For years, the Arctic region, home to 4 million people, ten percent of whom are indigenous, has provided an example of rapidly changing climate patterns impinging on human ability to adapt to the change (Arctic Centre, University of Lapland). The Circumpolar region has experienced warming at a rate roughly two to three times greater than the rest of the world (AMAP, 2021). As the environment changes, the region's economic prospects also change, both positively and negatively. But to understand the full extent of the Arctic as a region experiencing rapid climate change also requires examining the human toll—the emotional toll—this transformation causes. Duane Smith, President of the Inuit Circumpolar Conference Canada and Vice-President of Inuit Tapiriit Kanatami, points out in the UN Chronicle that the sacred knowledge of the world passed down through generations in Indigenous communities is becoming less accurate as Arctic ecosystems change with the climate. As a result, traditional ways of life are less viable for Arctic Indigenous peoples (Smith). Many Indigenous people have begun to feel like strangers in their own lands (GreenFacts Scientific Board, 2021). These communities have shown incredible resilience thus far, but that forced adaptation is also costly. Take for instance, the fact that Circumpolar people, specifically the wellbeing of adolescents, is worsening with not enough solutions in sight. Suicide is on the rise among Indigenous adolescents in the Arctic, especially in Greenland (Bjerregaard & Lynge, 2006). In the Arctic region, Greenland is the world's largest island with a population composed primarily of Inuit people (Rasmussen, 2021). The island is also home to the world's second-largest ice sheet, which is vital to global climate patterns (National Snow and Ice Data Center, 2020). Much like rapid modernization and cultural identity deviation, climate change impacts and melting Arctic ice are also contributing to this region's worsening mental health crisis (Barrett, 2019).

As Indigenous cultures and their relationship to the ice struggle to endure, they are vulnerable to underrepresentation in the face of globalization and modernization. If their unique needs and experiences are not recognized, they will suffer disproportionately from the impact of global climate change. Their experience could prove to be a warning sign for many cultures in the coming decades.

Mental health is a key area of concern, especially among younger generations in Greenland. Greenland has the highest suicide rate of any country in the world, almost to the point where suicide is a normal part of life. Every Greenlander can say they know someone who has died by suicide (Hersher, 2016). As the United Nations (UN) Sustainable Development

Goals (SDGs) framework is being deployed across the globe in accordance with its 2030 agenda, it's essential this region and its communities are not left behind. One way to do this is to mobilize the recommendations of the UN's Goal 3 (Good Health and Well-being) by investing in improved mental health infrastructure for Arctic native people.

The Inextricable Link Between Environmental and Mental Changes for Arctic Indigenous People

According to recent reports by the UN, 2019 was the second-hottest year on record within the hottest decade recorded (2020). For the Arctic, this reality has been unmistakable. Glacier ice, sea ice, and permafrost are melting at alarming rates in this region, creating devastating impacts on the world's cryosphere (National Snow and Ice Data Center, 2020). According to predictions, the Arctic will be ice free for at least part of the year before this century ends. It might even be ice-free by the middle of the century (Scott & Hansen, 2016).

The UN recognizes Indigenous people as "inheritors and practitioners of unique cultures and ways of relating to people and the environment" (United Nations, Department of Economic and Social Affairs Indigenous Peoples). And, with more than 40 different ethnic groups, the Circumpolar Indigenous people have called the Arctic home for thousands of years (Arctic Centre, University of Lapland).

Ford and others explain that Indigenous people have strong cultural and spiritual ties to their lands and "also have a central role in detecting and managing change due to [those] deep connections to the land and seas" (Ford, 2020). As industrialization and social and climate change erase Arctic ice and change weather patterns, the foundational continuity for indigenous traditions, livelihoods and culture are threatened (Arctic Centre, University of Lapland). This is leaving the Arctic's native people more vulnerable than ever, impacting their housing, infrastructure, and transport connections to the point of necessary relocation (Arctic Centre, University of Lapland). One example from the National Snow and Ice Data Center shows that slower fall freezes are leaving Indigenous peoples without access to hunting, other communities, and health care (2020). "As a result, the livelihoods connected with hunting, fishing, and herding are under threat. Indigenous peoples have an especially strong bond with nature and the changes in harvesting activities may have implications for the economy, society, culture and health" (Arctic Centre, University of Lapland).

