

# Towards gender equality in digital welfare

---

A programme of



GOBIERNO  
DE ESPAÑA

VICEPRESIDENCIA  
TERCERA DEL GOBIERNO  
MINISTERIO  
DE ASUNTOS ECONÓMICOS  
Y TRANSFORMACIÓN DIGITAL

SECRETARÍA DE ESTADO  
DE DIGITALIZACIÓN  
E INTELIGENCIA ARTIFICIAL

**red.es**



MOBILE  
WORLD CAPITAL™  
BARCELONA

# About Digital Future Society

Digital Future Society is a non-profit transnational initiative that engages policymakers, civic society organisations, academic experts and entrepreneurs from around the world to explore, experiment and explain how technologies can be designed, used and governed in ways that create the conditions for a more inclusive and equitable society.

Our aim is to help policymakers identify, understand and prioritise key challenges and opportunities now and in the next ten years in the areas of public innovation, digital trust and equitable growth.

Visit [digitalfuturesociety.com](https://digitalfuturesociety.com) to learn more

A programme of



SECRETARÍA DE ESTADO  
DE DIGITALIZACIÓN  
E INTELIGENCIA ARTIFICIAL

red.es



## Permission to share

This publication is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/) (CC BY-SA 4.0).

## Published

June 2020

## Disclaimer

The information and views set out in this report do not necessarily reflect the official opinion of Mobile World Capital Foundation. The Foundation does not guarantee the accuracy of the data included in this report. Neither the Foundation nor any person acting on the Foundation's behalf may be held responsible for the use which may be made of the information contained herein.

# Contents

<b>Executive Summary</b>	<b>4</b>
<b>Glossary</b>	<b>6</b>
<b>Introduction</b>	<b>8</b>
Reclaiming Beijing amid a global pandemic	9
Why welfare should integrate intersectional feminism	11
Addressing systemic inequalities	14
<b>1. Gender inequalities in welfare systems</b>	<b>16</b>
Disadvantage by design?	17
Doubling down on double standards	17
Gender roles in welfare	18
The invisibility of care	20
Examining the roots of gendered poverty	21
<b>2. ADMS in welfare systems</b>	<b>24</b>
The managerial welfare state	25
Towards a digital welfare state	26
Putting ADMS in context	27
The gendered challenges of deploying ADMS in digital welfare	29
<b>3. Case studies</b>	<b>34</b>
The two-child limit (UK)	35
Algorithmic profiling of job seekers (Austria)	39
ParentsNext (Australia)	42
Case studies takeaways	45
<b>4. Gender equality principles for the digital welfare state</b>	<b>47</b>
Principle 1: Gender-relevant datasets and statistics	49
Principle 2: Gender mainstreaming in planning	52
Principle 3: Co-design, oversight and feedback	54
Principle 4: Equality by default	57
<b>Conclusion</b>	<b>59</b>
<b>References</b>	<b>62</b>
<b>Acknowledgements</b>	<b>76</b>

# Executive Summary

---

Social protection programmes are going digital. Datafication and profiling are replacing would-be face-to-face interactions with caseworkers. Core decision-making processes, as well as their execution, are being partially or completely delegated to automated procedures, producing automated decision-making systems (ADMS). This solutionist approach to technology has been flagged as extremely dangerous by the former UN Special Rapporteur on Extreme Poverty and Human Rights, Philip Alston. Indeed, the rise of what he labels as “the digital welfare state” has been accompanied by considerable budget cuts, intrusive forms of conditionality, opaque and immutable decision-making processes, and the indiscriminate collection and processing of personal data.<sup>1</sup> Under automated regimes, marginalised welfare claimants are subject to extra scrutiny, warned political scientist Virginia Eubanks in her 2018 book *Automating Inequality*.<sup>2</sup>

While a growing number of researchers, NGOs, journalists and public authorities is looking at human rights in the digital welfare state, little attention has been paid to the gender inequalities ADMS perpetuate. Coinciding with the 25th anniversary of the Beijing Declaration and Platform for Action, this report aims to build a bridge between the debate about welfare and gender on one side, and the social impact of algorithms on the other. The material available about this connection is extremely scarce. But without shining a light on this blind spot, gender inequalities will never be fully understood and thus improved in this new wave of digital welfare policies and systems.

The report is a primer for policymakers seeking to exploit technology’s potential in welfare while promoting gender equality. The underlying premise is that technology is never a benign instrument. Instead, it incorporates biases and ways of functioning that, in the case of welfare, have been entrenched throughout history. The first part of the report demonstrates this by reviewing gendered disadvantages in Western society, which are reflected by welfare systems’ appraisal of women’s roles and needs. The second contextualises ADMS in the evolution and digitalisation of welfare systems, providing an overview of the main gendered challenges they present. The latter are exemplified in three case studies, which show how women are penalised in the already discriminatory roll-out of ADMS in three Western countries. The final section of this report proposes four guiding principles for developing ADMS that promote gender equality.

If accompanied by an understanding of gender inequality mechanisms in both traditional and more recent digital welfare systems, integrating ADMS in welfare can be a revolutionary process. It even has the potential to amend dated assumptions about gender roles and design a social protection system that truly empowers women and leads to a more equitable society for all.

---

<sup>1</sup> Alston 2019

<sup>2</sup> Eubanks 2018

# Glossary

---

## Activation regimes

Programmes and services aimed at promoting the employability and labour-market participation of unemployed and economically inactive people.

## Automated decision-making systems (ADMS)

Algorithmically controlled, automated decision-making systems (ADMS) or decision support systems are procedures in which decisions are initially — partially or completely — delegated to another person or corporate entity, who then in turn use automatically executed decision-making models to perform an action. In keeping with the definition proposed by AlgorithmWatch, this report considers ADMS as socio-technological frameworks that encompass a decision-making model, an algorithm that translates this model into computable code, the data this code uses as an input (either to “learn” from it or to analyse it by applying the model), as well as the entire political and economic environment surrounding its use.<sup>3</sup>

## Biometrics

Metrics related to characteristics of the human body, such as fingerprints or facial images. They are promoted as secure identifiers and means of access to digital services.

## Care

Typical “domestic responsibilities” or tasks performed inside a household to ensure that its members’ basic needs are met, such as cooking, cleaning, and caring for children or other dependents and family members.

## Datafication

The transformation of social actions into quantifiable data, thus enabling real-time tracking and predictive analysis.

## Digital welfare state

Systems of social protection and assistance in countries around the world being increasingly driven by data and digital technologies.

## False positive

In binary classifications, an outcome where the model incorrectly predicts the positive classification. It refers to the reporting of the presence of a condition (e.g. fraud), which is not actually present.

## Freedom of information

Laws or regulations that regulate public access to information held by governments and institutions. Public authorities are compelled to publish information about their activities, and citizens are entitled to request information from them.

## Gender

Roles, behaviours, activities, attributes and opportunities that any society considers appropriate for girls and boys, and women and men. Gender interacts with, but is different from, the binary categories of biological sex.

## Gender-disaggregated data

A dataset in which male and female elements are collected and analysed separately.

## Gender-responsive

Policies or work that not only acknowledges gender issues but elaborates proposals to address them.

---

<sup>3</sup> AlgorithmWatch 2019

## Gender analysis

The study of how genders differ in a given context in terms of their members' relative position in society when it comes to:

- access to resources (income, land, goods, services, credit)
- opportunities (access to education, information)
- constraints (care work, productive work, leisure time)
- power (leadership capacity, participation in public decision-making)

## Gender impact assessment

An analysis of the extent to which (positive, negative or neutral) any policy or activity affects gender equality.

## Gender mainstreaming

The practice of incorporating gender perspectives into policy. It has two components: gender analysis, which captures the status quo, and gender impact assessment, which evaluates the possible effects of a policy.

