and right second molar display crowns that are ½ complete. The remainder of the crowns are damaged postmortem and cannot be scored for development. No pathologies or lesions are noted.

Burial 31

General Description
This mostly complete skeleton represents a White male between 29.3 to 56.2 years of age at death, with an estimated stature of approximately 5’5” to 5’8”. A trepanation is located on the posterior cranial vault at the right parietal/occipital border.

Inventory and Condition of Remains
The remains of Burial 31 are mostly complete, with most long bones intact. Although the entire cranium is fragmented, the vault and craniofacial complex are present and were used in the analysis.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 31 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
Because the pelvis was intact and complete, sex was estimated based on the statistical evaluation of the pelvic traits following Klales, et al. (2012), modified from Phenice (1969), which provides a posterior probability of sex based on logistic regression analysis of ordinal scores. The subpubic concavity scored as four, the medial ishio-pubic ramus scored as three, and the ventral arc scored as five. Based on the Klales method, Burial 31 is estimated as male with a posterior probability of .99.

The overall skeletal morphology, including the robusticity of the postcrania and cranial features are also indicative of male.

Age: *29.3–56.2 years*
The cranium, along with right and left sides of the pubic symphysis and auricular surface were available for age estimation. Numerous features of the pubic symphysis, auricular surface, and cranial suture closure were scored following descriptions outlined in Milner and Boldsen (2016).

The auricular surface topography displayed a median elevation. The morphology was bumpy. The auricular surface texture was smooth or had microporosity. The posterior exostoses displayed some smoothness and jagged exostoses. Symphyseal relief showed residual billowing while the symphyseal texture displayed microporosity. The superior protuberance was late stage. The central and dorsal symphyseal margins had a rampart complete without the anterior sulcus or a rim, respectively. Cranial sutures were scored as to whether they were open, fused, partially fused or completely obliterated. Lambdoidal asterica and the left interpalatine and zygomaticomaxillary sutures were open and/or juxtaposed.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 31 is estimated to be 29.3 to 56.2 years of age at death, with a maximum likelihood (point estimate) of 39.2 years.

Burial 31 shows little degenerative changes. The only exception was the maxillary and mandibular dentition, which showed antemortem tooth loss, disease, and heavy wear patterns. The scores for the pelvis and cranium, in conjunction with the dental wear and disease, suggest that Burial 31 is close to or above the point estimate.

Biological Affinity: *White*
A total of 22 measurements were available for analysis representing the overall craniofacial region and vault. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified at 87.2%, greater than chance alone. The results suggest that Burial 31 is most similar to the 19th Century

American Whites with a posterior probability of 0.98 and a typicality of 0.46. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups (Jantz and Ousley 2005).

Due to the high reference group classifications, the high posterior probability, and the typicality score, the estimation of American White for Burial 31 is strong.

Stature: *5'5" to 5'8"*
Stature was estimated using FORDISC 3.1 (Jantz and Ousley 2005) and all available postcranial measurements and the 19th Century White male group as a reference. The measurements with the highest correlation to stature were femur bicondylar length, femur maximum length, and tibial length, with an R-square of .0.746. Using the three measurements, the stature for Burial 31 is estimated between 5'5" to 5'8".

Skeletal Pathology: *Trepanation*
Surgical trepanation (craniectomy or craniotomy) is present on right posterior parietal/occipital border. Trepanation is complete with bone plug present. Diameter of the bone plug measures 17mm, while diameter of circular defect is 20mm. This surgical defect is not associated with any cranial fracture or trauma. There are no signs of healing or bone reaction present, indicating this surgical procedure was performed in the perimortem or postmortem period.

Trauma: *None*
No trauma was observed on Burial 31.

Dental Inventory and Oral Health
The maxilla is fragmented, although mostly complete and the mandible is present and complete. Teeth #1 and 5 are missing antemortem tooth #10 is missing postmortem from the maxillary dentition. Teeth #19, 30, and 31 are missing antemortem with complete resorption from the mandibular dentition. Extreme dental wear is noted on the maxillary and mandibular anterior dentition. Extensive dental caries, some with complete crown destruction, are noted on Burial 31.

Tooth #3 has a carious pit on the disto-occlusal surface. Tooth #4 displays carious lesions on the mesial interproximal crown and cervical root. Tooth #7 has mesial interproximal caries near the occlusal surface, #8 and #9 both exhibit mesial and distal interproximal caries that is also apparent on the labial surface. Tooth #11 has mesial interproximal caries. Teeth #12–14 have carious lesions with complete crown destruction with observed periapical abscessing on #13 and 14. Teeth #18, 25, 26, and 28 have complete crown destruction from caries with roots still present. Tooth #29 presents a periapical abscess. Hypercementosis of the root is noted on tooth #14. Hypoplasias are noted on teeth #22 and 27. Using the Cares Henriquez and Oxenham (2019) method, measurements of the hypoplasias indicate that age at formation occurred between 3.0–3.1 years of age.

