Marginalized Aadhaar

How the world's largest digital identification programme led to the exclusion of marginalized communities.

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The views expressed in this publication, except the ones attributed to the respective interviewees and/or other individuals and organisations, are the author's alone and are not necessarily the views of Yoti.

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Contents

Glossary of terms

The terms identity, identification and ID that are used in this publication are inline with Caribou Digital's style guide. An oversimplification of these terms could be as following:

Identity

The way a person believes what they are. Identity is a complex and "multidimensional social location of an individual relative to other people and institutions around them".

Identification

A process of verification for a person's identity by use of proof or attributes like personal information including biometrics.

ID

A tangible object that is used to help with identification e.g. Voter's ID and Ration Card in India respectively for eligible voters and ration distribution.

State and Union Territories (UT)

Administrative divisions of India - 28 states (provincially governed) and eight Union Territories (federally-governed).

UIDAI

A public agency that enrols residents and provides the unique Aadhaar number.

Aadhaar

A 12-digit unique number that is assigned to residents of India upon enrollment that requires capturing a range of personal details including biometric data such as fingerprints, facial image and retina scan.

JAM trinity

Jan-Dhan (Pradhan Mantri Jan Dhan Yojana or PMJDY - a programme for providing a bank account to every Indian citizen, including minors), Aadhaar and a mobile phone account are collectively known as the JAM trinity. Aadhaar is often linked to the bank account and a phone number is used for text message OTP based authentication.

Pragya Kendra

Pragya Kendra, in the state of Jharkhand, and eKiosk in Rajasthan, are privately-owned centres that help Aadhaar users with updating the latter's details in case of any mistake. There are cases of fraud reported in some centres, along with misuse of personal data.

Hijra

Is a term used in many parts of South Asia to refer to trans-people.

Adivasis

Are predominantly indigenous groups spread in South Asia. Their collective population is about 106 million in India.

Abstract

Aadhaar, India's biometric-based ID, has been widely discussed since its inception in 2008-2009: from Aadhaar's widest reach in enrolling majority of India's 1.31 billion population, to the constitutional validity of Aadhaar, to the exclusion of marginalized communities and other human rights issues, and topics related to privacy, security and data protection.

Through documentary research for the film "Marginalized Aadhaar", I have investigated mostly three main areas. First: how lack of access to information - both before Aadhaar enrollment and during its implementation - has excluded marginalized groups. Key marginalisation factors include socio-ethnic, linguistic, economic and gender issues. Second: how the Aadhaar ecosystem has led to a violation of human rights and digital rights (human rights in digital environments). Several rights advocates and researchers both from India and elsewhere who have investigated ID systems, disability, linguistic issues and Free/Libre and Open Source software have covered many aspects related to this issue while elaborating further on how the Aadhaar project changed its course from an identity project to a mass identification/surveillance programme. Third: how the lack of openness and transparency are linked, and lead to the building of technological tools of mass exclusion.

1. Introduction

1. a. Global context

The United Nations Sustainable Development Goal (SDG) number 16.9 underlines the importance of "providing legal identity for all, including birth registration by 2030". There is a significant push from major international and/or intergovernmental organisations including the United Nations (UN), World Bank, and International Monetary Fund (IMF) for digital identification implementations. Many developing nations around the world are already in the process of creating some form of system to enable residents to legally identify themselves. As legal identity, especially through biometric identifications, is predominantly being used for both public welfare and private services, "failure in possessing legal identity" [enrolling and acquiring a legal ID] is increasingly leading to denial of entitled basic services.

1. b. Background of Aadhaar

Aadhaar, by design, is a 12-digit unique number that is created in a centralised database maintained by the Indian state. Aadhaar numbers are provided to residents against their biometric and other personal and demographic data. Aadhaar as a project was born in 2008 and emerged in 2009 through the formation of the Unique Identification Authority of India (UIDAI).

Though the targeted delivery of welfare and essential services is usually attributed to Aadhaar by law, many researchers argue that it is used primarily for identification, mass surveillance and discrimination of minority communities (Ramanathan 2017).

Aadhaar is widely used as authentication for many essential public services such as the Public Distribution System (acronymed PDS - used for the dissemination of subsidised food grains and other essential commodities), both private and public banking, and a de-facto proof of identification for a range of public and private sector services. Aadhaar's initial design was meant to facilitate seamless and fast authentication by using biometrics (fingerprint or iris scan) and/or authentication by sending a One Time Password (OTP) to the user's registered mobile number.