Relative to these people's ancestral lineage on this land, the impacts they are seeing now from climate change are very disruptive to what they have always known. We know that disruption causes mental health challenges and suicidal risk factors like family collapse, increased alcoholism, and child abuse and neglect (Hersher, 2016). One example of widespread community devastation and rapidly forced adaptation happened in New Orleans, Louisiana following Hurricane Katrina in 2005. A study found that serious to moderate mental illness nearly doubled among survivors of one of the deadliest hurricanes on record, forcing 500,000 people to relocate from their homes (Kessler, 2006). Another example of how climate change is devastating homelands, and by extension the mental health of its residents, comes from a 2016 wildfire at Fort McMurray in Alberta, Canada (AMAP, 2021). A mental health status assessment of young adolescents showed triple the rate of depression and double the rate of anxiety and post-traumatic stress disorder (AMAP, 2021).

While change in the Arctic has been more gradual than a single natural disaster event, considering mental health and psychological theory shows how this disruption of ecosystems and livelihoods can adversely affect mental health. Psychologist Urie Bronfenbrenner developed an ecological paradigm that shows how a person's development, interpersonal relationships, and overall well-being are influenced by the interconnected relationship between various ecosystems, from an individual to a macro level, and vice-versa (Guy-Evans, 2020). The work of Bronfenbrenner illustrates how interconnected human beings are with their environments and cultures. This is especially true for Arctic Indigenous people. Livelihoods, cultures, and support systems, all of which are under threat in the Arctic Indigenous communities, play an important role in identity formation, life fulfillment, and resilience to stressors. When people's ecosystems are threatened or out of balance and interpersonal relationships are strained, mental, physical, and spiritual vitality wane. That can be a catalyst for isolation and mental illness.

Mental health literature also demonstrates what can happen when basic needs become more challenging to meet as a result of disrupted ecological systems. One of psychology's most influential theorists, Abraham Maslow, asserts that human needs exist in a hierarchical schema where low level basic needs like food, water, shelter, safety, and security must be accomplished before higher level, self-fulfillment needs like a sense of belonging, fulfilling one's full potential, and creative innovation can be satisfied (McLeod, 2014). If the lower-level basic needs go unmet, or are disrupted, it creates a substantial impact on a person's

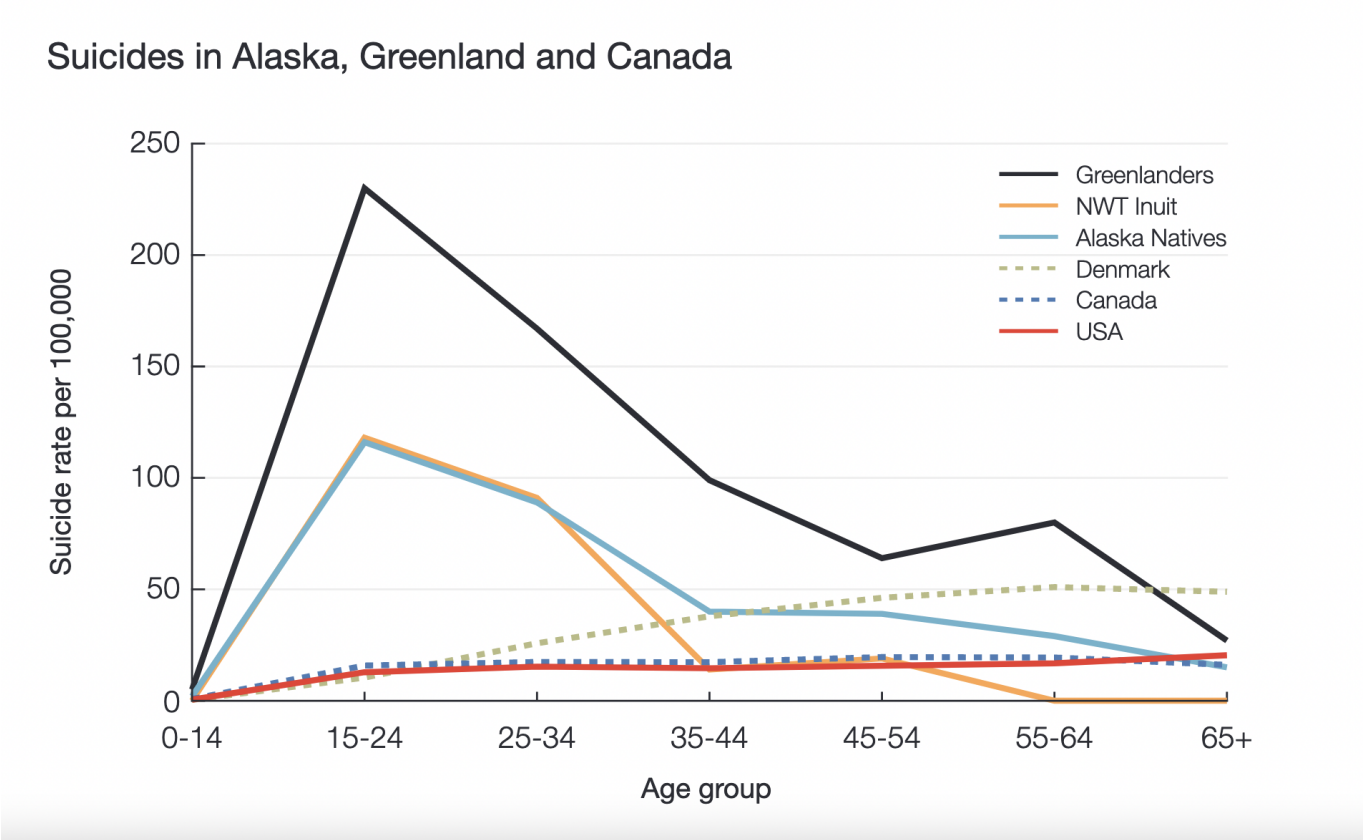
mental health.