## Gender statistics

Statistics that reflect gender-related differences and inequalities in all areas of life.

## Means-tested assistance

The eligibility of an individual or family for financial or in-kind support based on the level of their income and earnings.

## Mechanical Turk

An 18<sup>th</sup>-century chess-playing machine designed to create the illusion that it could play chess like an experienced human, despite being operated by a person hidden inside. "The Turk" is often used as metaphor to refer to artificial intelligence that can supposedly think for itself, as well its opaque nature ("black box"). It is also the name Amazon gave to its marketplace where humans perform "micro-tasks" that computers struggle with.

## New Public Management (NPM)

A public services management approach inspired by the private sector. It focuses on budget optimisation, increasing competition (between the private and public sectors, and among third-party providers) and framing citizens as users.

## Patriarchy

The organisation of a society based on the supremacy of men. Historically, it has tended to exclude women, trans and gender-diverse people from power.

## Persona

In user experience design, a fictional character created to represent a person or customer that might use a website, app, service or product.

## Poverty

When a person's or family's (mainly material) resources are insufficient to meet their minimum needs (including social participation).<sup>4</sup>

## Profiling

Use of a person's socio-demographic, attitudinal and behavioural data in order to determine patterns of behaviour.

## Strategic litigation

A legal strategy consciously designed to advance the fulfilment of human rights. Normally it leverages an individual case to create precedent for a larger social group.

## White feminism

A type of feminism that focuses on the struggles of middle-class, educated white women, disregarding forms of discrimination related to ethnicity, sexual orientation and religion.

<sup>4</sup> Bennett and Daly 2014

# Introduction

---



# Reclaiming Beijing amid a global pandemic

Beijing, September 1995. The city is hosting the largest conference ever held by the United Nations and the largest global conference hosted by the Chinese government to date. The topic: women. Namely, advancing equality and enhancing their rights.

The Fourth UN World Conference on Women is attended by 17,000 participants, just over half of the 30,000 taking part in the parallel NGO Forum on Women. The main legacy of the event is the Beijing Declaration and Platform of Action, a document that the UN defines as “the most progressive blueprint ever for advancing women’s rights.”<sup>5</sup> Signed by 189 countries (of which only 8 had a female leader at the time), it is a global framework for promoting equality in every sphere of society.<sup>6</sup> It especially stresses the importance of women’s participation in decision-making processes and their access to power. In the air, the feminist adage “women’s rights are human rights” is palpable. An eponymous speech is given by then-First Lady of the United States, Hillary Rodham Clinton.<sup>7</sup>

2020 marks the 25th anniversary of the Beijing Conference. In March 2020, UN Member States reaffirmed their commitment to its goals: both an acknowledgement of their relevance, and an admission that the road to equality remains long.<sup>8</sup> As of 2014, 143 countries have granted equal rights to men and women in their constitutions.<sup>9</sup> And yet, women have lower wages.<sup>10</sup> They constitute the largest part of world’s poor.<sup>11</sup> They are the sole receivers of invasive contraception drugs and policies.<sup>12</sup> Since 1995, forms of inequality have evolved too. Women are less likely than men to be shown high-salary positions during online job searches.<sup>13</sup> Trans women face discrimination by public administrations.<sup>14</sup> Facial recognition software struggles to detect black women.<sup>15</sup>

The Covid-19 pandemic is revealing gender vulnerabilities across society. In Germany, the “#CoronaElternRechnenAb” campaign prompted mothers from across the country to present invoices for the cost of school and day-care closures to the state; on average, the extra hours dedicated to childcare and teaching are worth an estimated 8,000 EUR per family.<sup>16</sup> It is unlikely that making remote work the default will benefit women’s careers or emancipate them from care roles.<sup>17</sup> The imminent global recession will weaken female presence on a job market that sees women paid less and work more precarious jobs than their male peers.<sup>18</sup> Quarantines also risk increasing the probability of domestic violence. While comparative data are not yet

<sup>5</sup> UN Women 2015

<sup>6</sup> Statista 2020

<sup>7</sup> Clinton 1995

<sup>8</sup> UN 2020

<sup>9</sup> UN 2015

<sup>10</sup> European Commission 2017

<sup>11</sup> World Bank 2018

<sup>12</sup> Donegan 2019

<sup>13</sup> Vincent 2015

<sup>14</sup> Whittle et al. 2007

<sup>15</sup> Buolamwini 2016

<sup>16</sup> Bruehl 2020

<sup>17</sup> Ammerman and Groysberg 2020

<sup>18</sup> ibid.

available, individual countries registered an uptick in reported cases (more than 30 percent in France during the first week of lockdown alone).<sup>19</sup> Comprising 70 percent of healthcare and social workers globally, women are and will remain on the front lines of the fight against the coronavirus.<sup>20</sup>

Early signs indicate that Covid-19 is likely to detract from gender equality, potentially reversing decades of progress in female labour force participation and earnings, especially among mothers. New research shows that women in the UK and US, for example, are more likely to have lost their jobs, been furloughed, or suffered a reduction in earnings than men. A real time study by the universities of Cambridge, Oxford and Zurich found that 16 percent of mothers in the UK have lost or given up paid work entirely compared with 11 percent of fathers.<sup>21</sup> 17 percent of women in the UK found themselves newly unemployed compared to 13 percent of men.<sup>22</sup> In the US, the gap was wider still: 21 percent of women compared to 14 percent of men.<sup>23</sup>

The crisis will also see many women return to the domestic sphere to care for children. Research indicates women are shouldering a disproportionate burden of providing home-based, unpaid childcare due to the closure of schools and nurseries. A recent time use study by the Institute for Fiscal Studies in the UK found that since the covid-19 pandemic and subsequent lockdown, mothers are now doing 50 percent more unpaid childcare than fathers.<sup>24</sup> In families where both parents are working from home, mothers are also interrupted 50 percent more often.<sup>25</sup> If such trends persist, they risk reversing much of the progress made towards women's economic independence and in narrowing the domestic labour and gender wage gap.

Despite these new adversities, this report seeks to renew the endeavours of the Beijing Conference by placing a gender lens on a topic where its absence has real-life consequences: the automation of welfare. The risks of delegating crucial social support decisions to algorithms have only recently entered public discourse. The most authoritative voice in this area is Philip Alston, former UN Special Rapporteur on Extreme Poverty and Human Rights. In a 2019 report on the digital welfare state, Alston declares that nations worldwide are “stumbling zombie-like into a digital welfare dystopia,” where technologies like facial recognition and automation surveil and punish the poorest parts of the population.<sup>26</sup> That same year, AlgorithmWatch issued a seminal report on the deployment of automated decision-making systems in European public administrations.<sup>27</sup> This report uses the AlgorithmWatch definition of automated decision-making systems as opposed to generic terms such as “AI” or “algorithms”:

**“Algorithmically controlled, automated decision-making or decision support systems are procedures in which decisions are initially — partially or completely — delegated to another person or corporate entity, who then in turn use automatically executed decision-making models to perform an action. This delegation — not of the decision itself, but of the execution — to a data-driven, algorithmically controlled system, is what needs our attention.”<sup>28</sup>**

<sup>19</sup> Euronews 2020

<sup>20</sup> UN Women 2020

<sup>21</sup> Adams-Prassl et al. 2020

<sup>22</sup> *ibid.*

<sup>23</sup> *ibid.*

<sup>24</sup> Andrews et al. 2020

<sup>25</sup> *ibid.*

<sup>26</sup> Alston 2019

<sup>27</sup> AlgorithmWatch 2019

<sup>28</sup> *ibid.*

## Why welfare should integrate intersectional feminism

Women are by no means a homogenous group. They experience multiple forms of discrimination, including age; place of birth or residence; race and ethnicity; religion; economic or social status; disability; and sexual orientation.<sup>29</sup> When referring to “women”, this report implies the female gender as recognised by welfare services, acknowledging that welfare systems do not always account for trans or gender-diverse persons, nor for lesbians, whose biological female sex does not automatically grant them the same rights as heterosexual women.<sup>30</sup> This report also recognises the multiplicity of the female condition and experience, as well as the critique of “white feminism” (feminism accused of fighting only for the struggles of white Western middle-class women). It also reviews existing work at the intersection of algorithms and women’s rights, bridging it with traditional welfare and gender studies. The perspective adopted is the one of intersectional feminism.

