



Emergency Medicine for Rural and Indigenous Communities Conference

September 15th - 17th, 2022

An Indigenous Rights-Based Approach to Emergency Medicine

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AN INDIGENOUS RIGHTS-BASED APPROACH TO EMERGENCY MEDICINE



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OBJECTIVES

Gain

Context on Indigenous Peoples' rights (including Indigenous patients), as per the UN Declaration on the Rights of Indigenous Peoples (UNDRIP).

Learn

About the relationship between Indigenous rights and health disparities, including increased medical emergencies.

Examine

How the implementation of the UNDRIP can improve Indigenous health and decrease medical emergencies.

Apply

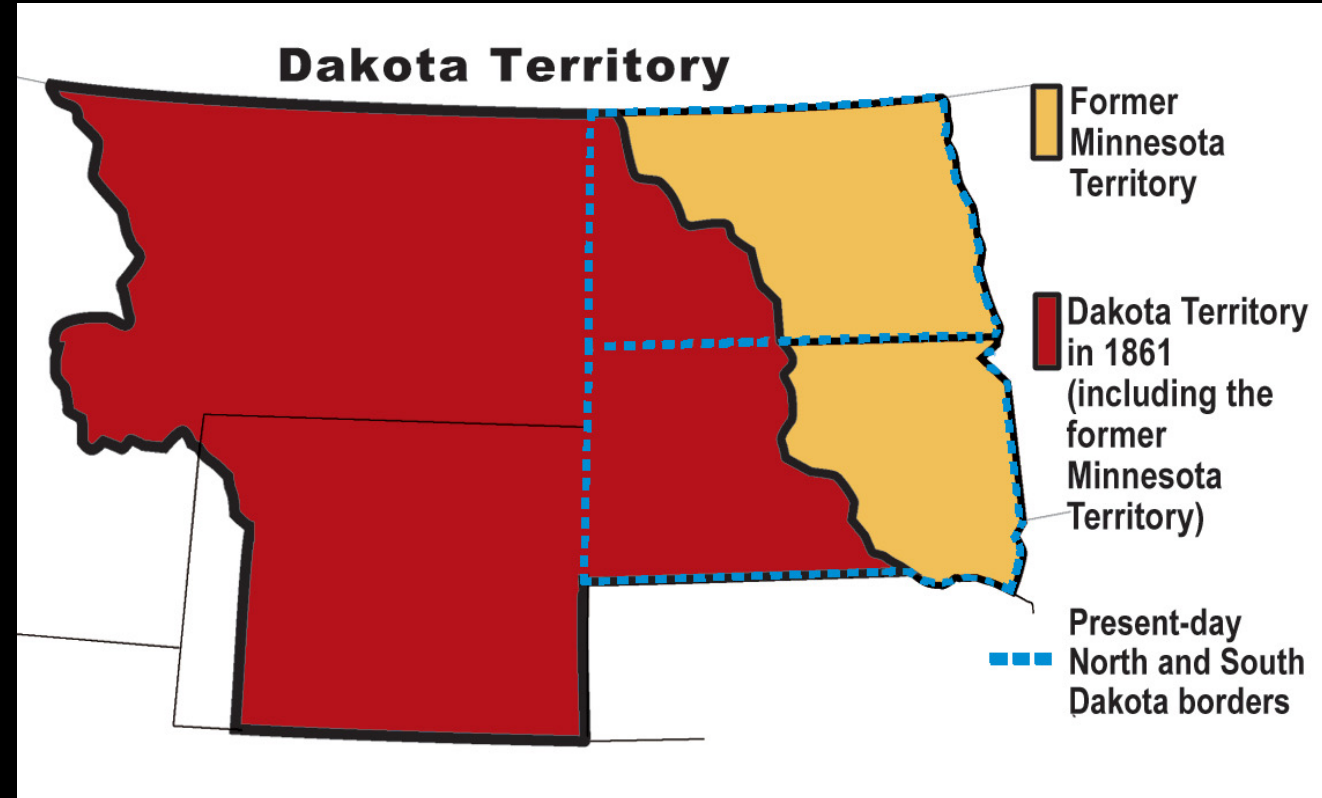
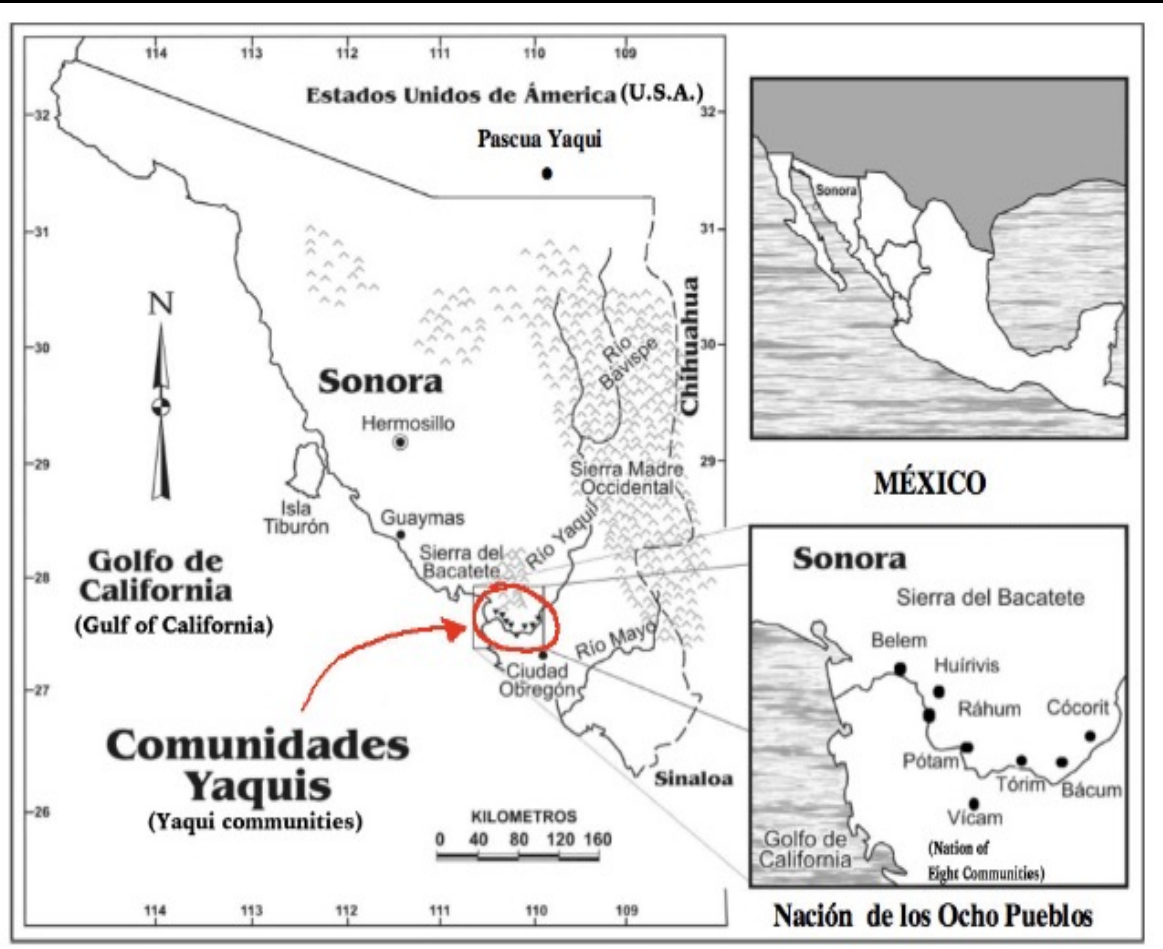
An Indigenous rights framework to your clinical practice, political advocacy, and healthcare delivery.

FIRST, A LITTLE ABOUT ME!

