



# Lethal Legacy: Fetal Development on the Navajo Nation

Shelly Nez  
Graduate: Bachelor in Indigenous and American Indian Studies  
Haskell Indian Nation University  
Dine



## Introduction

The legacy of uranium mining continues to have lasting health effects on Navajo mothers located in Church Rock, New Mexico who disproportionately give birth to children with birth defects due to over exposure to uranium tailings from abandon mining operations (Fig.2). Infant mortality rates on the Navajo Nation are higher than all races within the United States. (Fig 5)

Growing up on the Navajo Reservation in the Four Corners region is a culturally unique experience compared to other places in the United States. With a population of over 332,000, and a large land base, the Navajo Nation is one of the largest tribes in North America (Navajo Times January 26, 2012). Like many members of the Navajo Nation, Diné is my first language (Fig.1). It is critical to use the Diné language as a communication tool to educate Navajo women about uranium exposure and maternal health.

## Research Question

How can Indian Health Services use the Navajo language to empower Navajo communities about uranium exposure and its impact on fetal development?

## Language Barriers

In the Navajo area of Church Rock, New Mexico, uranium exposure is a health issue leading to birth defects, cancer, and the early deaths of Navajo women and children. Before mining began on the Navajo Nation, families spoke and communicated with one another in their Native language. English has been slowly replacing Navajo in communities and schools, particularly since uranium mining began.

Navajo women and their families living on the reservation may or may not, understand the risk of exposure to uranium through drinking water. Navajo people passed down Indigenous Knowledge and teaching children the importance of Navajo language since creation. Utilizing Indigenous Knowledge to establish culturally relevant curriculum will connects Navajo women to a past tradition that embodies identity, culture, and Native language.