Burial 32

General Description

This skeleton represents an infant between 7.5 ± .18 to 10.5 ± .24 months of age at death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains

The remains of Burial 32 are fragmentary, with high fragmentation in the region of the craniofacial complex, thorax, pelvis, and long bones. Although the remains are fragmentary, the deciduous dentition was available for analysis.

Minimum Number of Individuals: One

The skeletal remains of Burial 32 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: Indeterminant

Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 32 has no complete long bones.

Age: 7.5 ± 0.18 to 10.5 ± 0.24 months

For juvenile remains, age is estimated from the eruption and development of the available deciduous and permanent dentition. The deciduous dentition for Burial 32 was mostly complete, allowing for age estimation from the developed crowns. Using the methods outlined by AlQahtani, et al. (2010), development of the deciduous dentition was noted. All available deciduous crowns were fully complete. Root formation was present on the maxillary and mandibular incisors; however, the roots were broken post-mortem. Based on the crown formation of the deciduous teeth, Burial 32 is estimated as 7.5 ± .18 to 10.5 ± .24 months of age at death.

Biological Affinity: Indeterminant

Currently, it is not considered good practice to estimate biological affinity of subadults. While it is possible to get a broad-based biological affinity estimation using dental metrics from the permanent dentition, Burial 32 has no permanent teeth for an estimation attempt.

Stature: Indeterminant

Because of the fragmentation of the remains and lack of available stature techniques for subadult remains, stature for Burial 32 is undetermined.

Skeletal Pathology: None

No pathologies were observed on Burial 32.

Trauma: None

No trauma was observed on Burial 32.

Dental Inventory and Oral Health:
The maxilla and mandible are not present and were lost postmortem. The dentition is mostly complete and represented by deciduous teeth. Teeth C, F, M, and R are missing postmortem, the remainder are present and in the developmental process. Teeth A, B, I, J, K, and T are characterized by crowns that are 3/4 complete. Tooth G's crown is 1/2 complete. Teeth L and S have complete crowns. Teeth E, N–R have roots that are 1/4 complete. No dental caries or other pathologies are noted on Burial 32.

Burial 33

General Description
This skeleton represents an infant between 20–36 intrauterine weeks old at time of death, with an indeterminant sex, biological affinity, and stature.

Inventory and Condition of Remains
The remains of Burial 33 are highly fragmentary. The deciduous dentition is also highly fragmentary; however, some small tooth crown fragments remain for analysis.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 33 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*
Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 33 has no complete long bones.

Age: *20–36 weeks intrauterine*
Due to the extreme fragmentation of Burial 33, only the pars petrosa of the temporal were available for age estimation. Size and formation of the pars petrosa were compared to two fetal donors, one which was 27 weeks intrauterine and another which was 36 weeks intrauterine. The pars petrosa of Burial 33 was slightly smaller than the 27-week intrauterine fetal donor. Therefore, a broad age range of 20–36 weeks intrauterine was estimated.

Biological Affinity: *Indeterminant*
Currently, it is not considered good practice to estimate biological affinity of subadults. While it is possible to get a broad-based biological affinity estimation using dental metrics from the permanent dentition, Burial 33 only has too few permanent teeth for a reliable estimation attempt.

Stature: *Indeterminant*
Because of the fragmentation of the remains and lack of available stature techniques for subadult remains, stature for Burial 33 is indeterminant.

Skeletal Pathology: *None*
No pathologies were observed on Burial 33.

Trauma: *None*
No trauma was observed on Burial 33.

Dental Inventory and Oral Health
The dentition is represented by Teeth E, F, O, and P (deciduous maxillary and mandibular left and right central incisors). No roots are present and the teeth are represented by crowns only, in the process of development. The right maxillary central incisor crown is 3/4 complete in development, as is the mandibular left central incisor. The remainder of tooth crows are too fragmented to assess crown development. No pathologies or lesions are noted.

Burial 34

General Description
This mostly complete skeleton represents a Mexican male between 20.9 to 48.2 years of age at death, with a stature of approximately 5'2" to 5'8". Schmorl's nodes are located on two thoracic vertebrae.