### What does “intersectional” mean?

The term “intersectionality” was coined in 1989 by legal theorist Kimberlé Crenshaw who, as a law student, came across the case of Emma DeGraffenreid, an African-American woman who sued General Motors for not hiring her on the basis of race and gender discrimination.<sup>31</sup> DeGraffenreid’s claim was dismissed because the company had a history of hiring both women and black people, but not black women. Intersectional social identities like hers were invisible to the law. As Crenshaw states in her 2016 TED Talk: “when there’s no name for a problem, you can’t solve it.”<sup>32</sup> Intersectionality assumes that the intersecting aspects of a person’s identity are paralleled by intersecting forms of power and oppression. Crenshaw’s concept was key in the inclusion of non-white and non-heterosexual women in feminist discourse.

Intersectional feminism is an incredibly powerful tool that can reveal inequalities embedded in the current golden era of artificial intelligence. Algorithms operate based on binary, deterministic worldviews made of “big data” and result in derivative, self-fulfilling prophecies.<sup>33</sup> Intersectional feminism is a prism that allows us to see through this supposedly rational surface, and to instead systematically consider the differences and nuances of the social systems it reflects. Historically, computer science evolved from the prerogative of women in the 1950s to a field largely dominated and informed by men. One need only look at the disproportionate number of male computer science students, or at the resulting majority of male professionals, academics, and decision-makers in the field.<sup>34</sup>

For consistency and relevance, we focus on Western welfare systems. Early 2020 saw

<sup>29</sup> UN High Commissioner for Human Rights 2017

<sup>30</sup> Le Monde 2020

<sup>31</sup> Crenshaw 1989

<sup>32</sup> Crenshaw 2016

<sup>33</sup> Finn 2017

<sup>34</sup> Varley 2019

a historic ruling handed down in the Netherlands: The Court of The Hague ordered the immediate halt of System Risk Indication (SyRI), an automated system designed by the Dutch state to detect benefit fraud. Since 2014, SyRI had been gathering anonymised data from various public services (taxes, fines, housing, education...) and flagging individuals as potential frauds. This was followed by an investigation of each flagged citizen. Prosecuted by a coalition of Dutch NGOs and public figures, SyRI was eventually deemed illegal for not respecting citizens' privacy and violating the European Convention on Human Rights (ECHR).<sup>35</sup> The SyRI case is not without precedent; the hypothetical impartiality and fairness of ADMS had already been questioned in the COMPAS case in the United States,<sup>36</sup> or by academics questioning automated student selection processes.<sup>37</sup>

A similar case in the UK affected lone parents claiming welfare benefits and tax credits (a majority of whom are women). The UK tax authority, HMRC, outsourced its tax credit fraud detection service to a US owned company called Concentrix. In a controversial data matching exercise, Concentrix wrote to claimants asking for information to demonstrate that they were entitled to receive the benefit. 324,000 people were contacted, most of them lone parents suspected of "cohabiting" fraud where they failed to disclose the presence of a partner.<sup>38</sup> Claimants had 30 days to provide information to prove they were not cohabiting, or they would lose their entitlement. Those who did not reply had their tax credits stopped. Most of these automated decisions were challenged and later overturned but not without considerable effort and stress on the part of affected claimants, a majority of whom were women.<sup>39</sup> Following a damning enquiry, Concentrix lost its government contract, but the wider implications in terms of the risks posed by ADMS and the use of private contractors for delivering social protection programmes received very little coverage or discussion in parliament or the media.<sup>40</sup>

### **What can public servants learn from the SyRI case?**

A first of its kind, the SyRI case serves as a cautionary tale for public administrations looking into embed ADMS in their workflow. Firstly, it demonstrates the importance of transparency when applying ADMS in public services. SyRI's algorithmic risk model remained secret even during the court case; this lack of transparency proved to damage the accountability and credibility of both the system and the state. Announcing the verdict, the judge declared "the court cannot test the veracity of the state's position on what SyRI is exactly." By obscuring the very function of SyRI, the government put itself in a questionable position towards the citizens it supposedly serves.

The SyRI ruling made history because it was the first time the use of ADMS by a public authority was questioned on the grounds of human rights,<sup>41</sup> resulting in an instructive example of strategic litigation. SyRI was judged to have violated Article 8

<sup>35</sup> Vervloesem 2020

<sup>36</sup> Angwin 2016

<sup>37</sup> Salem and Gupta 2020

<sup>38</sup> House of Commons Work and Pensions Committee 2016

<sup>39</sup> *ibid.*

<sup>40</sup> *ibid.*

<sup>41</sup> Blauwn 2020

authority was questioned on the grounds of human rights,<sup>41</sup> resulting in an instructive example of strategic litigation. SyRI was judged to have violated Article 8 of the European Convention on Human Rights: the right to privacy. Article 8 indicates that it may be acceptable for public authorities to interfere with privacy rights in certain circumstances, namely in the pursuit of social interest. Nonetheless, the court disagreed with the state's claim that SyRI advanced its mission of preventing fraud while respecting privacy: SyRI did not strike the 'fair balance' required under the ECHR between the social interest and the violation of private life. The government failed to demonstrate sufficient privacy safeguards, and the whole mechanism proved too opaque. For instance, municipalities had no obligation to inform citizens that they were being investigated.

What could have prevented the shutdown of SyRI? Preceding the implementation of the system with an impact assessment based on human rights principles, paired with mechanisms to unpack and examine so-called "black box" or appeal decisions, may well have prevented its demise. Furthermore, given the central role of personal data, a review of the European Global Data Protection Regulation (GDPR) is essential. Although the ruling focused on the ECHR violation, the GDPR has precise indications about ADMS: namely, Article 22 bans fully automated individual decision-making, including profiling. Such preliminary assessment could have been the source of documentation to prove the ADMS was being deployed in the public interest.

The importance of the planning phase is highlighted by another flaw of the system: the lack of an overall strategy across the governmental agencies involved, not only for privacy, but also for data management:

**"There was an indiscriminate linking of different types of data, across siloed departments. Each organisation did a private data use assessment, but there was not an overall assessment of the system. There is no evidence that the goal of preventing fraud needed the connection of all those data across services."**

**- Ronan Fahy and Naomi Appelman, University of Amsterdam**

Finally, a Freedom of Information request proved that SyRI has been mainly used in low-income neighbourhoods. This intentional form of discrimination undermined the claim of using ADMS for efficiency and objectivity. In a letter to the Dutch Court, Philip Alston underscored how focusing fraud detection efforts on people in poverty is a form of victimisation and discrimination.<sup>42</sup>

---

<sup>42</sup> Alston 2019

On 23 April 2020, the Secretary of State for Social Affairs and Employment informed the Dutch Parliament that he would not appeal against the ruling.<sup>43</sup> While reiterating that combating fraud is essential for the preservation of the social security system, he promised to further explore risk models and privacy guarantees with other parties and experts, and to assess the bottlenecks experienced so far in SyRI with all the government agencies involved.

