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“Identifying Skeletal Trauma Markers Associated With Intimate Partner Violence”

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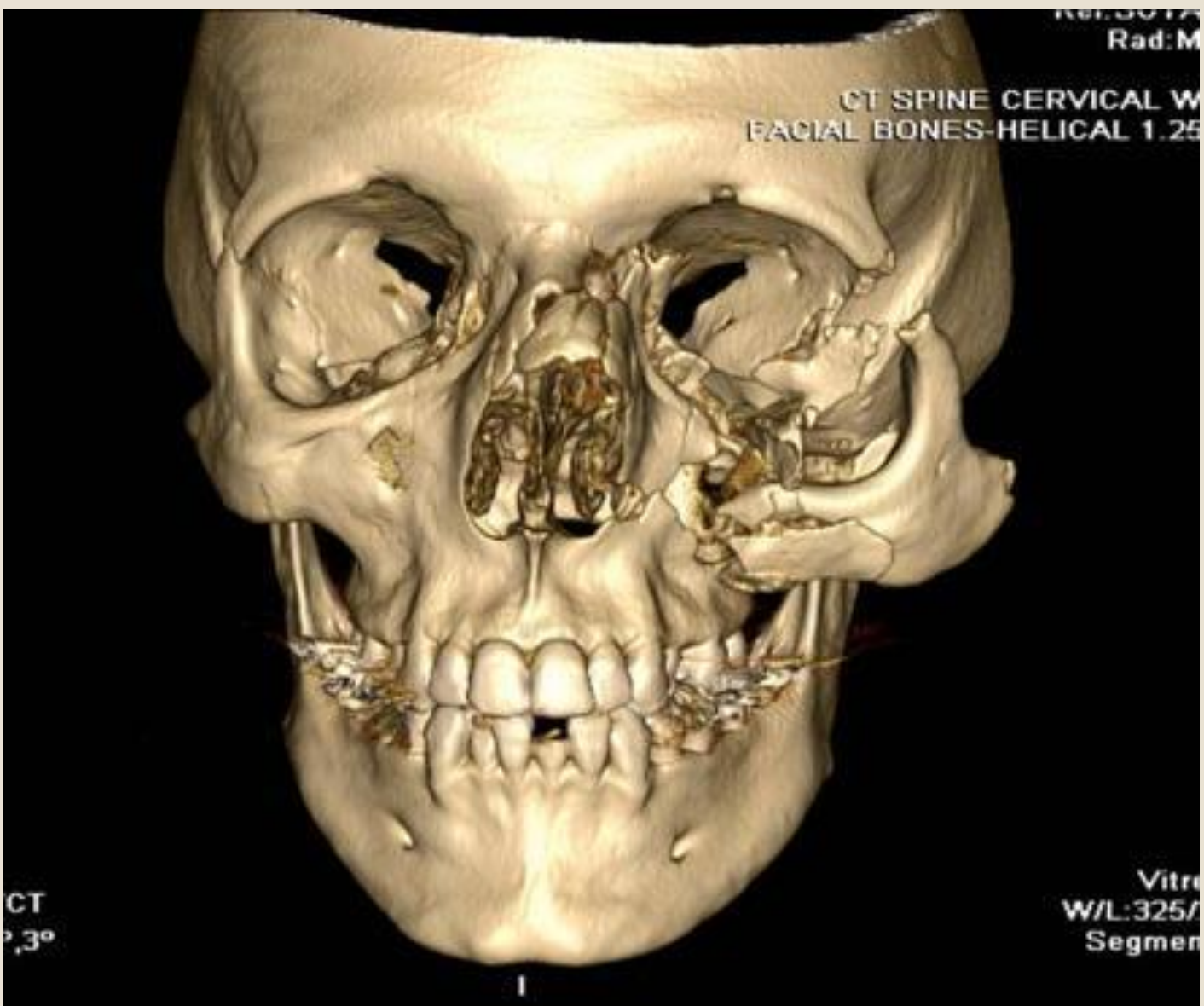
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“Identifying Skeletal Trauma Markers Associated with Intimate Partner Violence”

