Working Paper

Spring 2023

Authors

Yvonne Su
York University

Yuriko Cowper-Smith
York University

Sivakamy Thayaalan
York University

The Double-edge Sword of Humanitarian Technologies: A Case Study of UNHCR's Use of Biometrics Technologies

Defence & Security Foresight Group

ABSTRACT

To manage growing migration flows, governments and multilateral organizations in collaboration with private tech firms, have increasingly turned to biometric technology. Within international development, some scholars and practitioners are optimistic about the possibilities of biometric technology and how it can benefit the populations served by the humanitarian sector. At the same time, the widespread use of such programs raises concerns about data security, increased surveillance, and ethics. This working paper addresses the implications of a new biometric identity management system (BIMS) launched by the United Nations High Commissioner for Refugees (UNHCR). Among other locales, BIMS has been implemented to identify Rohingya refugees in Cox's Bazar, Bangladesh. Using the analytical concept of compassionate repression (Fassin, 2005 in Iazzolino, 2021) we argue that BIMS in Bangladesh is tangled in a web that bundles together the dynamics of control, surveillance, protection, within which the goals of the humanitarian sector rub up against people's agency. Rohingya people, long targets of bureaucratic violence in Myanmar, who in parallel genuinely fear the effacement of their identity, are legitimately wary of programs like BIMS. Rohingyas' repudiation of BIMS reveals the complicated intentions and interests that fuel the humanitarian sector.

KEYWORDS:

biometrics, Rohingya, United Nations, humanitarianism, technology

Cover Photo

A Rohingya refugee holds their ID card in Shamlapur refugee camp, Cox's Bazar, Bangladesh on 25 May, 2018

Photo credit: Clodagh Kilcoyne/REUTERS

About the Authors

Yvonne Su, PhD, Assistant Professor, York University

Dr. Yvonne Su is an Assistant Professor in the Department of Equity Studies at York University researching forced migration, queer migration and refugee protection. Dr. Su is the Director of the Global South Migration Lab at York University.

Yuriko Cowper-Smith, Research Associate, Global South Migration Lab, York University

Yuriko has a Ph.D. in Political Science and International Development from the University of Guelph, and her work focuses on the intersection of migration, social movements, statelessness, and mass atrocities. Yuriko is a research associate at the Global South Migration Lab at York University.

Sivakamy Thayaalan, Research Associate, Global South Migration Lab, York University

Sivakamy Thayaalan holds a master's degree in political science from the University of Western Ontario. She has experience in programmatic roles in non-profit organizations such as War Child Canada and currently works as a research assistant at York University conducting research on topics related to forced migration and disaster recovery. Sivakamy is also a research associate at the Global South Migration Lab at York University.

Introduction

Technology has played an increasingly prominent role in determining refugee status and people's experiences during the asylum-seeking process.[1] Surveillance technologies at the border and in refugee camps, and the use of biometrics and computer-aided decision-making shape refugee systems during a period of significant resistance against accepting refugees. Advances in biometric technology have become useful at a time when states are looking for neoliberal technocratic solutions to streamline asylum bureaucracy. The increase in the use of these technologies is also coinciding with the Sustainable Development Goals' push to provide legal identity for all by 2030, which means the humanitarian sector has been increasingly invested in rolling out digital identity systems in their work (Field et al. 2020). With a growing preference for cash-based interventions, increased pressure by international donors to integrate biometrics into aid delivery, and interest in the new technology in the humanitarian sector, biometric technology, in particular, has become increasingly prevalent in the sector (Nyst, Rahman, and Verhaert 2018). The two leading actors in the "biometrics for humanitarianism space are UNHCR [The United High Commissioner for Refugees] and WFP [World Food Programme] which use the technology for registering beneficiaries and distribution assistance (Nyst, Rahman, and Verhaert 2018).

The increased deployment of biometrics technologies has meant that little research has been done to understand its implications. This gap necessitates questioning its potential. On the one hand, some scholars and practitioners are optimistic about the possibilities of biometric technology and how it can benefit both the humanitarian sector and the groups it serves. On the other hand, technology is only as altruistic as the leaders it benefits. To understand the current state of knowledge on this topic, we conducted a literature review of recent and relevant scholarship. To analyze the use of this technology in this sector, this paper was guided by three central questions:

- How is the humanitarian sector involved in biometric identification in this context?

- What are some of the challenges associated with this new technology?

- What are the consequences of the use of this technology?

The thematic analysis demonstrated the benefits and risks of using biometrics technology in the humanitarian sector (see Table 1). The benefits covered in the literature include providing people with identification and the feeling of belonging, streamlining processes, efficiency and effectiveness of programming, and convenience. However, the associated risks include lack of evidence surrounding efficiency and reduction of fraud, lack of full informed consent, risks of data-sharing and fears of privacy violations and data misuse, experimentation of technological innovation in the Global South, misidentification, lack of access and loss of access to aid and services, further entrenchment of social inequalities, loss of access to aid and services, and function creep. The humanitarian sector ultimately lacks publicly available evidence, research and agreed-upon standards for using biometrics (Nyst, Rahman, and Verhaert 2018). When viewed within the context of the humanitarian space, it is unclear whether the benefits of this technology outweigh its possible risks, especially because of the limits of the international state order. These limits include UNHCR's reliance on donor states, the expansion of its mandate and evolution over time within the state system, and states' political preferences and

---

[1] See Lucia Nalbandian & Nick Dreher (2022). "Advanced Digital Technologies in Migration Management: A Review of Emerging Literature". Working Paper No. 2022/11. Toronto Metropolitan Centre for Immigration and Settlement (TMCIS) and the CERC in Migration and Integration at Toronto Metropolitan University.

self-interest. Due to all of these considerations, we caution against the use of biometric identification in these settings. At the same time, we do not foresee these technologies disappearing.

Table 1: Benefits and Risks of Biometrics Technology in the Humanitarian Sector

Benefits of biometrics technology	Risks of biometrics technology
- providing people with identification - the feeling of belonging - streamlining processes - efficiency and effectiveness of programming - convenience	- lack of evidence surrounding efficiency and reduction of fraud - lack of full informed consent - risks of data-sharing - fears of privacy violations and data misuse - experimentation of technological innovation in the Global South - Misidentification - lack of access and loss of access to aid and services - further entrenchment of social inequalities - function creep

If the Canadian government were to pursue supporting the use of such technologies in its foreign policy, these are the 7 common recommendations found within the literature (Amnesty International 2020; Brinham et al. 2020; Holloway, Al Masri, and Abu Yahia 2021; Human Rights Watch 2021; Bin Shafique et al. 2020; Weitzberg et al. 2021; Cioffi, Adelmant, and van Veen 2022):

1. Meaningful consultations with communities in the design, development, and review of systems;

2. Assurance that the use of biometric identification systems are necessary and proportionate to achieving a legitimate goal;

3. Establishment of policies and legislation that protect the rights of people affected by digital ID systems;

4. Alternatives to biometric technologies so people can opt-out of this system without foregoing aid;

5. Incorporation of data contestability into data collection systems (e.g., in cases where peoples' fingerprints are not being registered by the technology) and decentralize biometric data to reduce surveillance risks;

6. Promotion of transparency about access to peoples' data and ensuring data is not shared with host countries and other third parties without full consent;

7. Further research, cost-benefit analyses, and impact assessments before any new or enhanced digital ID system is rolled out

The paper will first discuss the background of Rohingyas in Bangladesh and UNHCR's Biometric Identity Management System (BIMS) Program. It will then outline the methodology, and the results of the analysis. The following section puts forward our thematic analysis, and ends with foresights and conclusions.

Background and contextualization of issue

The history of Rohingyas in Bangladesh and UNHCR's BIMS Program

UNHCR has been working on its Biometric Identity Management System (BIMS) since 2013, when it hired the technology company Accenture to support its development. Biometric identification refers to the verification of people based on their physiological features, such as their fingerprints, irises, and faces. After testing the technology in the Dzaleka Refugee Camp in Malawi, and nine refugee camps in Thailand, in February 2015, UNHCR working with Accenture, finalized BIMS. Since then, UNHCR has been unrolling this technology across its worldwide operations. As Accenture notes, BIMS allows the UNHCR's "7600 employees to improve protection and support for an estimated 33.9 million refugees in 125 countries as they move across borders" (Accenture 2022).