Navajo Speakers in McKinley County

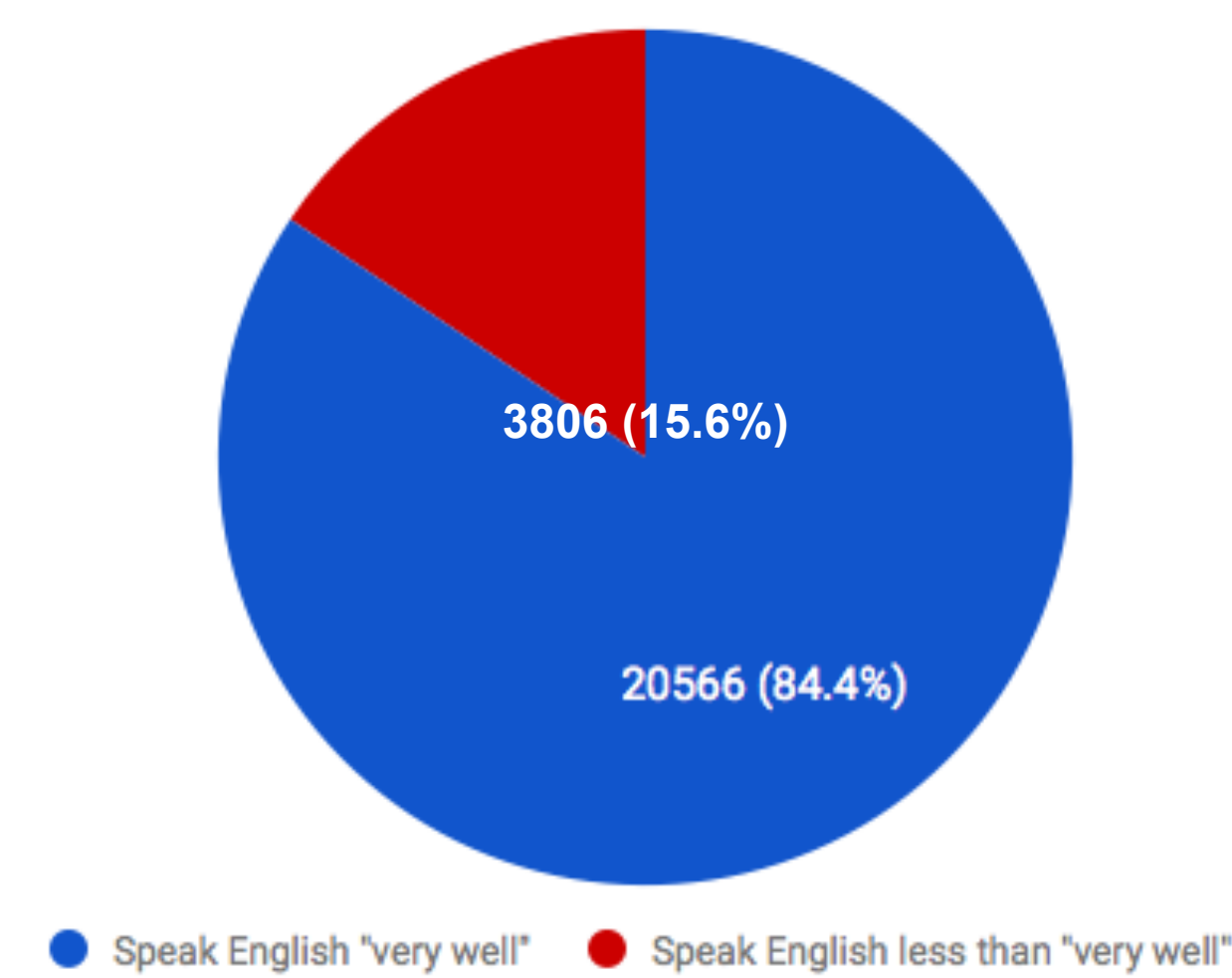