HUNKPATI DAKOTA AND YAQUI NATIONS



Lands of the Yaqui & Dakota Nations



Family



Indigenous Youth Engaging in the International Work



UN Indigenous Youth Caucus meeting with UN FAO,
Rome, October 2017, Rome



OBJECTIVE #1:

GAIN CONTEXT ON INDIGENOUS PEOPLES' RIGHTS (INCLUDING INDIGENOUS PATIENTS), AS PER THE UN DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES (UNDRIP).

Who are Indigenous Peoples?

My Definition: Indigenous Peoples belong to Indigenous Nations that have a pre-colonial continuity with their traditional lands since time immemorial. They consider themselves politically distinct from societies that colonized their lands & waters. Despite the ongoing detrimental impacts of colonization, they are determined to preserve, develop, and transmit to future generations their ancestral lands, waters, cultures, self-governance, **individual rights & collective rights.**





History was Made:
General Assembly
Adopted the UN
Declaration on the Rights
of Indigenous Peoples on
September 13th, 2007

“The United Nations, its bodies, including the Permanent Forum on Indigenous Issues, and specialized agencies, including at the country level, and **Member States (e.g. IHS)** shall promote respect for and full application of the provisions of this Declaration and follow up the effectiveness of this Declaration.”



The Declaration is the “Minimum Standard”

- “The rights recognized herein constitute the minimum standards for the survival, dignity and well-being of the Indigenous Peoples of the world.”
--Article 43

Some UNDRIP Provisions

Discrimination: “Reaffirming that indigenous peoples, in the exercise of their rights, should be free from discrimination of any kind..”

Racism: “Affirming further that all doctrines, policies and practices based on or advocating superiority of peoples or individuals on the basis of national origin or racial, religious, ethnic or cultural differences are racist, scientifically false, legally invalid, morally condemnable and socially unjust”

Self Determination: “Indigenous peoples have the right of self-determination”

Lands, Territories and Resources: “Indigenous peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired. States shall give legal recognition and protection to these lands, territories and resources.”

OBJECTIVE #2:

LEARN ABOUT THE RELATIONSHIP BETWEEN INDIGENOUS RIGHTS AND HEALTH DISPARITIES, INCLUDING INCREASED MEDICAL EMERGENCIES.

Indigenous Health Disparities

American Indian and Alaska Native Mississippians experience higher rates of chronic conditions for all measures with Indigenous populations data, including asthma, cardiovascular disease, diabetes, and smoking.

American Indian and Alaska Native patients nationally were significantly more likely to die in the hospital of COVID-19 than patients of any other race at every level of comorbidity risk.

AI/ANs were more likely to die of diabetes, chronic liver disease (ALDx10), accidents, and suicide than whites.

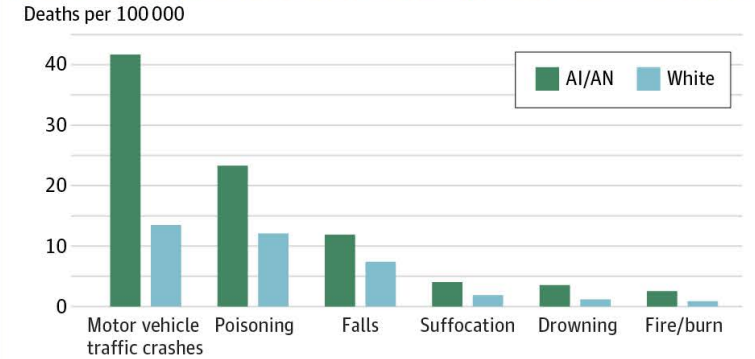
Accidents were the third leading cause of death for AI/ANs and the rate of motor vehicle traffic death, the highest among all other reported unintentional causes of death, was nearly 3 times that of whites.

Leading Causes of Death, 1999-2009 Regardless of sex, AI/ANs were more likely to die of diabetes, chronic liver disease, accidents, and suicide than whites.

AI/AN	Male	White	AI/AN	Female	White
1	Heart disease	1	1	Cancer	2
2	Cancer	2	2	Heart disease	1
3	Accidents	4	3	Accidents	6
4	Diabetes mellitus	6	4	Diabetes mellitus	8
5	Chronic liver disease	10	5	Stroke	3
6	Suicide	7	6	Chronic liver disease	12
7	CLRD	3	7	CLRD	4
8	Stroke	5	8	Influenza & pneumonia	7
9	Assault (homicide)	19	9	Kidney disease	9
10	Influenza & pneumonia	8	10	Septicemia	10
11	Kidney disease	11	11	Alzheimer disease	5
12	Septicemia	13	12	Suicide	16

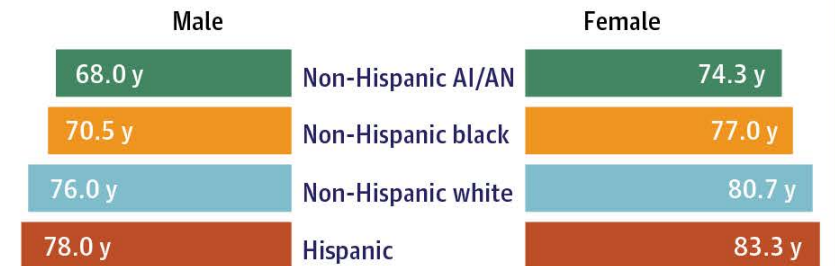
Abbreviation: CLRD, chronic lower respiratory diseases.

Unintentional Injury Mortality, 2005-2009 Unintentional injury was ranked as the third cause of death among AI/ANs. Death rates were higher among AI/ANs than among whites across all of the leading causes of unintentional injury death.



Life Expectancy at Birth The non-Hispanic AI/AN population in CHSDA counties, 2007-2009, had the lowest life expectancy compared with other US racial/ethnic groups, 2008.

Life expectancy at birth



Colonization and Attacks on Indigenous Rights have Contributed to DM Disparities

The lack of self determination to live a traditional way of life is a direct result of US' colonization of AI lands and displacement of AI people.