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Introduction

- ❖ *Intimate Partner Violence (IPV)* is an issue that has been around for a very long time and needs to be put in the spotlight.
- ❖ According to the National Institute of Justice Research Report (2016), more than half of American Indian/Alaskan Native women (55.5%) have experienced violence by intimate partners in their lifetime and are 1.7x more likely than white women to have experienced violence in the past year.
- ❖ According to Adserias-Garriga (2019) & Keith Biddle (2019), maxillo-facial fractures seemed to correlate the most with IPV situations.



Research Questions:

- What is IPV, and how is it identified on the skeleton?
- Which trauma markers can we group to correlate the individual to an IPV situation?

Hypotheses/Test Expectations:

1. I expect to find that facial fractures, specifically those of the zygomaticomaxillary complex (ZMC), will highly correlate with IPV situations. My reason for expecting that the ZMC fracture will be the most common is because of the expected place that a person might punch another to the cheek.
2. I expect to see that more Native American individuals and Women of Color (WOC) in the age range of 20-30 years old will have a higher frequency of these IPV skeletal trauma markers than males and those of European descent.

Methodology

The New Mexico Decedents Images Database (NMDID) is a combination of demographic data, medical history, and CT images for all deceased individuals. Looking at only those individuals whose manner of death was homicide-beaten by an assailant, and cause of death was head, neck, and face injuries or multiple injuries. Some of the individuals contained general notes specifying the area in which the fracture was located, but for the ones with “Facial Trauma- Area Unknown” or “Facial Trauma- Non-Specific”, the CT scans were analyzed with the intention to determine where the facial fracture took place. The fracture types were then categorized into: (1) Maxilla, (2) Mandible, (3) Zygomatic/ZMC, (4) Nasal, (5) Frontal, (6) Teeth/Alveolar Region, and (7) Non-specific/other.

Samples (Databases)