UNHCR uses BIMS in Rohingya refugee camps in Cox's Bazar, Bangladesh. Rohingyas are an indigenous ethnolinguistic group of Myanmar mainly originating from Rakhine state (Zarni and Cowley 2014). Since 1962, the military dictatorship led and installed by General Ne Win set in motion the systematic elimination of Rohingyas from the country. As Zarni and Cowley (2014, 67) underline, "the State and the predominantly Buddhist society have collaborated with the intent to deindigenize, illegalize, dehumanize and destroy a people whose ancestral home is in Myanmar". General Ne Win's military dictatorship and successive governments have accomplished this goal over generations. In 1974, the junta ratified the Emergency Immigration Act, authorizing the removal of Rohingyas' national registration certificates and substituting them with foreign registration cards (Cheung 2012). Framing Rohingyas as Muslim foreigners, in 1977, the junta introduced Nagamin, or Operation Dragon King, to "designate citizens and foreigners who have filtered into the country illegally" (Zarni and Cowley 2014, 95). Operation Dragon King led to one of the first significant exoduses of Rohingyas in Bangladesh. In 1982, a new citizenship law was used as a pretext to deprive Rohingyas of citizenship. This law outlines 135 ethnic minorities who are automatically eligible for full citizenship; Rohingyas are not recognized among them. To be granted citizenship, Rohingya people had to apply for naturalized citizenship for non-Indigenous people (Phillips 2013; Ullah 2016; Zarni and Cowley 2014). Beyond the deprivation of legal status, the 1982 citizenship law also legalized discriminatory treatment. As Brinham (2012) notes, the 1982 law "formed the legal basis for arbitrary and discriminatory treatment against the Rohingya community and made them subject to a series of draconian policies and controls" (Brinham 2012, 40). Win and Brinham (2022) point out that deprivation of nationality is a critical component of the Myanmar state's persecution of Rohingyas which essentially legitimized the narrative that Rohingyas were foreigners.

The government implemented more restrictions against Rohingyas in the 1990s. In 1991, Operation Pyi Thaya (Clean and Beautiful Nation) led to the killings, rape, and razing of villages and mosques. Thousands of Rohingyas were forcibly displaced (Fortify Rights 2019, 27). In 1992, the Ministry of Defense created the border control agency, NaSaKa (Equal Rights Trust 2014). NaSaKa cemented the destruction of the Rohingya community, and between 1991 to 1993, approximately 250,000 Rohingyas fled to Bangladesh (Equal Rights Trust 2014; Fortify Rights 2019). In 2012, large-scale violence against Rohingyas resulted in "estimated thousands of deaths, the forced displacement of 100 000 people, and the burning and destruction of homes and property throughout Rakhine state" (Brinham 2012, 40). Adopting a law-and-order narrative, the Myanmar government legitimized the military's continued role in politics. "Protecting" Buddhism against Islam became even more embedded in mainstream

political discourse. Since 2012, troops have provided extra security in Rakhine in response to alleged Rohingya insurgencies. Over time, Rohingyas' human rights were eroded even further. This logic of 'foreign-ness" justified explicit policies designed to marginalize Rohingyas in Rakhine State. As the Institute on Statelessness and Inclusion (ISI), a non-governmental organization focused on the right to a nationality and the rights of stateless peoples details, since 2015, Myanmar has administered National Verification Cards (NVCs) to Rohingyas, a type of identity meant for non-citizens. All these factors culminated around August 25th, 2017, when the escalating violence of "security operations" led by the government prompted 742 000 Rohingya people to flee to Bangladesh.

The refugee camps in Bangladesh are thus largely a product of a longstanding state-led genocide that forced the remaining Rohingya community into Bangladesh (Win and Brinham 2022). These recent refugees joined about 300,000 Rohingya people who had already relocated to the area during previous exoduses over the past several decades (UNHCR 2020). Most people arrived during the 2017 exodus, but many others were born in the camps; generations of families have lived there since the 1970s. The refugee camps straddle the border region of Cox's Bazar district. According to UNHCR's population map (see Figure 1), as of May 2022, there are 27 campsites in addition to Nayapara and Kutupalong registered camps, hosting close to a million people (UNHCR, 2022).

The government of Bangladesh jointly manages the camps under the Office of the Refugee Relief and Repatriation Commissioner (RRRC), the UNHCR, and the International Organization for Migration (IOM). Some authors note how, before the pandemic, there were poor hygienic conditions in the camps, malnutrition was endemic, physical and sexual abuse rates were high, and mental health was affected (Hossain et al. 2021; Milton et al. 2017; Akhter and Kusakabe 2014). Refugees endure substandard housing (Milton et al. 2017). They also face several deficiencies: there is a lack of educational opportunities; lack of clean water, sanitation and healthcare services (particularly for long-term care and treatments); a lack of adequate food and nutrition from being solely dependent on relief packages, and the effects of which are most felt by women and children; and have few recreational activities to occupy their time which compounds the mental health consequences of not being able to go to school and living in a small space (Hossain et al. 2021). Akhter and Kusakabe (2014) describe how refugees, who receive minimal state support - both financial and non-financial - are not allowed to find employment in Bangladesh. As such, refugees are forced to earn income through informal means, or to sell their food rations, to get necessities like fuel, soap and clothes. Unfortunately, refugees often suffer violence when they leave the boundary of the camps because they are targeted by local police who arrest them for working illegally, and face violence from locals who accuse Rohingyas of taking their jobs (Akhter and Kusakabe 2014).

These conditions, plus overcrowding and unequal access to water, sanitation, and hygiene (WASH) and health facilities, have worsened during the COVID-19 pandemic. In addition, as Akter et al. (2021) point out, refugees are often apprehensive about closely following COVID-19 guidelines because of previous psychological traumas they have experienced by state-imposed rules. For example, many Rohingya women do not trust medical professionals. They do not want to get vaccinated as they believe it is a way for the state to run experiments on them (Akter et al., 2021). These concerns are not surprising given the context that in September 2017, family planning authorities asked the Bangladesh government to consider volunteer sterilization in Rohingya refugee camps. Shortly before this announcement, family planning authorities pushed for the use of contraceptives for Rohingya in the camps, making many Rohingya women believe that the contraceptives provided to them by

Figure 1: Rohingya Population by Location Map
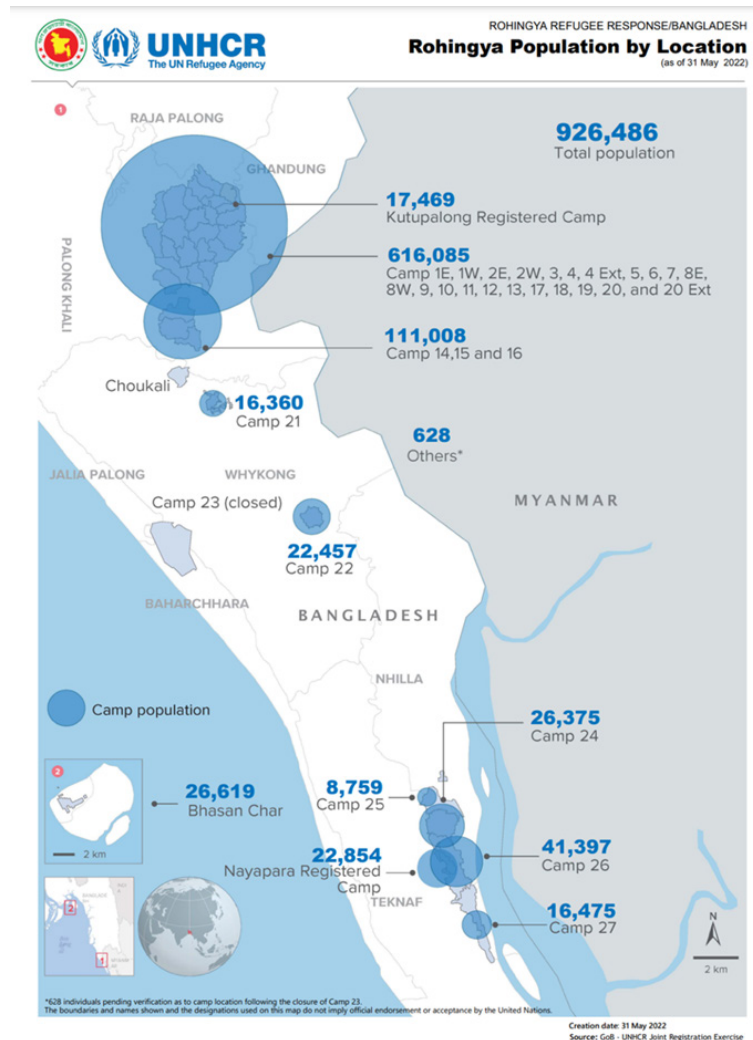
Source: UNHCR 2022

the Bangladesh government are intended to cause sterilization (RFA, 2017; France-Presse 2017). Furthermore, many refugees in the camps indicate that staff and healthcare providers are rude to them, exacerbating their lack of trust and disincentivizing them from following health guidelines (Akter et al. 2021). A Human Rights Watch report (2020) notes that "the fear of medical assistance can have long term implications" and we see that now with Rohingya's distrust of COVID-19 vaccines.