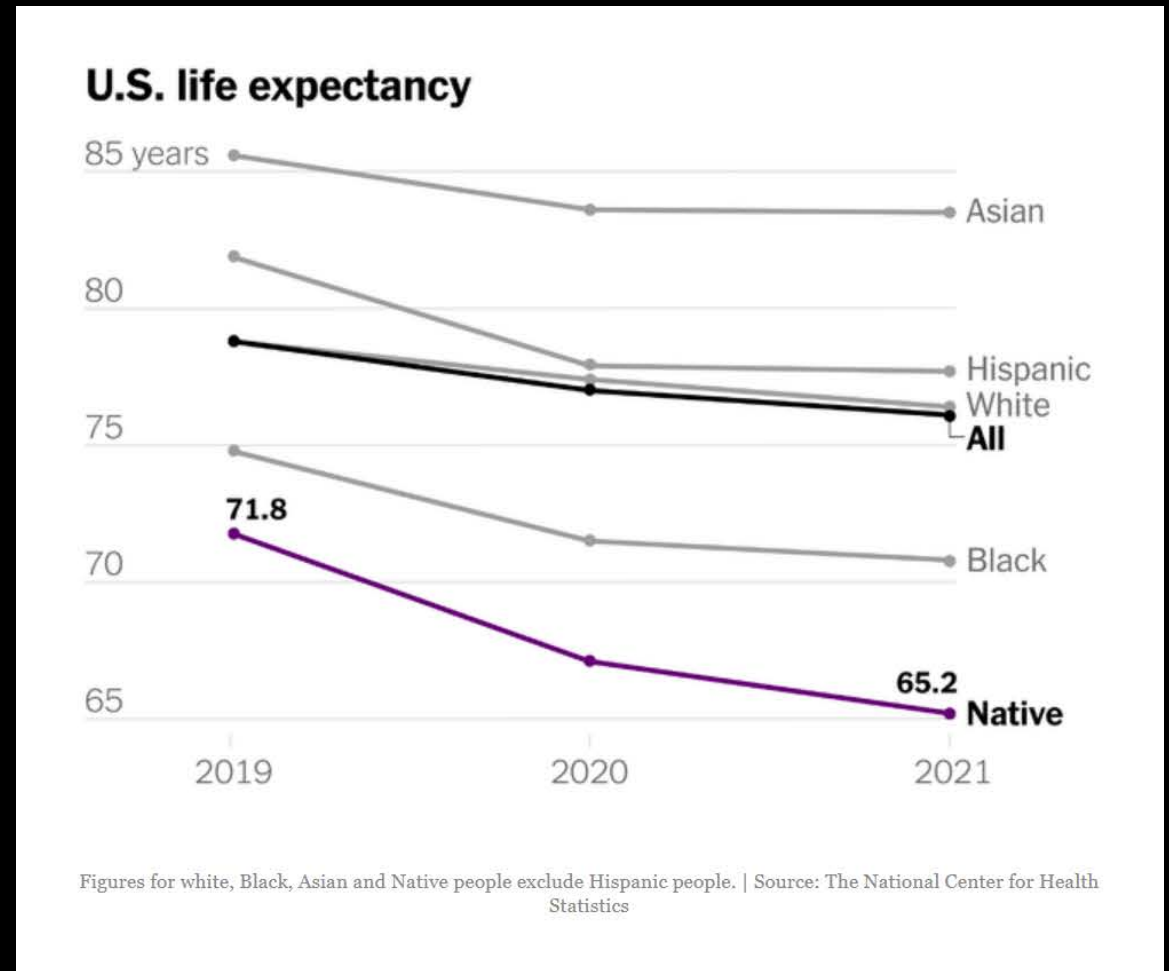
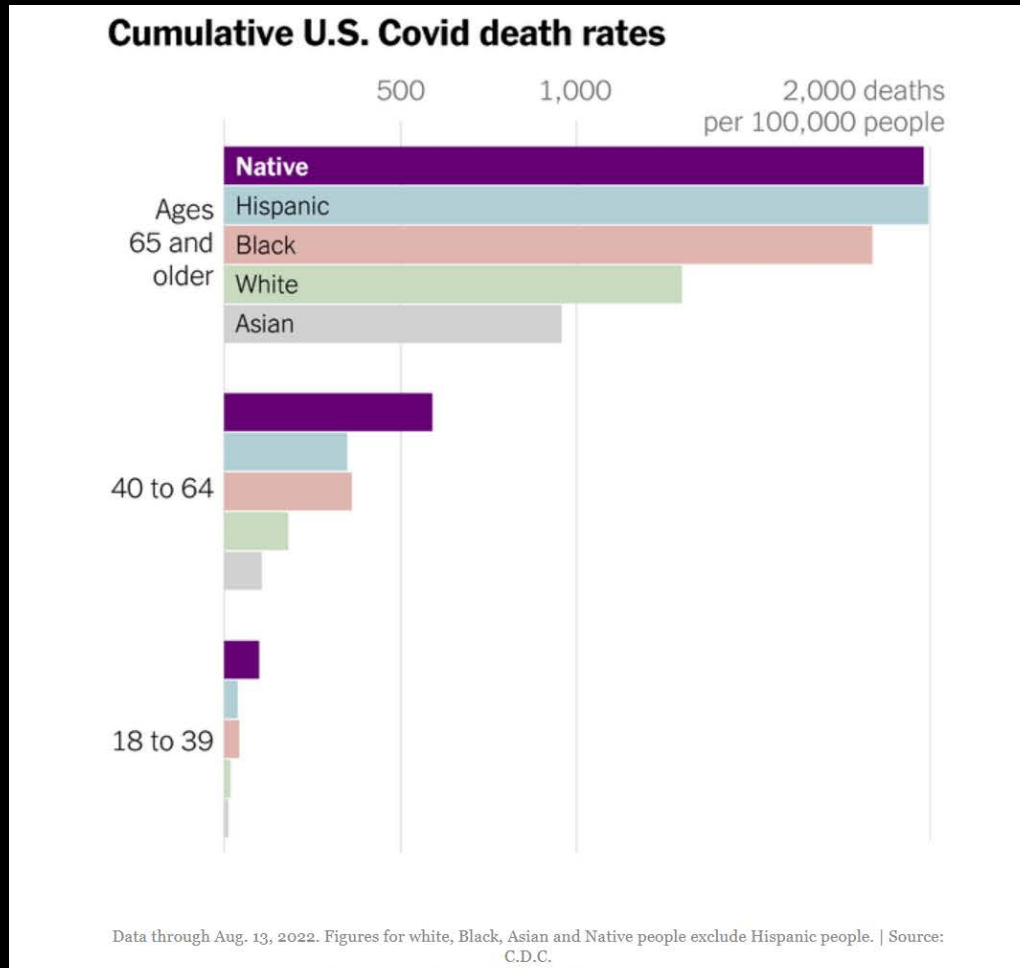
The ability to preserve the traditional way of life serves as a protective factor against developing T2DM in AI communities.

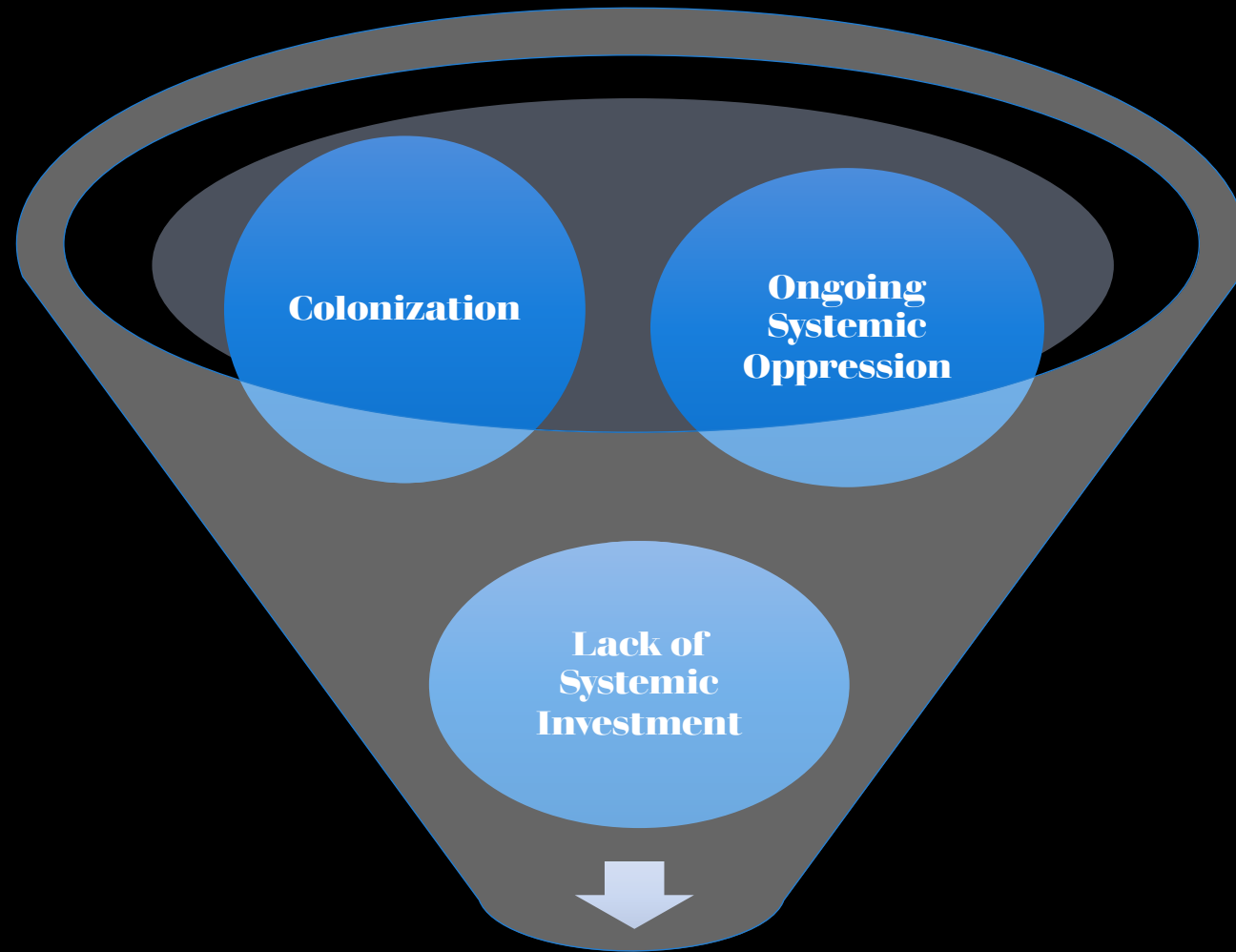
Colonization of AI lands and displacement of AI people have created a lack of suitable food options and destruction of food practices, which also play a significant role in both GDM and T2DM development.