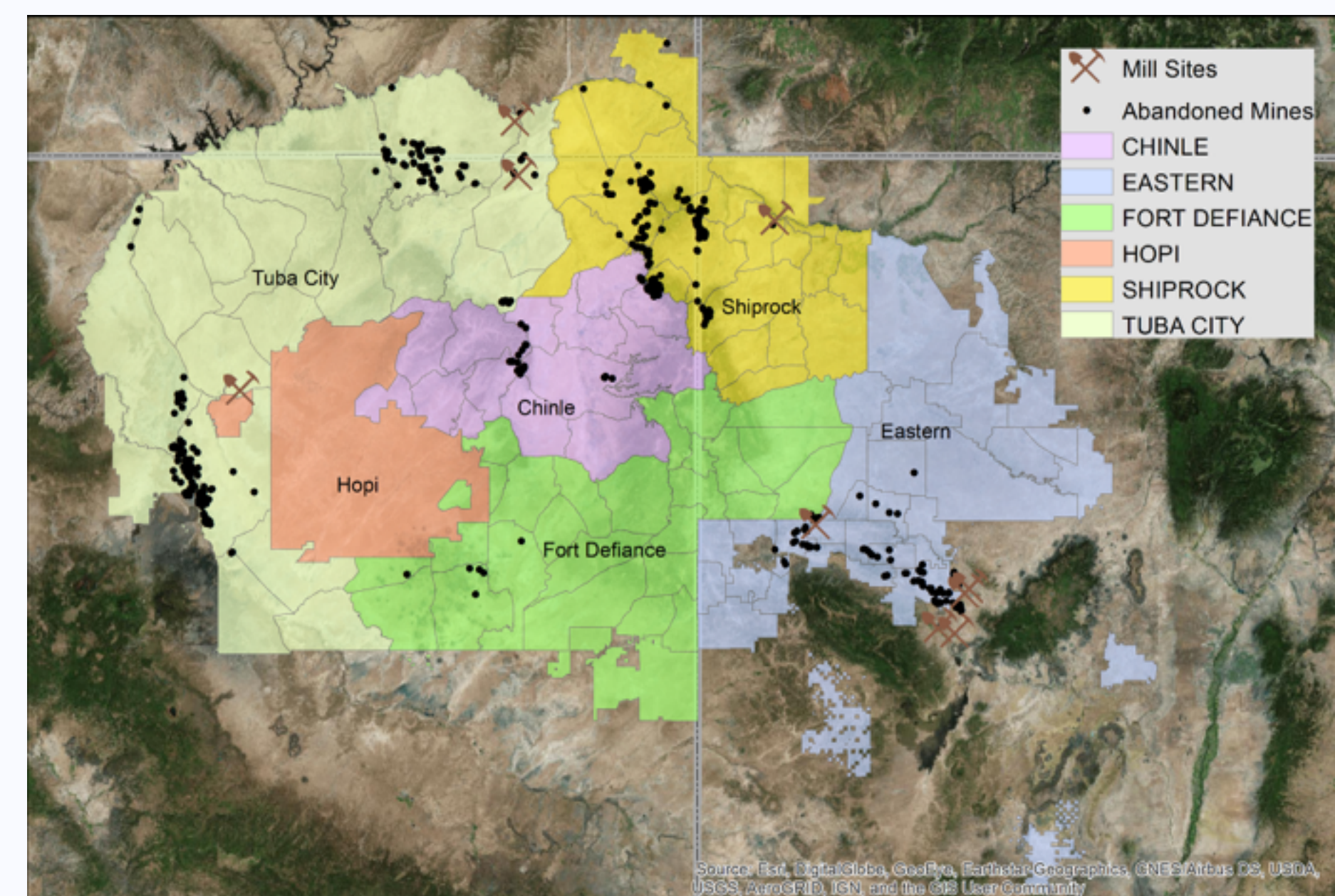
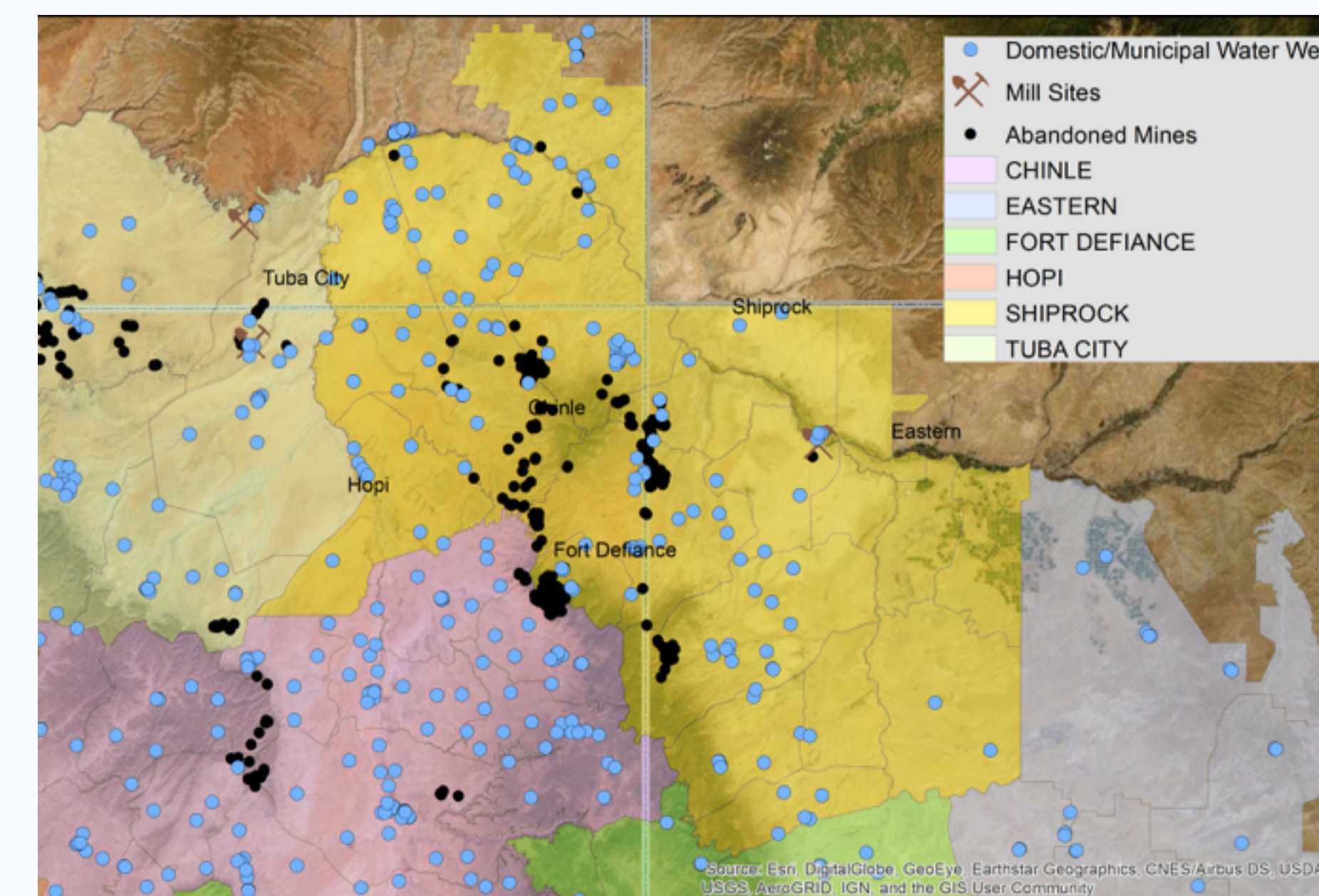