Some of the higher-level needs for the Arctic Indigenous, in particular, are currently under threat and often overlooked in health care systems. According to the Arctic Human Development Report, Arctic Indigenous people emphasize the importance of three key factors of human development not found in the Human Development Index. These include fate control (controlling one's own destiny), maintaining cultural identity, and living close to nature (Larsen et al., 2014). Unfortunately, large gaps still exist for the Arctic Indigenous populations when it comes to meeting their lower-level, basic survival needs making it that much more difficult for them to realize these higher-level needs they hold as sacred and necessary for well-being.

The unsustainable burden climate change puts on the Arctic Indigenous people is playing out most uniquely for the future generations. These future generations are being raised by parents who have long been coping with ecological disruptions and unmet needs. Now, these parents are suffering with mental illnesses such as substance abuse and depression as a result of traumatic assimilation demands and rapid modernization. This increases mental health risk factors for their children (Barrett, 2019). As these parents are then looked upon to manage the burden of past and present circumstances, they are also managing the path forward for their children. This begins to illustrate what can happen when a culture and its needs are substantially eradicated within the span of a generation or less. In Greenland, for instance, many young people feel cut off from the older generations while also not really belonging to the new one (Hersher, 2016). The Indigenous youth are caught somewhere between a demand for modernity and new ways of living and a sacred duty to honor the culture of their ancestors as they find a way forward amid the far-reaching impacts of climate change.

Suicide Among Greenland's Indigenous Adolescent

According to Chow, "Inuit Indigenous peoples make up 89% of Greenland's population which means that mental health issues are particularly prevalent in Inuit communities" (2019). Of that 89%, the most alarming mental health concerns come out of the adolescent population.



"Inuit suicide rates per 100,000 for Greenland, NWT and Alaska with their national averages for Denmark, Canada and US by age group 1980-89 (8)" (Einarsson et al., 2004)