The IHS' failure to properly fund and staff clinics prevent many AI from receiving proper health education regarding their risk, preventative screenings, and counseling on lifestyle modifications, glucose monitoring, and pharmacological management.

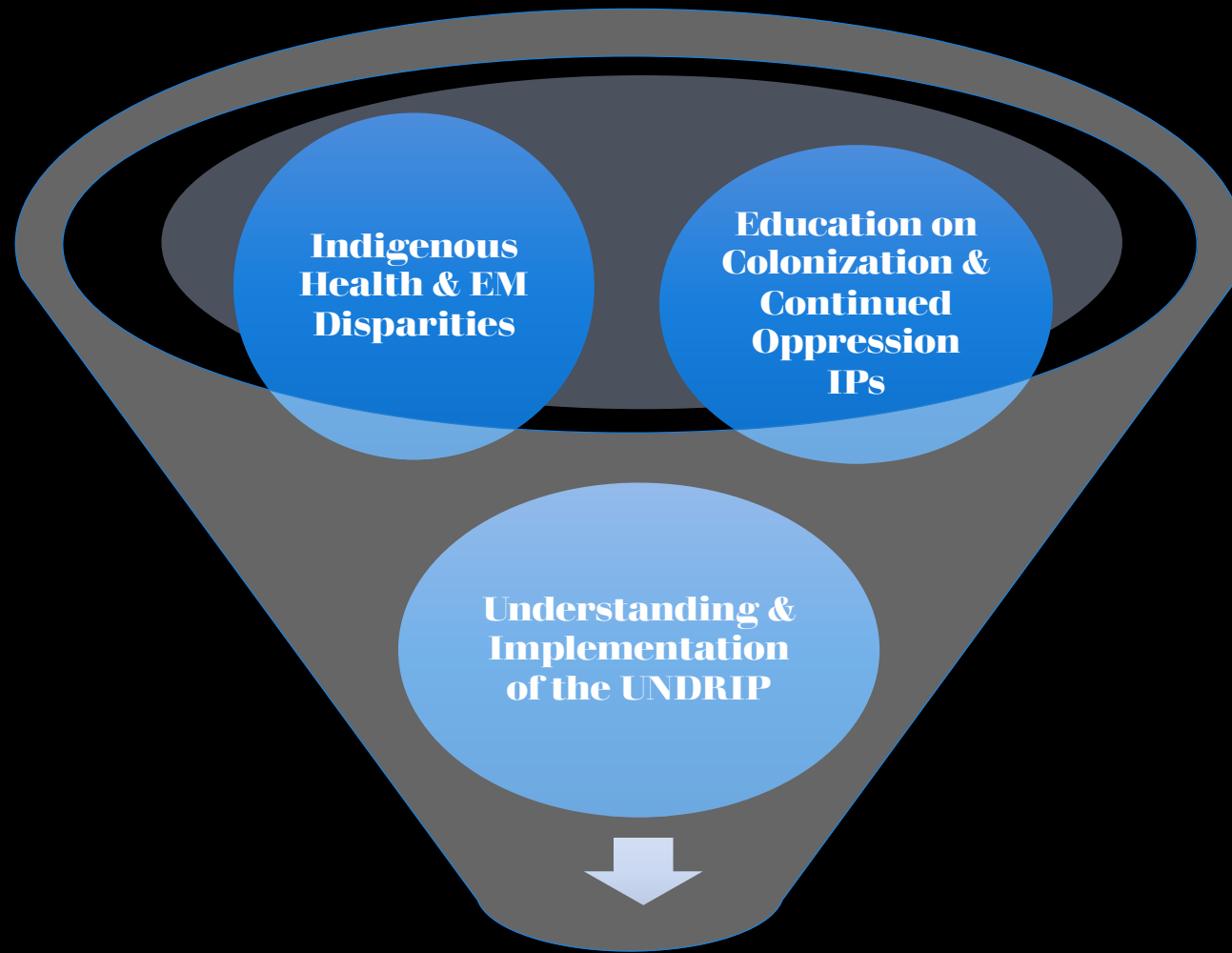
- 1) Huttlinger, K. W. (1995). A Navajo perspective of diabetes. *Family and Community Health*, 18(2), 9–16. <http://www.ijstor.org/stable/44953615>
- 2) Sharon Levy, To Combat Diabetes, Native Peoples Rediscover Traditional Plants: Ethnobotanists partner with indigenous communities, *BioScience*, Volume 69, Issue 9, September 2019, Pages 689–696, <https://doi.org/10.1093/biosci/biz081>

“Among them: Native Americans have some of the highest rates of health conditions, such as obesity and diabetes, that make a person much more likely to die from Covid.” – NYT





Disparities in Indigenous Health & Medical Emergencies



Reduced Indigenous Health Disparities & Medical Emergencies

OBJECTIVE #3: EXAMINE

HOW THE IMPLEMENTATION OF THE UNDRIP CAN IMPROVE INDIGENOUS HEALTH AND DECREASE MEDICAL EMERGENCIES.

Example #1: Environmental Violence via Poison

Violence Against Indigenous Women and Children, UNDRIP Article 22



- States shall take measures, in conjunction with indigenous peoples, to ensure that indigenous women and children enjoy the full protection and guarantees against all forms of violence and discrimination.

The UN Declaration on the Rights of Indigenous Peoples, Article 29



2. States shall take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their free, prior and informed consent.
3. States shall also take effective measures to ensure, as needed, that programs for monitoring, maintaining and restoring the health of indigenous peoples, as developed and implemented by the peoples affected by such materials, are duly implemented.

The UN Rotterdam Convention and many National laws allow States to export pesticides whose use they prohibit, as long as they inform the importing country of their status



"Just because something is not illegal, it may still be immoral. Allowing the export of products recognized to be harmful is immoral"

-- UN Special Rapporteur on the Adverse effects of the illicit movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights, Ms. Fatma-Zohra Ouhachi-Vesely on her 1st country visit to the US, December 2001

Name of Community Member, age, gender (if provided)	Yaqui Pueblo	Role in Community	Date Collected	Affected Individuals	Health Issues or symptoms described	Pesticide transmission	Medical Specialists Seen	Medical specialist opinion	Mortality
Jose Mario Alvarez E., 42 years old, male	Potam	Field worker	October 10, 2003	Brother	Leukemia	Did field work with a broken backpack that carried pesticides without protections or education	Doctor	Doctor related the illness to an accident in which the individual's backpack broke, soaking him in the pesticides that he worked with	Passed away after a year of hospitalization, chemotherapy, and several blood and platelets donor attempts
Grandma (unnamed), female	Not specified	Grandmother	January, 2013	Juan Antonio Rodriguez Coronado, grandson	Liver cirrhosis, sick and swollen at birth	Mother performed field work while pregnant	Doctor	Not specified	Passed away in 2016 from cirrhosis of the liver
Alejandra Mariela Espinoza, female	Not specified	Mother, wife to field worker	January 18, 2014	Son	Myelomeningocele, born with a protuberance at the coccyx requiring surgery, malformation in the lower lip	Home contamination, mother fell on contaminated field while pregnant	Doctor	Not specified	No
Luisa Anguis, female	La Loma de Bacum	Mother	August 20, 2013	5-year-old child in community named Lucio Juarez	Leukemia, marks on skin, loss of appetite, weight-loss, cancers in community	Living in an area considered dangerous due to pesticide use	Doctor	Doctors said transfusion treatments were not available to the boy	Passed away while hospitalized
Ramon Valencia Amarillas, male	Not specified	Cousin	January, 2014	Younger cousin	Leukemia, frail body, respiratory problems, fatigue,	Proximity to agricultural plots and a pesticide application aircraft field	Doctor	Doctors did not have the necessary resources to provide medical care and save the child	Passed away at age of 13