Inventory and Condition of Remains
The remains of Burial 34 are incomplete, with high fragmentation in the areas of the craniofacial complex, thorax, and pelvis. Although the proximal and distal ends of the long bones are fragmentary, most of the limbs were used in analyses.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 34 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
Sex was estimated based on observation of nonmetric pelvic traits, postcranial metrics, and statistical evaluation of cranial nonmetric traits. The only portion of the pelvis available for sex estimation was the sciatic notch, which was assessed based on qualitative features outlined in Buikstra and Ubelaker (1994). The sciatic notch suggests probable male based on a narrow width.

Following Spradley et. al (2015), postcranial sectioning points for Mexican Hispanics were used to estimate sex. Only one measurement was available, the tibial maximum diameter at the nutrient foramen with a classification accuracy of 80% (see Table 17) suggesting that Burial 34 is male.

Using Walker (2008), sex was estimated from fragments of the cranium, including the nuchal crest (score=1), mastoid process (score=3), the supra-orbital margin (score=2), glabella

(score=2), and the mental eminence of the mandible (score=4). Walker (2008) uses discriminant function analysis to estimate sex based on features of the skull. Using the mental eminence and mastoid, the Walker method provides an 85% probability of male. Additionally, using the supra-orbital margin and mental eminence, the method provides an 82% probability of male.

Based on methods presented by Walker (2008), Spradley, et al. (2015), and found in Buikstra and Ubelaker (1994), the estimated sex for Burial 34 is male.

Table 17: Univariate sex estimation of Burial 34

Measurement	Sectioning Point	Burial 34	Classification Accuracy (%)	Estimated Sex
Tibia max. diameter nutrient foramen	31	38	83	Male

Age: *20.9–48.2 years*
Due to the fragmentation to the skeletal remains, only the right and left auricular surfaces, and three sutures, the coronal pterica, sagittal obelica, and lamdoidal asterica, were available for age estimation analysis. All characteristics were scored as outlined in Milner and Boldsen (2016). The auricular surface topography displayed a median elevation and/or was flat to irregular. The auricular surface morphology was flat and/or bumpy. The inferior surface texture was smooth on the right side, Cranial sutures were scored as to whether they were open, fused, partially fused or completely obliterated. All of the cranial sutures on Burial 34 were juxtaposed.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 34 is estimated to be 20.9 to 48.2 years of age at death, with a maximum likelihood (point estimate) of 31.8 years.

There are no signs of osteoarthritis or degenerative changes suggesting that Burial 34 is most likely closer in age to the point estimate.

Biological Affinity: *Mexican*
Although the cranium of Burial 34 was fragmented, a total of eight measurements were available for analysis: ASB, AUB, FRC, GOL, NOL, OCC, PAC, and XCB. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 75.6% of the time, greater than chance alone. Burial 34 is most similar to the Mexican group with a posterior probability of 0.757 and a typicality of 0.844. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups (Ousley and Jantz, 2005:96).

Due to the number of available craniometric variables, the overall classification rate of reference groups, and the posterior and typicality probabilities are both strong. The overall group membership for Burial 34 is estimated as Mexican and represents a strong classification.

Stature: *5’2” to 5’8”*

Stature was estimated using FORDISC 3.1 (Jantz and Ousley 2005) and all available postcranial measurements. However, the only measurement available for estimation of stature was calcaneus length (83 mm). Calcaneus length was entered into FORDISC and referenced against the 19th Century Cadaver Statures for "any" group. The calcaneus correlated with stature and provided an R-square value of .257. Stature is estimated as 62.7 to 70.4 inches or 5'2" to 5'8".

Skeletal Pathology: *Schmorl's nodes*
Schmorl's node are noted on two thoracic vertebral bodies.

Trauma: *None*
No trauma was observed on Burial 34.

Dental Inventory and Oral Health
The maxilla is fragmented, and the mandible is complete. Tooth #1 was lost antemortem or congenitally missing. Tooth #19 was lost antemortem with full resorption. The remainder of the dentition is present and fully developed, with the exception of tooth #16 which is fully developed but not in occlusion. Wear is minimal on the entire dentition with the most wear on the anterior dentition. The crown of tooth #3 was destroyed by a carious lesion, only roots are present. Periodontal abscessing is also noted on teeth #3, 4, and 5. Minimal dental calculus is noted on the posterior dentition. Linear enamel hypoplasias are noted on teeth #6, 7, 22, and 25–27 and a linear vertical grove is also noted on tooth #22. Using the Cares Henriquez and Oxenham (2019) method, measurements of the hypoplasias indicate that age at formation occurred between 1.7–3.69 years of age.

Burial 35

General Description
This highly fragmentary skeleton represents a White, probable male of middle to adult age at time of death.