---

<sup>43</sup> van Ark 2020

<sup>44</sup> For general recommendations about ADMS in public services, see the Digital Future Society report entitled *Where emerging tech meets government: Automated decision-making systems and distributed ledger technologies in public innovation*.

## Addressing systemic inequalities

Despite the growing scrutiny of ADMS applications in the public sector, little has been said about their gender impact. Looking at automated welfare through a gender lens can contribute to making these systems equal and lawful not only for women, but for all those social groups that make up the bulk of beneficiaries because they suffer from intersecting forms of discrimination.

Our journey into the gender challenges of the Western welfare state starts with a review of gender's place in the history of welfare, and how that was shaped by gendered social roles. Welfare services rarely considered the daily realities of women beneficiaries in their design. Correcting for this oversight is no easy fix; the feminisation of poverty is a complex phenomenon that cannot be solved with “plug-and-play” techno-solutionist measures. The second part of the report explores the digitalisation of the public sector, contextualising ADMS as social constructs that reflect the evolution of the welfare state. A presentation of the main gendered challenges of ADMS in welfare is followed by three case studies emblematic of gender inequalities generated by ADMS. The report concludes with four gender equality principles for the digital welfare state.<sup>44</sup>

This report is the first of two exploring the interplay of gender equality, ADMS, and digital welfare. While the second focuses on designing gender-responsive ADMS, the objective of this first report is to provide the framework for doing so, and to investigate how the digitalisation of essential public services can be an opportunity for women's inclusion and empowerment instead of a threat. This cannot be achieved with an overly strong focus on technology. The implementation of ADMS in welfare follows centuries of socio-economic constructs that made welfare what it is today. ADMS merely reproduces the mental models that rule traditional systems. For this reason, steering the implementation of these systems towards gender equality must be done in full acknowledgement of broader contexts. As the AI Now Institute puts it:<sup>45</sup>

**...policymakers have a hard time determining what the optimal outputs should be, so they look to technical solutions that allow them to avoid these difficult policy decisions. (...) Developing a broader advocacy strategy that integrates concerns over algorithms with broader social, economic, and political concerns, such as the fact that agencies are underfunded and understaffed, teachers are underpaid, and low-income communities and communities of colour are overpoliced. How do we make sure we are addressing the systemic and structural concerns in these areas, and not just tinkering with the algorithmic systems at the margins?**

---

<sup>45</sup> AI Now Institute 2019



# **Gender inequalities in welfare systems**

---



## Disadvantage by design?

Welfare systems are both a historical and social construct. While the European welfare state as we know it today was forged out of various goals and ideals such as equality, social citizenship, full employment, fighting poverty, and supporting citizens “from the cradle to the grave”,<sup>46</sup> it also contains built-in biases. If ADMS are equated to agnostic procedures capable of immediately producing “fairness”, existing inequalities are likely to be reinforced.

Any attempt to automate or combine human and algorithmic work must first recognise the inequalities that have been woven into welfare systems over time. Equipped with this understanding, the design and implementation of ADMS can serve as an opportunity to advance social justice. This chapter reviews the main forms of gender inequality as they manifest in welfare systems according to the role and agency historically assigned to women. We identify three main points of reflection: the double standards applied to women in the public sphere (which are reflected in how social protection reinforces gender roles), the invisibility of care work, and the feminisation of poverty.

## Doubling down on double standards

Despite the growing awareness about diversity, many everyday objects are modelled on the needs and size of the average man. The book *Invisible Women: Exposing Data Bias in a World Designed for Men* by Caroline Criado-Perez identifies numerous examples:<sup>47</sup> office temperatures overestimate female metabolic rates by as much as 35 percent, making the average workplace five degrees too cold for women;<sup>48</sup> “standard” protective masks designed for male faces don’t fit women;<sup>49</sup> Google speech recognition software is 70 percent more likely to recognise male voices.<sup>50</sup>

Historically, the male gender has been in a position of power and visibility. Within the social contract, this translated to a higher degree of citizenship. For example, the 1804 Napoleonic Code institutionalised the legal incapacity of married women, as well as the norm that the head of the family, the husband or father, determined the nationality of the family group.<sup>51</sup> The equality of men and women in terms of nationality was enshrined by a UN convention over 150 years later, in 1957.<sup>52</sup> Although the history of universal suffrage dates back to the end of the 18<sup>th</sup> century, it always came with strings attached, such as lineage, income, or marriage. For the full right to vote, and being elected, women in most countries would need to wait until after World War II.

---

<sup>46</sup> Whiteside 2014

<sup>47</sup> Criado-Perez 2019

<sup>48</sup> Kingma and van Marken Lichtenbelt 2015

<sup>49</sup> TUC 2017

<sup>50</sup> Tatman 2016

<sup>51</sup> Encyclopédie d’histoire numérique de l’Europe n.d.

<sup>52</sup> *ibid.*

The 1942 Beveridge Plan for the British welfare system made history not only for its ambitious vision of social equality, but also for preparing the ground for the elimination of invasive means test procedures. Public support for the Plan was not unanimous, however. Elizabeth Abbott and Katherine Bompas of the Women's Freedom League defined the Beveridge Plan as "a man's plan for man."<sup>53</sup> Its denial of the equal status of women workers, and distinction between married and unmarried women, made it immediately clear to Beveridge's feminist contemporaries that double standards were being applied in the name of equality.<sup>54</sup>

The idea that a woman cannot exist independently from her male partner or family within law and society is a legacy deeply entrenched in Western welfare systems. It mirrors the society in which the modern welfare state was born: a highly patriarchal one, based on the family, and with a strict separation of the public and private realms. This distinction is also what shaped the notion of privacy. The UK charity Privacy International deconstructs the history of privacy through a gender lens, highlighting how the legal discourse around the right to privacy was promoted by men seeking to protect their homes and property, creating impunity for the violence perpetrated against women and children inside them.<sup>55</sup> Privacy rights — extremely important in the welfare state automation process — are gendered. Feminist scholars like Lindsay Weinberg underline how privacy debates often assume individual subjects are "free, self-possessed, and equally able to enter into contracts", an assumption that does not account for the historical exclusion of women from the category of the individual.<sup>56</sup> Professor Khiara M. Bridges digs into how the privacy of poor mothers has historically been overruled by welfare services in the US because of their lack of familial, informational, and reproductive privacy rights in the first place.<sup>57</sup>

## Gender roles in welfare

The (male) "breadwinner" model has been the foundation of most welfare systems.<sup>58</sup> It echoes a heterosexual, marriage-based vision of the family and of society.<sup>59</sup> Until the late 20<sup>th</sup> century, the subordination of women was considered vital for social reproduction.<sup>60</sup> Over time, gender roles have been assigned differently according to the contribution of each to the family income and care over time.

---

<sup>53</sup> Abbott and Bompas 1943

<sup>54</sup> *ibid.*

<sup>55</sup> Privacy International 2018

<sup>56</sup> Weinberg 2017

<sup>57</sup> Bridges 2017

<sup>58</sup> International Encyclopaedia of Social Policy n.d.

<sup>59</sup> Carter 1998

<sup>60</sup> Bakker 2017

Most gender-based arrangements of labour and care within welfare systems can be grouped into four categories:<sup>61</sup>

**1**

Male breadwinner/female caregiver: the classic, paternalistic welfare approach.

**2**

Male breadwinner/female part-time worker: also known as the Adult Worker Model, this approach can be described as “maternalistic” welfare. As more women enter the workforce, they are framed not only as mothers and carers, but also as workers. While this model acknowledges women’s employability and right to work, it fails to account for the burden of traditional tasks.

**3**

Dual earner: care and domestic work are outsourced (often to other women). This model relies on a false gender symmetry; it takes for granted that decent jobs are equally accessible to both men and women. Moreover, it ties care work to children, without accounting for care of the elderly or disabled.