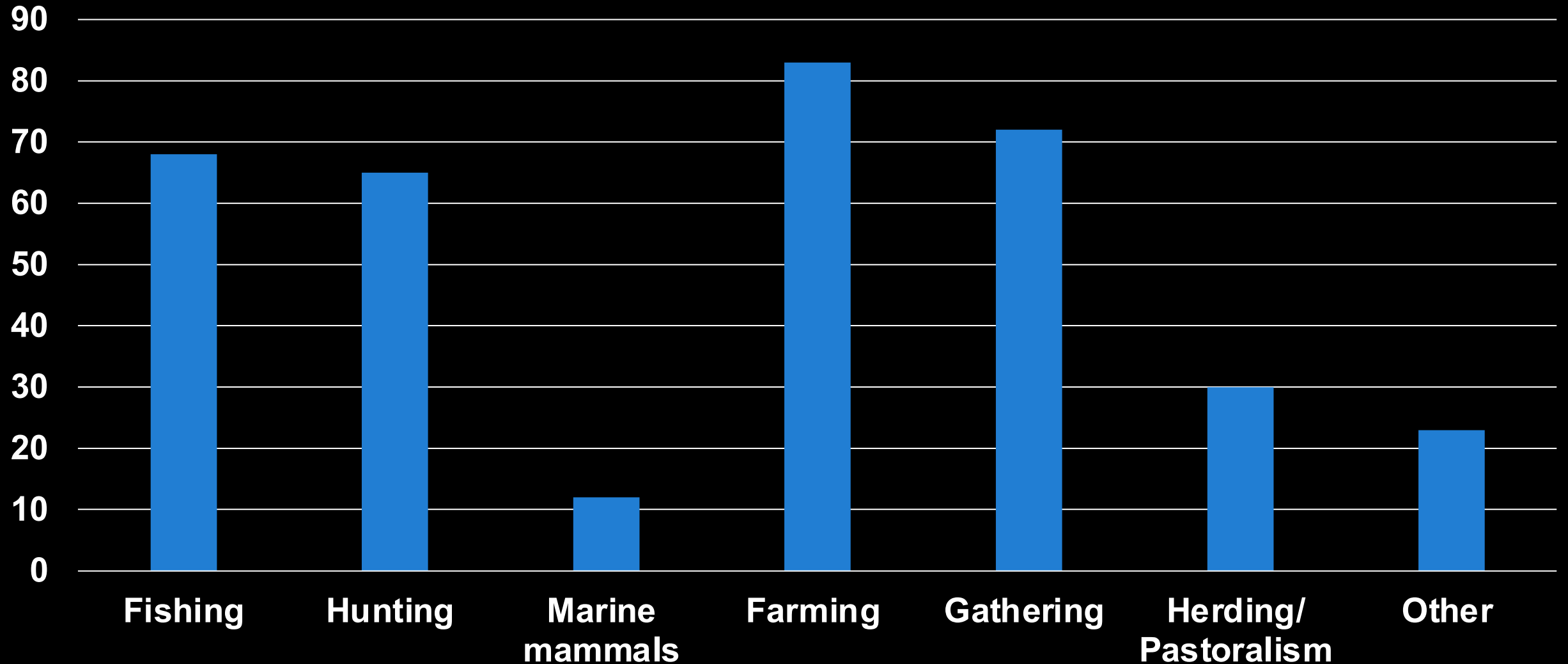
Statement presented to the UNPFII 17th Session, April 16, 2018

“...Indigenous peoples such as the Yaqui have suffered grave adverse impacts on their health and dignity from of the ongoing use of highly hazardous pesticides. These pesticides are often imported from countries that have banned their use domestically because of uncontrollable and unreasonable risks.”



**Former UN Special Rapporteur
on Toxics, Baskut Tuncak**

What is the traditional means of subsistence for your community/ tribe/ nation/ peoples?





The UN Stockholm Convention

“Arctic ecosystems and Indigenous communities are particularly at risk because of the biomagnifications of POPs and that contamination of their traditional foods is a public health issue”

-- preamble, adopted 2001

Indigenous Women and Girls are Disproportionately Impacted



Indigenous girls gather Tule (reeds)

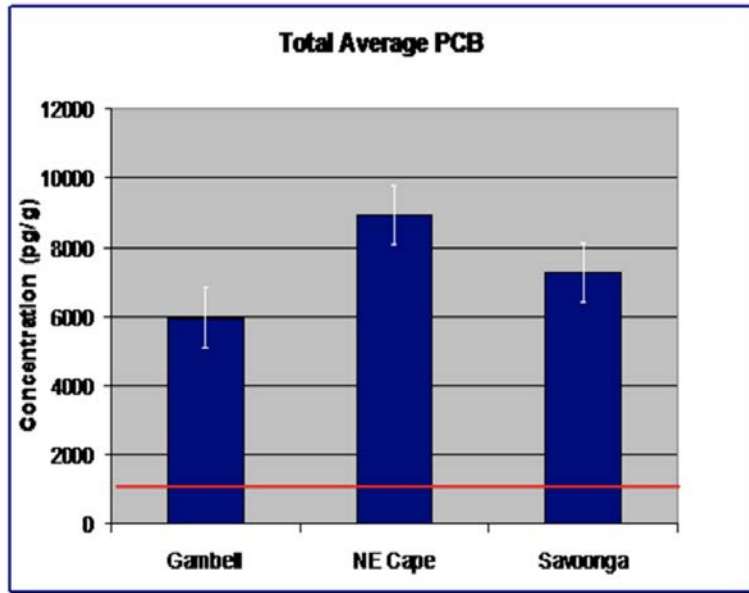
- Indigenous women and girls have a central role in traditional food gathering/preparation and cultural practices, and a higher body fat ratio, increasing their exposure to acute, chronic, and acute on chronic medical emergencies due to poisoning from environmental contaminants

UNDRIP Article 30

1. Military activities shall not take place in the lands or territories of indigenous peoples, unless justified by a relevant public interest **or** otherwise freely agreed with or requested by the indigenous peoples concerned.
2. States shall undertake effective consultations with the indigenous peoples concerned, through appropriate procedures and in particular through their representative institutions, prior to using their lands or territories for military activities.



Environmental Violence and Indigenous Arctic Communities



Levels of PCBs in the blood of St. Lawrence Island Yupik people are **6-9 times higher** than the average in the continental United States populations (indicated by the red line).