Inventory and Condition of Remains
The remains of Burial 35 are severely fragmented throughout the entire skeleton. Most skeletal elements were missing or highly fragmentary, making much of the analyses for the biological profile undetermined. The cranium was not able to be reconstructed, but much of the mandibular and maxillary dentition were present and complete.

Minimum Number of Individuals: *One*
Although the skeleton is highly fragmentary, the remains of Burial 35 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Probable Male*
The pelvis is the best estimator of sex, followed by the postcranial skeleton and lastly the skull. Due to highly fragmentary remains, sex was estimated using available features of the cranium. Using Walker's (2008) statistical assessment of nonmetric cranial traits, including the mastoid process (score=3), the supra-orbital margin (score=2), and the mental eminence of the mandible (score=3), Burial 35 is most likely male. Using the mental eminence and mastoid, the Walker (2008) method provides an 85% probability of male. Further, using the supra-orbital margin and mental eminence, the method provides an 82% probability of male.

Based on the three observations of cranial traits, Burial 35 is a probable male.

Age: *Middle to Older Adult*
There were no auricular surfaces, pubic symphyses, or cranial sutures present for age estimation. The skeletal elements present appear to be from a fully fused adult. The third molars were examined for root development, however, the apices of tooth #1 are unobservable due to taphonomic damage. Because of the fragmentation of the remains, no further precise age estimation is possible.

Biological Affinity
Broad Estimation: *Probable European*
Narrow Estimation: *Probable White*
Metric and nonmetric statistical analysis of the cranium was not possible due to the fragmentation and incompleteness. Therefore, dental metric analysis was utilized for a broad biological affinity estimation. A total of six teeth were available for analysis. A freely available GUI provided by Kenyhercz, et al. (2019) with a global, although continental data set, was utilized for the estimation. The reference groups consisted of global European, African, and Asian samples and correctly classified 97.4% of the time. The results suggest that Burial 35 is most similar to the European group with a 0.69 posterior probability followed by Asians, with a 0.30 posterior probability. Although Burial 35 classified as European, there are three groups listed in the Oakwood Chapel Cemetery: Black, White, and Mexican. Because individuals considered White have European ancestry, Burial 35 is considered White.

Although the reference groups classify correctly at a high percentage, the posterior probability is below 75%, therefore both the broad and narrow estimations are considered probable.

Stature: *Indeterminant*
Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Skeletal Pathology: *None*
No pathologies were observed on the available skeletal material.
Trauma: *None*
No trauma was observed on Burial 35.

Dental Inventory and Oral Health

The maxilla is highly fragmentary and incomplete and the mandible is fragmentary represented by the left and right bodies. The majority of the dentition is present for Burial 35 and all teeth are fully developed. Teeth #2–4, 8–10, and 14–16 are missing with no associated alveolar bone. Teeth #23–25 are also missing, however, fragmentary alveolar bone is present and it is not possible to determine if these teeth were lost antemortem or postmortem. Burial 35 exhibits little to moderate wear although generalized, severe periodontitis is noted. Additionally, the roots of all teeth present have heavy accretions of calculus. The advanced state of periodontal dental disease must have been long-standing and painful as there is no evidence of any dental treatment. Dental caries are noted on tooth #1, in the mesial cemento-enamel junction, and on tooth #19 on the occlusal surface in the form of a pit. Linear enamel hypoplasias are documented on teeth #8, 22, and 27. Using the Cares Henriquez and Oxenham (2019) method, measurements of the hypoplasias indicate that age at formation occurred between 2.7–4.29 years of age.

Burial 36

General Description

This mostly complete skeleton represents a Black male between 20.2 to 28.4 years of age at death, with a stature of approximately 5’2” to 5’7”. A Schmorl’s node is located on one unsequenced thoracic vertebrae.

Inventory and Condition of Remains

The remains of Burial 36 are mostly complete, with high fragmentation in the areas of the craniofacial complex and thorax. Although the long bones were fragmented post-mortem, many measurements were attained and used in the skeletal analysis. Cranial reconstruction allowed for biological affinity estimation.

Minimum Number of Individuals: One

The skeletal remains of Burial 36 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: Male

Sex was estimated based on observation of pelvic features, statistical analysis of postcranial measurements, and cranial nonmetric traits. Despite fragmentation of the pelvis, the greater sciatic notch and ischiopubic ramus ridge were available for analysis. Using the sciatic notch and the definitions in Buikstra and Ubelaker (1994), this trait is in between narrow and wide, the ischiopubic ramus ridge is narrow, and a ventral arc is present although small. The combined indicators suggest ambiguity in the pelvic traits.