Women face unique challenges, experiencing violence both within and outside the home. The structural power of the majhee system (i.e., camp leaders) increases women's vulnerability to violence (Akhter and Kusakabe 2014). There have been several instances of majhee taking advantage of women who need permission to leave the camps (Akhter and Kusakabe 2014). Women are also unable to address authorities regarding instances of violence without first reporting to the relevant majhee (Akhter and Kusakabe 2014). With the pandemic, many women also lost access to reproductive and other critical services (ISCG et al. 2020).

Regarding biometric identification, ISI notes how the refugee registration system was digitized in Bangladesh starting in 2017. Since June 2018, approximately 500,000 Rohingya refugees in the Cox's Bazar camps have been registered by the Bangladesh government and the UNHCR using the BIMS system. ISI notes that in this system, "they are registered not as refugees, but as "Forcibly Displaced

Myanmar Nationals." According to the UNHCR, BIMS' express purpose is to "register and protect people, verify their identity and target assistance for the forcibly displaced in operations around the world." The cards issued through the BIMS system are popularly known in the camps as Smart Cards (Brinham 2018). By carrying this card, as ISI points out, refugees are afforded some rights and services. Indeed, one touted advantage is using biometric technology to make aid delivery and access to essential services more efficient and accurate (Win and Brinham 2022). Using the biometric data collected via BIMS, UNHCR launched the Global Distribution Tool (GDT) in one of the refugee settlements in August 2019. The GDT organizes the distribution of goods and services to refugees by verifying their identity through fingerprints or iris scans.

With its innovative system design, UNHCR (2015; 2019) maintains that using biometrics can strengthen and make its identity management processes more efficient in at least three ways. Firstly, as their Division of Programme Support and Management (DPSM) Key Initiatives brief notes, regarding increased accuracy, BIMS captures both fingerprints and iris scans, allowing for more coverage of the refugee, asylum-seeking population UNHCR serves. Second, the system is versatile across various online and offline environments using a regular laptop, fingerprint and iris scanners, and webcams. It is also "interoperable with IT systems used by governments and partner organisations." Third, BIMS can identify a person within seconds, presenting a swift processing time. Finally, as a centralized database, it allows for checking identities in real-time across all UNHCR sites in a standard manner. Indeed, for the organization, the verification of identities is vital. An efficient and accurate system ensures that refugees' identities cannot be lost, registered multiple times or subject to fraud or identity theft. With this logic, as UNHCR (2019) argues, the BIMS system in Bangladesh allows for the accuracy of data about Rohingya refugees in the country, providing the government and humanitarian agencies with more information about the population and their needs; precise data helps with programming and targeted assistance. Second, as UNHCR (no date) details, digital identities are an essential security measure. UNHCR (no date) argues that identity preservation is critical for ensuring "protection and solutions for refugees" and is a matter of human dignity.

At the same time, researchers have pointed out the less favourable aspects of biometric technology in humanitarian spaces. Indeed, regarding the use of biometric technology with Rohingya populations, ISI finds that "bordering technologies can compound statelessness and impact the human rights of stateless persons by furthering exclusion and discrimination and extending state surveillance capacities." Statelessness can become worse when states are enabled by technology that facilitates the management of populations. To be clear, these new technologies need to be contextualized within Bangladesh's treatment of Rohingyas. The Bangladesh government has violated the rights of Rohingyas beyond poor conditions in the camps. Bangladeshi authorities have imposed new restrictions on travel within the camps in Cox's Bazar, arbitrarily destroying thousands of shops run by Rohingyas, essential sources of income for Rohingyas, and banned Rohingya-run community schools (Human Rights Watch 2022). Human Rights Watch (2022) notes that humanitarian groups are worried that these efforts are part of the Bangladesh government's strategy to move Rohingyas to Bhasan Char, where already 22,000 Rohingyas have moved thus far. The government has increasingly sent Rohingyas to the remote island without their fully informed consent, where people face abuse from authorities, lack adequate food and access to healthcare, and cannot leave (Milton et al. 2017; Wahab 2022; Human Rights Watch 2021).

Furthermore, anti-Rohingya sentiment is becoming more prevalent among the host community due to factors such as Rohingyas competing in the local job market and being willing to work for less pay than host community members. The government is also cautious with how it proceeds with Rohingyas due to the rise of some militant groups, such as the Rohingya Patriotic Front and Arakan Rohingya Islamic Front, who are active at the Myanmar-Bangladesh border and demand a separate Islamic state (Milton et al. 2017). As a result, Bangladesh uses tactics such as limiting the mobility of Rohingyas and isolating them from the host community to control and surveil them. This is in line with historical precedent, with Crisp (2018) noting how, in the 1970s and 1990s, the Bangladesh government (without much public contestation from UNHCR headquarters) used harmful tactics to pressure thousands of Rohingya into returning to Myanmar. However, the Bangladesh government's motivations to pursue these actions vary, ranging from the cost of hosting refugees, national security threats (e.g., from militant groups in the camps), and diplomatic relations with Myanmar.

Repatriation is also a concern. ISI further notes how digitized registration is justified to support Rohingyas' eventual repatriation to Myanmar. However, as the organization points out, the "collection and storage of biometric and biographic information comes with risks and concerns, in particular Rohingyas in the camps are concerned about how this data will be used concerning future repatriations back to Myanmar" (Field et al. 2020, 5) Indeed, the Bangladesh government has said that its top priority "is immediate repatriation of the Rohingyas to their homeland Myanmar" (Human Rights Watch 2022). Ultimately, these policies make it harder for Rohingyas to integrate into the host society and make the repatriation process easier for the Bangladesh government.

Methods

The findings of this paper are based on a literature review on various topics relevant to understanding the context and consequences of using BIMS in Rohingya refugee camps in Bangladesh. Primarily through the online academic search engine, Omni, the authors searched for articles using keywords, independently and in different combinations, such as biometric technologies, humanitarian sector, UNHCR, Rohingya, Bangladesh, Smart Cards, digital identity, refugee protection, and statelessness. The period in which this search took place was between January 2022 to June 2022.

The two tables (Tables 2 and 3) below outline the results of the literature review, according to thematic breakdown and the type of methodology used. Across 29 articles, 14 articles discussed risks, five highlighted benefits, and 12 analyzed the topic as related to the limits of the international state system. Regarding methodologies, 18 articles utilized primary data from interviews with experts, intended users of these systems, government officials, staff at humanitarian agencies, and other relevant stakeholders to get a better understanding of the rationalities behind implementing these technologies, who are benefiting from them, and what the impact is on beneficiaries. Nine articles fully based their analyses on secondary data from other journal articles, news articles, international non-governmental organization (INGO) reports, and legal documents.

Table 2: Thematic Breakdown by Article

	Thematic Breakdown By Article (n=29)[2]		
	Risks	Benefits	Limits of the International State System
Articles	14	5	12

[2] The sum of articles is larger than n=29 as Lemberg-Pedersen and Haoity (2020) and Nyst, Rahman, and Verhaert (2018) address both risks and benefits.