- The Yupik Indigenous People of St. Lawrence Island, Alaska have been harmed and displaced by the formerly used military bases in the Arctic region.
- The US Department of Defense routinely dumped toxic waste on the Island until 1972 after reports of high birth defects and cancers halted the practice. The US government never cleaned up the military bases, which continue to leak pollutants in the soil and groundwater and cause health problems.
- This has been exacerbated by climate change, leading to a rise of Arctic temperatures, melting of ice caps and spreading of contaminants

Environmental Violence and Other Indigenous Nations

The **Tewa Pueblo community** (New Mexico) are surrounded by uranium mines and factories that leak polychlorinated biphenyls (PCBs) and other toxic wastes into to the region. These areas have PCB levels 25,000x the standard for health, and contribute to increasing **risks of cancer, renal disease and birth defects.**

The **Mohawk Nation at Akwesasne** (New York) rely on the St. Lawrence river and its tributaries for fish. Aluminum foundries contaminated the river with PCB and hydraulic fluids, leading to high PCB levels in fish. These elevated levels are associated with early onset puberty and **elevated rates of heart disease, thyroid disease, diabetes, and hypertension.**

IMPLEMENTING THE UN DECLARATION TO REDUCE INDIGENOUS HEALTH DISPARITIES & EMERGENCIES



Indigenous Peoples' advocacy at the Stockholm Convention COPs from 2008 – 2015 have resulted in international bans on Lindane, Endosulfan, Pentachlorophenol and other highly toxic POPs used in Indigenous communities



EXAMPLE #2:
TREATIES

International Standing of Treaties

Indigenous peoples have the right to the recognition, observance and enforcement of treaties, agreements and other constructive arrangements concluded with States or their successors and to have States honour and respect such treaties, agreements and other

-- UNDRIP Article 37



The U.S. is obligated by treaty-precedent to provide quality healthcare services to Indigenous Peoples

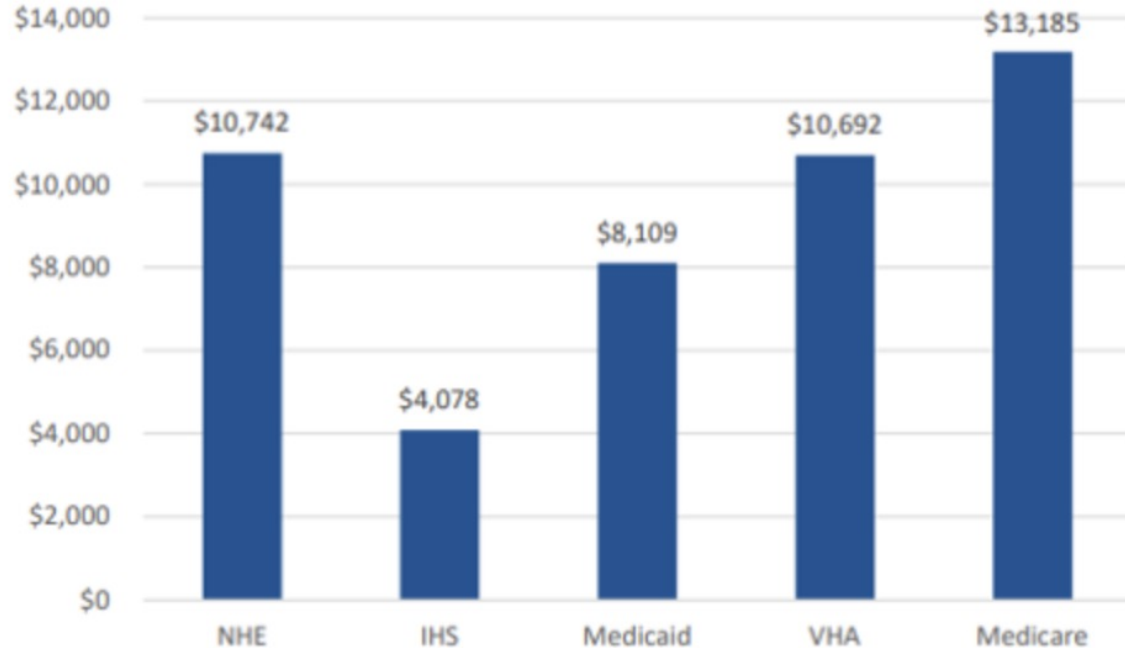
“The trust responsibility of the US government to provide health services for AI/AN people who are enrolled members of a federally recognized Tribe is based on numerous treaties, laws, and Supreme Court decisions. The Indian Health Service (IHS), a federal health program for American Indian and Alaska Native (AI/AN) groups, has served as the primary mechanism by which to fulfill the legal responsibility of the US government, based on treaty obligation, to provide quality health services to AI/AN populations.”

UNDRIP Article 24

Article 24: Indigenous individuals also have the right to access, without any discrimination, to all social and health services. Indigenous individuals have an equal right to the enjoyment of the highest attainable standard of physical and mental health. States shall take the necessary steps with a view to achieving progressively the full realization of this right.

IHS and Budget: Less funding = more medical emergencies

Figure 7. Estimated Per Capita Spending for Select Federal Health Care Programs, 2017



Note: IHS collects payments from various payers such as Medicare, Medicaid, and private insurance, which are captured in the per capita spending estimate for IHS listed above. For 2017, per capita funding for Medicaid (\$411/user), Medicare (\$126/user), Private Insurance (\$78/user), and VA reimbursement (\$4/user) are included in the \$4,078 IHS per capita calculation.

Sources: U.S. Government Accountability Office. Indian Health Service: Spending Levels and Characteristics of IHS and Three Other Federal Health Care Programs. December 2018 (GAO-19-74R); Keehan SP, Cuckler GA, Poisal JA, et al. National Health Expenditure Projections, 2019-28: Expected Rebound in Prices Drives Rising Spending Growth. Health Affairs, 39(4), March 2020.

- The discretionary funding model established by the Snyder Act persists today and contrasts with entitlement health care funds like Medicare.
- Korenbrot et al. observed a 9–11% increase in the rate of hospitalizations for each 10% increase in the disparity between health care funding for federal employees and funding for the TOHP.

- 1) The Indian Health Service and American Indian/Alaska Native Health Outcomes. Gina Kruse, Victor A. Lopez-Carmen, Anpotowin Jensen, Lakotah Hardie, Thomas D. Sequist. Annual Review of Public Health 2022 43:1, 559-576
- 2) Korenbrot C, Kao C, Crouch JA. 2009. Funding of Tribal health programs linked to lower rates of hospitalization for conditions sensitive to ambulatory care. Med. Care 47:88–96

Example #3:
Representation in
Medicine

The UN Declaration on the Rights of Indigenous Peoples affirms the Right to Participate in Decision-Making



Chief Wilton Littlechild, Rapporteur UN Permanent Forum on Indigenous Issues, 2007

Article 18: “Indigenous peoples have the right to participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedures, as well as to maintain and develop their own Indigenous decision-making institutions.”