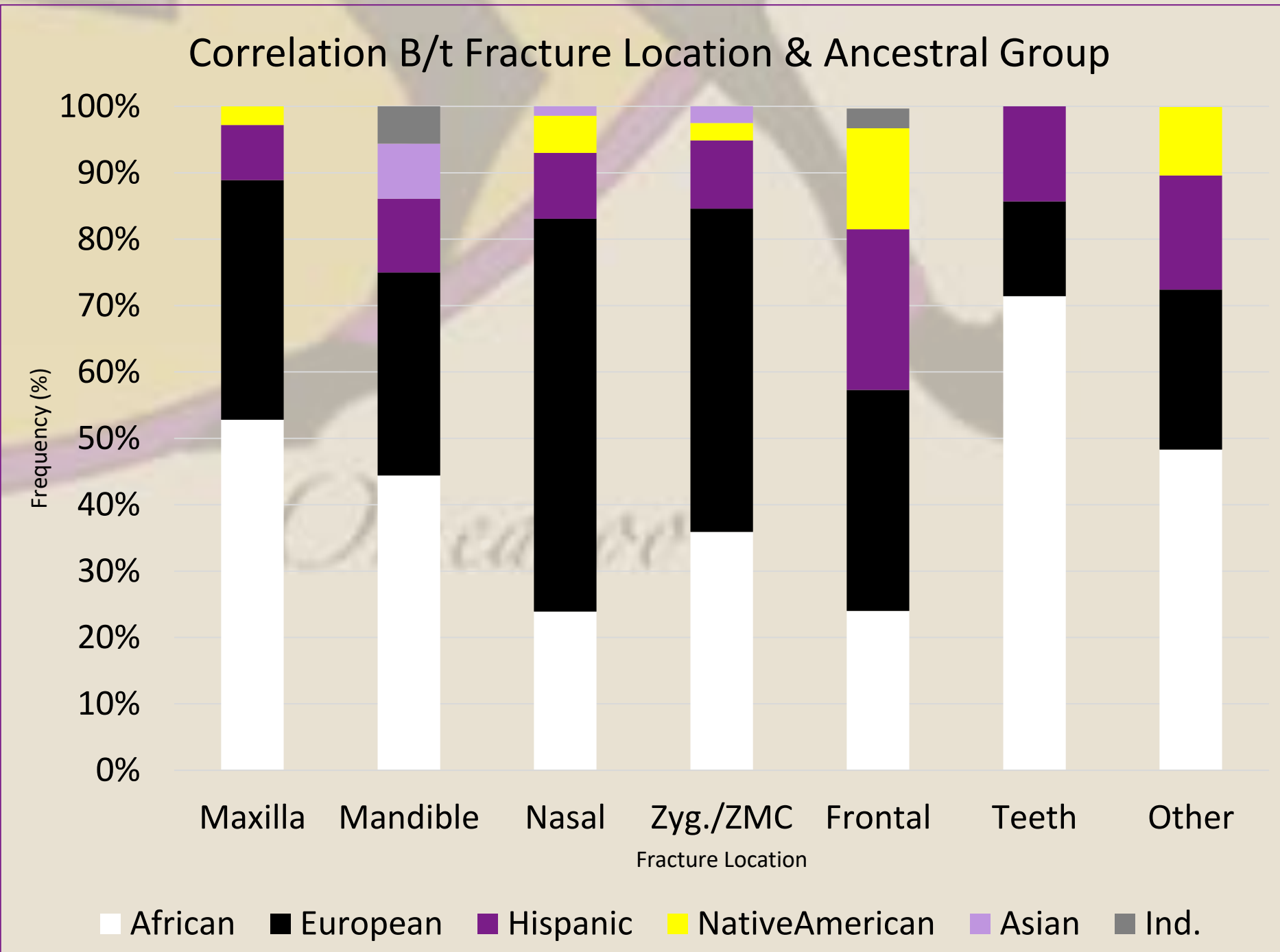
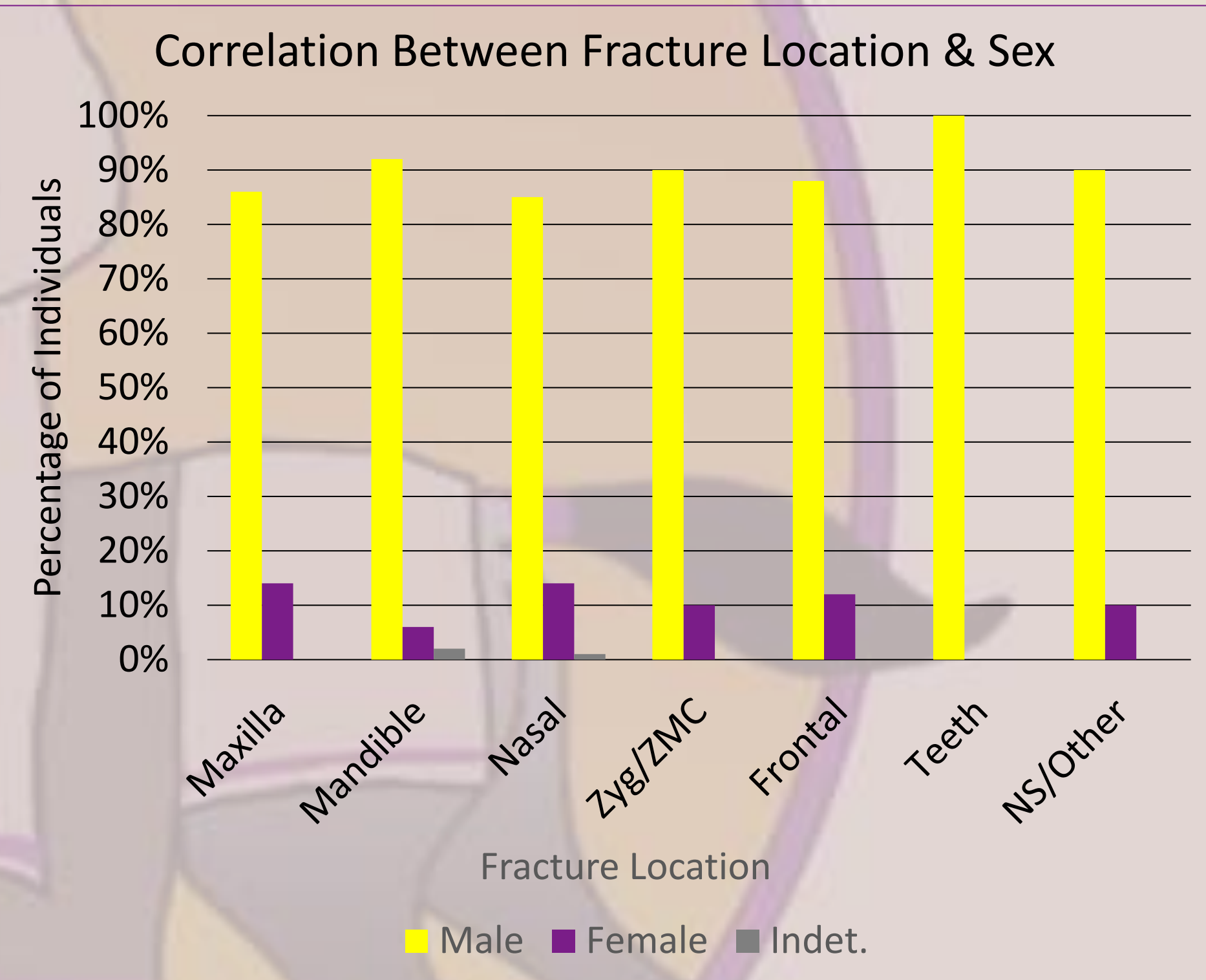
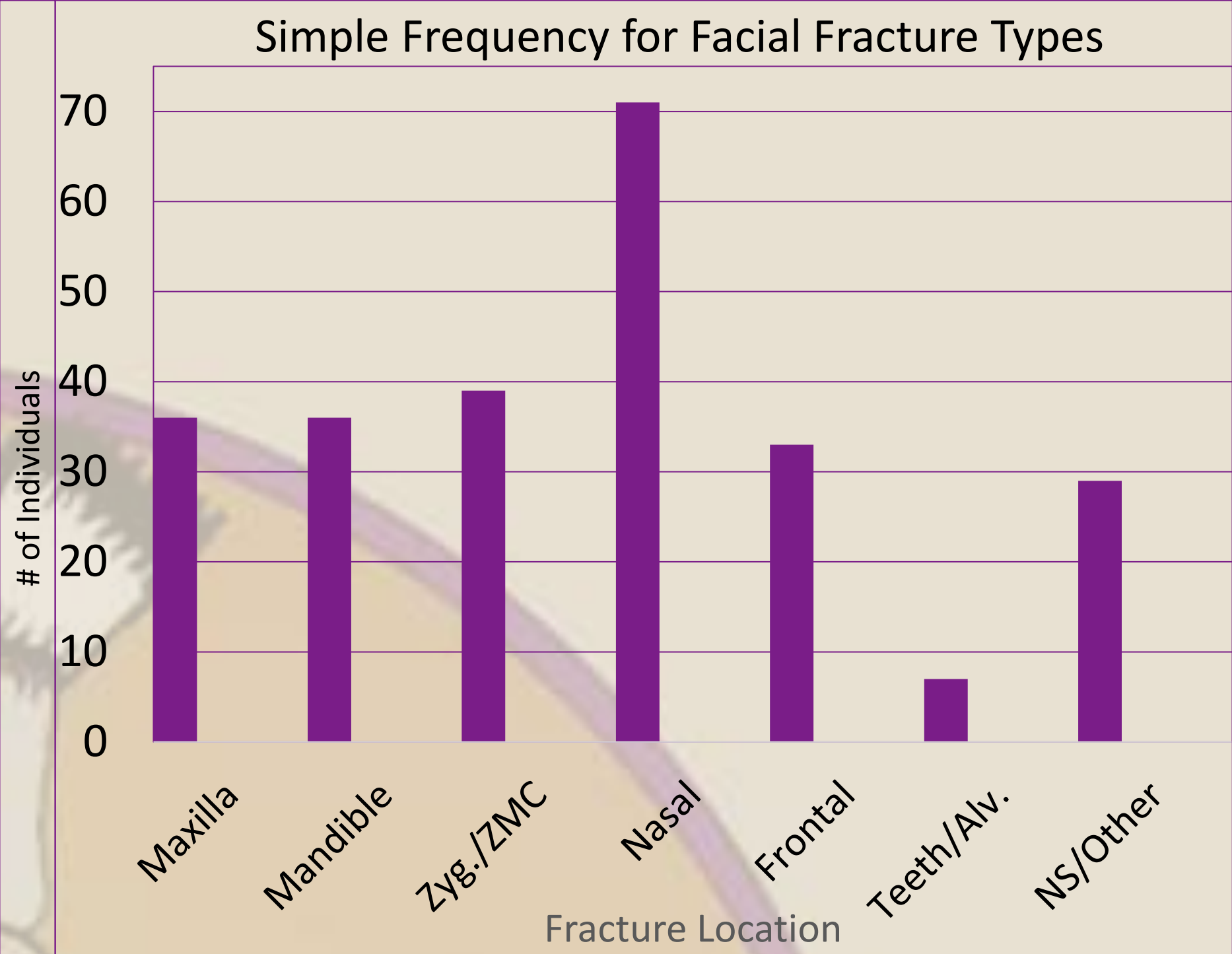
1. Forensic Anthropology Data Bank (FDB) from University of Tennessee
2. New Mexico Decedent Images Database (NMDID)
3. 1990 Excavation of Second Catholic Cemetery (SCC) from University of Missouri- St. Louis