Table 3: Type of Methodology Used in Article

	Type of Methodology Used in Article (n=29)			
	Solely secondary literature review (e.g., journal articles, books, INGO reports)	Interviews/focus group discussions[3]	Interviews/focus group discussions and ethnography[4] (including but not limited to digital ethnography, participant observation, mobile ethnography)	Methodology not specified
Articles	9	14	4	2[5]

Thematic Analysis

This section of the paper will discuss findings from the scoping review and analysis conducted to better understand why Smart Cards and biometric registration have been deployed in Bangladesh with the Rohingya population by UNHCR as well as the consequences of the use of these technologies. The findings are divided according to themes that were encountered in the literature.

Benefits of using biometric technologies in humanitarian settings

One theme that emerged from the analysis was the focus on the benefits of using biometric technologies in humanitarian settings. These benefits include providing people with identification and the feeling of belonging, streamlining processes, efficiency and effectiveness of programming, and convenience.

In a report commissioned by Oxfam to provide advice and recommendations for the future of Oxfam's biometric programming, Nyst, Rahman, and Verhaert (2018) from The Engine Room state that they are largely skeptical of the use of biometric technologies in humanitarian work. Nevertheless, the authors address some benefits of the technology. In providing people that lack government identification with biometric identification, organizations can ensure individuals are within oversight of the programme and better track where aid goes. Biometric identification systems can also help streamline the refugee registration process and speed up assistance, which eliminates the waiting time normally required to authenticate paper identity documents. Many stakeholders interviewed by the Engine Room stated that biometrics helps reduce fraud by addressing the issue of double registration (with double registration, according to Farraj (2011), potentially leading to inequitable distribution of goods and services); however, the report concludes the evidence as to whether biometrics helps reduce fraud is lacking. Lemberg-Pedersen and Haoity (2020) also note the need to demonstrate upward accountability to donors, such as meeting targets. A staffer at the UNHCR Information and Communications Technology (ICT) centre in Amman stated in an interview that UNHCR experiences "donor fatigue," which is especially difficult for organizations like the UNHCR, which is funded exclusively by donors. Biometric technologies thus serve the dual purpose of ensuring

---

3   These articles also include findings from secondary data sources.
4   These articles also include findings from secondary data sources.
5   Azad (2021) does not discuss the methodology used for his article but mentions that he has done extensive fieldwork with Rohingya refugees, government officials and humanitarian professionals to understand internal bordering practices and digital identification of refugees.

donor confidence about the effectiveness of programming and helping to "do more with less" - a form of neoliberal austerity.

Weitzberg et al. (2021) argue for a "depolarized approach" to studying digital identity that is wary of "technoapologists" as well as technophobic rhetoric. Though there are problems with using biometric technology in humanitarian work[6], they argue that there are components of data collection and identification which are essential in delivering aid and there are potential benefits for using digital technology in aid distribution for both humanitarian institutions and intended beneficiaries. For example, sometimes the data fieldworkers collect is anonymized and mundane (e.g., about refugees' soap use patterns). It is useful and necessary for refugee management, and not necessarily reinforcing problematic power differentials.[7] Weitzberg et al. (2021) argue that beneficiaries, such as rural communities in India regarding the Aadhar system, may also see benefits to digital identification systems such as recognition, belonging, efficiency, and convenience. There have also been cases of beneficiaries resisting digital identification systems being imposed upon them and helping to improve upon these systems based on their needs (e.g., the use of WFP's biometric identification system with Houthis in Yemen). The authors suggest grounding research on this topic in the perspectives of those receiving aid "in all their diversity, ambivalence and contradictions" (Weitzberg et al. 2021, 4).

It is worth noting that most of the sources (apart from Farraj (2011) and Weitzberg et al. (2021)) and literature encountered more generally on the subject of biometric technologies in humanitarian spaces are largely critical of the use of biometrics. The following theme will provide a summary of these critiques as well as gaps in the research on this topic.

Risks of using biometric technologies in humanitarian settings

Another theme that emerged from the analysis is the risks of new technology. Several issues are repeatedly highlighted in the literature on the use of biometric technologies by humanitarian organizations like UNHCR. These risks include lack of evidence surrounding efficiency and reduction of fraud, lack of fully informed consent, risks of data-sharing and fears of privacy violations and data misuse, misidentification, and lack of access and loss of access to aid and services. Moreover, there are concerns that the Global South is viewed as a playground for technological innovation, the further entrenchment of social inequalities, and function creep (Nyst, Rahman, and Verhaert 2018; Lemberg-Pederson and Haioty 2020; Brinham et al. 2020; Iazzolino 2021). Ultimately, as Nyst et al., (2018) argue, the humanitarian sector lacks publicly-available evidence, research and agreed-upon standards for using biometrics, and it is unclear whether the benefits of this technology outweigh its possible risks.

Efficiency is a benefit that is often purported by development and humanitarian groups. However, there is a lack of evidence surrounding the efficiency of such technology (Cioffi, Adelmant, and van Veen 2022; Holloway, Al Masri, and Abu Yahia 2021; Nyst et al. 2018). Researching the experiences of refugees in Jordan who had their biometric data collected and subsequently received access to cash and voucher assistance (CVA), Holloway, Al Masri, and Abu Yahia (2021) found that while humanitarian actors they interviewed felt that biometrics helped simplify beneficiaries' lives, this was not the case

6   For instance, technology can sometimes be used without informed consent of displaced people and to limit their opportunities and control their mobility.
7   Scholars such as Madianou (2019b) argue that the convergence of digital technologies like biometrics with humanitarian structures and market forces reproduce colonial relationships of dependency between refugees and aid agencies which she dubs "technocolonialism".

for the refugees who were interviewed. Most refugees they spoke to preferred getting cash via an ATM card over iris scans as they had to deal with broken machines and weak internet connections, having a single financial service provider, and the inability to have another family member pick up aid on their behalf.

Interestingly, Sözer (2020) argues that the success of humanitarian projects being measured according to criteria such as "efficiency" (i.e., the well-documented use of project resources rather than the actual impact of the project) and "accountability" (i.e., justifying project spending to donors rather than justifying the project to the public) is reflective of the neoliberal transformation of humanitarianism. Indeed, discussing the purpose of biometrics in humanitarian spaces, Madianou (2019a, 594) argues that policies surrounding "digital identity" have less to do with refugees and more to do with the benefits accrued by those who develop the technology and their stakeholders, partners, and investors; "digital identity is a neoliberal project that promises freedom and economic development, while contributing to systems of migration control and the accumulation of capital."

Some authors also problematize the notion that biometric technologies "reduce fraud" (Iazzolino 2021; Lemberg-Pedersen and Haioty 2020). Iazzolino (2021), for example, worked with Somali refugees registered in UNHCR's BIMS in the Kakuma refugee camp in Kenya to understand their perspectives regarding this technology. One of the fears refugees had with the implementation of BIMS in the camp concerned a loss of income. A loss of income would subsequently increase dependence and indebtedness to households in dominant clans to compensate for this loss. Before the implementation of BIMS, Somali Bantu households would pursue a strategy whereby one member, usually a young man, would move to the city looking for work. If he was still registered as the head of the household, his registration card could be used by another member of the family and his food ration could be resold to traders or used to pay local pastoralists in exchange for goat meat. Rather than ensuring the equitable distribution of aid among refugees, Iazzolino (2021) argues that humanitarian actors use biometrics as a disciplinary tool to categorize actions as "illicit" or "licit" to decide who is entitled to aid. However, in doing so, they ignore the structural conditions that force people to "play the system" to overcome livelihood constraints. Ultimately, by affecting the livelihoods and socio-economic practices of specific groups, the design, set up and management of systems to digitize and verify identities can contribute to the protracted marginalization of these groups. This concern is relevant for Rohingyas in Bangladesh as well, where Azad (2021) argues that with the recent integration of biometrics into state and humanitarian processes (e.g., requirements for fingerprint and iris scans for National ID card and passport and UNHCR's biometric database), refugees may have a harder time pursuing informal strategies[8] to gain citizenship or leave the country.