There is no Aadhaar smartcard that can be used for cryptographic verification. However, the paper copies of Aadhaar (or soft copies), which can be faked or manipulated, are generally printed, and are used for authentication like most other physical IDs during physical verification. Hence Aadhaar has also become known as the "Aadhaar Card", a misnomer that is widely used to refer to the printed/digital version of a downloadable Aadhaar number containing other personal data. In October 2020, a Polyvinyl chloride (PVC) based card, rightly named as an Aadhaar Card, was launched by UIDAI. Though they are touted as having security features, they are nowhere near many current smartcards that use modern cryptographic technology such as encryption.

1. c. Functional role of Aadhaar (or the lack of)

Most other IDs in India have a clearly defined functional use. For instance, a "driving license" is used for the verification of a certified driver or a Permanent Account Number (PAN) Card is used for taxation purposes. Aadhaar, on the other hand, is not attributed to a key functional role nor is it accepted as a proof of citizenship. Aadhaar is recommended to be used as a photo ID, unlike other IDs, as its digital nature does not accommodate security features such as a hologram, official seal, or microchip. The latter are hard and expensive to fake whereas faking a physical replica of a downloadable version is possible.

1. d. Biometric ID

Though ID is historically, and in the present context, understood as a tangible artifact, Aadhaar does not have a physical form, at least not from a secure identification or authentication standpoint. Aadhaar, however can be used for a biometric-based (fingerprint or iris scan) authentication for the purpose of identification.

1. e. Features or flaws: unique, ubiquitous, and universal

The early design of Aadhaar included three factors: unique, ubiquitous, and universal. Though the design gave a sense of a unique ID, law researcher Dr Usha Ramanathan learnt later that the "unique" is about

tagging every resident with a unique number. Lawyer Rahul Narayan who has advocated on behalf of petitioners in front of the Indian Supreme Court, draws an identical design from Nazi Germany where Jewish inmates had unique numbers tattoed on their skins for easy identification. Similarly, Dr Ramanathan finds the feature "ubiquitous" to be a subtext for populating a unique number for each resident across databases for identifying later. Aadhaar critiques explain the "universal" factor to be the universal rollout that would compel everyone to enrol for Aadhaar as if it is essential for their survival. When these factors are weighed up against realities on the ground, Aadhaar stands as a clear example of an identification tool rather than an ID.

1. f. Data security

UIDAI has boasted about the safety and security measures taken by the agency for data protection - everything from using 2048-bit encryption to the data centre being earthquake and flood resistant. That level of encryption, when enforced even at the user's end, should make the data collection very secure. But there were reports of "jailbreak" software being sold for as low as 500 to 2,000 INR (US $6-26) that would allow a user to add new entries to the Aadhaar database or modify one. Though UIDAI has categorically denied any discrepancy in its data management, there were widespread reports of an image of Hanuman, the mythological character from Hindu epic Ramayana, being used to create an Aadhaar number in 2014 with a phone number and biometric data, such as a fingerprint linked to it.

2. Key issue areas

2. a. Access to information

The 1903 Linguistic Survey of India portrays the Adivasi (an umbrella term for all indigenous peoples of India) as "wild" and "aborignal". After a century, more than 106 million Scheduled Tribe communities (an official classification by the Indian government for Adivasis) still do not have equitable access to information on critical public information in their own languages. Such information ranges from health advisory during the ongoing COVID pandemic, literacy of rights that are affected because of the rollout of myriad government programmes, to even school education.

Of the 780 languages that the People's Linguistic Survey of India identified, most are oral and lack any writing system of their own. Article 343 (1) of the Indian constitution mandates the use of Hindi along with English at the federal level whereas the Eighth Schedule has guidance on the official use of 22 languages. However, the rest of the languages, especially the Adivasi languages, are poorly represented in oral history and governance alike.

During the production of MarginalizedAadhaar, I interviewed *Lanjia Sora* elder Ramani who lives in a village in the Rayagada district, a southern administrative division in the eastern Indian state of Odisha. The Sora people are one of the 62 Adivasi communities of Odisha and have a population of over 850,000.

Ramani and many in her village are unaware of the real purpose behind Aadhaar. A large majority of the Sora elders are monolingual and speak only in Sora whereas most of the authorities speak Odia, the official language of Odisha. Ramani had to comply and enrol for Aadhaar when the authorities asked her to do so without even understanding much about Aadhaar.

Lanjia Sora elder Ramani (Subhashish Panigrahi, CC-BY-SA-4.0)

We made [enroled for] our Aadhaar cards. The government asked us to make it. Why are they asking us to make [enrol] this [Aadhaar]? What will they do with this Aadhaar card? We didn't know Odia or Hindi [languages] - only Sora.

— Ramani, Lanjia Sora elder (Female, 60-70 years old)

In another Sora village, Jholasahi in the Gajapati district of Odisha, *Jurai* Sora speakers Manjula (female, 30-40 years old) and Dinabandhu (male, 60 - 70 years old) who are both bilingual (Sora and Odia) and are literate in Odia were aware of the Aadhaar enrollment process. They also knew how to correct any errors in the information added to Aadhaar, such as a spelling mistake.

