Data, Algorithms, and Automation in Social Protection. A Data Justice Perspective on the Single Registry.

Danyelle Carvalho [a*], *Mariana Valente* [b], *Clarice Tavares* [c], *Isabella Bassani* [d].

[a] Researcher at InternetLab; Master of Laws (LL.M.), University of São Paulo Law School (FDUSP), São Paulo, Brazil, danyelle.reis@internetlab.org.br, ORCID: https://orcid.org/0000-0002-9104-1152

[b] Assistant Professor of International Economic Law, University of St. Gallen, St. Gallen, Switzerland, mariana.valente@unisg.ch, ORCID: https://orcid.org/0000-0002-4714-3426

[c] Research Director, InternetLab; MA student, Postgraduate Program in Social Anthropology, University of São Paulo (PPGAS-USP), São Paulo, Brazil, clarice.tavares@internetlab.org.br, https://orcid.org/0009-0006-4103-7258

[d] PhD Candidate, IDHEAP | Institut de hautes études en administration publique, University of Lausanne, Lausanne, Switzerland, isabellafbassani@gmail.com, https://orcid.org/0000-0001-9266-4469

Submitted: 31 January 2025, Revised: 26 March 2025, Accepted: 21 April 2025, Published: 22 May 2025

Abstract. In recent years—particularly following the COVID-19 pandemic—governments have expanded the use of digital technologies and automated systems in social protection policies. One of the most prominent developments in this field is the spread of Single Registries: unified databases of individuals and families in vulnerable situations, often integrated with artificial intelligence (AI) and automated decision-making tools. In Brazil, the Unified Registry for Social Programs ("Cadastro Único") has become the main infrastructure for identifying and selecting beneficiaries of a wide range of social programs, including Bolsa Família. As of late 2024, it holds data on over 95 million people. In July 2024, the Brazilian government launched its national Artificial Intelligence Plan, allocating R$ 1.76 billion to the use of AI in public services—part of which is earmarked for modernizing Cadastro Único. While automation can improve the management and coordination of social policies, it also introduces new risks. If not carefully implemented, automated systems can produce errors, limit access to rights, and reinforce existing inequalities. In 2019, the UN Special Rapporteur on extreme poverty warned of the emergence of a "digital welfare dystopia" marked by opacity, exclusion, and lack of accountability. This workshop proposes a critical dialogue on the expansion of AI and automation in social protection, using the Brazilian experience as a starting point. We aim to discuss how data-driven tools are reshaping eligibility, targeting, and control in welfare systems, and to reflect on how a data justice approach can help ensure that digital governance in this field promotes — not undermines — equity and inclusion.

Keywords. Data Justice, automated decisions. Artificial Intelligence, Social Protection
Workshop, DOI: https://doi.org/10.59490/dgo.2025.1011

1. Introduction

Created in 2001, the Unified Registry for Social Programs (*Cadastro Único para Programas Sociais – CadÚnico*) is a

Copyright ©2025 by the authors. This conference paper is published under a CC-BY-4.0 license

tool of the Brazilian Federal Government designed to identify, register and select low-income families for access to social programs such as *Bolsa Família* and the Social Electricity Tariff, among others. Comprising software and forms that collect, process, and cross-check personal data of Brazilians living in poverty and extreme poverty [1], CadÚnico serves as an infrastructure for the implementation of social assistance programs [2]. It does so by applying income criteria and specific conditionalities for each government program, allowing cross-referencing information with other government agencies.

As of December 2024, more than 95 million Brazilians (or 41 million families) were registered in CadÚnico. In total, 45 Federal Government social programs currently rely on CadÚnico. States and municipalities also run programs that use the registry. Given the high number of programs and beneficiaries, datafication and automation are structural components of CadÚnico. It operates as a vast database which is automatically and periodically cross-checked with other government databases to verify the income data of registered families [3].

The increasing use of technology and automation in social protection programs is not a phenomenon exclusive to Brazil. The so-called Single Registries—unified databases of vulnerable citizens that incorporate artificial intelligence and automation—have been multiplying worldwide, with notable examples in South Africa (e.g., SOCPEN) and the Netherlands (e.g., BRP). In recent years, many of these Single Registry systems have introduced various technologies to automate registration, data cross-referencing, and beneficiary selection processes.

As Dencik et al. [4] point out, "smart" technologies, machine learning, and artificial intelligence are integral to how societies are organized and how decisions are made across different spheres. The types of services that can be accessed, how they are accessed, and the various governance models for public policies potentially involve data processing practices and automated decision-making.

The widespread use of technology can optimize the management of social protection programs, but it can also pose challenges for individuals who rely on these tools to exercise their rights. In 2019, in an analysis of the impact of data-driven and automated systems on income redistribution and service administration, the UN Special Rapporteur highlighted the potential risk of creating a dystopian state of digital welfare characterized by a passive and automated existence.

Studies in the field of Data Justice [5] [6] [7] seek to analyze this new era of digital governance in public policy from a perspective that, on the one hand, addresses power asymmetries in the use of personal data and, on the other, examines how data-driven technologies can promote distributive justice by increasing the visibility of marginalized groups [8].

In this context of intensified scrutiny of social assistance programs through a datafication-driven approach, artificial intelligence and automation have increasingly been incorporated into monitoring strategies. In 2024, the Federal Government announced the use of AI to "strengthen the fight against fraud in Bolsa Família and CadÚnico." [9] In other words, beyond the challenges related to the disproportionate exposure of beneficiaries' data in social protection programs, the growing use of invasive technologies for monitoring raise concerns about potential errors and injustices caused by automation.