Another major risk is the lack of fully informed consent obtained from the users of biometric technology (Molnar 2020; Brinham et al. 2020; Caroll 2018; Holloway, Al Masri, and Abu Yahia 2021; Human Rights Watch 2021; Bin Shafique et al. 2020). Refugees are often left unaware of how their personal data is used by the organizations that collect it. As Holloway, Al Masri, and Abu Yahia (2021) and Brinham et al. (2020) point out, those in need of aid in refugee camps are not necessarily in a position to withhold consent, particularly when there is a lack of alternatives provided to them to access aid. There have been clear cases of international organizations and states explicitly breaching the trust of refugees by utilizing their personal data without their fully informed consent. According

---

8   For example, picking up local ways of speaking Bengali and dressing up like a Bangladeshi citizen in order to trick police officers who arbitrarily check on people leaving the camps and to get forms of identification.

to a 2021 report from Human Rights Watch (HRW), UNHCR improperly collected and shared the personal information of Rohingya refugees with the government of Bangladesh, who then shared that information with Myanmar to verify people for possible repatriation. 23 out of 24 Rohingya people that HRW interviewed said that UNHCR staff told them that they had to register to get the Smart Card to access aid. However, they did not say anything about sharing data with Myanmar or linking it to repatriation eligibility assessments. 21 of those refugees had their names included in the list verified by Myanmar for repatriation, and they all said that after they found out their information had been shared with Myanmar, they went into hiding out of fear of being forcibly returned. HRW also reiterated that sharing this data could risk the possibility of involuntary repatriations, denial of citizenship and potential statelessness (as Rohingyas would be expected to register for NVCs upon return to Myanmar), and arbitrary detention for returnees as the Myanmar government has built "reception centres" and "transit camps" (which are surrounded by high barbed-wire fencing and security outposts like the central Rakhine state detention camps) in northern Rakhine state to process and house returnees. Put another way, given that Rohingyas link NVCs/forced statelessness to the mass expulsion and genocide of their people, it is very unlikely that Rohingyas would voluntarily repatriate to Myanmar (de Chickera, 2021; Faulkner & Schiffer, 2019). UNHCR and the Bangladesh government, in moving toward repatriation without the fully informed consent of Rohingyas and guarantees for their citizenship by Myanmar, risk Rohingyas' safety and progress in their fight for recognition of their indigeneity.

Another risk that emerged in the analysis is the exponential rise in largely Western biometric companies using the Global South as a playground for technological innovation. According to Lemberg-Pedersen and Haioty (2020), the biometric market is growing from a 33 billion USD market in 2019 to 653 billion USD in 2024, with many companies from security, defence and border control sectors attracted by the economic incentives from entering into deals with humanitarian organizations. Technology companies especially look to the humanitarian space to conduct business due to the lack of common standards for data protection among NGOs and states in the Global South along with the legal immunity of UN institutions, thus allowing them to avoid direct accountability when testing and researching new technologies on migrants and refugees (Lemberg-Pedersen and Haioty 2020). Humanitarian organizations enable experimentation which would otherwise be difficult to conduct in the Global North. Similarly, Sandvik, Jacobsen, and McDonald (2017) emphasize that humanitarian experimentation needs to be understood through the history of colonial experimentations in which "foreign" bodies were assumed to accept intrusion into their lives and were used to test new technologies to make them safe for use for "more valued citizens" in the West. They also point out that contexts of "emergency" and "urgency" have elicited the perception among humanitarian actors that "something must be done" to deal with the situation - in other words, putting the need to gain knowledge (particularly for the private sector which sees even failed trials as learning opportunities) or the immediate benefits (e.g., health benefits in medical trials) over the safety and protection of displaced people.

As touched upon earlier, the prominence of private sector interests in refugee camps can also be understood as a part of a shift toward neoliberal humanitarianism. Madianou (2019a, 595) argues, "by reframing political problems in line with business objectives (as is evident in the neoliberal logic of the camp as a place of opportunity), private sector initiatives depoliticize displacement". Rather than meaningfully addressing the social, economic, and political conditions which led to their displacement and affect their present precarious situations, under neoliberal humanitarianism, the ultimate goal of

humanitarian activities is for beneficiaries to become self-reliant and entrepreneurial (Sözer 2020; Madianou 2019). This approach helps reduce humanitarian operational costs. Any "failings" of this approach could also be blamed on the choices made by beneficiaries rather than harmful or inadequate programs implemented by humanitarian actors (Sözer 2020).

Other risks brought up in the literature include possibilities of misidentification and, thus, lack of access to aid and services and further entrenchment of social inequalities due to issues with how the technology was created and works. For example, facial recognition technologies often struggle to detect darker skin tones, and fingerprint readers are not always able to properly match the fingerprints of the elderly or people who do a lot of manual labour. There is also the possibility of losing access to aid and services due to errors in centralized identity system and fears of privacy violations and data misuse. Storage in a centralized database with software flaws and poor technology governance standards and data-sharing with countries and third parties which beneficiaries did not consent to are legitimate concerns. Finally, function creep is a major risk, in which technology initially adopted for one specific use spreads to other fields like surveillance. For instance, in Iazzolino's (2021) abovementioned article, Somali refugees registered in BIMS in the Kakuma Refugee Camp whom he interviewed feared that BIMS could be used to enhance police control over their movement. The launch of BIMS also happened around the same time as new announcements of the Kenyan government planning to repatriate Somali refugees. This made refugees worry that BIMS could be used as a tool to prevent those sent back to Somalia from re-entering Kenya.

In terms of gaps in the literature on biometric technologies in humanitarian settings, one is the stark lack of research on the impact of the use of biometric technologies in humanitarian settings on the LGBTQ+ community – this is a significant gap to be addressed as displaced people that are not cisgender may face scrutiny by humanitarian staff. For example, Hodge, Hallgrimsdottir, and Much (2019) found that non-binary, transgender, and queer asylum seekers arriving in Canada may be barred from receiving assistance if their perceived gender does not match the data in the biometric registration system. Another gap includes the lack of research with large sample sizes. The research found through this literature review that use primary data utilize small sample sizes in order to capture in-depth information on the impact of biometric technologies through methodologies like interviews; however, large-scale survey data, for instance, could allow researchers to gather more representative data on the population they are interested in studying.

Limits to Protecting Refugees Under the International Refugee Regime

Considering the risks to using biometric technologies in humanitarian settings and sharing biometric data with third parties to the protection of refugees' rights, another theme that emerged in the analysis was the limits of the international state system, and how they impact refugee protection. These limits include UNHCR's reliance on donor states, the expansion of its mandate and evolution over time within the state system, and states' political preferences and self-interest.

In their report on governance of the global refugee regime, Betts and Milner (2019) highlight three main problems which prevent the refugee regime (and particularly the UNHCR) from realizing its mandate of protecting refugees. Firstly, states have complete control regarding the implementation of global norms on their territory. Specifically, states are responsible for granting status and determining the rights afforded to refugees that are living there. As a result, since the late 1980s, many states in

the Global North have created subsidiary categories of protection which allow them not to confer refugee status onto displaced people in their territory. Relatedly, Feller (2001, 590) notes how the current "climate for the admission, processing and treatment of asylum-seekers is less benevolent" than previous decades. She points to states reverting to a strict application of the 1951 Convention and the 1967 Protocol, implementing a range of policies to prevent legal and physical access into the state, and the inappropriate use of asylum-related concepts such as "safe country" or "manifestly unfounded claims." There is also a rise in alternative protection regimes that are shorter in duration and guarantee less rights than those in the 1951 Convention. Crisp and Maple (2021) also highlight states' declining respect for the norms on which the refugee regime is based, noting that "a growing number of states have realised that the accountability mechanisms of the refugee regime are very weak, and that the rules on which it is based can be broken with impunity."

Secondly, as touched upon by Feller, Betts and Milner (2019) note that there has been a rise in fields that overlap with the refugee regime (which the authors call "regime complexity"). An example of a consequence of this is that states in the Global North have tended to deal with asylum seekers as if they are undocumented migrants. Asylum seekers thus fall under the scope of the travel regime, and states can go against obligations set out under the refugee regime like non-refoulement. Thirdly, states have no binding obligations to share the costs associated with providing asylum. As such, the responsibility of refugees becomes an "accident of geography" whereby 85% of refugees live in low- and middle-income countries in the regions they originate from. Meanwhile, 77% of contributions to UNHCR come from just ten states in the Global North. The authors note that this situation has led many states in the Global South to implement more restrictive refugee policies, prompted tensions between the Global North and Global South concerning the refugee regime, and has led to low levels of trust and confidence between major refugee-hosting and donor states.