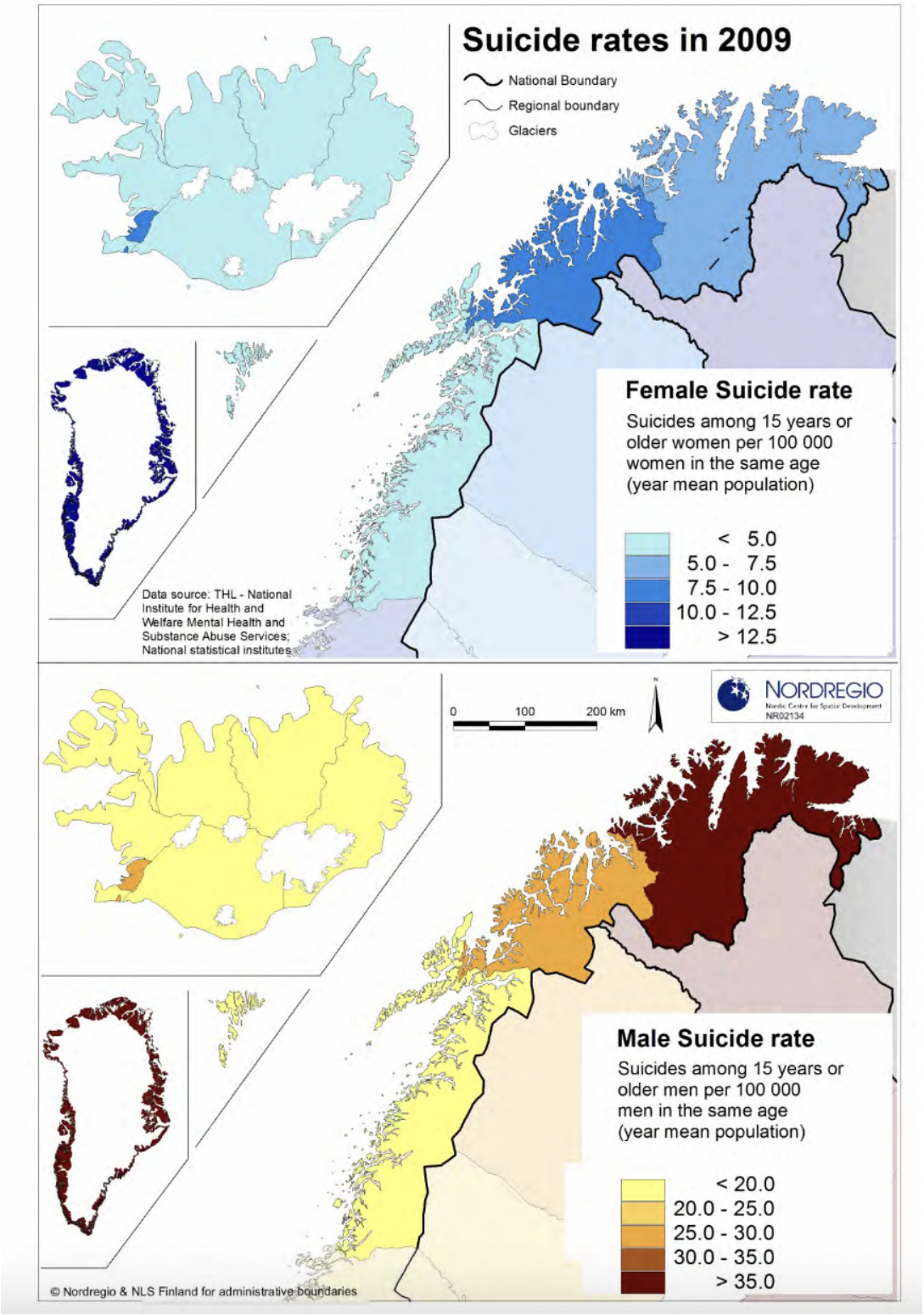
The above image indicates the vast disparity in suicide rates across the Arctic's Indigenous youth. "Youth suicide rates are alarmingly high in many parts of the Arctic, particularly in Greenland [where] the suicide rates were around two to 10 times higher among Indigenous youth" (Lehti, Niemelä, Hoven, Mandell, & Sourander, 2009).

Additionally, youth suicides follow unique patterns. They tend to occur in clusters meaning for every suicide, there are many more attempts and instances of people experiencing suicidal thoughts and ideations creating catastrophic impacts on their communities (Larsen et al., 2014). This ripple effect of youth suicides can be devastating in small communities with nearly 60% of adults and roughly 33% of adolescent Greenlanders having lost a loved one to suicide (Larsen & Huskey, 2010). Suicidality at this level perpetuates the mental health crisis in this region as families take on more stress and coping responsibilities due to

losses and grieving.

In the Arctic, male Indigenous populations are even more disproportionately affected by suicide when compared with populations as a whole (Einarsson et al., 2004). One reason for this among Arctic Indigenous males could be the effect climate change is having on traditional Indigenous male roles. The image below indicates such rates across the Arctic with the highest numbers occurring in Greenland (Larsen, 2014).

Map 5: Suicide rates in the West Nordic Region in 2009



(Larsen, 2014)

Not only is risk of suicide significant in the Arctic's Indigenous communities, but it is also directly tied to globalization and climate change. Greenland's suicide wave has followed historical patterns and is indisputably linked to the rapid changes in Greenlandic ways of life (Larsen & Huskey, 2010). Youth is meant to be a time of growth, learning, and hope for the future, not a period of time marked by so many hardships and barriers that a person takes his/her own life. In order for these adolescents to have the best chance at a good future, they need mental health resources.

It's important to note that it's not just environmental changes that are impacting the Arctic Indigenous adolescents' mental health. Social-political changes like forced assimilation can lead to loss of traditional practices and beliefs, displacement, loss of lands, and acculturative stress (Kvernmo, 2006). The intersectionality of acculturation demands and challenges due to climate change leave the Arctic's Indigenous populations uniquely vulnerable to mental illness amid a lack of mental health resources. Climate change is resulting in food and water insecurity and impacts on health care infrastructure thus having a profound impact on human physical and mental health resulting in suicide and domestic violence, among others (Larsen et al., 2014). Mental illness can be shrouded in stigma and desires to avoid addressing the issue can run deep. Mental illness is often a difficult problem to face with no clear cut solution. Healing requires empowerment, hope, and thoughtful, intentional resource allocation.