For postcranial sex estimation, multivariate discriminant function formulae for American Blacks (Spradley and Jantz 2011) were used in lieu of sectioning points. Multivariate formulae are preferred over sectioning points, and Burial 36 had enough complete measurements for two discriminant function (DF) formulae using the clavicle and humerus. For DF scores, values

above zero are estimated male and values below zero female. DF scores for the clavicle and humerus for Burial 36 were above zero (see Table 18) providing a sex estimate of male.

Using Walker (2008), sex was estimated from fragments of the cranium, including the nuchal crest (score=3), mastoid process (score=3), the supra-orbital margin (score=2), and the mental eminence of the mandible (score=4). Walker (2008) uses discriminant function analysis to estimate sex based on features of the skull. Using the mental eminence and mastoid scores, the Walker method provides an 85% probability of male.

Based on methods presented by Spradley and Jantz (2011) and by Walker (2008), the estimated sex for Burial 36 is male.

Table 18: Multivariate sex estimation for Burial 36

Bone	Score	Classification Accuracy (%)	Estimated Sex
Clavicle	2.95	93.8	Male
Humerus	14.18	93.4	Male

Age: *20.2–28.4 years*
Due to the fragmentation to the skeletal remains, only the right and left auricular surfaces, a small portion of the left pubic symphysis, and the sagittal obelica suture were available for age estimation analysis. All characteristics were scored as outlined in Milner and Boldsen (2016). The dorsal symphyseal margin of the left pubic symphysis was serrated. The auricular surface topography was flat to irregular. The auricular surface morphology was less than one-third covered by billows or flat. Cranial sutures were scored as to whether they were open, fused, partially fused or completely obliterated. The cranial sutures on the sagittal obelica of Burial 36 were open or juxtaposed.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 36 is estimated to be 20.2 to 28.4 years of age at death, with a maximum likelihood (point estimate) of 20.2 years.

There are no signs of osteoarthritis or degenerative changes and the flake on the left medial clavicle was partially fused, while the flake on the right medial clavicle was unfused. Based on the fusion of the medial clavicle, Burial 36 is most likely closer in age to the point estimate.

Biological Affinity: *Black*
Although the cranium of Burial 36 was fragmented, a total of eight measurements were available for analysis: FMB, FRC, FRS, GOL, MDH, PAC, PAS, WMH, and XCB. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexican reference groups. The reference groups correctly classified 73.5% of the time, greater than chance alone. The results suggest that Burial 36 is most similar to the 19th Century American Blacks with posterior probabilities of 0.946 and a typicality of 0.915. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference

groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups (Jantz and Ousley 2005).

Based on the overall reference group classifications, the posterior probability and typicality, Burial 36 is estimated as American Black and is considered a strong classification.

Stature: *5'2" to 5'7"*
Stature was estimated using FORDISC 3.1 (Jantz and Ousley 2005) and all available postcranial measurements and the 19th Century Black male group as a reference. The measurement with the highest correlation to stature was humeral length, with an R-square of 0.670. Using the humeral length measurement, the stature for Burial 36 is estimated between 62.2 to 68.2 inches or 5'2" to 5'7".

Skeletal Pathology: *Schmorl's node*
A Schmorl's node is located on one unsequenced thoracic vertebral body.

Trauma: *None*
No trauma was observed on Burial 36.

Dental Inventory and Oral Health
The maxilla is highly fragmentary, and the mandible is mostly complete, although fragmentary. Tooth #19 is missing antemortem with full resorption. Tooth #32 is missing antemortem or congenitally absent. Tooth #3 is partially erupted, with the root 1/2 complete, but not in occlusion and the crown is rotated lingually. Tooth #1 exhibits a 1/2 closed root apex. Tooth #30 has a carious lesion that has destroyed the majority of the mesial half of the crown. The anterior dentition is crowded with tooth #10 occluded on the lingual surface of tooth #9.
Moderate calculus is present on the entire dentition with heavy calculus accretions on the right posterior dentition, especially on the buccal surface. Burial 36 exhibits minimal dental wear. Hypoplasias are present on teeth #7, 10, and 11. Using the Cares Henriquez and Oxenham (2019) method, measurement of the hypoplasia on tooth #11 indicate that age at formation occurred at approximately 2.8 years of age.

Burial 37

General Description
This partially complete skeleton represents a probable male, between 74.3 to 91.3 years of age at death.

Inventory and Condition of Remains
The remains of Burial 37 are partially complete, with high fragmentation in the region of the thorax, pelvis, tibiae and fibulae. Proximal and distal epiphyses of the long bones are fragmentary; however, the femoral heads remain in good condition and were used in the analyses. The cranium was reconstructed after cleaning, but the majority of the craniofacial complex was highly fragmentary, making it difficult to reconstruct. Adult maxillary and

mandibular dentition were available for dental analyses, but the teeth exhibit extremely heavy wear. Additionally, the skull and a small fragment of the greater sciatic notch were used for sex estimation.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 37 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
Sex was estimated based on the greater sciatic notch, postcranial metrics, and statistical evaluation of the non-metric traits of the skull. The greater sciatic notch was narrow (score=4) indicating a probable male (Buikstra and Ubelaker 1994).