UNHCR is a non-political organization that relies on annual voluntary funds for its activities (Betts and Milner 2019). Crisp (2022), who has previously held senior positions with international organizations like UNHCR, emphasizes that the agency's state-centric nature cannot be understated. UNHCR must maintain a "harmonious relationship" with member states as "the agency was founded by states, is funded by states, has a governing body comprised of states, has its budget approved by states, and can only operate in the field with the permission of states and under conditions that are imposed by states" (Crisp 2022). Looking at its role in the protection of refugees specifically, Krever (2011) argues that in earlier decades, UNHCR was willing to challenge countries over issues related to refugee protection.[9] However, since the 1990s, the UNHCR has transformed from a protection agency to an institution providing material assistance to, eventually, the lead UN agency in managing large-scale humanitarian operations.[10] With its expansion in scope came an increased reliance on voluntary contributions (thus leading donor interests to weigh heavily on the organization's decisions) as well as a need for cooperation and coordination with state and other military actors who may be participating in conflicts and have their own political priorities. Similarly, in analyzing UNHCR's role in world politics - while emphasizing that UNHCR is not simply a mouthpiece for state interests - Loescher (2001) highlights critiques of the organization which may be relevant to Smart Cards. For instance, repatriation appears to be UNHCR's primary solution to refugee crises, in line with the

---

9   For example, UNHCR refused to work in militarized refugee camps on the Thai-Cambodian border controlled by the Khmer Rouge, much to the chagrin of the United States in the 1970s.
10   Read more about the UNHCR structure here.

favourable shift toward repatriation by increasingly restrictionist countries following the end of the Cold War.

Still, UNHCR's expansion and activities are not necessarily supported by all donor states. Crisp (2009), analyzing the expansion of UNHCR's mission from refugees to groups such as asylum seekers, returnees, stateless populations, IDPs, and victims of natural disasters, points out that many of the key states that provide a majority of UNHCR's funding have expressed that they think the organization should return to its "core mandate" of protecting refugees in developing regions. Nevertheless, he argues, these states have not used their power to restrict UNHCR's activities, possibly reflecting the fact that worries about the organization's expansion are outweighed by the humanitarian needs the organization helps meet. Whitaker (2008) also notes that while state interests play a role in UNHCR's activities, UNHCR has a strong role in shaping its funding patterns. It develops budgets according to its own regional and program priorities and presents its budgets to donor countries through appeals. Donors fund some operations over others or earmark funds for specific programs; however, donors' decisions are affected by the information UNHCR shares with them in the budgets.

Crisp (2022) also notes that UNHCR finds it difficult to handle situations where refugees speak up for themselves and criticize the organization, and it is not too receptive to external criticism on the basis that other individuals and organizations do not have a thorough understanding of how the agency works or the effort they put behind the scenes. Ultimately, this context demonstrates how analyzing the use of biometrics with Rohingyas and in any other humanitarian setting requires understanding the interests of various actors in the international refugee regime, including the states of Bangladesh and Myanmar, major donor states, and humanitarian actors like UNHCR.

Some authors question UNHCR's approach to protecting forcibly displaced people. Oliver and Ilcan (2018) argue that UNHCR and their partners' understanding and practice of protection are indicative of a "minimalist understanding of human rights" (i.e., the right to live or survive) as opposed to a more expansive definition of protection that guarantees refugees the widest array of human rights. Looking at the protection issue of the right to adequate and sustainable food and food security, the authors argue that while the discourse on the right to food and food security has evolved among international organizations (recognizing that food availability is not the root cause of hunger and malnutrition), in practice, international and national approaches to the right to food focus on food availability and, as such, efforts to increase agricultural production and output. Organizations expect refugees to be self-reliant in an environment where they may face structural challenges to accessing adequate food, such as encampment policies of host governments that restrict refugees' movements, create social divisions between refugees and host communities, and prevent refugees from accessing arable land, private property rights, or opportunities for legal employment.

Another related issue is states' political preference for repatriation. Indeed, analyzing the perspective of the Bangladesh state on the Rohingya crisis, Bhattacharya and Biswas (2020) highlight that the government of Bangladesh favours voluntary repatriation in lieu of other durable solutions to the crisis including local integration[11] as well as third-party resettlement. Regarding the latter, there is limited willingness among Western countries and others in the region to take in refugees, in addition to the assumption made by the Bangladesh government that this solution would prompt more Rohingyas to flee to Bangladesh. In the 1970s and 1990s, UNHCR supported and/or passively

---

11   It would be difficult for Bangladesh to accommodate approximately one million Rohingya people in the already extremely densely populated and hazard-prone country.

contested efforts by the Bangladesh government to repatriate Rohingyas to Myanmar, a clear violation of their protection commitments, in order to avoid problems with Bangladesh authorities (Crisp 2018). It is then unsurprising that according to the Office of the Refugee Relief and Repatriation Commissioner (RRRC), one of the key purposes of the Smart Card has been to separate Rohingyas from local Bangladeshis and support repatriation efforts "when the condition of Myanmar [improves]" (Bin Shafique et al. 2020).

Bangladesh's desire to repatriate Rohingyas also helps explain how Rohingyas are identified on the Smart Cards. Wahab (2022) argues that the Bangladesh government uses an approach called "hybrid governmentality" to counter the challenge to its sovereignty posed by Rohingyas' cross-border activities. Hybrid governmentality essentially refers to the act of physically demarcating the refugee camps and socially segregating refugees from the host community. One way of separating refugees from locals is through the provision of the identity cards which label Rohingyas as "Myanmar nationals" to reflect that Rohingyas are temporary guests who will soon be returned to Myanmar and which allow the government to better control their movement within the camp. This serves as a major grievance for Rohingyas who wished to be labelled as "Rohingya refugees" in their ID cards in order to have their ethnic identity, the existence of which has been denied by Myanmar, as well as their status as refugees fleeing genocide, to be recognized (Brinham 2018).

Other techniques the state uses to reinforce the "proxy national boundaries" of the camps and separate refugees from Bangladeshi citizens according to Wahab (2022) include setting up robust surveillance mechanisms in the camps and socially segregating refugees from the host community. For example, learning centres are not formally permitted to teach Bengali to Rohingya children. Regarding the former, the author also argues that surveillance mechanisms are in place because the state prioritizes the security of its citizens from refugees. There is a network of internal and external intelligence officers who prevent the sale of drugs, human trafficking, and recruitment by militant groups. Furthermore, during his fieldwork in Cox's Bazar, Wahab (2022) observed that the police do not care as much about who is entering the camps as opposed to who is re-entering the region and city. Ultimately, this article shows that biometric identification can help states reinforce the purpose of the refugee camp to segregate, monitor, and control the movement of refugees.

In terms of gaps in research on refugee protection, future research could look at whether the UNHCR as an international institution could become less beholden to powerful states' geopolitical interests in order to better serve the protection needs of refugees. This includes research looking at the merits of potential reforms to UNHCR (e.g., guaranteed funding for field operations to reduce reliance on voluntary contributions) and/or suggestions for other mechanisms or bodies that would need to be set up (as well as insight into how they would be implemented and why they are necessary) in order to enhance refugee protection globally.

Foresight and considerations

In the foreseeable future, the role technology plays in the determination of refugee status, and asylum seekers' experiences of refuge, is only going to grow. States will continue to seek neoliberal approaches that help them cut costs and streamline asylum bureaucracy, while in parallel, there is an increasingly hostile climate towards refugees worldwide. While the literature is predominantly focused on the benefits and risks of biometrics technology, there was also a strong undercurrent of

recommendations for how to implement and use digital identification systems in effective, ethical and humanitarian ways.

If the Canadian government were to pursue supporting the use of such technologies in its foreign policy, these are the 7 common recommendations found within the literature.

1. Meaningful consultations with communities in the design, development, and review of systems (Amnesty International 2020; Brinham et al. 2020; Holloway, Al Masri, and Abu Yahia 2021). More specifically, in order to ensure that biometric systems provide a net benefit to those who provide their biometric data, it is vital that these groups are not only involved in the design of biometric systems but they should be consulted throughout the implementation of these systems in order to address issues as soon as they arise.

2. Assurance that biometric identification systems are necessary and proportionate to achieving a legitimate goal (Human Rights Watch 2021). As Holloway, Al Masri, and Abu Yahia (2021, 38) explain, "emphasis should be placed on creating systems that work for both the humanitarian organisation and the affected population, without adding extra burdens to their lives."