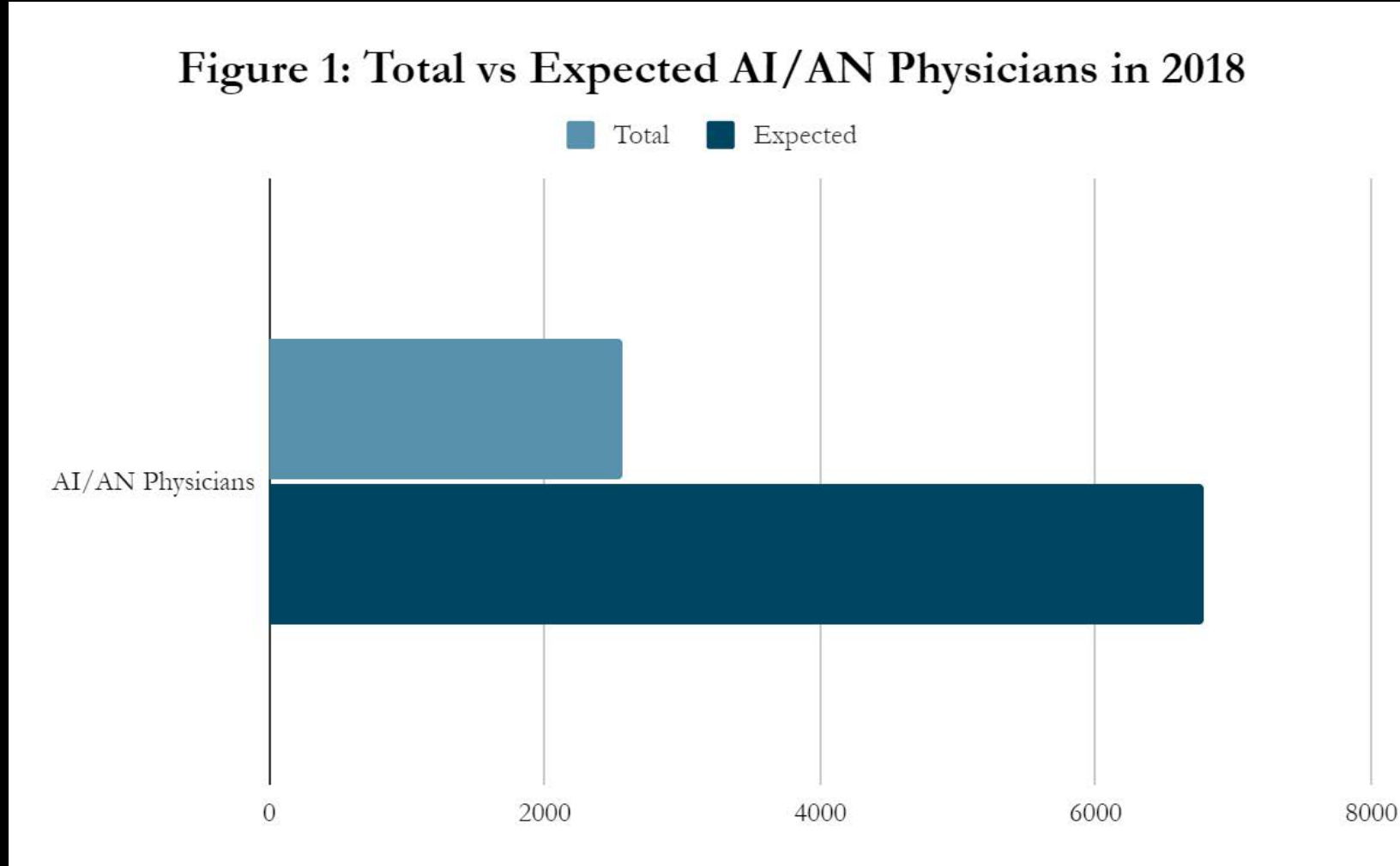
UNDRIP Article 23

Article 23: Indigenous peoples have the right to be actively involved in developing and determining health, housing and other economic and social programs affecting them and, as far as possible, to administer such programs through their own institutions.

UNDRIP Article 29

- Article 29: “...States shall also take effective measures to ensure, as needed, that programmes for monitoring, maintaining and restoring the health of indigenous peoples, as developed and implemented by the peoples affected by such materials, are duly implemented.”
-

American Indian and Alaska Natives Physician Shortage

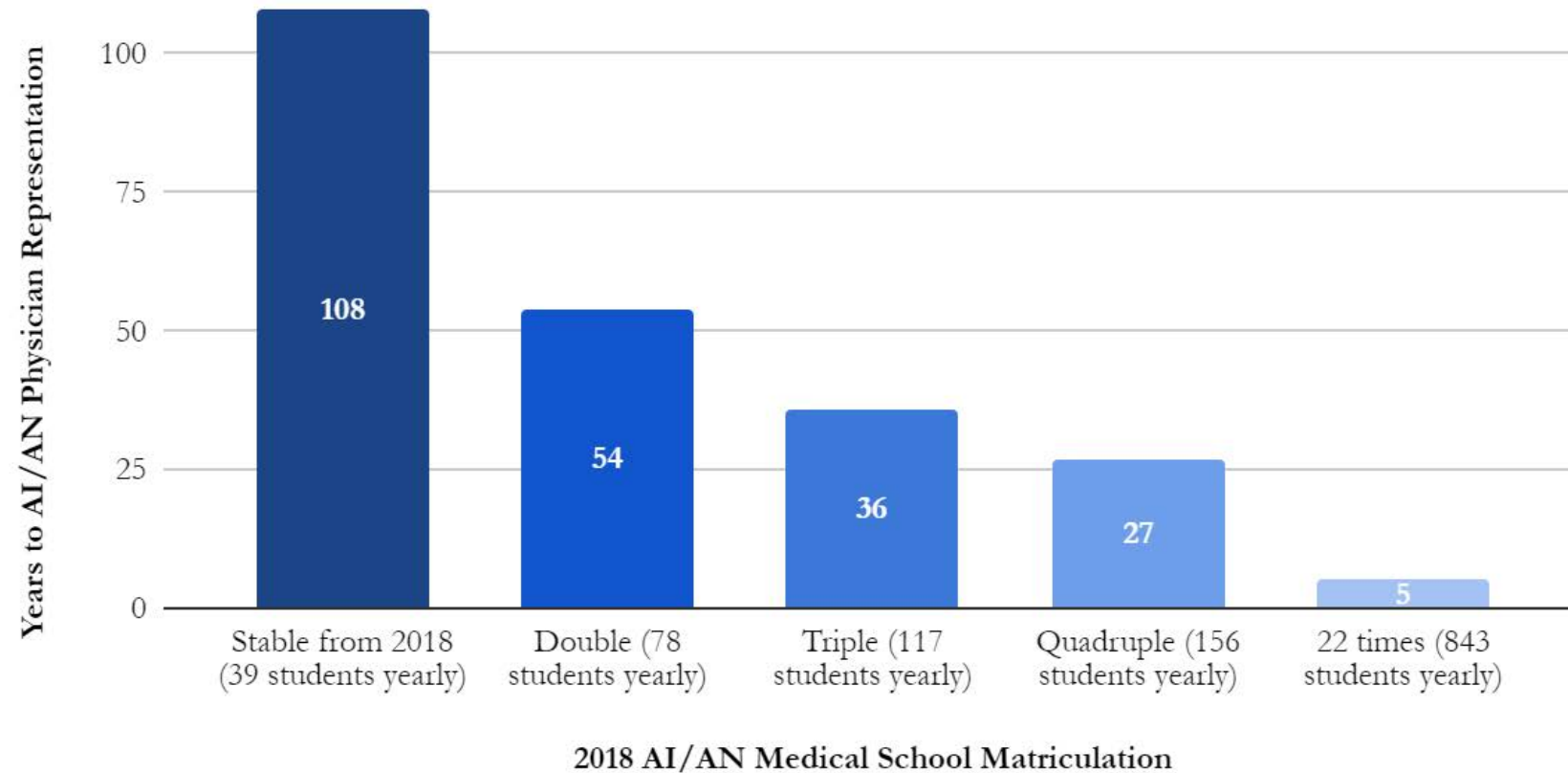


1) Association of American Medical Colleges. Diversity in Medicine: Facts and Figures 2019. Association of American Medical Colleges website. Published July 2019. Accessed June 16, 2022.<https://www.aamc.org/data-reports/workforce/interactive-data/figure-18-percentage-all-active-physicians-race/ethnicity-2018>

2) US Census Bureau. 2018 Population Estimates by Age, Sex, Race and Hispanic Origin. Census.gov. Last revised June, 2018. Accessed June 16, 2022.
<https://www.census.gov/newsroom/press-kits/2019/detailed-estimates.html>

AI/ANs are 108 Years from Equitable Physician Representation

Figure 2: Years to AI/AN Physician Representation Based on 2018 AI/AN Medical School Matriculation



1) Association of American Medical Colleges. Diversity in Medicine: Facts and Figures 2019. Association of American Medical Colleges website. Published July 2019. Accessed June 16, 2022.<https://www.aamc.org/data-reports/workforce/interactive-data/figure-18-percentage-all-active-physicians-race/ethnicity-2018>

2) US Census Bureau. 2018 Population Estimates by Age, Sex, Race and Hispanic Origin. Census.gov. Last revised June, 2018. Accessed June 16, 2022. <https://www.census.gov/newsroom/press-kits/2019/detailed-estimates.html>

EM BACKGROUND

- 2019-20 AAMC Data: 52 AI/AN EM Residents (.9%)
- AI/AN percentage of 2020 U.S. population: 3%
- Highest levels of homelessness per capita
- Increased ER Utilization

1) Jensen A, Lopez-Carmen VA (2022) The “Elephants in the Room” in U.S. global health: Indigenous nations and white settler colonialism. PLOS Glob Public Health 2(7): e0000719.

