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Indigenous data sovereignty in action: The Food Wisdom Repository

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Abstract

The rapidly expanding digital ecosystem has placed Indigenous data sovereignty (IDS) in high relief. The context of what, how, when, why, and by whom data is collected and controlled determines social narratives. Colonised data and data over which Indigenous people have sovereignty can produce vastly different results in decision-making, policy development, outcome assessment, and accountability.

The authors, while at the Research for Indigenous Community Health (RICH) Center, recognised that while health information is available, it is currently dispersed, disconnected, and difficult to access. Thus they proposed the development of a Food Wisdom Repository (Repository), with support from the Shakopee Mdewakanton Sioux Community, to provide an abundance of meaningful data, resources, and information sharing opportunities emerging from Indigenous health efforts. Drawing from the existing health needs, extant literature, and guidance from their external advisory committee, the authors proposed the development of an online digital repository of wise food practices that is grounded within Indigenous knowledges (IK) and IDS.

The theoretical framework underlying the Repository is explained, including IDS that centres and privileges an Indigenous worldview, IK, and wise practices in order to reverse the wave of biased or omitted data affecting Indigenous communities. Future plans for the online digital Repository include ongoing needs assessments, and hosting strengths-based data and stories that resist, recollect, and reclaim Indigenous ways of health, wellness, as well as innovations to address challenges in the field of Indigenous food, nutrition, health, and wellness.

Keywords: Indigenous data sovereignty, wise practices, food sovereignty, nutrition education, obesity prevention, diabetes prevention

Introduction

There is danger in a single story, especially when it spreads rapidly through digital platforms around the globe. The Nigerian author Chimamanda Adichie warns that a single story represents only one vantage point and is usually told by those who have the power to craft it (Adichie, 2009). Told over and over, a single story takes on a rhetorical sovereignty, and communicates the dominant culture's view. This single story becomes an indisputable truth rather than a social construct that is exploited by sovereign nations for colonisation and social "re-production". For example, off-reservation boarding schools were established in the U.S. as the best hope of changing American Indian children into members of the so-called American mainstream. These schools systematically eradicated Indigenous cultures. Western ways replaced American Indian language, sciences, history, arts, religion, and social structures (Child, 2000)

Similarly, Nigerian writer and critic Chinua Achebe recounts his experience in an educational system inherited from English colonial rule (Achebe, 2001). During his time in school, the only stories and literature available were written by English authors about English culture or written about Africa in ways that African people did not recognise or agree with. His remedy for this single story was to write non-colonial narratives in the style of the Igbo oral tradition. Achebe worked for a global "re-storying" of people, like his own, who were silenced by colonial system of surveillance, control, assimilation, and elimination (Achebe, 2001). Indigenous writers from Charles Eastman(1918) to Layli Long Soldier (2017) have and continue to reclaim Indigenous stories and thus contribute to the re-balancing of stories as Achebe envisioned.

In recent years, the rapidly expanding digital ecosystem has placed data sovereignty in high relief. To control data is to control the details from which information is derived and stories are told; data is infused with implicit cultural biases, which affect the context of what, how, when, why, and by whom stories are told. Thus data sovereignty has arisen as a key component of Indigenous sovereignty (Kukutai & Taylor, 2016). The purpose of this paper is to add to the "balance of stories" Achebe (2001) calls for by establishing the need for and a strong theoretical argument for the Food Wisdom Repository (here forward, Repository), a living example of data sovereignty in the context of political and rhetorical sovereignty. This paper begins with the theoretical framework that supports the need for the Repository (i.e., single stories that support Western sovereignty, settler colonialism and its influence on digital Indigenous data sovereignty). Next there will be a description of the Repository as an act of Indigenous data sovereignty (IDS) and wise practice; and finally, we contrast Indigenous and Western worldviews, knowledge and ways of knowing, and uses of power in relation to data sovereignty.

