Automation, digital technologies and social justice: experimenting with poverty in Colombia

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Abstract

The Identification System of Potential Beneficiaries of Social Programs (SISBEN) is the algorithm used for targeting social resources that individually rates the Colombian population in terms of prosperity. In its fourth version, the government will begin to use data analytics technologies to search for inconsistencies in the database, to punish people who have allegedly lied, and to reduce the number of people who could have access to benefits. Thus, the government has built poverty as a space for experimentation and profiling that must be constantly monitored. In this document the SISBEN system is analyzed, which is an algorithmic assembly that exceeds ethical concerns seen exclusively as a matter of principle in order to force us to address the issue of the values inherent in the system design in relation to social justice through an analysis of the discourses and promises offered by these new systems.

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1 Introduction

According to official figures, 27% of the population in Colombia lives in monetary poverty and, despite the fact that this number has decreased as the economy grows, the reduction has stagnated in recent years. Meanwhile, inequality continues to grow (DANE, 2019a, 2019b). The measurement instrument used to classify the poor population that may be a beneficiary of social programs is the Identification System of Potential Beneficiaries of Social Programs (SISBEN). This instrument, which was created in 1994, relies on data gathering by means of surveys of people's individual living conditions. However, since 2016 the National Planning Department (DNP), as the authority in charge of the system, has modified the measurement method to give greater weight to income, and has tried to consolidate an automated system that searches for irregularities in the beneficiaries' personal information in order to detect fraudulent actions (National Council of Economic Policy & National Planning Department, 2016).

Recently, the UN Special Rapporteur for Extreme Poverty and Human Rights called attention to the existence of a "Digital welfare state" characterized by the use of digital technologies to "automate, predict, identify, monitor, detect, target and punish" poverty (Alson, 2019). These digital systems, far from being neutral, embody a political process that can result in the creation of greater digital and social exclusion due to design practices and the establishment of access barriers to digital assistance services (Park and Humphry, 2019).

In parallel, multilateral organizations, academic and civil society associations and industries have developed a series of ethical principles to respond to and guide technological developments such as artificial intelligence and the use of big data. These research and political agendas are directed towards the establishment of ethical governance of artificial intelligence, towards the possibility of explaining and interpreting these technological devices and their results as well as creating audit mechanisms to 'open the black box' of their operation and effects (Cath, 2018). The aim of this text is to analyze how SISBEN is presented as an algorithmic assembly that configures issues of ethical concern.

This document offers an analysis using multiple sources such as academic articles, petition rights, public policy documents (CONPES), state contracts and agreements, training materials for the SISBEN survey, news, press releases and figures from public databases. The document has five parts starting with (1) an understanding of SISBEN as an algorithmic and historical assembly. This perspective allows us (2) to distinguish what SISBEN does and to point out the ethical concern issues that this system creates. We emphasize (3) the transparency and participation issue as a particular problem identified in different formulations of ethical principles in relation to technological developments. Finally, we close with some (4) conclusions and (5) recommendations related to SISBEN within the framework of the "Digital Welfare State" and with data justice as the political horizon of these discussions.

2. SISBEN as a social classification algorithm

a. The emergence of SISBEN and resource targeting

SISBEN was created in 1994 as a product of various reforms during the 1990s due to the debt crisis experienced in Latin America (Sarmiento, González and Rodríguez, 1999). In this way, governments began a quick liberalization process of the economy and social policy amid the need for international economic support (López Restrepo, 1995). The social policy positions promoted by the World Bank and the International Monetary Fund were fundamental for the reforms carried out in that decade throughout the region (Carnes and Mares, 2015; Deacon, 2007).

In the 1990s, the World Bank began promoting resource targeting, privatization of public service provision, and austerity policies on public spending (Hall, 2007). Thus, it was necessary for the State to start "looking for the poor" to focus on the limited resources left by the tax and tariff reforms (McGee, 1999). Therefore, the State began to require more data to "find" poor people and, especially, to focus resources individually.

As universalist social benefits were abandoned in favor of a welfare state that only supports the most impoverished segments of the population, the number of programs that depended on individual social benefits expanded (Carnes and Mares, 2015; Deacon, 2007). Thus, SISBEN began to take on greater significance and became the main instrument for targeting public resources.

b. "Technical, transparent and equitable" measurement and the policy of measures

SISBEN is an instrument for structuring the population based on their socioeconomic achievements, which began to be used in 1994 (Castañeda and Fernández, 2005; Sarmiento et al., 1999; Vélez, Elkin Castaño and Deutsch, 1999). The system relies on two

components: the individual definition of population socioeconomic characteristics and the structuring of said population from 0 to 100, where 100 means more prosperous and 0 less prosperous (Sarmiento et al., 1999). Each entity administering social benefits uses the resulting score to establish cut-off points to determine which person can request a specific benefit.