**4**

Dual earner/dual carer: the most balanced and modern model, it assumes that both members of the couple work and provide care, with an ideal distribution of  $\frac{3}{4}$  work and  $\frac{1}{4}$  care. This configuration acknowledges that the sharing of care activities between men and women is a tool for achieving gender equality.

The four models show how traditional welfare systems are imbued with a tremendous social and economic underestimation of female labour, as well as of female care. The two, and their relationship, are fundamental in creating fairer models. Welfare experts agree on three main instruments of work-life balance:<sup>62</sup>

- Family: Subsidies (payment of caring time)
- Services (especially for childcare)
- Work time policies (flexible working hours, remote working, time reduction, job sharing).

---

<sup>61</sup> Gaiaschi 2014

<sup>62</sup> *ibid.*

## The invisibility of care

All societies give and receive care, to some degree: we are born as defenceless children, and typically spend the winter of our lives in a vulnerable state. Dependency on others is a human trait. Nonetheless, in most societies, care is both a source of injustice and a highly gendered responsibility.<sup>63</sup> The social and economic value of care hidden behind domestic walls has long been absent from public debate. Yet domestic labour accounts for 81.8 percent of unpaid care work, followed by direct personal care (13 percent).<sup>64</sup> The International Labour Organisation (ILO) states that unpaid care is “considered as work and is thus a crucial dimension of the world of work.”<sup>65</sup> The burden of this unpaid form of work falls — even today — mostly on women:

**Across the world, without exception, women perform three-quarters of unpaid care work, or 76.2 percent of the total of hours provided. In no country in the world do men and women provide an equal share of unpaid care work. Women dedicate on average 3.2 times more time than men to unpaid care work: 4 hours and 25 minutes per day, against 1 hour and 23 minutes for men.<sup>66</sup>**

Framing care work as “proper work” can help advance our understanding of the staggering inequality built into social systems. The unpaid labour of women is worth trillions.<sup>67</sup> Estimates based on time-use survey data in 64 countries (representing 66.9 percent of the world’s working-age population) show that 16.4 billion hours are spent in unpaid care work every day. Valuing such services at a minimum wage, “they would amount to 9 percent of global GDP, which corresponds to 11 trillion USD (purchasing power parity 2011).”<sup>68</sup>

The intersection of labour and care must also be viewed through a poverty lens. Across regions and income groups, when both work for pay or profit and unpaid care work are counted together, the working day is on average longer for women (7 hours and 28 minutes) than it is for men (6 hours and 44 minutes), despite significant country differences.<sup>69</sup> This makes women consistently time-poorer than men, even after adjusting for hours of employment.<sup>70</sup>

Welfare experts see the solution in the encouragement of flexible gender roles in every social dimension of society (at school, at work, in public services), coupled with strong parental leave policies for men. Leave periods for carers for disabled or elderly people can also reduce the perception of care as a strictly child-related matter.

---

<sup>63</sup> Nussbaum 2003

<sup>64</sup> Addati et al. 2018

<sup>65</sup> *ibid.*

<sup>66</sup> *ibid.*

<sup>67</sup> Wezerek and Ghodsee 2020

<sup>68</sup> Addati et al. 2018

<sup>69</sup> *ibid.*

<sup>70</sup> *ibid.*

## Examining the roots of gendered poverty



Figure 1: The many faces of gendered poverty in the EU. Image source: Digital Future Society. Data source: UN 2015; European Institute for Gender Equality 2017; European Commission 2017; Eurostat 2019.

In the European Union, women are statistically more likely than men to be:

- Poorer (women and girls represent 53 percent of people living in poor households; the share of women among the older poor is 64 percent)<sup>71</sup>
- Unpaid carers (76.2 percent of the hours provided)
- Precarious workers (27 percent vs 15 percent of men)<sup>72</sup>

<sup>71</sup> UN 2015

<sup>72</sup> European Institute for Gender Equality 2017

- Low-earning (gender pay gap of 16 percent)<sup>73</sup> and thus accumulate smaller pensions
- Longer-living (life expectancy is on average 5 years longer)<sup>74</sup>

The gender analysis of poverty is not so much about whether women suffer more poverty than men, but rather about how gender influences the social processes leading to poverty, as well as the escape routes out of destitution.<sup>75</sup>

Lower employment rate; lower individual income (prevalence of part-time and irregular work; greater reliance on social security payments, gender pay gap; less valued positions); higher engagement as unpaid carers (of children, elderly, disabled); lack of access to housing, property and gender-relevant healthcare. The common denominator of these factors is poverty. They show how poverty is gendered.

The term “feminisation of poverty” was coined in 1978 by Diana Pearce, who studied the situations of divorced and single women in the US.<sup>76</sup> The factors exposing more women to poverty than men are structural and rooted in how societies function. Disadvantages are seeded within the education system and reinforced by the labour market. They even reappear in the later stages of life, when, coupled with female longevity, they increase a woman’s probability of spending her elderly years alone on a low pension.<sup>77</sup>

In the EU, the risk of poverty is increased for certain groups of women, such as lone mothers, elderly women (65 years and older), women members of other disadvantaged groups (such as immigrants, ethnic minorities and the disabled) as well as the long-term unemployed. Motherhood has an especially strong impact on employment and income.<sup>78</sup> According to the European Community of Practice on Gender Mainstreaming (Gender-CoP), motherhood is negatively correlated with employment rate in most EU Member States; the “difference between the employment rates for women with and without children under 12 was greater than 10 percentage points.”<sup>79</sup>

The gendered nature of poverty can therefore be found in practices and relationships associated with:<sup>80</sup>

- Family: unfair or unequal distribution of resources and burden(s) of care
- Labour: barriers precluding access to education and skills; quality of transport and childcare
- Social protection: women often gain entitlement to benefits and pensions through their partners