Manjula, Jurai Sora speaker (Subhashish Panigrahi, CC-BY-SA-4.0)

"

It has become a bit easier after getting the Aadhaar card. We get money when we provide a thumbprint. There is something called Jana Seva Kendra that the government has opened - they help us when we inform them about our issues.

— Ramani, Lanjia Sora elder (Female, 60-70 years old)

Most Soras that live in Jholasahi and other villages in the Gajapati district solely rely on a quasi government messenger who they call "endia", a misnomer that is derived from the word "India". The Endia would come to a village on a designated day to announce any public information and the people who live in that village would gather to hear about new government programmes or changes to the same, or other initiatives in which they have to participate.

Answering my question about use of indigenous languages for dissemination of knowledge, noted linguist Dr Mandana Seyfeddinipur says,

Access to knowledge is access to resources. If you don't know about something and if you cannot find out, then you cannot use this. As a citizen you have a government that will provide this for its society. The linguistic barrier - that is introduced by not making it available in different ways and in heterogeneous ways to respond to the heterogeneity of a society - means that particular parts of society will be excluded from accessing that knowledge. The moment they're excluded, we're dealing with a case of inequity.

— Dr Mandana Seyfeddinipur

Dr. Seyfeddinipur heads the Endangered Languages Documentation Programme at the SOAS University of London and is behind programmes such as VirALLanguages, a multimedia and multilingual portal that provides critical advisory about the COVID-19 pandemic in indigenous and other low-resource languages. The programme shows that video and multimedia content can be vital in the dissemination of critical information and public awareness.

During the filming, Dr Usha Ramanathan, an independent law researcher and a human rights defender, frowned on the way Aadhaar enrollment and its widespread use have been carried out. "There is one thing that we've learnt about both marketing and advertising - the idea is to sell a product and not explain what the product is, and that's what we've seen in this [Aadhaar] project".

India is home to 106 million Adivasis (8.6% of India's total 1.31 billion population), predominantly, the indigenous groups. By early November 2020, almost 1.27 billion people had signed up for Aadhaar. Many states like Odisha with a significant Adivasi population saw a high turnout for their Aadhaar enrollment. But there was little effort to educate citizens about Aadhaar, considering the level of personal data it captures or the number of public and private services it is linked to. Almost all of the Adivasi languages are oral.

It is important to note that the UIDAI website is currently available in 12 Indian languages whereas most other websites managed by the federal government are only available in Hindi and English - the two official languages of the State (archived January 2021). But the Aadhaar website does not include any of the indigenous languages, some of which (for instance, Santali) are spoken by as many as 7.6 million people. Considering the lower literacy rate among Adivasis and many other rural Indian communities, a larger portion of Aadhaar users are still illiterate or do not have any understanding of the programme.

2. b . Rights

In 2017, the Indian Supreme Court made a landmark judgement declaring "privacy as a fundamental right and to be intrinsic to right to life". There has been a huge government push to enrol all residents as quickly as possible, including minors and young children. There are many reasons individuals are unaware of their privacy, a guaranteed fundamental right in the Indian constitution. Illiteracy or lack of accessible information prevents individuals from accessing information about their right to privacy. As Aadhaar is now linked to almost all public services, the failure of authentication leads to exclusion. Communities that are already marginalized because of natural or other hindrances (such as lower economic conditions, disability and illiteracy) have been periodically denied from public welfare.

During my documentary production, I came across a [tweet](#) by the Right to Food Campaign, Odisha (@OrissaRtf) concerning [Harshabati Kheti](#). Kheti was disabled after losing her fingers and was denied enrollment for Aadhaar. She could not then authenticate herself during the ration distribution and was denied from receiving food grains or any other welfare for 11 months despite having a disability certificate.


In the family "Chaul Card" (ration card), I used to have my name. [The authorities] didn't give [me] any rice. It's been 11 months. [They] said, "you don't have an Aadhaar card. [So, we] can't provide rice". Even though I already have received the government [disability] certificate, [they] don't even listen [consider that]. [Referring to fingers] everything was burnt in fire and is gone. When [the authorities] came to the school [for Aadhaar enrollment], the lady [authority] said that you need to go to the government [to complain]. She denied to take picture [for enrollment].

— Harshabati Kheti (Female, disabled, 68 years old)

In the Nabarangpur district in Odisha, another elderly person, with a disability that restricted his ability to move without physical support, was denied rations for three years. Disability is one of the many reasons Aadhaar authentications fail. Parsuram Harijan, a resident from a village in Nabarangpur, also told me how there were over 100 individuals who have been denied food grains and other rations due to errors in records, despite having Ration Cards and Aadhaar.