Information gathering is carried out through a survey, the coverage of which is determined through an analysis of socioeconomic information to determine where low-income groups could be concentrated (Vélez et al., 1999). People who consider themselves vulnerable, and who are not found in these areas, can request the survey to be carried out. After the information is gathered, specialized software is used to generate the individual score and the structuring of the population (Castañeda and Fernández, 2005; Sarmiento et al., 1999).

The administrator of this database is the National Planning Department (DNP), an entity attached to the government, in charge of updating, every three years, the algorithm that generates the individual scores by determining the values of each category and the measured elements. (Castañeda and Fernández, 2005). The first designs measured a set of population characteristics that include: demographic variables, consumption of durable goods, human capital, and current income (Vélez et al., 1999). These components were based on a vision of poverty centered on living standards (Menjura Murcia, 2016).

Since its implementation, SISBEN has been presented as the most "technical, objective, equitable and transparent" instrument to determine the people "deserving" to receive social benefits (McGee, 1999; Vélez et al., 1999). However, SISBEN, like any other measurement system, embodies a conception of poverty and, considering that the DNP leadership is appointed by the President of the Republic, these measurements may be subject to change according to the needs of the governments in office. Indeed, the State may have a certain political or social intention to indicate who is in a situation of poverty (Menjura Murcia, 2016).

Specifically, SISBEN is used for 18 social programs of different characteristics. However, the only program with universal characteristics is the subsidized health system that covers more than half of the population. Most benefits and social programs require selection processes and the establishment of the program's own requirements, such as cut-off points, specific characteristics of the population, and budget availability. In this sense, many people have access to more than one program (CONPES, 2016) and the stability of different aspects of their lives such as health, education, old age, housing and income depend on the SISBEN score.

SISBEN algorithmic and historical assembly

The technical or computational definitions of algorithms are not enough to account for what they do in sociological and political terms. Expanding the definition of algorithm, like any technological system, must take into account the impossibility of separating them analytically from the social world and, specifically, its dual status of producer and product of the social order (Jasanoff, 2004). This feedback is verified in the blurring of the limits of the human agency and technological devices, in the ability to affect decision-making and in the political effects of algorithms (Beer, 2017).

Ananny (2016) suggests thinking algorithms as sociotechnical assemblies of codes, practices and standards whose fundamental characteristic is to make sense in relation to other assemblies and agents. This relational definition seeks to establish the way in which issues of ethical concern are configured based on the ability of algorithms (1) to create subjects through associations resulting from data analysis, (2) to enable actions based on judgments of the similarity probability among entities and (3) to determine the rhythm or times of action (Ananny, 2016).

From a historical point of view, artificial intelligence algorithms are configured as part of an automation trajectory to govern people's lives (Arora, 2019). Thus, the construction of automated systems that seek to classify the most vulnerable populations from a localized perspective in the construction practices of a subject "deserving" of benefits must be analyzed.

Next, we analyze how SISBEN creates a category of people from data gathering and analysis, and the way in which this new subject is susceptible to particular actions by the State. Both the creation of the "poor" person and the type of actions that this categorization allows are configurations of concern issues that escape ethics conceived as the adaptation of an action to a list of principles, which requires entering the field of social justice.

3 The creation of the "poor" person as a subject of social benefits

The analysis of SISBEN as an algorithm for social classification that enables decision-making on the distribution of public resources for poverty must first establish the sort of profiles and categories it configures and the mechanisms it employs to carry it out. The agencies in charge of defining and implementing SISBEN have used various definitions and adjustments of the scoring and classification system, going from quality of life to presumption of income. The mechanisms used for the creation of this subject have been the use of surveys and, in recent proposals, the cross-referencing of administrative databases.

SISBEN and its methodology have undergone four changes since 1994 while complying with the obligation of updating the algorithm every three years. The changes presented for its fourth version show a trend on social policy for the future. In 2016, in an analysis carried out by the DNP with the support of the World Bank, the Economic Commission for Latin America (ECLAC) and two experts found two basic problems with the third SISBEN system: the absence of the income component and the absence of an interoperable system to verify the information reported by citizens (National Planning Department, 2019).