Theoretical Framework

Western Sovereignty and Settler Colonialism. Sovereignty is a key feature of Western modernity (Stanford University Center for the Study of Language and Information, 2016). It is a single settler story that rulers and state powers use to

justify their supremacy over less powerful groups. "Knowledge is power" is another story that historically supports Western political sovereignty and cultural hegemony. The works of English political philosopher Francis Bacon established a political structure which ensured the self-perpetuation of a ruling professional class with the aim of controlling official institutions of learning (Bacon, 1597; Moreton-Robinson, 2011). Bacon's works laid the foundation for the Western scientific method and the supremacy of empiricism. Bacon legitimised the Christian notion of man's sovereignty over nature and the importance of knowledge to that project (Rodríguez García, 2001). Thomas Jefferson revered Bacon; as a result, Jefferson advocated for an educated class that would preserve the U.S. republic. Jefferson believed that American Indians (AI) must become "civilised" and Europeanised, or become "extinct." During Jefferson's presidency, the groundwork was laid for U.S. policies governing AI assimilation, removal, and genocide (Carpenter, 2013; Ellis, 1997; Jefferson, 1803, 1950). The roots of these stories and the implicit bias they engender run deep. Western notions of sovereignty and knowledge have infused U.S. history and subsequently bled into the digital realm.

Colonialism and Influence on Digital Indigenous Data Sovereignty.
Settler colonialism is unique in that its goal is to systematically replace Indigenous populations with settlers. It dismantles Indigenous cultures via forced assimilation, boarding schools, and other direct or indirect policies of ethnocide, and genocide, and trends towards transforming colonial differences into a supreme and sovereign unchallenged settler state (Wolfe 2006). For example, the U.S. government endorsed a story that secured the land rights of patriotic, Christian, white homestead settlers, while leaving out the parts about breaking treaties, ethnic cleansing, and forcing Indigenous people off their sovereign land. While notions of Euro-American political and rhetorical sovereignty have been normalised, Indigenous sovereignty has not. Ostensibly, the relationship between federally recognised tribes and the U.S. is sovereign to sovereign. The 573 federally recognised tribes in the U.S. inherently possess the authority to self-governance unless otherwise delimited by treaties, acts of Congress,

executive orders, federal administrative agreements and court decisions (Indian Affairs, n.d.). In practice, however, tribes face interlocking, sometimes competing, forms of power. This competition for power also flows to the digital arena and has spurred arguments for sovereignty. IDS has been defined as "the right of a nation to govern the collection, ownership, and application of its own data. It derives from tribes' inherent rights to govern their peoples, lands, and resources" (United States Indigenous Data Sovereignty Network [USIDSN], n.d., para. 1).

Indigenous Data Sovereignty and Story.
Ultimately, the quest for Indigenous sovereignty is not an attempt to revive the past, as such, but to revive the possibilities for Indigenous peoples to survive, be recognised, and flourish in a society that has not, by virtue of settler colonialism, stopped being colonial (Lyons, 2000; Veracini, 2010). IDS is a critical part of this re-storying because, over time, non-Indigenous people with the power to select, record, and interpret data have colonised it. As a consequence, such data represents the dominant worldview, legal and political system, cultural practice, and its institutional owners. Information derived from implicitly or explicitly biased data will likely become single stories that range from liberating and empowering at one end to controlling and disempowering at the other.

The enormity of the digital ecosystem and cloud computing have amplified concerns about data sovereignty. There is broad agreement that the size of the digital universe, its human and machine-generated data, will double at least every two years, a 50-fold growth from 2010 to 2020 (insideBIGDATA, 2017). In the "Internet of Things" Age, where any device with Internet access can be connected with billions of other devices and the people they belong to, data collection, ownership, residence, and access become essential international questions. Indigenous communities must be able to control the identification of data, from and about them; its classification, interpretation, and applications.

Indigenous governance also extends to data about Indigenous people that may be possessed by non-Indigenous entities (USIDSN, n.d.). Indigenous governance and custodianship

generate locally and culturally relevant data to sustain the aspirations, decision-making, innovation, and actions of Indigenous communities (Kukutai & Walter, 2015; Rainie, Schultz, Briggs, Riggs, & Palmanteer-Holder, 2017; Walter, 2016; Yap & Yu, 2016). IDS is imperative in the digital arena to ensure that Indigenous cultural continuity and wellbeing are respected and promoted. As the United Nations Secretary-General's Independent Expert Advisory Group reports, "Data are the lifeblood of decision making and the raw material for accountability. Without high-quality data providing the right information on the right trend, at the right time; designing, monitoring and evaluating effective policies becomes almost impossible"(Independent Expert Advisory Group Secretariat, 2014, p. 2) as does the sound use of resources. Indigenous communities must be at the forefront of determining which indicators are measured and overseeing the interpretation of these measures using culturally valid methods (Yap & Yu, 2016). For instance, a recent study found that health data surrounding high alcohol consumption indicated that Indigenous groups had lower rates, or no difference in rates, as compared to U.S. white groups. This study seems to debunk data related myths around Indigenous alcohol use often found in Western research and popular culture. Indigenous data must be examined within context and not guided by biased stereotypes (Cunningham, Solomon, & Muramoto, 2016). To do so, Indigenous persons and allies must be at the center of data analysis and interpretation.