Because only one trait from the pelvis was available, postcranial sex estimation was assessed using sectioning points for femoral head diameter for American Blacks, American Whites, and

Hispanics from Spradley and Jantz (2011) and Spradley, et al. (2015), as biological affinity estimation was indeterminant. Postcranial sectioning points are all suggestive of male.

Table 19: Univariate sex estimation of Burial 37

Measurement	Sectioning Point	Burial 37	Classification Accuracy (%)	Estimated Sex	Group
Femur head	44	51	86	Male	Black
Femur head	45	51	88	Male	White
Femur head	40	51	88	Male	Hispanic

To strengthen the overall sex estimation, non-metric traits of the skull were used following the descriptions in Walker (2008). Walker uses discriminant function analysis to estimate sex based on features of the skull and gives a posterior probability. The mastoid was large and rugose (score=4) and the mental eminence (score=3) and nuchal crest (score=3) are medium in size. The orbital thickness had the lowest score of all the cranial traits (score=2). Using the mental eminence and mastoid scores, the Walker method provides an 96% probability of male.

Based on methods provided by Buikstra and Ubelaker (1994), Spradley and Jantz (2011), Spradley, et al. (2015) and Walker (2008), the estimated sex for Burial 37 is male.

Age: *74.3–91.3 years*
Due to the fragmentation of the remains, only the cranial sutures were available for transition analysis, therefore, they were the primary indicators evaluated for age estimation. Multiple features of the cranial sutures were scored, following descriptions outlined in Milner and Boldsen (2016). Cranial sutures were scored as to whether they were open, fused, partially fused, or completely obliterated. Coronal pterica was punctuated, sagittal obelica was obliterated, and the left zygomaticomaxillary suture was juxtaposed.

Suture scores were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 37 is estimated to be 74.3–91.3 years of age at death, with a maximum likelihood (point estimate) of 74.3 years.

Biological Affinity: *Indeterminant*
Due to the fragmentation of the skeletal elements, biological affinity estimation is not possible.

Stature: *Indeterminant*
Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Trauma: *None*
No trauma is observed on Burial 37.

Skeletal Pathology: *None*
Burial 37 is fragmented with cortical destruction that obscures identification of potential pathological features; none noted on identifiable fragments.

Dental Inventory and Oral Health
The maxilla is highly fragmentary, and the mandible is complete with some postmortem alveolar destruction. The present dentition is fully developed, heavily worn, fragile, and friable. Teeth #1–3, 12, and 19 are scored as unobservable there is no associated alveolar bone. Teeth #4 and 6 are missing postmortem and the alveolar socket for teeth #4 and 5 exhibit periodontal abscessing with active resorption. Teeth #31 and 32 are missing antemortem with full alveolar resorption. Tooth #30 exhibits periodontal abscessing with destruction of the majority of the alveolar socket. The dentition exhibits extreme wear, with facial rollover wear present on tooth #15. Maxillary anterior dentition has extreme wear on entire lingual surface. Tooth #16's crown is fractured, perimortem, on the distal 1/2 of the tooth. Tooth #14 is represented by only one facial root. No hypoplasias are noted. The mandibular condyles display temporomandibular joint disease with moderate to extreme erosion and destruction of the condyles and cortical bone.

Burial 38

General Description
This fragmentary skeleton represents a Mexican male between 17.8 to 82.1 years of age at death.

Inventory and Condition of Remains
The remains of Burial 38 are incomplete, with high fragmentation in the regions of the thorax, pelvis, and craniofacial complex. Much of the skeleton is unavailable for analyses, however, the maxillary and mandibular dentition were present for some analyses. Cortical flaking is present on the long bones.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 38 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Male*
Due to the high fragmentation of the pelvis and cranium, sex was estimated from post-cranial elements for Hispanics following Spradley, et al. (2015). However, there were no complete elements available for the multivariate equations. Therefore, univariate sectioning points were used from available measurements from the femur and tibia (see Table 20). Values above the sectioning point are considered male, while values below the sectioning point are considered female. Using sectioning points with classification rates of 83% and above, Burial 38 is estimated to be male.