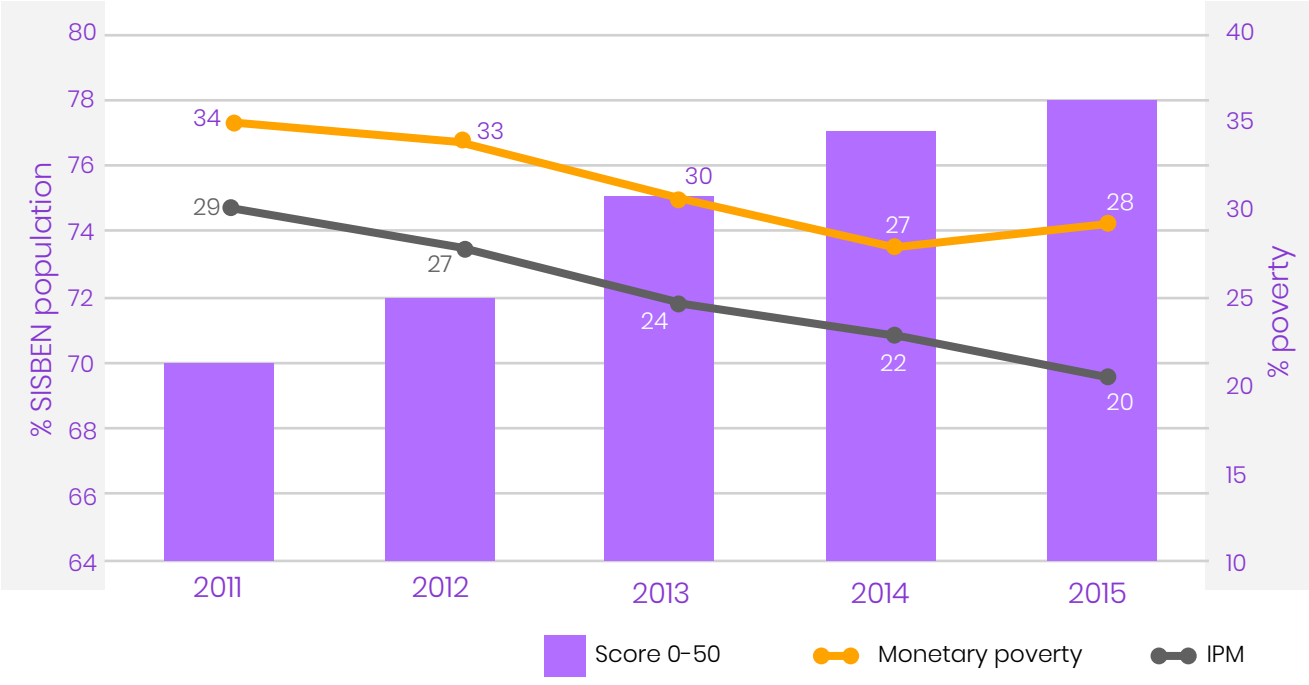

Figure 1. Incidences of monetary and multidimensional poverty and percentage of low-scoring population at the SISBEN III base (DNP 2016)

Firstly, according to the DNP, the SISBEN score as a standard of living is failing because, while the measurement of monetary and multidimensional poverty based on representative samples has decreased, the percentage of the population with scores that allow them to apply for social benefits has increased. The explanation for this phenomenon is that the previous algorithm concentrated 50% of the score on variables that included health, education, and housing. The DNP considered it necessary to modify the algorithm with which the SISBEN score is carried out to include "income generating capacity" in order to bring the SISBEN score in line with other indices (National Council for Economic Policy and National Planning Department, 2016).

In order to adjust the SISBEN measurement to the "income generating capacity", the survey was modified to include questions on "occupational position", "labor and non-labor income", "household expenditure" and "social benefits received" (National Planning Department, 2016). These questions seek to establish a "presumption of income" profile that seems to recall the approaches of banking institutions seeking to individually categorize a person's risk profile.

Secondly, regarding the methods used by SISBEN to configure poverty categories, CONPES pointed to the problem of the absence of an information exchange system to verify the information reported by citizens in the survey. For the DNP, this limits the State's capacity to identify and avoid inconsistencies in order to make an efficient use of public resources. In addition, it is not possible for entities to know the characteristics and benefits received by each person so that they can "design appropriate offer packages for their needs" (National Council of Economic Policy & National Planning Department, 2016, p. 47). To demonstrate the problem of the manipulation of SISBEN by people, the DNP cross-referenced the pensions and health system databases with SISBEN's database. Thus, 653 thousand cases were tagged "under verification" for high income and for deceased persons (National Planning Department, 2019).