Lack of data is also a major concern. Western reports regularly aggregate data representing Indigenous people into the "Other" category. This is so frequent that the National Congress of American Indians (NCAI) Research Center uses the term "Asterisk Nation" to characterize the frequency with which an asterisk appears in place of American Indian/Alaska Native (AI/AN) data points. This phenomenon is the result of narrowly defined mainstream criteria and Western conceptions of knowledge (National Congress of American Indians, n.d.). The omission of AI/AN data creates gaps in assessment and accurate allocation of resources, as well as inaccuracies in policy direction. Lack of data also hides the inequities that still exist for

Indigenous communities. This is especially relevant in healthcare where settler colonialism created an environment of racism, poverty, ill health, and a legacy of historical trauma that compromised health for generations of Indigenous people driving a need for decolonising approaches (Duran, Duran, Brave Heart, & Yellow Horse-Davis, 1998; Jennings, Little, & Johnson-Jennings, 2018; Johnson-Jennings, Walters, & Little, 2017; Schultz, Walters, Beltran, Stroud, & Johnson-Jennings, 2016; Slimming, Orellana, & Maynas, 2014; Walters, Beltran, Evans-Campbell, & Simoni, 2011; Walters & Simoni, 2002; Warne & Lajimodiere, 2015).

Obesity and diabetes were not seen in AI/AN people before their adoption of Western or industrialised diets. Early on data collection was not contextualised and Western medicine racialised diseases like Type 2 Diabetes (T2D; Milburn, 2004; Satterfield, Eagle Shield, Buckley, & Taken Alive, 2007). Contrariwise, when non-Indigenous populations began experiencing T2D researchers began to collect and analyse data that reflected social and environmental factors like food systems, cost, and access (Roy, 2006). Hence, data needs to not only be collected but also contextualised, which is more likely when Indigenous communities are engaged (Jennings et al., 2018).

Actualising IDS can reverse the wave of biased or omitted data that impacts Indigenous communities (Pool, 2016). The United Nations Permanent Forum on Indigenous Issues and the *United Nations Declaration on the Rights of Indigenous Peoples* stress the point that Indigenous peoples must have control over their data and be engaged in collecting, interpreting/analysing, and disseminating data (M. Davis, 2016). In so doing, Indigenous-led data projects can generate stories that represent an Indigenous worldview, Indigenous knowledges, values, and cultural practice, especially when Indigenous health beliefs conflict with Western beliefs. Indigenous communities can exercise their sovereignty to promote stories of both health strengths and disparities (Jennings et al., 2018). Indigenous stories that start with healthy, culturally appropriate, Indigenous food practices are being shared via digital platforms in the context of cultural disruption instead of a deficit discourse

in which Indigenous people are viewed as incapable of making healthy or correct decisions (Satterfield et al., 2003). IDS enables Indigenous people to gather and use existing data to shape Indigenous narratives and Indigenous ways forward (Walter, 2016).

Acts of Data Sovereignty and Wise Food Practices

Since the mid-20th century, many Indigenous communities have actively reclaimed previously disrupted tribal or group identity through self-determined efforts to develop health and wellness programs grounded in Indigenous data and health beliefs (Satterfield et al., 2003).

Indigenous Data Sovereignty and Wise Practices. Just as Western data sovereignty is based on Western knowledge and the production of meaning and social re-production, IDS is grounded in Indigenous ways and can promote ancestral or wise practices as valued data. Generally, Indigenous communities hold a relational worldview, which recognises events in relation to all others, and considers health to be a function of the balance between multiple interdependent elements including extended family, tribe, environment, spirituality, culture, history, and environment (Cross, 1998; Johnson-Jennings, et al., 2017).