Further, sex was estimated based on non-metric assessment of the skull following Walker (2008). The nuchal crest was rugose, indicative of male (scored=5), and the mental eminence was ambiguous (score=3). Based on the postcranial metrics, cranial nonmetric trait scores, and the overall size and robusticity of the postcranial remains, Burial 38 is estimated as male.

Table 20: Univariate sex estimation of Burial 38

Measurement	Sectioning Point	Burial 38	Classification Rate (%)	Estimated Sex
Femur Maximum Diameter of Head	40	45	88	Male
Tibia A-P Diameter of Nutrient Foramen	31	40	83	Male

Age: *17.8–82.1 years*
Due to the fragmentation of the skeletal remains, only the right auricular surface and the sagittal obelica suture were available for age estimation analysis. All characteristics were scored as outlined in (Milner and Boldsen 2016). Slight billowing is seen on the right auricular surface. The cranial sutures on Burial 38 were juxtaposed.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 38 is estimated to be 17.8 to 82.1 years of age at death, with a maximum likelihood (point estimate) of 39.2 years.

The skeleton remains are fully fused and there are no signs of osteoarthritis or other degenerative changes suggesting Burial 38 is most likely closer in age to the point estimate.

Biological Affinity: *Mexican*
The cranium of Burial 38 was highly fragmented and only four measurements from the vault were available for analysis: OCC, OCS, PAC, and PAS. These measurements were entered into FORDISC 3.1 (Jantz and Ousley 2005) using a custom discriminant function with 19th Century American Black and White and 20th Century Mexicans reference groups. The reference groups correctly classified 63.2% of the time, greater than chance alone. The results

suggest that Burial 38 is most similar to the Mexican group with a posterior probability of 0.959 and a typicality of 0.875. The posterior probability indicates the probability of group membership based on the assumption that the unknown is from one of the reference groups. The typicality indicates how likely it is that the unknown belongs to any of the reference groups (Jantz and Ousley 2005).

The overall reference group classification is above random chance, although below 75% and based only on four cranial measurements. However, the classification for the Mexican group is 83%, therefore the four measurements separate the Mexican group from 19th Century American Blacks and Whites. Though, based on the overall reference group classifications, the posterior probability and typicality, Burial 38's classification of Mexican is rated as moderate.

Stature: *Indeterminant*
Due to the fragmentation of the remains, stature estimation is not possible.

Skeletal Pathology: *None*
No pathologies were observed on Burial 38.

Trauma: *None*
No trauma was observed on Burial 38.

Dental Inventory and Oral Health
The maxilla and mandible are fragmentary. Teeth #1, 3, 5, 11, 16, 28, and 29 were scored as unobservable as they are not present and no associated alveolar bone is present. Teeth #18 and 19 are missing postmortem and tooth #30 was lost antemortem. All teeth present are fully developed with minimal wear. Teeth #8 and 9 have complete crown destruction from dental caries. Tooth #17 has an occlusal carious pit. Tooth #21 has distal carious lesion that has destroyed 1/4 of the distal surface. Tooth #32 has a carious lesion on the disto-facial surface that has destroyed 1/2 of the surface. Mild calculus is present and no hypoplasias are noted.

Burial 39

General Description
This skeleton represents a highly fragmentary perinatal individual aged at 36–50 weeks intrauterine at death.

Inventory and Condition of Remains
The remains of Burial 39 are highly fragmentary, especially in the region of the cranium, thorax, and long bones. Because of the fragmentation of the remains, many elements were unidentifiable. From the cranium, only the right parietal and the pars petrosa for right and left sides were available for analyses.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 39 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Indeterminant*
Secondary sexual characteristics that are detectable in the skeleton do not appear until puberty. Long bone lengths have recently been shown to provide reliable estimations of sex in juveniles, however, Burial 39 has no complete long bones.

Age: *36–56 intrauterine weeks*
Due to the extreme fragmentation of Burial 39, only the pars petrosa of the temporal were available for age estimation. Size and formation of the pars petrosa were compared to a fetal donor which was aged at 36 weeks intrauterine. The pars petrosa of Burial 39 was slightly larger than the fetal donor. Therefore, a broad age range of 36–56 weeks intrauterine was estimated.

Biological Affinity**:** *Indeterminant*
Currently, it is not considered good practice to estimate biological affinity of subadults. While it is possible to get a broad-based biological affinity estimation using dental metrics from the permanent dentition, Burial 33 only has too few permanent teeth for a reliable estimation attempt.

Stature: *Indeterminant*
There are currently no methods for estimating the stature of subadult remains.

Skeletal Pathology: *None*
No pathologies were observed on Burial 39.

Trauma: *None*
No trauma was observed on Burial 39.

Dental Inventory and Oral Health
There are not teeth available for inventory or analysis.