Using *IBM SPSS Statistics 26*:

- Simple frequency tests
- Correlation tests
- Chi-squared analyses



Results



Chi-Squared Test

Sex vs. Fracture Location:

The P-value is 0.718259. The result is not significant, at $p < .05$

Ancestral Group vs. Fracture Location:

The P-value is 0.004089. The result is significant at $p < .05$

For the Zygomatic/ZMC fracture, the most common age group was **21-30 years old**.

Conclusion

- Facial fractures were the most common trauma area, as opposed to other areas of the body.
- Nasal fractures, followed by the ZMC fractures, were the most common fracture locations.

Zygomatic/ZMC Fracture

(All Sources)

Highest Frequency:

Ancestral Group → **European**

Sex → **Male**

Age Range → **21-30 years**

Gather More Samples

Get Input From Professional Radiologist

Compare Accidental Fractures to Current Data

Future Studies

Acknowledgements

My advisor, Dr. Randall Skelton; UTK, UNM, and UMSL for the data used in this project, The Sloan Indigenous Graduate Partnership for helping to fund this project, Keith Biddle for his guidance and help with the project materials, and Brandon Omeasoo with Omeasoo Artwork and Design for the background of this presentation.

References

1. Adserias-Garriga J. (2019). A review of forensic analysis of dental and maxillofacial skeletal trauma. *Forensic science international*, 299, 80–88.
2. Biddle, Keith, (2019). "Sexual Dimorphism in Skeletal Trauma Associated with Intimate Partner Violence (IPV)" *Graduate Student Theses, Dissertations, & Professional Papers*. 11399.
3. UNODC, Global Study on Homicide 2019 (Vienna, 2019)