Krishnakant Mane, a Free/Libre and Open Source Software (FLOSS) technologist who runs a fintech company, has visual impairment himself. He and many of his colleagues design technology solutions with accessibility at its core and even advise governments to help them improve their accessibility index. During an interview for the documentary, Krishnakant shared how there is very little effort by an organisation like UIDAI, while appreciating some of the accessible features that are already implemented, to consult accessibility experts in the country while building programmes like Aadhaar.
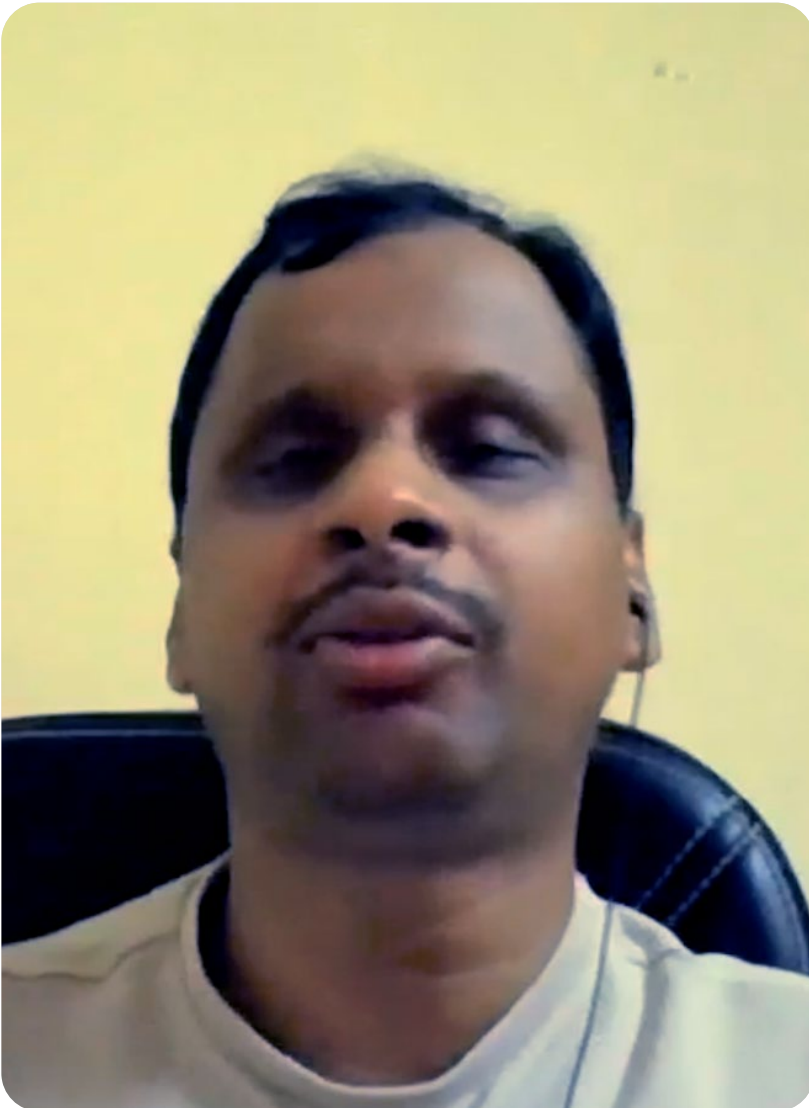
Krishnakant Mane (via online interview, Krishnakant Mane, CC-BY-SA-4.0)

> **"**
>
> **Now, there are so many people who have suffered from leprosy. Most of them have their fingers mutated. Now, how do you think they are going to give fingerprints (for Aadhaar enrollment or authentication)? Do you say that just because someone's suffered from leprosy, and his/her fingers are unfortunately mutated, they don't have the rights to all this ease of life?**
>
> — Krishnakant Mane,
> Digital-accessibility advocate
> and FLOSS technologist

Aadhaar has been deployed for biometric-based authentication in the distribution of food rations through the Public Distribution System (PDS), a federal government programme that provides food and other essential commodities to those in need. The objective, of course, is to eradicate poverty, but data from the country's census showed that between 2001 and 2011, the number of people in need rose from 21 to 26.8 million, a 22.4% increase, something that Aadhaar was allegedly going to address. Researchers who have studied issues with Aadhaar's direct contribution in increasing exclusion instead of reducing it have substantial evidence to back up their observations.