Furthermore, Indigenous cultures and continuity are seen as protective health factors (Chandler & Lalonde, 1998; Jennings, et al., 2018; Oster, Grier, Lightning, Mayan, & Toth, 2014; Institute of Medicine, 2013; Satterfield, DeBruyn, Santos, Alonso, & Frank, 2016).

Table 1. Spectrum of data sovereignty characteristics

	Indigenous	**Western**
Worldview	• Relational • Holistic – values harmony among physical, psychological, contextual, and spiritual forces • Interconnectedness of all of creation	• Linear • Dualistic – values separation of mind, body, and spirit • Inert • Practices dominion over nature
Knowledge and ways of knowing	• Indigenous and Traditional Ecological Knowledge • Participatory methods • Knowledge to benefit community • Storytelling • Data as living entity • Primacy of direct experience, interconnectedness, and relationships • Oral traditions	• Empirical knowledge • Positivism • Knowledge is power; a competitive advantage that requires control • Objective measures • Scientific method • Empirically justified beliefs over opinion • Written archival traditions
Beliefs	• Wise practices (*see* Table 2). • Prioritise Indigenous needs and values	• Best practices • Prioritises empiricism and needs of non-Indigenous people, groups and entities (e.g., academia, business)
Use of power: The politics of IDS	• Indigenous sovereignty • Decolonising methodologies for settler colonialism • Nation re-building • Group rights • Stewardship • Custodianship • Caretaking	• Settler colonialism • Maintaining and controlling the status quo • Colonial surveillance • Top-down • Patriarchal white sovereignty • Ownership/Possessiveness • Individual rights • Data as commodity • Discursive logic

Given these protective factors, the authors propose that data needs to be infused with the view of health as balance and the importance of food production, cultivation, distribution, and ceremony described in tribal IK and traditional ecological knowledge (TEK; Mihesuah, 2005). Table 1 provides a comparison of data sovereignty characteristics (Jennings, Davis, Little & Johnson-Jennings, 2016; Jennings, et al., 2018; Johnson-Jennings, et al., 2018; Johnson-Jennings, Jennings, Paul & Little, 2019; Little, 2019; Mihesuah, 2005; Walters, et al., 2018).

Defining Wise Practices. Indigenous scholars argue that wise practices are vital to cultivating health equity projects that center Indigenous ways of being and knowing, and show promise for improving health and wellness (Clark, 2016; Indian Health Service, 2017; Satterfield, DeBruyn, Francis, & Allen, 2014; Satterfield et al., 2016; Centres for Disease Control and Prevention, 2015). Definitions of wise practice include "locally-appropriate actions, tools, principles or decisions that contribute significantly to the development of sustainable and equitable social conditions" (Wesley-Esquimaux & Calliou, 2010, p19) and actions that "are inclusive, locally relevant, sustainable, respectful, flexible, pragmatic, and encompassing of all worldviews, and which consider historical, societal, cultural, and environmental factors" (Petrucka et al., 2016, p.181). Further, wise practices are grounded in IK, which Battiste and Henderson (2009) describe as:

> "part of the collective genius of humanity of Indigenous peoples that exists in the context of their learning and knowing from the places where they have lived, hunted, explored, migrated, farmed, raised families, built communities, and survived for centuries despite sustained attacks on the peoples, their languages, and cultures" (p. 5).

IK represents over 5000 languages and cultures within more than 70 nation-states (Little Bear, 2009) and is passed from generation to generation. Wise practices can be both ancestral knowledge, as well as practices that evolved over time and newer practices that promote health.

Wise practices are distinctly different from the Western concept of "best practices" (Little Bear,

2009). Table 2 compares the characteristics of wise and best practices (Jennings, Davis, Little & Johnson-Jennings, 2016; Jennings, et al., 2018; Johnson-Jennings, et al., 2018; Johnson-Jennings, Jennings, Paul & Little, 2019; Little, 2019; Walters, et al., 2018). Use of the term "best" is problematic as it connotes a hierarchy and infers that Indigenous communities should rely on the lessons learned in non-Indigenous communities, as opposed to their original instructions, or ancestral teachings (Wesley-Esquimaux & Calliou, 2010). The Merriam-Webster dictionary defines best practices as "a procedure that has been shown by research and experience to produce optimal results and that is established or proposed as a standard suitable for widespread adoption" (Best Practice, n.d., para. 1). In addition, the National Institute of Health (2018) defines best practice as a "superior method or an innovative approach that consistently exceeds standard levels of performance" (para. 1) and requires expert review or agreement by multiple independent sources to ensure superiority. Best practices often govern project funding and thereby disadvantage Indigenous communities.