---

<sup>73</sup> European Commission 2017

<sup>74</sup> Eurostat 2019

<sup>75</sup> Razavi 1998

<sup>76</sup> Pearce 1978

<sup>77</sup> European Institute for Gender Equality 2016

<sup>78</sup> Harkness 2016

<sup>79</sup> European Standard on Gender Mainstreaming in the ESF 2014

<sup>80</sup> Bennett and Daly 2014

## Gendered poverty conceptual framework and indicators (Bennett and Daly 2014)

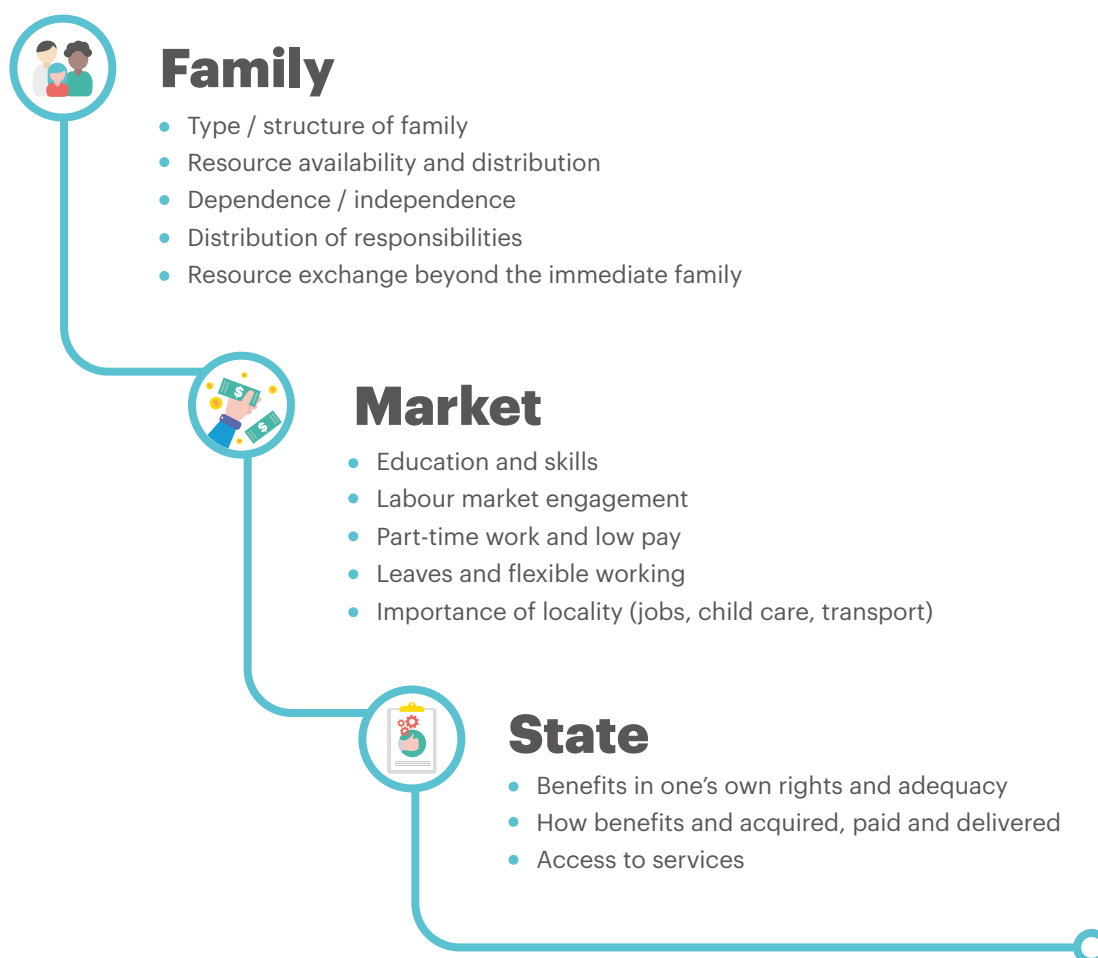


Figure 2: A conceptual framework for gendered poverty with indicators.  
Image source: Digital Future Society. Data source: Bennett and Daly 2014.

Tackling the perpetuation of gendered poverty requires access to an adequate independent income over a person's lifetime, as well as a fairer division of care tasks and associated costs.

# 2

## **ADMS in welfare systems**

---



This section looks at the welfare digitalisation process and seeks to contribute to the digital welfare debate by identifying critical opportunities for gender equality in ADMS.

## The managerial welfare state

In Europe, the use of ADMS in welfare systems followed a gradual shift from welfare (providing support to citizens who meet certain criteria, because it is their right) to workfare (conditioning benefits with specific activation and conditionality requirements), which had taken place over the last 30 years.<sup>81</sup> Economic austerity and rising unemployment led to the entrepreneurial management of welfare, also called New Public Management (NPM). Here the state is framed as a service provider and citizens are users. Key to NPM-style welfare are activation regimes: ways of making sure that each claimant improves her economic and social position. Activation regimes put a great deal of pressure on the welfare claimant, making her responsible for her situation and its improvement, without addressing the socioeconomic conditions that influenced her need for state help.<sup>82</sup> The Women's Budget Group found that women are more likely to experience austerity precisely because of their restricted income. Moreover, their earnings are made in greater proportion than men by benefits and tax credits, that they receive not only because of their own situation, but also on behalf of the people they provide care for.<sup>83</sup>

## Towards a digital welfare state

The digitalisation of social protection programmes followed the expansion of the internet<sup>84</sup> and can be traced back to e-health programmes in the 1990s.<sup>85</sup> Since then, it has focused on two aspects: organising information and streamlining eligibility and access procedures. Data collected through public services have been moved from unnavigable subterranean paper archives to digital databases. Smart cards, biometric systems, and digital national ID systems became simulacra of citizens' social rights: unique and personalised gateways to access public services. 30 years on, both forms of digitalisation continue to pose challenges for policymakers and citizens alike.

Institutions' databases are confronted with geopolitical threats, such as cyberattacks, data breaches,<sup>86</sup> and complicated by questions of data sovereignty<sup>87</sup> and cloud hosting governance.<sup>88</sup> On the organisational side, NPM policies have siloed work between agencies and third parties, generating a lack of coordinated management, as we saw in the SyRI case.<sup>89</sup> When interfacing with beneficiaries, a lack of transparency on personal data management, as well as incomplete information creates concerns about privacy and personal data monetisation from citizens and the third sector.<sup>90</sup>

---

<sup>81</sup> Deeming 2015

<sup>82</sup> Allhutter et al. 2020

<sup>83</sup> Bennett 2015

<sup>84</sup> Privacy International 2019

<sup>85</sup> Della Mea 2001

<sup>86</sup> Pritchard 2020

<sup>87</sup> Eddington 2019

<sup>88</sup> Irion 2012

<sup>89</sup> OECD 2016

<sup>90</sup> Cox 2019

Digital interfaces and devices to access social protection are a ticking time bomb for rampant inequalities. First, their design and deployment tend to overlook the digital gap experienced by the low-income sets of population they address. For instance, a faulty internet connection could cause delays or defaults in beneficiaries' obligations to the state; or they may lack the context or literacy to consent to or oppose a privacy-sensitive process. Being the largest part of the population affected by the digital divide, women are at higher risk of being discriminated by the digital novelties introduced in welfare.

Secondly, a growing number of digital procedures is normalising the collection of biometric data,<sup>91</sup> paving the way for what whistle-blower, Edward Snowden, recently dubbed as an "architecture of oppression."<sup>92</sup> The increased capacity of the state to track and identify individuals is not only a threat to freedom of expression and assembly, but it is also likely to impact sets of population which are already exposed to abuse and policing. Among them, women also suffer from the discrimination of silence: as demonstrated by the Say Her Name movement in the US, black women killed by the police did not make the headlines as much as their male counterparts.<sup>93</sup>

By way of example, if biometrics can identify and support refugees who no longer possess identification documents, they can also expose them to unjust treatment<sup>94</sup> and discriminatory surveillance.<sup>95</sup> In a recent letter to the Irish government, Philip Alston expressed concern for how the Public Services Card (PSC) — designed to improve access to welfare benefits and digital government services — constitutes a biometric ID database and adds bureaucratic obstacles for the most marginalised parts of the population.<sup>96</sup>

Public servants are challenged to leverage digital technologies to rethink and modernise the sector. For an effective digital transformation, existing procedures must be questioned profoundly. According to the Organisation for the Economic Co-operation and Development (OECD), this means moving from government-centric services "to environments in which citizens and businesses determine their own needs and address them in partnership with governments (people or citizen-driven approaches)."<sup>97</sup> If technology is not taken as an opportunity to reorient our social systems towards equality, it will only end up entrenching historical disadvantages and even creating new ones.