Economist and Prof. Reetika Khera has examined many aspects of the kinds of exclusions that were not taken into account in Aadhaar's design. During the interview, she recalled how a person who was bed-ridden after an accident could not enroll for Aadhaar and his ration card was struck off as soon as Aadhaar was brought in for authentication. Prof. Khera frowns, saying,

Often people with disabilities, or people who due to old age can't move around, have been left out. People who have problems with their biometrics - either because of illness or because of manual labor that biometric capture doesn't happen.

— Prof. Reetika Khera, Economist

Many volunteers that were a part of Rethink Aadhaar, a collective advocating for equitable service to marginalized communities through Aadhaar, co-founded the Article 21 Trust. The Trust continues to research and enhance public awareness around the growing exclusion of many marginalized communities. Prasanna S. who is a founder trustee at Article 21 Trust, flagged to me some of the most foundational issues with Aadhaar when I interviewed him.

Public Distribution System and rations are never looked upon as doles and matters of charity that the government does but these are rights of people, of every human being. How Aadhaar disrupted these rights: where it blocked access to a vast number of people in trying to access these rights. Several people couldn't even enrol as their biometrics data just won't capture or was of poor quality (as fingerprints tend to wear off during manual work or illness or old age).

— Prasanna S., Lawyer and former technologist

Prof. Khera also highlights the process of linking Aadhaar into various public welfare systems, leading to more fraud. Interestingly, Aadhaar has been promoted as a tool to curb "leaks" and "frauds" but evidence of large-scale scams in the state of Uttar Pradesh and many other places around the country suggest the contrary. These events also lead to an increase in many genuine Aadhaar holders being denied public welfare, which is very much a violation of their fundamental rights, and they become subsequently marginalized. The exclusion of marginalized communities spans across the socio-economic, gender, race and ethnicity, and disability spectrum. The systemic bias that is linked to Aadhaar includes Dalit[1] and Muslim schoolchildren from low-income families being denied scholarships because of Aadhaar system errors, to Muslim citizens being harassed and asked to provide proof of citizenship.

The deep linkage of Aadhaar with the National Register of Citizens (NRC), a programme designed to eliminate illegal immigrants, is prominent from an exclusion standpoint. 1.9 million people, mostly Muslims, out of the state's population of 33 million, were declared illegal during the NRC exercise. In his interview for my documentary, Ashraful Hussain, a young community leader who has worked closely with many Muslims who were termed as illegal through NRC, has much deeper worries.

The Muslims in NRC were not considered in the Original Inhabitant Clause of NRC[2], a power an officer could have exercised. Apart from some Muslims, the rest were kept out of that clause. The issue with Aadhaar cards is not a grave one in Assam. When the NRC process started, the authorities were going to collect the biometrics and they collected them as well. But one can strip someone's rights using other parameters, tools. One might not get their [welfare] benefits.

— Ashraful Hussain, resident of Assam

1 - Dalits are a heterogenous social class that have been widely marginalized, historically oppressed, and, present day, practice widespread religious faiths like Hinduism, Islam, Christianity or Buddhism.

2 - Original Inhabitant Clause is one of the clauses of the National Register of Citizens. Office of the State Coordinator of National Registration (NRC). Government of Assam. https://web.archive.org/web/*/http://nrcassam.nic.in/eligibility-criteria.html

The COVID-19 pandemic has created a huge adverse impact on the Indian economy with a negative GDP value and the deepest recession in three decades that was much worse than early World Bank estimates. Most Muslims that Ashraful works with are economically poor and face extreme hardship because of denial of welfare. Attorney Tripti Poddar emphasises that biometric data collected during the NRC process was used to provide Aadhaars to those who made it to the NRC list. Those who did not were denied. Lawyer Rahul Narayan compares the process of 'tagging people with numbers and creating large and centralised databases for a greater control by the state' as the systemic exclusion in Stalinist Russia or Nazi Germany.

Dr Usha Ramanathan (Subhashish Panigrahi, CC-BY-SA-4.0)

"

[The] World bank or the UN are looking at spreading this [Aadhaar architecture] across the world so that all seven billion will be on a database that they can access. You know the one thing that it will do? Like we have seen with the National Register of Citizens. The one thing that we can significantly see it doing is it creates statelessness.

— Dr. Usha Ramanathan, rights advocate and law researcher

2. c. Technology and exclusion

Many in the technology and policy community have taken sides while examining Aadhaar. Some have shed light on the technological implementations of these policies that often translate into inherent and serious design flaws and others on the misuse of biometric information by the government without the legislation.

As technology is not isolated from society, it cannot be discussed without discussing social discriminations, such as the caste system that divides Hindus into four major classes leaving a large section of the country as 'untouchables'. Collectively known as Dalits, these communities are classified as Scheduled Castes (SC) in the constitution. Though caste or religious details are not collected in the Aadhaar enrollment per se, other public departments have reportedly used the UID data to create databases that integrate race and ethnicity. Advancing repressive technology also furthers unforeseen discrimations, as anticipated by security researcher Jacob Appelbaum 2013; "UID will create a digital caste system because going by the way it is now being implemented, if you choose not to be part of the system, you will be the modern-day equivalent of an outcast."