Figure 1: U.S. Census Bureau. 2015. "Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over." 2011-2015 American Community Survey 5-Year Estimates.

## Uranium Mining on the Navajo Nation



Uranium Mining on the Navajo Nation. Figure 2: Created by Josh Meisel



Church Rock, New Mexico Uranium Mining Figure 3: Created by Josh Meisel

- In 1968, Northwest of the city of Gallup in the town of Church Rock, New Mexico. United Nuclear corporation began mining the largest underground uranium mine in the United States. Many people in this area relied on a nearby Puerco River for water. (Brugge 2007, p. 1597)
- "On July 16, 1979 1,100 tons of radioactive mill waste and 95 million gallons of mine process effluent down Pipeline Arroyo and into the North fort of the Puerco River. This tremendous flow of spill back up sewers, affected two nearby aquifers, left pools along the river, and transported contaminants 130 km downstream to a point near Navajo, Arizona". (Brugge 2007 p. 1598)
- Within weeks, signs were posted in New Mexico and Arizona that warned against the use of water for human and livestock consumption. Water wells were closed by the New Mexico Environmental Improvement Division. (Brugge 2007 p. 598)
- "To look more closely at the effects of uranium exposure on human reproduction and development 1,500 pregnant women participated in the "Navajo Birth Cohort study. A study of matched control among Navajo births over 18 years suggested that children of women who lived near abandoned uranium sites were 1.83 times more likely to have 1 of 33 selected defects. (Arnold 2014 p. 49)

## Impacts

- The Church Rock spill occurred in a low-income, rural American Indian area, close to the small city of Gallup, New Mexico. This led to the development of birth defects and was the leading cause of deaths in the area after pregnant Navajo women were exposed through drinking water in their homes. (Brugge 2007)
  - "Most of the respondents reported that they were never warned about radiation hazards. Because of lack of risk notification families could not make informed decisions about health and safety". (Dawson 2011 p. 620)
  - It was also reported that children playing in abandoned uranium mines led to increased anxiety about larger environmental contamination and exposures to wider population. (Dawson 2011)