<https://doi.org/10.1571/journal.pgph.0000719>

2) Zook HG, Kharbanda AB, Puumala SE, Burgess KA, Pickner W, Payne NR. Emergency Department Utilization by Native American Children. Pediatr Emerg Care. 2018 Nov;34(11):802-809. doi: 10.1097/PEC.0000000000001289. PMID: 28953102; PMCID: PMC5867199.

3) <https://www.aamc.org/data-reports/students-residents/interactive-data/report-residents/2020/table-b5-md-residents-race-ethnicity-and-specialty>



Equal Participation

- “If we are not at the table, we are on the menu”
 - To participate in medicine, we need representation in medicine.
-

OBJECTIVE #4: APPLY

AN INDIGENOUS RIGHTS FRAMEWORK TO
YOUR CLINICAL PRACTICE, POLITICAL
ADVOCACY, AND HEALTHCARE DELIVERY.

AN INDIGENOUS RIGHTS FRAMEWORK FOR EMERGENCY MEDICINE: ACTION ITEMS

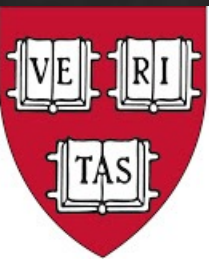
1. Know the UN Declaration on the Rights of Indigenous Peoples (UNDRIP)
2. Understand the rights of your Indigenous patients per the UNDRIP
3. Understand the historical and ongoing systemic impacts to Indigenous Rights, and how they affect your patients
4. Ask yourself what specific systemic attacks on Indigenous rights are potentially increasing medical emergencies in Indigenous Nations
5. Find ways to support Indigenous Peoples in advocating for those protection of those rights
6. Ask yourself how care be improved to consider Indigenous rights and the historical abuses to them
7. Ask yourself what you can do in EM partnerships to take Indigenous rights into account
8. Understand that Indigenous rights are at the core of Indigenous health and Indigenous emergency medicine disparities.

OHIYESA PREMEDICAL PROGRAM (OPP)



HARVARD
T.H. CHAN
SCHOOL OF PUBLIC HEALTH

Named in honor of a
Mdewakanton Dakota
physician (Dr. Charles A.
Eastman aka Ohiyesa)



HARVARD
HUMANITARIAN
INITIATIVE



FRONT LINE
INDIGENOUS PARTNERSHIP

Right to Health and to Traditional Health-Related Practices

“Indigenous peoples have the right to their traditional medicines and to maintain their health practices, including the conservation of their vital medicinal plants, animals and minerals...” ---

UNDRIP Article 24



Education and Language: Article 14

“Indigenous peoples have the right to establish and control their educational systems and institutions providing education in their own languages, in a manner appropriate to their cultural methods of teaching and learning.”





We partner with Indigenous Peoples, Nations, and organizations to provide medically accurate and culturally relevant COVID-19 info in Indigenous languages across the world.

IDEAS

Harvard medical student knocks down a big barrier to COVID-19 info

Indigenous communities are some of the hardest hit by the pandemic, but until recently, many were largely without public health guidance in their languages.

By **Julia Sklar** Updated September 26, 2020, 4:00 a.m.



 **TRANSLATIONS
& OUR NATIONS**
by and for Indigenous Peoples

TRANSLATIONS



th...
BEMBA

CHATINO

ENDOROIS/SWAHILI

GREENLANDIC

Language Examples

mira.kleist@gmail.com < 1 of 117 >  

Responses cannot be edited

Call for translation for COVID-19 preparation and response in Indigenous communities:

As the world braces and reacts to COVID-19, we are calling out to our global family to request support translating key documents into Indigenous languages from English and Spanish materials. Translators will be credited and work alongside a team composed of Indigenous leaders, Indigenous physicians, Harvard Medical Students and peers at other institutions, experts in public health and clinical medicine, and UN Agencies. Please fill out this form for more information or to offer your services.

Questions Responses **20**

Convocatoria de traducción para la preparación de traducción para dar respuestas sobre COVID19 en las comunidades Indígenas

A medida que el mundo se prepara y reacciona a COVID-19, estamos pidiendo a nuestra familia global que solicite ayuda para traducir documentos clave a idiomas indígenas de materiales en inglés y español. Los traductores recibirán crédito de su autoría y trabajarán junto a un equipo compuesto por líderes indígenas, médicos indígenas, estudiantes de medicina de Harvard y colegas de otras instituciones, expertos en salud pública y medicina clínica y agencias de la ONU. Complete este formulario para obtener más información o para ofrecer sus servicios.

Language	Indigenous Peoples	Geographical Region	Team Associated
Assamese	Assamese	India	Asia Team
Ateso	Iteso	Uganda, Kenya	Africa Team
Chichewa	Chewa	South/Central Africa	Africa Team
Diné	Navajo	Southwest United States	North America Team
Fulani French	Fulani	West Africa	Africa Team
Fulfulde	Fula Peoples	West Africa	Africa Team
Gujarati	Gujarati	India	Asia Team
Hausa	Hausa	Nigeria, Niger	Africa Team
Hopi	Hopi	Southwest United States	North America Team
Igbo	Igbo	Nigeria	Africa Team
Inuktitut	Inuit	Northern Canada	Arctic Team
Kalaallisut	Inuit	Greenland	Arctic Team
Kichwa	Kichwa-Otavalo	Ecuador	Central/South America Team
Kiswahili	Waswahili	East Africa	Africa Team
Koya	Koya	India	Asia Team
Kuman	Kuman	Papua New Guinea	Asia Team

Maithili	Maithil	India, Nepal	Asia Team
Mopan Maya	Mopan Maya	Guatemala, Belize	Central/South American Team
Naro	Khoekhoen	Botswana, Namibia	Africa Team
<u>Nchumurung</u>	Krachi-nchumuru	Ghana	Africa Team
Pinayuanan	Paiwan	Taiwan	Asia Team
Samburu Maa	Samburu	Kenya	Africa Team
Samia	Samia Peoples	Kenya, Uganda	Africa Team
Sinhalese	Sinhalese	Sri Lanka	Asia Team
Telugu	Telugu vaaru	India	Asia Team
Terëna	Terena	Brazil	Central/South America Team
Wanji	Waanyi	Australia	Pacific Team
Wapichan	Wapichan	Guyana/Brazil	Central/South America Team
Yoruba	Yoruba	Nigeria, Benin, Togo	Africa Team
Zapotec	Zapotec	Mexico	North America Team

EXAMPLE
VIDEO
(KHWEDAM
LANGUAGE,
NAMIBIA)

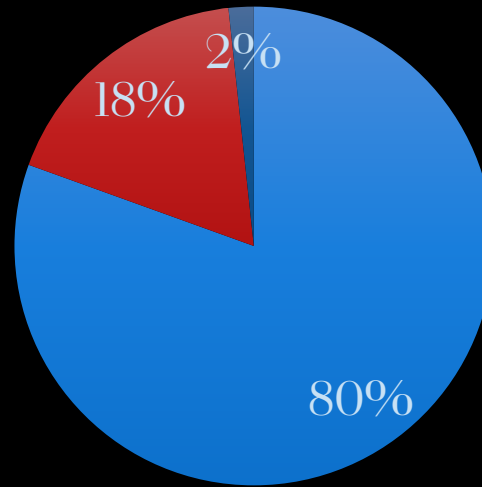


Traditional Knowledge: Article 31



1. Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines...

How important are traditional/ Indigenous knowledge, cultural practices and cultural heritage (including seeds, sacred places and medicines) for the resiliency and vitality of your community/ tribe/ nation/ peoples' food systems



■ **Essential**

■ **Very important**

■ **Somewhat important**

■ **Not important**

■ **No opinion**

And Now It's Up To You!



Thank you!

- Victor_Lopez-Carmen@hms.harvard.edu