Organisations with significant control over major economies around the world, most notably the UN, World Bank (particularly through its Identification for Development initiative - ID4D), and the International Monetary Fund (IMF), have been very keen on digital identification programmes. The impact is seen across many developing countries - many governments and public administrations in countries with poor freedom indices have started to roll out programmes that collect and store personal data. The lack of legal and regulatory frameworks have led to unrestricted and insecure data collection and data management endangering the freedom of many marginalized communities. As discussed earlier, the lack of creation and dissemination of critical public information in different spoken languages, and in accessible formats, furthers vulnerabilities of the people.

As far as policy considerations go, data protection in the UIDAI database has been subject of a long standing debate. Amba Kak, Director of Global Strategy and Programs, AI Now Institute, underlines clearly how loopholes in legal frameworks are often exploited to create centralised and biometrics-based databases, and to use these databases for targeted purposes that are quite beyond their original mandate. (Kak 2020)

In one of the documentary interviews, journalist and digital rights activist Nikhil Pahwa simplifies the safety protocols. "The problem from a safety and security perspective was that UIDAI doesn't have a monitoring mechanism. If there's a leak, they will never know. They have an audit mechanism. And there is no publicly available information on that."

Raina Roy (via online interview, Raina Roy, CC-BY-SA-4.0)

The government is trying to keep all the information of all the people of India. So many Hijra[3] community people been arrested and have been a victim of genocide. If they [the transgender community] will rise up, then the entire system will fall down.

— Raina Roy, transgender-rights activist and founder, Samabhabona

3 - Hijra is a term used in many Indian languages to describe transgender individuals collectively.

As Aadhaar implementation becomes more stringent, Raina Roy, a transgender-rights activist and sex worker from Kolkata, is extremely concerned about the safety of many other transgender sex workers, especially when they are already struggling due to the COVID-19 outbreak.

Sunil Abraham, a public policy researcher and Free and Open Source Software advocate, describes in his interview to me how biometric IDs are a plainly consentless and oppressive technology. He argues that biometrics is directly tied to surveillance and law enforcement and discourages its use for e-governance projects.

The project uses what it calls a unique identifier and that is also a massive design flaw. Use of biometrics in Aadhaar's design violates the most important principle in privacy law - consent. It is a disempowering technology for the people that use it.

— Sunil Abraham, technology-policy researcher

Instead of using biometrics, Sunil details how a smartcard with a microprocessor can utilise the Public Key Infrastructure (PKI). PKI empowers a user with a set of digital keys - a public key and a private key - to securely participate in transactions by providing consent. Similarly, he also criticises how some of the core components of Aadhaar have proprietary technology that cannot be audited independently. One of the reasons he cites is the oppressiveness in biometric authentication, which arguably does not encourage freedom-focused FLOSS developers to develop robust tools.

The exclusion caused by enforcing biometric-based technology is felt across the world in countries where they are now being implemented. In one of the interviews in the documentary, Savita Bailur, Research Director at Caribou Digital, shares details of the exclusion of many in Côte d'Ivoire who don't have a biometric ID.

*Savita Bailur (via online interview, Savita Bailur, *

"

The government of Côte d'Ivoire decided that all SIM cards had to be registered with the biometric ID. So, those without the ID lost access to their SIM cards and eventually to their mobile money account and any kind of money stored in it. That's the irony of identification, right? It's like air. If you've got it, you don't think about it. If you don't have it, it becomes critical.

— Savita Bailur, Research Director, Caribou Digital

3. Recommendations

The interviews with marginalized community members and subject experts from the documentary film are summarised in the form of recommendations for both policy-making and implementations.

a.   Aadhaar's use of biometrics to administer the provision of basic services for marginalized groups who have not been addressed in their language turned out to be an oppressive technological implementation as, without understanding, it lacks informed consent. Given the prevalence of many languages and oral tradition, it is strongly recommended that consideration be given to other smart-card based digital identification solutions that use encryption instead of biometrics.

b.   Educating citizens about justice and other rights-related information is a must before large-scale implementations of programmes such as Aadhaar. These initiatives have to be optimised to include the most marginalized communities, through methods such as using multimedia tools to educate speakers of Adivasi and/or other oral languages.

c.   Aadhaar should not be used as a sole de facto identification tool especially for the Public Distribution System, pension and other services including vaccination, as failure in any number of areas could potentially be fatal for marginalized people.