3. Establishment of policies and legislation that protect the rights of people affected by digital ID systems (Bin Shafique et al. 2020). Bin Shafique et al. (2020) suggest focusing on: "rights-affirming" legislation that places greater importance on the needs of those giving their biometric data over entities implementing biometric systems; designing mechanisms to report grievances and processes to quickly solve issues; and developing policies that will help address how power asymmetries can affect informed consent (e.g., finding ways to replace or support consent processes in contexts where informed consent cannot be meaningfully obtained).

4. Alternatives to biometric technologies so that people can opt-out of this system without foregoing aid (Holloway, Al Masri, and Abu Yahia 2021). This is significant because as the authors rightly note, those in need of aid in refugee camps are not necessarily in a position to withhold consent, particularly when there is a lack of alternatives provided to them to access aid (Brinham et al. 2020).

5. Incorporation of data contestability into data collection systems (e.g., in cases where the technology is not registering peoples' fingerprints) (Amnesty International 2020) and decentralization of biometric data to reduce surveillance risks (Weitzberg et al. 2021). Without data contestability, people may endure unwarranted scrutiny from the institution implementing the biometric system and/or be shut out from the benefits of being included in this system. With regard to decentralizing the storage of biometric data, as mentioned above, centralized databases have been noted to be less secure than other data storage options (e.g., blockchain) and can also lead to an increased risk of people being shut out of receiving aid (e.g., if there is a data entry error or they are logged under a category of "foreign") (Franke 2022; Brinham et al. 2020). ICRC in its biometrics policy decided to only have beneficiaries' biometric data stored on a token like a card that remains with the beneficiaries. The use of the token is limited to verifying beneficiaries during aid distribution. ICRC does not collect, retain or further process their biometric data and thus does not have a biometric database that other countries could pressure the organization to share (Hayes and Marelli 2020).

6. Promotion of transparency about access to peoples' data and ensuring data is not shared with host countries and other third parties without full consent (Brinham et al. 2020; Holloway, Al Masri, and Abu Yahia 2021). Sharing personal data comes with some level of personal risk and it is thus critical people are aware of and give permission for how their data is used. Rohingya refugees in Bangladesh have spoken out against the lack of transparency and consultation regarding the implementation of UNHCR's Smart Cards (Brinham et al. 2020). Their anxieties were, as discussed earlier, not unfounded - in sharing some Rohingyas' biometric data with the Myanmar government in preparation for possible future repatriation without their full consent, the Bangladesh government and UNHCR have put these peoples' lives at risk (Human Rights Watch 2021).

7. Further research, cost-benefit analyses, and impact assessments before any new or enhanced digital ID system is rolled out (Cioffi, Adelmant, and van Veen 2022; Human Rights Watch 2021). As Cioffi, Adelmant, and van Veen (2022, 79) note, "before any new or augmented digital ID systems are rolled out nationwide, it is vital to establish an evidence base and take all necessary steps to anticipate and mitigate possible harms in advance." This is particularly pertinent considering that thus far, developments in digital ID systems have been relatively rapid despite the fact that a full understanding of the human rights implications of these systems may take years to completely emerge (Cioffi, Adamant, and van Veen 2022).

References

Accenture. 2022. "UNHCR: Identity Management System Uses Biometrics to Better Serve Refugees." Accessed August 29, 2022. https://www.accenture.com/za-en/success-unhcr-innovative-identity-management-system.

Akhter, Shamima, and Kyoko Kusakabe. 2014. "Gender-based Violence among Documented Rohingya Refugees in Bangladesh." Indian Journal of Gender Studies 21 (2): 225-246. https://doi.org/10.1177/0971521514525088

Amnesty International. 2020. "Race, Borders and Digital Technologies." https://www.ohchr.org/sites/default/files/Documents/Issues/Racism/SR/RaceBordersDigitalTechnologies/Amnesty_International.pdf

Azad, Ashraful. 2021. "The Rohingya's Navigation of Everyday Borders amidst Restrictions in Bangladesh." Routed Magazine, May 8. https://www.routedmagazine.com/omc21-5rohingya-restrictions.

Betts, Alexander, and James Milner. 2019. Governance of the Global Refugee Regime. World Refugee Council Research Paper No. 13. Waterloo: Centre for International Governance Innovation. https://www.cigionline.org/publications/governance-global-refugee-regime/

Bhattacharya, Srobana, and Bidisha Biswas. 2020. "International Norms of Asylum and Burden-Sharing: A Case Study of Bangladesh and the Rohingya Refugee Population." Journal of Refugee Studies 34 (4): 3734–51. https://doi.org/10.1093/jrs/feaa122.

Bin Shafique, Sharid, Chenai Chair, Kittima Leeruttanawisut, Koliwe Majama, Chuthathip Maneepong, Precious Ogbuji, and Berhan Taye. 2020. Understanding the Lived Effects of Digital ID – a Multi-country study. The Engine Room. https://digitalid.theengineroom.org/assets/pdfs/200310_TER_Digital_ID_Report+Annexes_English_Interactive_Edit3.pdf

Brinham, Natalie. 2018. "'Genocide Cards': Rohingya Refugees on Why They Risked Their Lives to Refuse ID Cards." OpenDemocracy. October 21. https://www.opendemocracy.net/en/genocide-cards-why-rohingya-refugees-are-resisting-id-cards/.Brinham, Natalie. 2012. "The conveniently forgotten human rights of the Rohingya." Forced Migration Review 41: 40-41.

Carroll, Joshua. 2018. "Violence Stalks UN's Identity Card Scheme in Rohingya Camps." Al Jazeera, November 23. https://www.aljazeera.com/news/2018/11/23/violence-stalks-uns-identity-card-scheme-in-rohingya-camps.

Cheung, Samuel. 2012. "Migration control and the solutions impasse in south and southeast Asia: implications from the Rohingya experience". Journal of Refugee Studies 25 (1): 50-70. https://doi.org/10.1093/jrs/fer048

Cioffi, Katelyn, Victoria Adelmant, and Christiaan van Veen. 2022. Paving a Digital Road to Hell? New York: Center for Human Rights and Global Justice. https://chrgj.org/wp-content/uploads/2022/06/Report_Paving-a-Digital-Road-to-Hell.pdf

Crisp, Jeff. 2018. "'Primitive People': The Untold Story of UNHCR's Historical Engagement with Rohingya Refugees." Humanitarian Practice Network. October 24. https://odihpn.org/publication/primitive-people-the-untold-story-of-unhcrs-historical-engagement-with-rohingya-refugees/.

Crisp, Jeff. 2022. "Protected? UNHCR's organizational culture and its implications for refugee advocates and activists." LERRN: The Local Engagement Refugee Research Network. July 29, 2022. https://carleton.ca/lerrn/2022/unhcr-organizational-culture/

Crisp, Jeff, and Nicholas Maple. 2021. "Relevant or redundant? The future of the international refugee protection regime." Refugee Law Initiative, July 22, 2021. https://rli.blogs.sas.ac.uk/2021/07/22/relevant-or-redundant-the-future-of-the-international-refugee-protection-regime/.

Equal Rights Trust. 2014. Equal only in name: The human rights of stateless Rohingya in Thailand. London: Equal Rights Trust and Institute of Human Rights and Peace Studies, Mahidol University. https://www.refworld.org/pdfid/5444b7534.pdf

Farraj, Achraf. 2011. "Refugees and the Biometric Future: the Impact of Biometrics on Refugees and Asylum Seekers." Columbia Human Rights Law Review 42 (891): 891–940.

Feller, Erika. 2001. "International refugee protection 50 years on: The protection challenges of the past, present and future." International Review of the Red Cross 83 (843): 581-605.