In order to carry out the information exchange, a comparison was made of the records from different public and private entities so as to identify " possible inconsistencies" and to allow the "automatic updating of information" registered in the SISBEN database (CONPES, 2016, 46). As reported by the DNP, the interoperability process has been planned to be carried out with at least 34 databases that include categories such as health, pensions, education, work, real estate, taxes, financial risks, social benefits, transportation, victim registration, and public services.

The population profiling process was accompanied by an announcement from the DNP to expand its databases by collecting more information about the population that is already in the system and, in turn, taking data from other groups that were not in traditional areas. For this reason, there was talk of increasing the database to reach 40.5 million people, that is, 84% of the population (Correa, 2017).

A change that illustrates the problem of the DNP as a great data collector from people is the new socio-economic classification form with which potential beneficiaries are surveyed, which includes two clauses that need to be accepted to take the survey, specifying that "The refusal to supply all the requested information will prevent registration in the SISBEN system" and that the information is provided by swearing under oath, so that "any alleged falsehood identified through database cross-referencing will generate exclusion from the SISBEN system", and legal and judicial actions would be taken (National Planning Department, 2016).

The fourth version of SISBEN diagnoses a score "mismatch" that allowed some people to have access to subsidies despite exceeding the poverty levels indicated by other indices. Classifications can be as broad or detailed as desired and measurements respond to a certain political will to expand or reduce state action (Jasanoff, 2017; Menjura Murcia, 2016). For this reason, the aim of SISBEN is to reduce the number of people eligible in order to reach the "truly poor" people, without a strong analysis of the consequences that may be caused by further tightening requirements and eliminating benefits to those who survive thanks to limited contributions.

In the next section, an analysis will be provided regarding the way in which changes in the algorithm and the inclusion of automated systems to verify information from possible beneficiaries show a discourse that is trying to find and punish the "gatecrashers" or wrongly qualified people within the system, which means turning away from the social function of resource allocation.

4. Taking action against "gatecrashers"

The algorithmic assembly of the SISBEN system directly allows taking action against people surveyed and followed through administrative databases. One of the actions that clearly appears in public policy documents and that becomes a matter of ethical discussion is the need to generate regulatory adjustments that allow fraud prevention and punishment.

In May 2017, Decree 441 of the year 2017 was issued, to modify the guidelines used to update and search for inconsistencies in SISBEN databases. This regulation left the DNP in charge of database validation processes and quality controls. In this way, public entities can "make information available without agreements to carry out the update and apply the validation processes and quality controls" and information exchange agreements can be concluded with companies (National Planning Department DNP, 2017).

The decree established two types of results for the validation processes through interoperability. On the one hand, "the exclusion" from the database that will be carried out due to the death of the person registered after a comparison against other databases, by court order or due to record duplication. On the other hand, the "under verification" tagging in which the DNP informs the territorial entity of the inconsistency. From that point onwards, the territorial entity is in charge of informing the person of their situation and deciding on their exclusion from the records by administrative action or, instead, requesting a new interview for reclassification. Within the six months following the DNP notification, the exclusion from the records will be informed to the entities that manage social programs so that the benefits can be withdrawn (National Planning Department, 2017, Article 2.2.8.3.5).

The DNP determined nine reasons to place the records of the SISBEN database "under verification": (1) changes of residence without requesting a new survey, (2) death record in other databases, (3) unjustified change of information determined by the DNP, (4) income records higher than the values determined by the DNP, (5) news about unreported socioeconomic conditions, (6) reports from territorial entities, (7) reports from the entities administering benefits, (8) information inaccuracies or inconsistencies, or (9) any other inconsistency considered by the DNP (National Planning Department, 2017).

This movement towards the integration of administrative databases to monitor a person's life and their interactions with the State hides a surveillance dynamic (Lyon, 2009). The general tendency in the countries of the Global South to focus public resources individually and to "look for the poor" has generated a State that depends on the creation of large personalized registries to determine eligibility. In other words, according to Arora (2019), the Welfare State is a surveillance State that sets its sights on individual practices.

Considering the logic behind the inclusion of technologies in the SISBEN system, it is necessary to explore this problem in light of some ethical principles of artificial intelligence and to show the significance of analyzing these systems while thinking in terms of social justice within data systems.