d.   Failure of enrolling for Aadhaar or authentication using Aadhaar must never be used as grounds for denial of any service. There must be alternatives offered across all sectors.

e.   Given the immature data protection regime in India, it is recommended that UIDAI uses open standards and Libre/ Free and Open Source Software in the backend of the Aadhaar infrastructure to allow public scrutiny.

f.   Modern and secure encryption methods including Public Key Infrastructure should be implemented both at the user end and in the server to guarantee security and protection of the private data of users and their sovereignty.

g. Given the language barriers, there is currently a high risk of onward sharing of personal data without true consent; as a result the collection and storage of paper and soft copies of the downloadable Aadhaar - containing private information - by both public and private service providers must be stopped immediately through official notification.

h. Throughout Aadhaar's implementation, the authorities must maintain individual freedoms over any benefits to any public/ private infrastructure. The current practice of data sharing through application programming interface (API) based services must be stopped or highly controlled until there is a clear data protection legal structure in India. The General Data Protection Regulation (EU) 2016/679 (GDPR) guidelines could be an ideal basis for future legal regulations.

4. Approaches

- Accounts of oral history of individuals from various marginalized groups with a varied level of exclusion were recorded as text, audio and video. Interviews were recorded with their consent.

- Marginalisation is a wide and complex spectrum. So, some forms of marginalisation were investigated. Literacy in an official language; use of the official language as a first/native language; use of an Adivasi and/or and other oral and/or low-resource languages as a native language. Social and economic exclusion (gender and ethnic minorities, sex workers and economically poor individuals) were some of the areas of marginalisation.

- Interviews with noted linguists with experience in documenting indigenous languages, and examination of their research outcomes, were studied to understand the role of native languages in access to critical information.

- The film is not to be considered as a commercial or mainstream film but an intersectional non-fiction multimedia report.

- The interviewees who preferred not to be named have been attributed anonymously.

- The interview questions were often translated into the native languages of interviewees with the help of translators to retain any cultural/regional nuance. The interviewee and the translator-interviewer mostly knew each other personally prior to the interview and/or the interviews were conducted in the presence of other intermediaries who the interviewees knew.

- Portions of longer interviews were edited while retaining their context. Hence, some interviews might be longer than others in the main film. The length of an individual interview is not a representation of any kind of order - the arrangement and runtime is primarily designed to provide for a cohesive narrative.

5. Conclusion

Aadhaar is offered to the citizens as a technological solution to citizen participation without addressing any of the deep-rooted issues - ethical, legal, socio-economic and even geopolitical ones - which have only led to an increase in exclusion. The urgency of information literacy, especially educating citizens about identity and digital identification, was vital before building public and private ecosystems that would use Aadhaar for authentication.

In its foundational design, Aadhaar implements an oppressive technology such as biometrics that allows the state to have unregulated surveillance and other forms of control on the citizens while endangering their liberty. Using digital artefacts like Aadhaar *(or apps like Aarogya Setu)* for manual and physical verification also opens the door to fraud. Aadhaar's design also deviates from its predecessor, the Scosta design, which could have led to a smartcard-based ID. With the same functions as that of Aadhaar, a smartcard could have helped protect the liberty and sovereignty of the user with informed consent built into the design. The Aadhaar architecture divulged the legal framework of user data protection by drifting away from that design.

Aadhaar also implements proprietary software code in its core infrastructure that is the intellectual property of private companies that cannot be publicly audited, and hence, the use of open source software still does not help with openness and transparency in governance. All the aforementioned issues including lack of inclusive public literacy on Aadhaar, which has led to biometrics being submitted without informed consent and subsequently being required for authentication without understanding or consent. The centralised storage of private data especially without any data protection policies, mandating Aadhaar at all levels, creating loopholes for commercial exploitation, and use of Aadhaar for mass surveillance - have led to grave exclusion of communities that are already marginalized. The members of such communities and experts with experience in relevant issues strongly recommend the discontinuation of any non-inclusive, non-consented or oppressive approaches for providing public welfare by mandating biometric-based identification in Aadhaar. These groups heartily recommend and citizens deserve the use of open and transparent digital authentication and identification methods with fair and equitable data protection practices.

Resources

The resources listed below are referred to or quoted by the interviewees in the film "Marginalized Aadhaar". The time code is mentioned before each citation. For instance, 00:41:06.839 means the referred citation is mentioned at 41 minutes and 06 seconds and 839 milliseconds. When a video is played the timecode generally appears on screen.