Field, Jessica, Natalie Brinham, Amal De Chickera, AD Tiwari, and Jaivet Ealom. 2020. Locked In and Locked Out: The Impact of Digital Identity Systems on Rohingya Populations. The Institute on Statelessness and Inclusion. https://files.institutesi.org/Locked_In_Locked_Out_The_Rohingya_Briefing_Paper.pdf

Fortify Rights. 2019. Genocide by Attrition: The Role of Identity Documents in the Holocaust and the Genocides of Rwanda and Myanmar. https://www.fortifyrights.org/downloads/Genocide%20by%20Attrition%20-%20Fortify%20Rights%20Report.pdf

Fortify Rights. 2019. "Tools of Genocide." National Verification Cards and the Denial of Citizenship of Rohingya Muslims in Myanmar. https://www.fortifyrights.org/downloads/Tools%20of%20Genocide%20-%20Fortify%20Rights%20-%20September-03-2019-EN.pdf

Franke, Mark F. N. 2022. "Refugees' loss of self-determination in UNHCR operations through the gaining of identity in blockchain technology." Politics, Groups, and Identities 10 (1): 21-40. https://doi.org/10.1080/21565503.2020.1748069

Frances-Presse, A. 2017. "Bangladesh to offer sterilisation to Rohingya in refugee camps." The Guardian, October 23. https://www.theguardian.com/world/2017/oct/28/bangladesh-to-offer-sterilisation-to-rohingya-in-refugee-camps

Hayes, Ben, and Massimo Marelli. 2020. Reflecting on the international Committee of the Red Cross's Biometric Policy: Minimizing Centralized Databases. AI Now Institute. https://ainowinstitute.org/regulatingbiometrics-hayes-marelli.pdf

Hodge, Edwin, Helga Hallgrimsdottir, and Marianne Much. 2019. "Performing Borders: Queer and Trans Experiences at the Canadian Border." Social Sciences 8 (7): 1–14. https://doi.org/10.3390/socsci8070201.

Holloway, Kerrie, Reem Al Masri, and Afnan Abu Yahia. 2021. Digital identity, biometrics and inclusion in humanitarian responses to refugee crises. HPG working paper. London: ODI. https://odi.org/en/publications/digital-identity-biometrics-and-inclusion-in-humanitarian-responses-to-refugee-crises.

Human Rights Watch. 2020. "An Open Prison without End: Myanmar's Mass Detention of Rohingya in Rakhine State". Oct 8. https://www.hrw.org/report/2020/10/08/open-prison-without-end/myanmars-mass-detention-rohingya-rakhine-state.

Human Rights Watch. 2021. "UN Shared Rohingya Data without Informed Consent." June 15. https://www.hrw.org/news/2021/06/15/un-shared-rohingya-data-without-informed-consent.

Human Rights Watch. 2022. "Bangladesh: New Restrictions on Rohingya Camps." April 4. https://www.hrw.org/news/2022/04/04/bangladesh-new-restrictions-rohingya-camps

Iazzolino, Gianluca. 2021. "Infrastructure of Compassionate Repression: Making Sense of Biometrics in Kakuma Refugee Camp." Information Technology for Development 27 (1): 111–28. https://doi.org/10.1080/02681102.2020.1816881.

Krever, Tom. 2011. "'Mopping-up': UNHCR, Neutrality and Non-Refoulement since the Cold War." Chinese Journal of International Law 10 (3): 587–608. https://doi.org/10.1093/chinesejil/jmr019.

Lemberg-Pedersen, Martin, and Eman Haioty. 2020. "Re-Assembling the Surveillable Refugee Body in the Era of Data-Craving." Citizenship Studies 24 (5): 607–24. https://doi.org/10.1080/13621025.2020.1784641.

Loescher, Gil. 2001. "The UNHCR and World Politics: State Interests vs. Institutional Autonomy." International Migration Review 35 (1): 33–56. https://doi.org/10.1111/j.1747-7379.2001.tb00003.x.

Madianou, Mirca. 2019a. "The Biometric Assemblage: Surveillance, Experimentation, Profit, and the Measuring of Refugee Bodies." Television & New Media 20 (6): 581-599. https://doi.org/10.1177/1527476419857682

Madianou, Mirca. 2019b. "Technocolonialism: Digital Innovation and Data Practices in the Humanitarian Response to Refugee Crises." Social Media + Society 5 (3): 1–13. https://doi.org/10.1177/2056305119863146.

Molnar, Petria. 2020. Technological Testing Grounds. EDRi and the Refugee Law Lab. https://edri.org/wp-content/uploads/2020/11/Technological-Testing-Grounds.pdf

Milton, Abdual H., Mijanur Rahman, Sumaria Hussain, Charulata Jindal, Sushmita Chodhury, Shahnaz Akter, Shahana Ferdousi, Tafzila A. Mouly, John Hall, and Jimmy T. Efird. 2017. "Trapped in

Statelessness: Rohingya Refugees in Bangladesh." International Journal of Environmental Research and Public Health 14 (94): 1-18. https://doi.org/10.3390/ijerph14080942

Nyst, Carly, Zara Rahman, and Paola Verhaert. 2018. Biometrics in the Humanitarian Sector. The Engine Room and Oxfam. https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620454/rr-biometrics-humanitarian-sector-050418-en.pdf?sequence=1

Oliver, Marcia, and Suzan Ilcan. 2018. "The Politics of Protection: The Right to Food in Protracted Refugee Situations." Refugee Survey Quarterly 37 (4): 440–57. https://doi.org/10.1093/rsq/hdy013.

Packer, John. 2018. "Need More Proof of Genocide in Myanmar? It's Being Born Right Now." Centre for International Policy Studies. June 3. https://www.cips-cepi.ca/2018/06/03/need-more-proof-of-genocide-in-myanmar-its-being-born-right-now/.

Philipps, Alexandra. 2013. "The World's Blind Spot: Shedding Light on the Persecuted." Harvard International Review 35 (2): 31-33.

Radio Free Asia (RFA). 2017. "Bangladesh family planning officials face challenge in Rohingya camps." November 3. https://www.refworld.org/docid/5a9427d08.html.

Sandvik, Kristin Bergtora, Katja Lindskov Jacobsen, and Sean Martin McDonald. 2017. "Do No Harm: A Taxonomy of the Challenges of Humanitarian Experimentation." International Review of the Red Cross 99 (1): 319–44. https://doi.org/10.1017/s181638311700042x.

Sözer, Hande. 2020. "Humanitarianism with a neo-liberal face: vulnerability intervention as vulnerability redistribution." Journal of Ethnic and Migration Studies 46 (11): 2163-2180. https://doi.org/10.1080/1369183X.2019.1573661

Ullah, Ahsan A. K. M.. 2016. "Rohingya Crisis in Myanmar: Seeking Justice for the "Stateless"". Journal of Contemporary Criminal Justice 32 (3): 285-301. https://doi.org/10.1177/1043986216660811

United Nations Human Rights Council. 2018. Report of the detailed findings of the Independent International Fact-Finding Mission on Myanmar. A/HRC/39/CRP.2. https://www.ohchr.org/en/hrbodies/hrc/myanmarFFM/Pages/ReportoftheMyanmarFFM.aspx

Wahab, Sharif A. 2022. "Hybrid Governmentality in Practice: Territoriality and Biopolitics in the Rohingya Refugee Camps in Bangladesh." Political Geography 94: 1–10. https://doi:org/10.1016/j.polgeo.2021.102568.

Weitzberg, Keren, Margie Cheesman, Aaron Martin, and Emrys Schoemaker. 2021. "Between Surveillance and Recognition: Rethinking Digital Identity in Aid." Big Data & Society 8 (1): 1–7. https://doi.org/10.1177/20539517211006744.

Whitaker, Beth E. 2008. "Funding the International Refugee Regime: Implications for Protection." Global Governance 14 (2): 241-258. https://www.jstor.org/stable/27800704

Win, Kathy, and Natalie Brinham. 2022. Dangerous Journeys Through Myanmar: Insecurities and Immobilities for Rohingya and Muslim Women in Post-Coup Myanmar. https://files.institutesi.org/Rohingya_Women_in_Post-Coup_Myanmar.pdf

Zarni, Maung, and Alice Cowley. 2014. "The Slow-Burning Genocide of Myanmar's Rohingya." Pacific Rim Law & Policy Journal 23 (3): 681-752. ProQuest.

UNHCR. 2015. "DPSM Key initiatives." Access September 7, 2022. https://www.unhcr.org/550c304c9.pdf

UNHCR. 2019. "More than Half a Million Rohingya Refugees Receive Identity Documents, Most for the First Time." August 9. https://www.unhcr.org/news/briefing/2019/8/5d4d24cf4/half-million-rohingya-refugees-receive-identity-documents-first-time.html.

UNHCR. 2022. "Joint Government of Bangladesh - UNHCR Population Map as of 31 May 2022." June 9. https://data.unhcr.org/en/documents/details/93465.