REFERENCES

[1] Nazareno, B. R. de, & Tortato, C. de S. B. (2019). A tecnologia do cadastro único no âmbito da política pública de assistência social – Reflexões correlatas ao campo de estudos em ciência, tecnologia e sociedade em face às políticas sociais adotadas no Brasil. Revista Tecnologias e Sociedade, 15(37), 371–388

[2] Farias, L. de, & Dias, R. de B. (2018). O Cadastro Único: A consolidação de uma infraestrutura para programas sociais. Revista Teoria & Pesquisa, 27(1), 22–47. https://doi.org/10.31068/tp.27102

[3] Sposati, A., Monteiro, M., & Anazawa, T. (Eds.). (2024). IMPDS: Um outro olhar do CadÚnico. SMADS/Paulus Social.

[4] Dencik, L., & Sanchez-Mondero, J. (2022). Data justice. Internet Policy Review, 11(1). https://doi.org/10.14763/2022.1.1615

[5] Van der Ploeg, L., & de Lange, T. (2021). Digital welfare fraud detection and the Dutch SyRI judgment. Journal of European Social Policy, 31(4), 487-499. https://doi.org/10.1177/13882627211031257

[6] Barreneche, C., Bermúdez, A., & Martín, J. (2021). Datafication in corruption contexts: Sociotechnical imaginaries and resistance practices vis-a-vis anti-poverty systems in Colombia. Palabra Clave, 24(3). https://palabraclave.unisabana.edu.co/index.php/palabraclave/article/view/15107/6563

[7] Redden, J., et al. (2022). Automating public services: Learning from cancelled systems. Carnegie UK Trust. https://carnegieuktrust.org.uk/publications/automating-public-services-learning-from-cancelled-systems/

[8] Taylor, L. (2017). What is data justice? The case for connecting digital rights and freedoms globally. Big Data &

Copyright ©2025 by the authors. This conference paper is published under a CC-BY-4.0 license

Society, 4(2), 2053951717736335.

[9] Agência Brasil. (2024, março). IA vai auxiliar no combate a fraudes no Bolsa Família. Agência Brasil. https://agenciabrasil.ebc.com.br/radioagencia-nacional/geral/audio/2024-03/ia-vai-auxiliar-no-combate-fraudes-no-bolsa-familia#:~:text=A%20intelig%C3%AAncia%20artificial%20vai%20refor%C3%A7ar,cheguem%20a%20quem%20realmente%20precisa

2. Objectives

Based on the Brazilian case of CadÚnico, this workshop aims to discuss the challenges of expanding automated decision-making and AI in social protection policies. We seek insights into:

(1) **how automation has been incorporated into social protection programs worldwide**, focusing on the different technological tools and models being used, the role of AI in these systems, and the outcomes and challenges faced in various countries;
(2) **the benefits and risks of these automated systems,** examining both the positive impacts (such as increased efficiency) and the potential drawbacks, such as increased surveillance and potential biases. We also intend to discuss how automation can either improve or worsen access to services for marginalized groups;
(3) **how technologies can effectively address inequalities**; and
(4) **whether these technologies may inadvertently perpetuate inequalities**.

Through this dialogue, we aspire to collectively tackle challenges and explore more effective pathways for developing social protection policies grounded in data justice.

3. Methodology and Format

This workshop will adopt a participatory format that combines the World Café and Chatham House methods to foster an open and reflective environment (*The World Café is a structured conversational process aimed at encouraging collaborative dialogue and knowledge sharing through rotating small-group discussions. The Chatham House Rule offers the possibility of workshops in an atmosphere of trust: participants are free to use the information received, but the identity and affiliation of other speakers cannot be revealed; the event is not recorded or transcribed; and participants are allowed to post about it on social media, as long as no attributions are made to the statements*).

The structure is designed to balance theoretical framing with collaborative discussion, while respecting the time allocation of two 90-minute sessions. It will combine a conceptual presentation on Data Justice and the Brazilian Single Registry case, based on the research conducted by InternetLab and the Privacy International in partnership with University of St, Gallen. After the initial presentation, the workshop participants will be divided into four groups, each tasked with collectively discussing one targeted question. The activity will have the following structure:

1) Introduction and contextualization (15 minutes):
This opening segment will present the workshop's objectives, structure, and participatory rules. It aims to frame the discussion and foster a space for collective inquiry into the role of data and automation in social protection policies.

Presentation on Data Justice and CadÚnico (35 minutes):
To ensure a common foundation of knowledge among all participants, the workshop moderators will conduct a theoretical presentation on the concept of data justice. They will also present the results of the research *Data Justice and Social Protection: Technologies, Algorithms, and Automated Decisions in CadÚnico*, conducted by InternetLab, which will support the group discussions.

Group discussion (1 hour 30 minutes):
The workshop room will be organized into four discussion tables, each focused on one of the workshop's four key questions (as outlined in the previous section). Participants will be divided into groups and will rotate through two different tables in 45-minute rounds. Each table will have post-its on which participants will write key points from the discussion. This format ensures that everyone engages with at least two of the key questions, allowing for both focused and diverse contributions across topics.

Collective discussion (40 minutes):
Participants will reconvene in a plenary session to share key takeaways and reflect on cross-cutting themes.

Copyright ©2025 by the authors. This conference paper is published under a CC-BY-4.0 license

Moderators will synthesize insights from the discussion tables, identifying tensions, convergences, and directions for future research and advocacy. The workshop will close with a collaborative exercise to draft a preliminary agenda for data justice in the field of social protection.

4. Target Audience

The workshop is designed for researchers, policymakers, and civil society organizations that work at the intersection of technology, social protection, digital governance, artificial intelligence and data justice.

Copyright ©2025 by the authors. This conference paper is published under a CC-BY-4.0 license