## Leading Causes of Infant Deaths, Navajo areas

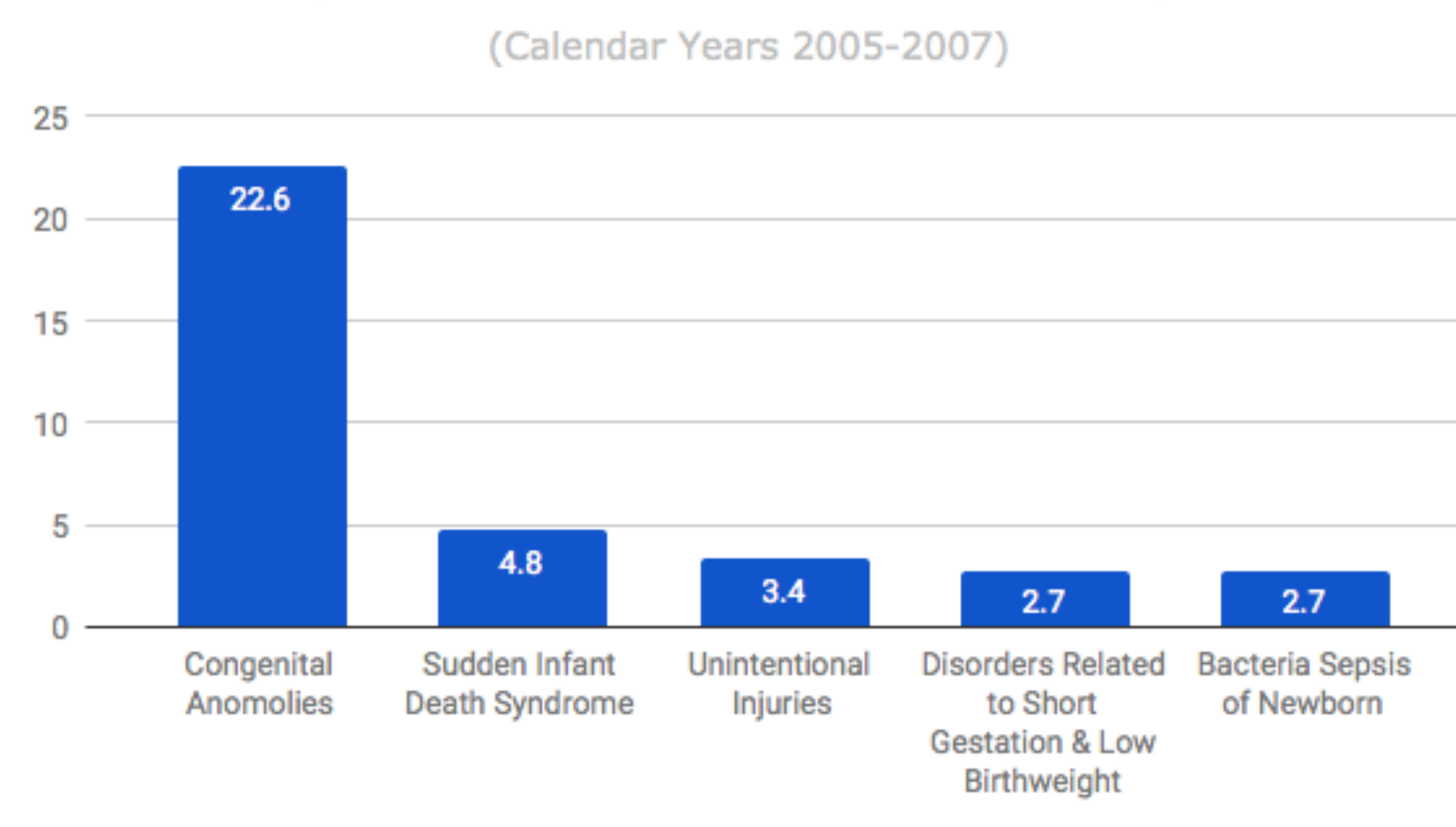


Figure 4: Indian Health Service. 2012. "Regional Differences in Indian Health: 2012 Edition." U.S. Department of Health and Human Services.