5 Ethics and data justice issues within SISBEN

Technological capabilities in relation to data gathering and analysis and artificial intelligence have grown in tandem with the proliferation of ethical principles to govern the development of these tools and their implications. These principles set an ethical limit external to the algorithm or artificial intelligence system and constitute a way of judging its ethics or the ability to satisfactorily answer the question about what should be done (Ananny, 2016).

The private sector and multilateral organizations have proposed at least 84 ethical principles in the past five years. Most agree on principles such as doing only good, doing no harm, promoting human autonomy and control of the agency of technology and justice. The principle of "explicability" must be added to them, according to which an artificial intelligence system must be able to explain its operation and those responsible for it (Floridi et al., 2018; Jobin, Ienca and Vayena, 2019). Among these principles are those of organizations such as the OECD (2019), and companies such as Telefónica (2018), Google (Alvaréz, 2018) or Microsoft (2019).

In the case at hand, the view of the ethical principles postulated by these organizations is important but limited for the social justice objectives that the welfare state must pursue (Mittelstadt, 2019). For this reason, several authors have suggested the idea of "data justice" to refer to the connection between the technical possibilities of digital technologies and the social justice agenda, defined as the struggle for a less inequitable society that protects social, civil and political rights (Dencik, Hintz and Cable, 2016; Dencik, Hintz, Redden and Treré, 2019; Heeks and Renken, 2018; Taylor, 2017).

Some principles such as "explicability" and transparency are related to a vision that advocates a fair data distribution and treatment by considering those people who are transformed into records (Heeks and Renken, 2018). For this reason, it is essential that the people evaluated by these data systems understand and participate in the way they are classified, know who manages said data, what are the duties of those institutions with said data and the way in which data are collected.

In this case, the SISBEN algorithm acts as a "black box" in which we only know the input files and the results. While the State uses the data obtained from people for objectives that grow more distant from the duty to guarantee citizens' social rights and, in turn, makes people's lives more transparent, the people who receive social assistance know less about the way in which they are being rated and the mechanisms used for the system to work.

Both the algorithm that classifies people and the treatment of SISBEN data are unknown to those who are classified. In the framework of these investigations, the Karisma Foundation made several requests for access to information to the DNP asking for more clarity on the previous studies that support the SISBEN algorithm, the measurement units and the specificity of the variables taken into account to measure the "income generating capacity" (National Planning Department, 2019). However, the DNP's response was that "the information is subject to confidentiality", since revealing this information may compromise "the country's macroeconomic and financial stability" because "it may lead to modifying the information registered in the database, thus constituting fraud" (National Planning Department, 2019, 4). Furthermore, the DNP mentioned that an assessment was carried out in 1997 showing an increase in fraud in the way the SISBEN score is obtained, which had an impact on the country's economy as more people could apply to access social services (National Planning Department, Directorate of Social Development, Mission to Support Decentralization and Targeting of Social Services, Social Mission, 2003).

The DNP arguments are related to the idea of impartiality by the SISBEN algorithm and by the technologies that will be included in the process to classify the population, from which follows the possibility of analyzing the algorithm as a discourse invoking a neutrality and depoliticization field for the definition of poverty (Beer, 2017). On the one hand, the methodologies used for the SISBEN system are presented as the most technical as they are the result of the DNP's analyzes; but they leave out the vision of people who experience difficulties in accessing their social rights (McGee, 1999). Thus, the results of the SISBEN rating are presented as perfect and flawless without recognizing the design and implementation problems of the system and the perspective of the people who are beneficiaries. In this way, the data inequality that exists between a State that qualifies the population and citizens in a closed manner, who cannot know how said data is classified by these systems, is once again exemplified.

The technology inserted into the system is presented as an absolute and error-proof solution despite the fact that these processes may fail due to many factors, such as the quality of the information, its handling or simply due to system failures (Dencik, Hintz, Redden, & Warne, 2018; Eubanks, 2018; Madden, Gilman, Levy, & Marwick, 2017). For this reason, the DNP considered that the solution to the manipulation problems that occurred at different stages of the information consolidation would be fixed with an application that encrypted said information, without recognizing structural manipulation factors by local governments[1] (Castañeda and Fernández, 2005; National Planning Department, 2019). In this way, the vigilant eye of the State is placed on the people registered in the databases and not on the information chains and the agents who mediate in the construction of the system.

1 There are several documented examples of manipulation of the SISBEN database by local officials who modify people's scores so that they can receive benefits, threats to people who are in the SISBEN database to vote for a certain candidate in exchange for not losing their social benefits, and local governments who want to show more low-scoring people in the SISBEN system in order to receive a bigger budget.