Best practices lack context; two of its key characteristics are generalisability and scalability to other populations. They are often a fait accompli, one-size-fits-most, or official procedures meant to standardise. While there are narrow parameters for adapting best practices to one's particular setting, they must stay true to the standard (Spencer et al., 2013). Best practices are hierarchical and codified, whereas wise practices are egalitarian, emerge from diverse cultures and community experiences and reflect tribal and regional variation in beliefs and traditions (Wesley-Esquimaux & Calliou, 2010). Further, in the scientific community, best-practitioners are regarded as superior to others (National Institutes of Health, 2018; Weaver, Salas, & King, 2011); while wise-practitioners are recognisable community members who demonstrate the characteristics of wisdom (O. L. Davis, 1997; Little Bear, 2009). As set out by the Wharerata Declaration (Sones et al., 2010) the wellbeing of Indigenous people depends on valuing Indigenous and clinical perspectives equally

Table 2. Comparison of wise and best practice characteristics

Wise Practices	Best Practices
Indigenous knowledge	Western Eurocentric knowledge
Contribute to sustainable and equitable social conditions	Commercial or professional procedures accepted as most effective
Respects and protects IK and TEK	Respects and protects laboratory science; randomised controlled trials are the gold standard
Highly contextual; considers historical, societal, cultural, and environmental factors and their relationships	Restricted context; objective and reproducible
Locally pertinent actions, tools, principles or decisions (IK, TEK based)	Generalisable and scalable; an official standard suitable for widespread adoption
Egalitarian	Hierarchical and codified
Heterogeneous	Hegemonic
Humble and pragmatic; grounded in lived experience	Superior approach and results as established by research and expertise
Inclusive; any community member can contribute to the development of wise practices even children	Exclusive; requires expert review or agreement by multiple independent sources to ensure superiority
Flexible	Narrow parameters restrict adaptation
Dynamic and sustainable over time	Static
Practitioners: community members who demonstrate wisdom	Practitioners: viewed as producing superior results

(Echo-Hawk, 2011) including perspectives about digital data. The Repository reflects the highly contextual, idiosyncratic diversity of tribal and Indigenous community cultures by providing access to data and resources (O. L. Davis, 1997).

Use of Power: The Politics of Indigenous Data Sovereignty. Wise practices serve as a fundamental principle for creating, governing, and sustaining IDS. In order to balance Indigenous and clinical perspectives, Indigenous communities require access to their food wisdom, IK, and TEK and culturally appropriate ways to safely share this information. In doing so, the notion that Western establishment has a monopoly on what does and does not count as knowledge can be countered. Through establishing a shared online data Repository, Indigenous communities can increase their voices, access to knowledge, and thrivance (Vizenor, 2008) while holding fast to Indigenous ideals within the reality of Western institutions (i.e., healthcare) and settler colonialism. Further, this platform needs to be dynamic and flexible, making room for future growth and serve as an ongoing act of self-determination.

There are many interlocking forces that affect IDS, including self-determination, wise practice, group rights, settler colonialism, and decolonising methodologies, among others. Likewise, there are various approaches for addressing these forces to protect the rights and aspirations related to Indigenous data. We argue that this includes the principle of Indigenous people being the rightful custodians of Indigenous data regardless of possession or ownership by none-Indigenous entities (Walter, 2016).

A Proposed Digital Food Wisdom Repository

In keeping with the principles of IDS, the authors at the Research for Indigenous Community Health (RICH) Center and the Shakopee Mdewakanton Sioux Community (SMSC) recognised that the underlying causes of diet-related illness for Indigenous people are not well understood. While health information is available, it is currently dispersed, disconnected, and, or difficult to access. Thus, the principal investigator Dr. Johnson-Jennings (Choctaw Nation Tribal Member), clinical health psychologist and RICH founding director; RICH Community Outreach director, Dr. Jennings (Sac

& Fox, Quapaw Nation Tribal Member); and co-investigator and RICH leadership Dr. Little (ally); partnered with SMSC to improve access to IK and practices for people and communities working to improve Native nutrition and related imbalances.