---

<sup>91</sup> Snijder 2016

<sup>92</sup> Dowd 2020

<sup>93</sup> The African American Policy Forum 2015

<sup>94</sup> Thomas 2018

<sup>95</sup> Ball and Hopkins 2013

<sup>96</sup> OHCHR 2020

<sup>97</sup> OECD 2016

## Putting ADMS in context

From the perspective of governments, ADMS are innovative tools that can bolster welfare systems with shrinking budgets while supporting a growing number of citizens. Policymakers perceive automation as an enabler for procedural and economic efficiency. It can help make sense of vast amounts of data at a faster rate than the human brain, and with fewer human resources. For these reasons, public servants look to ADMS with high expectations, including but not limited to more efficient and consistent decision-making processes; better management of complex, data-rich systems; increased fairness through the elimination of human bias, and reduced human labour costs through optimised or automated administrative processes.<sup>98</sup>

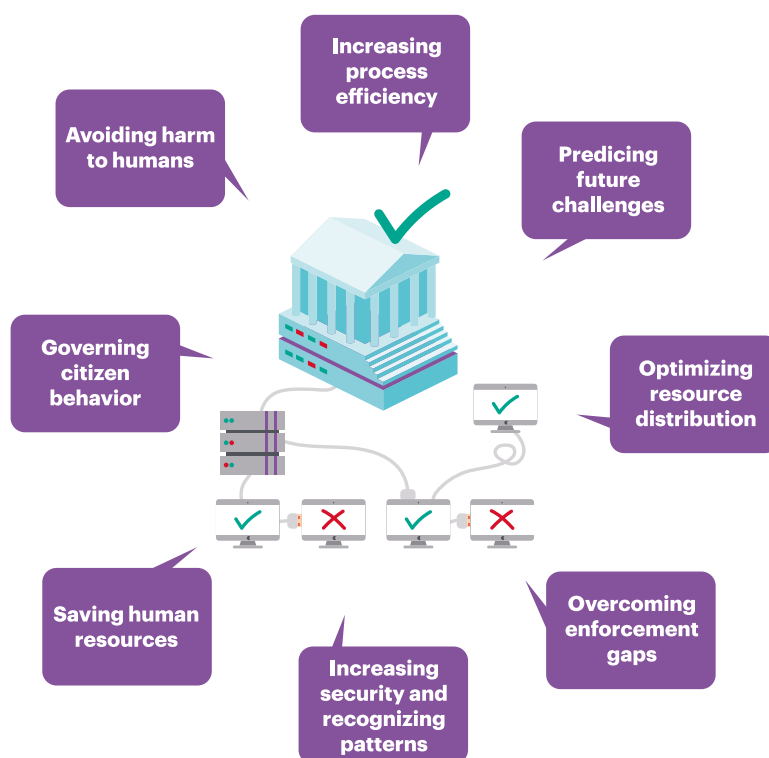


Figure 3: Goals for the use of ADMS in the public sector. Image source: Digital Future Society

Integrating ADMS in the welfare workflow requires the recruitment of profiles that are not typically found in the public sector, such as data scientists or data analysts, but also non-technological profiles such as interface or experience designers. The Observatory of Public Sector Innovation underlines how digital transformation requires such hires to integrate digital tools and methods not only in strategies, but also in daily operations.<sup>99</sup> A widely used shortcut is the outsourcing of digitalisation, at least for what concerns the development of these tools.

<sup>98</sup> Digital Future Society 2019

<sup>99</sup> Observatory of Public Sector Innovation n.d.

Contracting external providers can add to the opacity of ADMS applications in government beyond the technology itself. In 2018, for example, the Australian National Audit Office Report pointed out several irregularities in the tendering process and contract management of Indue Ltd., the private company in charge of designing, building and operationalising the Cashless Debit Card.<sup>100</sup> According to the report, “the department did not document a value for money assessment for the card provider’s IT build tender or assess all evaluators’ tenders completely and consistently.”<sup>101</sup>

When justifying the switch to ADMS on the grounds of cost savings, public administrations can fall into a conundrum, since they are not always able to justify the costs of the initial ADMS deployment. Initial design and development costs tend to be overlooked. This happened in Australia, but also in the UK roll-out of Universal Credit. While UC was debated in 2010 and piloted in 2013, it was not until 2018 that a business case with a value for money assessment emerged.

Whether we look at their place in the evolution of welfare, or who builds ADMS and how, or at cost analyses, we see how ADMS are also social constructs, much like gender roles and welfare itself. Any critical review must address them as such. ADMS encompass not only computable code and data inputs, but also “the entire political and economic environment surrounding [their] use.”<sup>102</sup>

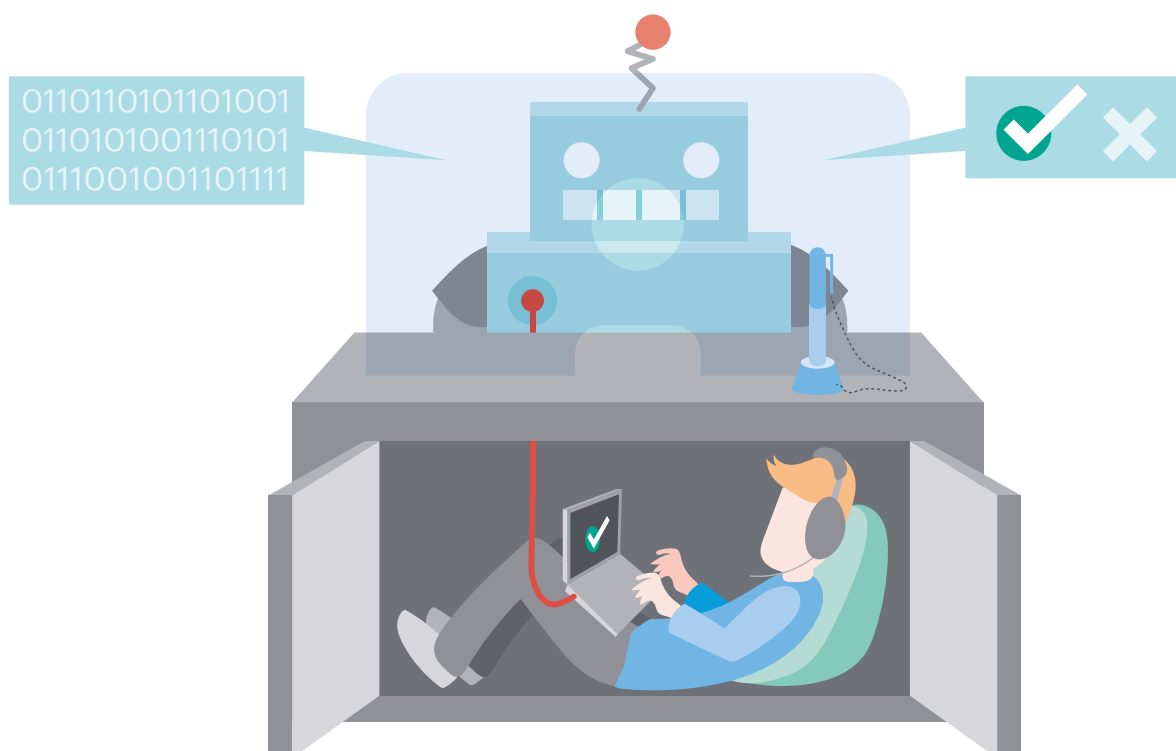


Figure 4: ADMS in welfare: beware the Mechanical Turk. Image source: Digital Future Society

<sup>100</sup> Australian National Audit Office 2018

<sup>101</sup> Uniting Communities 2019

<sup>102</sup> AlgorithmWatch 2019

## The gendered challenges of deploying ADMS in digital welfare

Having sketched the context and conditions for implementing ADMS in welfare — including the historical background, expectations, goals, procurement logic and costs justification — we now turn briefly to the technology.

ADMS are not simply the digital version of a paper form, or an online replica of a bureaucratic procedure. They perform automated administrative processes, which are either automatically translated into actions (e.g. suspending a payment) or used to support human decision-making.

When applied to welfare, ADMS can affect the rights of citizens and poor and vulnerable people who need state support to build a decent life. These systems can produce life-altering outcomes that no human decision maker would make lightly: taking claimants to court for fraud; suspending benefit payments when claimants have no other source of income; evicting claimants from public housing; validating a warrant to take away their children... the list goes on. So why should ADMS take such a decision based on purely quantitative (and often biased) data?