Burial 40

General Description
This skeleton represents a probable adult White male between 48.8 to 91.2 years of age at death.

Inventory and Condition of Remains
The remains of Burial 40 were found while drilling for a pier in the Oakwood Cemetery Chapel. The remains are incomplete, with high fragmentation in the region of the skull and thorax. Proximal and distal epiphyses of the long bones, the cranium, and mandible could not be

reconstructed. However, a mostly complete set of adult maxillary and mandibular dentition were available for dental analyses.

Minimum Number of Individuals: *One*
The skeletal remains of Burial 40 represent one individual. All elements present are consistent in terms of size, development, articulation, and taphonomic history. There are no duplicated elements.

Sex: *Probable Male*
Because the skull and pelvis are mostly fragmentary, sex was estimated using the greater sciatic notch on the left side. The sciatic notch is narrow (score=5). Because of the small width of the greater sciatic notch, the sex estimation for Burial 40 is estimated as probable male.

Because only one trait was observable from the pelvis, postcranial sex estimation formulae for American Whites (Spradley and Jantz 2011) was used to provide an additional sex estimate. Single measurements from the femur, humerus, and tibia were utilized (see Table 21).

Table 21: Univariate sex estimation of Burial 40

Measurement	Sectioning Point	Burial 40	Classification Rate (%)	Estimated Sex
Femur Maximum Head Diameter	45	49	88	Male
Humerus Epicondylar Breadth	60	62	87	Male
Tibia Circumference at Nutrient Foramen	92	87	81	Female

The femur head diameter and humerus epicondylar breadth provided estimates of males with reported classification rates of 87% and 88%, however, the tibial circumference suggests female at 81% accuracy. Based on the sciatic notch morphology, femur and humerus measurements, Burial 40 is considered a probable male.

Age: *48.8–91.2 years*
Due to the fragmentation of the skeletal remains, only the right and left auricular surfaces were available for age estimation. However, both right and left sides of the auricular surface have slight cortical damage. Numerous features of the right and left sides of the auricular surface were scored, such as morphology and topography following descriptions outlined in Milner and Boldsen (2016). Topography traits were flat or irregular, and morphology was also flat.

All traits were entered into the ADBOU (Boldsen, et al. 2002) program. Burial 40 is estimated to be 48.8–91.2 years of age at death, with a maximum likelihood (point estimate) of 76.8 years.

There is no osteoarthritis or degenerative changes on the skeleton. Additionally, the first sacral segment, which is fragmentary, has a youthful appearance on the anterior promontory. Further, a fusion line for the distal right radius is still visible on the bone at the ulnar notch, suggesting an age range on the lower end of the estimate.

Biological Affinity
Broad Estimation: *Probable European*
Narrow Estimation: *Probable White*
Due to the high fragmentation of the cranium, there are no cranial measurements or nonmetric traits for statistical biological affinity estimation. Therefore, dental metrics, using a global data set in conjunction with random forest classification, were used to provide a broad-based geographic ancestry estimation using a freely available GUI provided by Kenyhercz, et al. (2019). The program contains African, European, and Asian reference groups and Burial 18 was compared to all reference groups with pooled sex. The analysis suggests that Burial 40 is most similar to Europeans with a posterior probability of 0.61, followed by Asians with a posterior of 0.37. The results suggest that the individual is more similar to Europeans than Asians and is not similar to Africans.

The overall reference groups classification was 97.6%, well above random chance. However, the posterior probability is less than 75%. Therefore, both the broad and narrow estimations should be considered probable.

Stature: *Indeterminant*
Due to the fragmentation of the skeletal elements, stature estimation is not possible.

Skeletal Pathology: *None*
See Trauma section below.

Trauma:
Burial 40 exhibits a complete fracture to the distal third of the right ulnar shaft. The fracture exhibits healing and callous formation, although with non-union at the fracture site. General periosteal formation and reaction is also noted. Internally, the medullary cavity is infiltrated by the additional bone growth.

Dental Inventory and Oral Health
The maxilla is not present and only a fragment of the mandible is present. All teeth are present and fully developed with the exception of tooth #4, which was scored as unobservable as the tooth is missing and there is no associated alveolar bone. Minimal wear is present on the dentition and generalized calculus is present on majority of dentition, more markedly on the posterior dentition. Slight to moderate wear is noted on the anterior and posterior dentition, with the exception of the maxillary and mandibular second and third molars. No dental caries are present. Hypoplasias are present on tooth #6, 7, 22, and 27. Using the Cares Henriquez and Oxenham (2019) method, measurement of hypoplasias on teeth #6, 22, and 27, indicate that age at formation occurred at approximately 2.85–3.62 years of age.

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