In order to control their fate, the Arctic Indigenous people must have agency and resources. Unfortunately, large gaps still exist for the Arctic Indigenous populations when it comes to decision making opportunities, especially in regard to health systems. Many Indigenous people see the inclusion of local values as foundational to any healing system, therefore, making it important to broaden our ideas about what constitutes cross-cultural healthcare services and create new approaches to solving old problems (Einarsson et al., 2004). Acknowledging what is happening to the people in these communities begins to illustrate how this fate could befall others if more isn't done to mitigate the risk factors.

A Case Study for Populations Everywhere

Research proves that when people are supported by mental health resources, they are more resilient, can take better care of their families, can participate more fully in society, and have the freedom to innovate and the world needs more of this (World Health Organization, 2013). By paying attention to the quality of life and adaptability among its vast and varied interconnected ecosystems and people, any region stands to gain a better understanding of itself and how it, too, might adapt to the changing environments. The Arctic Indigenous communities are currently some of the hardest hit by climate change, but they won't be the only ones. They offer a clear example of why mental health needs to be a priority in implementing the UN's Goal 3 and the allocation of resources.

Bolstering this community starts by creating more mental health infrastructure for the Arctic's Indigenous people and their youth. This would broaden the community's capacity to live at their fullest potential, to thrive, and to innovate. However, it's important to consider the many barriers to mental health care services that often exist in rural areas. These include stigma around mental health, stigma toward those who have a desire for care, lack of anonymity when seeking mental health treatment, lack of mental health professionals, lack of affordable culturally competent care, and lack of transportation to care (Rural Health Information Hub, 2019). These are barriers that must be overcome.

Research shows that societies greatly benefit from more investment in mental health resources. One study looked at the effectiveness of implementing mindfulness-based practices into mental health care for Native American youth for suicide prevention. The results indicated the mindfulness approach, in collaboration with an indigenous research framework, improved their self-regulation and reduced suicidal thoughts (Le & Gobert, 2013). Another example of the positive impact mental health resources can have come out of Germany. In a study where interventions for depressive disorders were implemented, there was success in reducing suicidality, and this approach is currently being implemented in several other regions across Germany (Hegerl et al., 2006). Though the implementation of mental health resources is often costly and challenging, these studies indicate that it is a necessary and worthwhile priority.

Currently, there are numerous examples of resilience and evidence that Indigenous people are having some success coping and adapting to rapid change. They are improvising, adapting technologies, altering knowledge systems, and learning how to navigate

challenging new environmental and social realities (Ford et al., 2020). While their resilience is evident, it is in response to great suffering that continues to escalate. That is why investment in mental health resources is urgently needed to allow the Arctic Indigenous people time and space to preserve their vibrant cultures in a changing world. No one knows better what the Arctic Indigenous people need to heal and to prosper than themselves. Providing them with the resources they need could allow them the space to do just that.

Conclusion/Discussion

The melting Arctic ice and the rapidly changing environmental and economic landscapes of the Arctic regions are creating a trickle-down effect that is impacting every facet of Indigenous life, right down to the mental health of youth. Creating a healthier, more sustainable path forward for the next generation of Arctic Indigenous livelihoods, cultures, and health will require innovative changes ranging from environmental sustainability to responsible business practices to increased mental and physical health resources. The UN's Goal 3 calls for global good health and wellness (United Nations Development Programme, 2020). According to the World Health Organization (WHO), world leaders are now recognizing a need for the promotion of mental health and well-being as health priorities within the global development agenda (2016). One compelling reason is the direct impact mental illness will have on the global economy. As Chisholms writes, The World Economic Forum estimated that the cumulative global impact of mental disorders in terms of lost economic output will amount to US$16 trillion over the next 20 years, equivalent to more than 1% of global gross domestic product (GDP) over this period. (2013). As the world works to implement changes in response to Goal 3, investment in mental health care will be needed in order to reduce suffering and unnecessary loss of life in the global health paradigm.

Climate change will continue to impact more and more populations and cultures, and we must be ready to support the emotional, and not just physical or economic needs, brought on by our changing environment. True sustainability is not just about protecting the environment, it's about protecting people and human rights as well. When looking at the compelling evidence for global mental health investment, the WHO states, "for each year of inaction and underinvestment, the health, social and economic burden will continue to rise. Doing nothing is therefore not a viable option" (Chisholm, 2013). What the Arctic region

proves is that there is work to be done in supporting mental health in order to foster resilient societies in the decades of transformation to come.

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