## Infant Mortality Rates

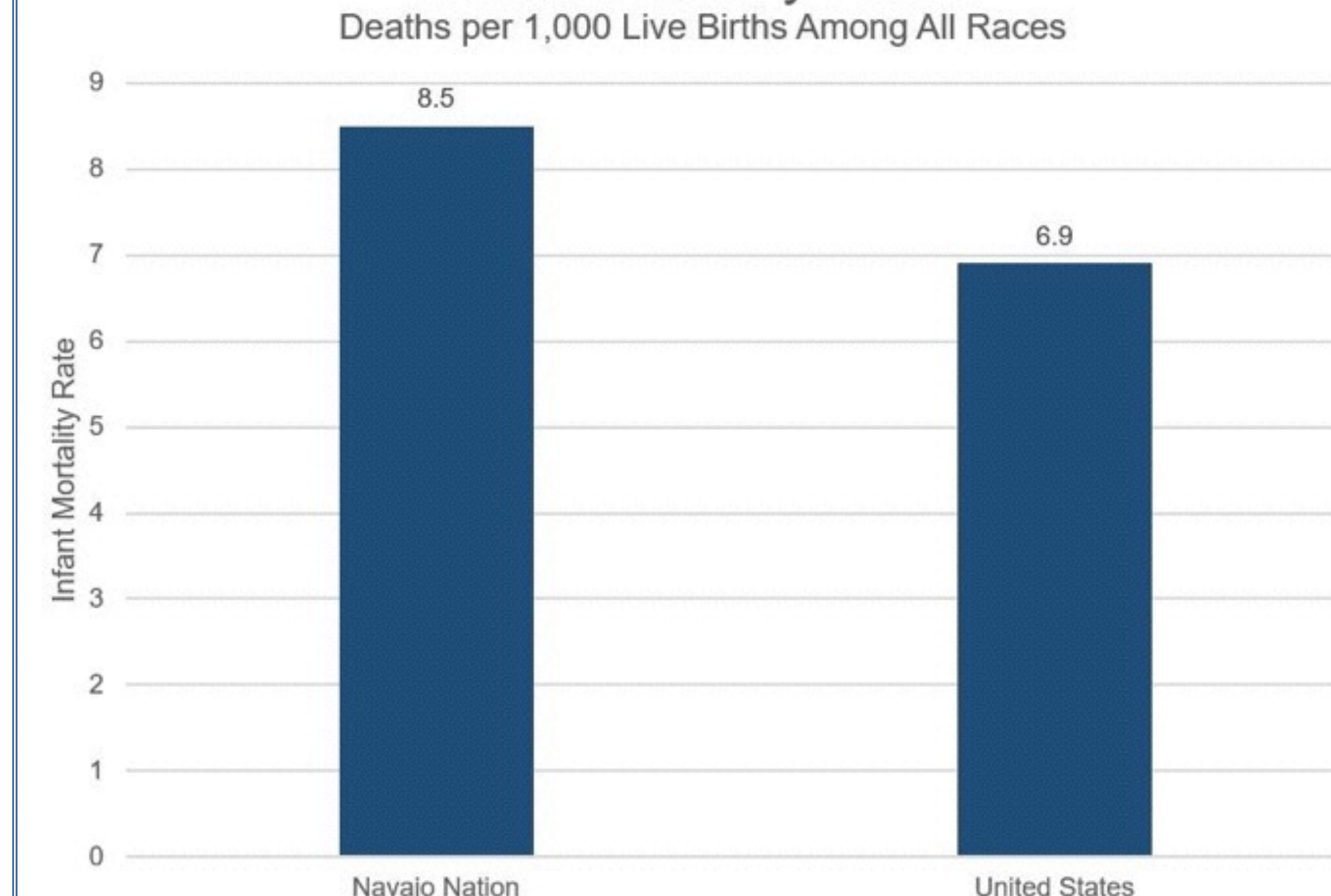


Figure 5: [https://www.ihs.gov/dps/includes/themes/responsive2017/display\\_objects/documents/RD%2002-03%20Part%203-Natality&Infant%20Mortality.pdf](https://www.ihs.gov/dps/includes/themes/responsive2017/display_objects/documents/RD%2002-03%20Part%203-Natality&Infant%20Mortality.pdf)

## Methods and Materials

This research was conducted utilizing evidence from:

- Peer reviewed articles
- Public health reports
- U.S. Census Bureau. data
- Interviews with Navajo people
- Interviews with Indian Health Service staff



## Conclusion

The solution to reducing uranium exposure depends upon effective communication about health risks in the Navajo language. Indigenous Knowledge comes from our parents and elders who teach us about history, traditions, and tribal language at the earliest possible age. Therefore, I think that passing down Indigenous Knowledge and teaching each other the importance of Navajo culture and language demonstrates the importance of our parents' and elders' teaching, as they are the ones that pass down a tradition of respect. Helping and supporting one another is a pathway to awareness in the communities through revitalizing the use of the Navajo language.

It's important for the younger generation to take the lead in revitalizing the Navajo language. This revitalization will aid communities in their awareness of the health issues related to uranium exposure in the Navajo language (Dawson & Madsen, 2011). Therefore, educating in the Navajo language is an interconnection of culturally-relevant curriculum that will decrease birth defects, illnesses, and deaths on the Navajo Nation.

An educational curriculum aimed at empowering pregnant Navajo women about the risks related to uranium exposure is critical to the future of the Navajo Nation and its communities. The Indian Health Service can help to reduce health risks by providing awareness campaigns in the Navajo language through multimedia formats.

## References

Arnold, Carrie. "Once Upon a Mine: The Legacy of Uranium on the Navajo Nation." *Environmental Health Perspectives* 122, no. 2 (February 2014). <https://doi.org/10.1289/ehp.122-A44>.

Brugge, Doug, Jamie L. deLemos, and Cat Bui. "The Sequoyah Corporation Fuels Release and the Church Rock Spill: Unpublished Nuclear Releases in American Indian Communities." *American Journal of Public Health* 97, no. 9 (September 2007): 1595-1600. <https://doi.org/10.2105/AJPH.2006.103044>.

Dawson, Susan E., and Gary E. Madsen. "Psychosocial and Health Impacts of Uranium Mining and Milling on Navajo Lands." *Health Physics* 101, no. 5 (November 2011): 618-25. <https://doi.org/10.1097/HP.0b013e3182243a7a>.

Hunter, LCDR Candis M., Johnnie Lewis, Douglas Peter, Mae-Gilene Begay, and Angela Ragin-Wilson. "The Navajo Birth Cohort Study." *Journal of Environmental Health* 78, no. 2 (2015):4



## Contact Information

Shelly Nez  
HERS Program  
shellynez68@gmail.com  
Phone: (785)-813-9210



## Acknowledgements

I would like to thank my parents and brothers for supporting me with my education. The Haskell Environmental Research Studies Institute (HERS), EPSCoR, the National Science Foundation (NSF), Haskell Indian Nation University, and the University of Kansas. I would also like to acknowledge Katie Grote, Josh Meisel, and Drs. Jay Johnson, Cody Marshall, Dr. Joe Brewer, Katrina McClure, and Lois Stevens. This project was supported by KS NSP EPSCoR Award 1656006