Ref. Usha Ramanathan at 0:04:09.916 (Ramanathan, 2017)

Ramanathan, U., Dr. (2017, August 17). 'UID isn't an identity, but an 'identification' project'. *'UID Isn't an Identity, but an 'identification' Project'*. Retrieved February 7, 2021, from https://mumbaimirror.indiatimes.com/others/sunday-read/uid-isnt-an-identity-but-an-identification-project/articleshow/60240576.cms

Ref. Savita Bailur at 0:09:18.058 (Sharma & Vaktania, 2020)

Sharma, D., & Vaktania, S. (2020, May 09). Migrants with Mumbai address in Aadhaar can't take special trains. Retrieved February 07, 2021, from https://web.archive.org/web/20200614230928/https://www.mid-day.com/articles/migrants-with-mumbai-address-in-aadhaar-cant-take-special-trains/22773277

Ref. Nikhil Pahwa's at 00:37:03.513 (Thomson, 2014)

Thomson, I. (2014, December 30). German Minister fingered as hacker 'steals' her thumbprint from a photo. Retrieved February 07, 2021, from https://www.theregister.com/2014/12/29/german_minister_fingered_as_hackers_steal_her_thumbprint_from_a_photo/

Ref. Nikhil Pahwa at 00:38:16.920 (Khaira, 2018)

Khaira, R. (2018, January 8). Rs 500, 10 minutes, and you have access to BILLION Aadhaar details. Retrieved February 07, 2021, from https://www.tribuneindia.com/news/archive/nation/rs-500-10-minutes-and-you-have-access-to-billion-aadhaar-details-523361

Ref. Raina Roy at 00:41:06.839 (Hindustan Times 2020)

Hindustan Times. (2020, January 28). Supreme Court notice to Centre on plea against transgender act. Retrieved February 07, 2021, from https://www.hindustantimes.com/india-news/supreme-court-notice-to-centre-on-plea-against-transgender-act/story-HfBrPZBTFmusm9theecWoL.html

Ref. Apar Gupta at 00:41:45.628 (Singh & Ahmad, 1996)

Singh, K., & Ahmad, S. (n.d.). *People'S Union Of Civil Liberties vs Union Of India (Uoi) And Anr. on 18 December, 1996* (Rep.). Retrieved February 7, 2021, from Supreme Court of India website: http://indiankanoon.org/doc/31276692/

Ref. Gupta at 00:44:52.481 (Kodali, 2019)

Kodali, S. (2019, December 24). Digital India on Steroids: How AADHAAR Infra enables the NPR and the NRC. Retrieved February 07, 2021, from https://thewire.in/tech/aadhaar-infra-npr-nrc

Ref. Sunil Abraham at 00:52:48.457 (Ecensusindia Issue number 11 : 2002, 2002)

Ecensusindia Issue number 11 : 2002 (2002). Census of India - Srs Newletters - Ecensusindia : Issue number 11 : 2002: Multi Purpose National Identity Card (MNIC). Retrieved February 07, 2021, from https://censusindia.gov.in/Vital_Statistics/MNIC/MNIC.html

Ref. Abraham at 00:52:53.170 (National Informatics Centre, Ministry of Communication and Information Technology, Ministry of Road Transport and Highways, & Indian Institute of Technology Kanpur , 2002)

National Informatics Centre, Ministry of Communication and Information Technology, Ministry of Road Transport and Highways, & Indian Institute of Technology Kanpur. (2002, March 15). Specifications for the Smart-Card Operating System for Transport Applications (SCOSTA). Retrieved February 07, 2021, from https://scosta.gov.in/SCOSTA_1.pdf

Ref. Abraham at 00:55:12.559 (Chokhani, Ford, Sabett, Merrill, & Wu, 2003)

Chokhani, S., Ford, W., Sabett, R., Merrill, C., & Wu, S. (2003, November). Internet X.509 Public Key Infrastructure: Certificate Policy and Certification Practices Framework. Retrieved February 07, 2021, from https://www.ietf.org/rfc/rfc3647.txt

Originally an ISO standard, public key infrastructure (PKI) is currently maintained by the Internet Engineering Task Force (IETF) as RFC 3280. Read a general description about PKI on Wikipedia at https://en.wikipedia.org/wiki/Public_key_infrastructure/

Ref. Kak, K., Ben-Avie, J., Munyua, A., & Tiwari, U. (2020, January 24)

Bringing Openness To Identity: Technical and Policy Choices for Open National ID Systems (Rep.). Retrieved February 7, 2021, from Mozilla website: https://blog.mozilla.org/netpolicy/files/2020/01/Mozilla-Digital-ID-White-Paper.pdf

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Interviewees of the documentary (in order of appearance)

Other interviewees

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The Fellow's activities can be anything from a technical platform, a report, a website, a book, a policy paper, a film or any other medium relevant to their proposal.

Further details on our Social Purpose Programme, and the Fellowship, can be found at www.yoti.com/social-purpose.