6. Conclusions

SISBEN has been presented in this document as an algorithmic assembly. This statement allows, first of all, to connect the methods on how to define poverty based on analysis and data gathering with current discussions on artificial intelligence and data processing. By identifying a definition configuration of the "poor" person and the inclusion and exclusion actions to recognize benefits for sectors of the population, we point out an ethical analysis that goes beyond the principles to enter the field of justice. The analysis carried out distances itself from the "codes of ethics" that constantly appear under the influence of the industry, which fail to incorporate concerns for the respect and promotion of human rights (Alson, 2019, 12). On the contrary, our analysis starts from ethics as a set of values inscribed in the design and practice of the SISBEN system (Ananny, 2016).

Considering the way in which we think of the SISBEN system, the automation, interoperability and big data ideas take specific forms related to objectives, political interests and the construction of these measurements. Since 2015, these technologies have taken center stage in the changes and promises of the fourth SISBEN version, which indicate the narrative of the future of social assistance focused on individualization and the constant examination of "being deserving" of benefits (Morales Manchego and Galindo Caballero, 2019).

With the SISBEN narratives, the problem of the State's inability to reduce poverty in recent years is presented as a technical and not a political situation. Thus, the stagnation that poverty reduction presents and the great inequalities between regions (DANE, 2019a, 2019b) are not the effect of failing social policies, but rather the absence of a more modern and precise instrument that is able to "search" for "truly poor" people and punish those who "lie". Once again, characterizing SISBEN as an algorithmic assembly allows for the connection of its political burden with the speed and dynamism that is ascribed to digital technologies.

As evidenced, the vision of social protection through data analysis transforms the citizen, as a subject of rights, into an archive with information that will make them "deserving" of the protection of the State (Jasanoff, 2017). Large information systems and interoperability allow the creation of an administrative registry with a presence in multiple spaces that can be modified according to the current needs. In other words, large information systems allow the "deserving" to be made and unmade by means of a system that, despite being time and again arbitrary or unfair from its design (Constitutional Court, First Review Chamber, Ruling T-716 / 17, 2017), seems to be the result of an objective examination of cutting-edge technologies.

The problems that can be detected in the dynamic production of the poor as a subject susceptible to state benefits and legal sanctions force recourse to more comprehensive frameworks to analyze the ethical implications of these systems.

Activism, as regards technology and digital rights issues, is experiencing a moment of transformation that involves building bridges with social justice agendas (Dencik et al., 2016). A relationship that has been difficult to establish is the fight for social justice that connects human rights concerns with social inequities (Rodríguez Garavito, 2019). Hence, a vision of technologies from the Global South must consider the reproduction of social inequities and violence towards vulnerable groups as a brand of state-building (Arora, 2019; Milan and Treré, 2019).

For this reason, a concept such as "data justice" can function as a bridge between the human rights agenda in digital spaces and the struggle for social justice in massive data systems (Dencik et al., 2016; Dencik et al., 2019; Heeks and Renken, 2018; Taylor, 2017). As this analysis shows, the data justice framework can enrich discussions of "what should be done" regarding the use of collection technologies and data analysis to determine resource allocation and the categorization of people receiving state aid.

7. Recommendations

- The introduction of automation technologies in distribution and access to social benefits must respond to the purposes of protecting citizens and the proportionality of risk that it may pose for people. Efficiency goals can often go against the social justice to which the Welfare State must aim.

- The inclusion of technologies in public administration should not necessarily respond to surveillance and individualization processes regarding those people who require the support of the State. An approach including the risks and potential people affected by automation can lead AI to strengthen the institutional framework in order to defend people from abuses by other agents. Furthermore, technology should aim to improve people's inclusion in social benefits, and should not be focused on exclusion for the damages that it may generate.

- People who are rated by using an algorithm should have the means to be able to demand an explanation for the rating they received and the reasons for any type of tagging they receive due to inconsistencies, including the databases and reply channels used. Furthermore, the inclusion of people who are rated in the construction processes of this type of algorithms can enrich the need analysis and the proportionality of this type of technology.

- The analysis of social problems in which automation technologies are used may show the limitations of data protection laws based on the idea of consent. When access to social benefits which is vital for people depends on consent, it will hardly be free and informed. Thus, the discussion on privacy and data protection can be enriched by considering the consent limitations in the public sector, and the discussion on the Welfare State can benefit from considering the damages that data exploitation can create for people.

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