The project was actively guided by the wisdom of an external advisory council and previously established key community partners. The external advisory council consisted of Indigenous, or allied, health professionals (e.g., physicians, social worker, health educator, nutritionists, academic leaders, and Indigenous community leaders). Drs. Johnson-Jennings and Jennings engaged with several tribal communities in the U.S. mainland, as well as Hawaii, Alaska, Canada, and New Zealand at community meetings, health conferences, and workshops. Informal community feedback and guidance was provided by approximately 34 Indigenous food related directors, healthcare leaders, and tribal community members working with traditional food revitalisation and obesity. A variety of approaches were used to assess the need for the Repository; the types of information needed to support Indigenous aspirations for authentic food practices as well as preferred modes of access to information and its potential uses. Wise practices and decolonising methodologies guided collection and contextualisation of food wisdom practices. The external advisory council and community members actively guided the organisation of Repository content and search terms. The organising themes included literature focused on wise practices including the following: Indigenous food knowledges (i.e., food as medicines, food as nutrition, food relationships, food stories), grassroots efforts at food reclamation (i.e., successful community programs, traditional food revitalisation, ancestral instructions around foods and agriculture, and community-led health interventions), clinical research on food and nutrition, academic literature (i.e., historical food documents, trade routes, agriculture, and nutrition research), and grey literature (i.e., community newsletters, programs, and other online resources highlighting wise practices and successes).

Community feedback was sought at RICH related events and gatherings. Elders, community leaders, program directors, nutrition educators, community gardeners, chefs, youth, food sovereignty activists, food systems change advocates, health professionals, and researchers shared their stories and contributed to the design. Community discussions also revealed a need for pertinent, organised peer-reviewed resources, and a directory of Indigenous consultants to support funding efforts and program development. In addition, a need was discussed to survey people working in the fields of Indigenous food, nutrition, or health and wellness. Potential survey participants served a variety of constituencies including tribal governments, community-based reservation or rural projects or organisations, regional or national non-profit organisations, and non-tribal colleges or universities. Community members suggested that digital resources would provide the advantage of access to resources outside their local areas. In addition, they stated a need for communities to play an active part in further development and then testing the Repository prototype to ensure the suitability of the user interfaces.

Indigenous Data Sovereignty for the Repository. In proposing the Repository the authors took into account group rights that predominate in Indigenous societies in contrast to the supremacy of individual rights in Western societies. Group rights are those possessed by a group, as a group, rather than by separate members of a group (Steinman, 2012). Therefore, as groups, Indigenous and tribal communities collectively hold rights to custodianship of data they collect and data gathered about them that is possessed by non-Indigenous entities. In addition, the knowledge that is shared through the Repository will meet cultural protocols set out by Indigenous and tribal communities. Otherwise, in the hands of non-Indigenous storytellers, data will continue to be used to "re-produce" the single story of deficit discourse.

Decolonising the Repository. Decolonising methodologies were also a central consideration in envisioning and developing the proposed Repository. Broadly, decolonisation is a process of Indigenous people understanding the history of their colonisation, and reviving ancestral knowledge and culture with an eye to the future (Smith, 1999). As Lyons (2000) indicates

decolonisation is not an effort to revive the past but to revive Indigenous possibilities. By centering Indigenous food wisdom practices, the Repository provides a space where Indigenous approaches are brought out from the margins, critically question and contradict the notion that the dominant culture has a monopoly on knowledge and ways of knowing and bring about healing and transformation (Kovach, 2009).

Conclusion

The authors developed the Repository design after studying community feedback, reviewing the literature, and consulting with the advisory council. The Food Wisdom Repository design provides a digital space where people working on Indigenous food and nutrition initiatives can share meaningful data, resources, and information. It exercises the power of data sovereignty through centering and privileging an Indigenous worldview, a diversity of IK and ways of knowing, and wise practices; it also emphasises the voices of Indigenous community members and Indigenous researchers. The Repository has the potential to deconstruct a single colonial story of Indigenous food, nutrition, health, and wellness. It can serve as the foundation of multiple strengths-based stories of resistance and thrivance that can both recollect and reclaim ways of health and wellness and build the capacity for more successes, and innovations in Indigenous communities.

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