Detailed accounts of ADMS biases and pitfalls can be found in the reports of Alston, AI Now and AlgorithmWatch. This section focuses on three components of ADMS that are particularly relevant for the delivery of equitable welfare services to women: datasets, decision-making models, and design.



### Datasets

- Lack of gendered datasets
- Under-exploitation of qualitative data
- Gender bias in data



### Decision-making model

- Determinist approach to prediction
- Weight of gender variables
- Lack of gender impact assessment



### Design

- Lack of co-design
- Gendered barriers in participation
- Men as default recipient

Figure 5: ADMS in welfare: critical areas for gender equality. Image source: Digital Future Society

## Datasets

### Lack of gendered datasets

Key datasets are lacking.<sup>103</sup> Without gendered datasets, the possibility to serve female citizens is substantially undermined; as Crenshaw and Criado-Perez teach us, they become “invisible.” For example, not until January 2020 did the US government obtain standardised maternal mortality data from all 50 states, which enabled federal policymakers to better understand and legislate to protect women against the phenomenon.<sup>104</sup> Such datasets not only offer an objective report of the number of deaths, but they also capture inequalities, such as the fact that black women die 2.5 times more often than white women. Data on the mortality of black mothers allows for the creation of targeted initiatives that can serve them better, like correcting the implicit bias of doctors.<sup>105</sup>

### Under-exploitation of qualitative data

Datasets mainly consist of quantitative data that fail to capture the complexity of the reasons leading a person to apply for and having to rely on welfare payments. The AI Now Institute reports how public benefit assessments rely too heavily on quantitative data such as “financial costs and number of hours of care, and failed to take into account more qualitative information, such as the benefits of remaining at home and of being integrated into one’s community, which serve both the patient and save the state money in the long term.”<sup>106</sup> Qualitative information can better capture the nuances of underreported gendered experiences such as domestic violence, and consequently help shape better services. As we will see in the first case study, there are multiple reasons why such experiences and their impacts do not lend themselves well to quantification, and thus should not be treated as a conclusive mathematical variable.

Secondly, by relying heavily on statistical data, welfare systems and activation regimes tend to isolate and depersonalise claimants. Decisions about individuals are derived from inferences about the social group they are categorised in, regardless of their personal history.

### Gender bias in data

The optimistic perception of ADMS efficiency is in large part based on the idea that data is neutral. When gendered datasets exist, it is important to understand how gender is portrayed. It is widely accepted that biased datasets produce biased predictions. For example, datasets used to train image recognition in machine learning models exhibit a stereotyped vision of women. Researchers found that an image search for the activity “cooking” is over 33 percent more likely to involve females than males in datasets designed to train machine learning models. A trained model can further amplify this disparity to 68 percent.<sup>107</sup>

---

<sup>103</sup> Digital Future Society 2019

<sup>104</sup> Hoyert et al. 2020

<sup>105</sup> Chuck 2018

<sup>106</sup> AI Now Institute 2019

<sup>107</sup> Zhao et al. 2017

## Decision-making models

### Deterministic approach to predictions

Another common belief from the current mythology of algorithms is that they can make far more accurate predictions than a basic statistical analysis performed by humans. A recent study by Princeton University researchers called The Fragile Families Challenge questions this assumption.<sup>108</sup> Hundreds of researchers were asked to predict six life outcomes for parents, children, and households using more than 13,000 data points about over 4,000 families. The authors found that none of the researchers, regardless of the tool used, could make an accurate prediction. Predicting and thus reinforcing gendered disadvantage is not a desirable outcome. The study authors recommend that policymakers determine “whether the achievable level of predictive accuracy is appropriate for the setting where the predictions will be used, whether complex models are more accurate than simple models or domain experts in their setting.”<sup>109</sup>

### Weighting gender variables

Algorithms follow a decision-making model that is established by humans. Human decisions precede and inform automation. Even though a dataset might have gender data, considering gender as a relevant variable, or giving it a certain weight when predicting future behaviour, are human decisions. A 2016 ProPublica investigation into COMPAS, a system designed to predict felon recidivism that was found to have a high negative bias against black people, is well-known. Less known is that journalists also found out that female offenders, despite lower levels of criminality, were 19.4 percent more likely to get a higher score than men. A high-risk score for women was equivalent to a medium risk for men, but the two were treated “equally.”<sup>110</sup>

### Lack of continuous gender impact assessment

Without an informed opinion on how certain interventions and decisions will affect women specifically, it is hard to assess how well a policy is performing. Both researchers and activists note a general lack of impact indicators in ADMS deployment. In 2011, for example, an equality impact assessment of the UK’s Universal Credit was conducted but has never been updated despite government commitments to do so and significant design and policy changes enacted since this time.<sup>111</sup>

---

<sup>108</sup> Hao 2020

<sup>109</sup> *ibid.*

<sup>110</sup> D’Ignazio 2020

<sup>111</sup> Department of Work and Pensions 2011

## Faulty system design

### Lack of co-design

Public services targeting women are not necessarily designed with their involvement, which can contribute to a negative user experience. For instance, an evaluation of the Money Management programme in New Zealand, which delivers Youth Payment and Young Parents Payment services, highlights how a policy that disproportionately affects young women and Māori was developed and implemented with surprisingly little regard for their particular needs or specific impacts on them.<sup>112</sup> Some consequences were tangible, for example restrictions on where recipients can buy clothes forced young women to open a procedure with their mentor, potentially uncomfortable when the reason is pregnancy. Others were more psychological, like the perception that Money Management prevented users from developing intimate relationships with a working partner out of fear of losing their benefits.

### Gendered barriers in access and uptake

In terms of uptake, there is little awareness of the barriers women face in their use of digital welfare services. One UK study correlates the increase in food bank users with Universal Credit.<sup>113</sup> The study estimated that for every 100 claimants moving to the Universal Credit system in a year, an additional 27 food parcels were issued compared to the previous system of legacy benefits and tax credits.<sup>114</sup> In the UK, single mothers represent one fifth of all food bank users, while mothers are twice as likely to be food insecure than men since they tend to skip meals in favour of their children more often.<sup>115</sup>

Such disparities can also be found in the digital realm, where women make up the largest part of the population left behind by the digital gap. The International Telecommunication Union (ITU) estimates that the global proportion of men using the internet in 2017 was 12 percent higher than women.<sup>116</sup> The OECD states in 2018 that there were 200 million fewer women than men who owned a mobile phone.<sup>117</sup>

The digital gap can also prevent potential welfare beneficiaries from accessing support in the first place. A lack of impact and performance indicators makes it hard to determine whether the cost reduction associated with automation comes from efficient algorithms or from fewer people filing applications. Research about mothers with a low socio-economic position in Amsterdam shows how owning a device does not imply that they can connect to the internet at home. Further, many of these mothers have fragmented ICT capabilities, also called “splinter skills”, meaning that although they may be able to open an email, they might not know how to reply or compose a new one.<sup>118</sup>

---

<sup>112</sup> Humpage 2018

<sup>113</sup> The Trussel Trust 2019

<sup>114</sup> Butler 2019

<sup>115</sup> *ibid.*

<sup>116</sup> ITU 2017

<sup>117</sup> GSMA 2019

<sup>118</sup> Goedhart et al. 2019



Secondly, in the process of determining their eligibility for a service, women can face many forms of discrimination. Some have childcare responsibilities, which makes it complicated to go to appointments. Women are more likely to juggle between different jobs and schedules. Some public services for mothers require invasive personal information about the conditions under which their children were conceived, as in the case of the “rape clause” which will be presented later on.

The UK-EU settlement scheme, a system designed to give EU citizens already living in the UK “settled status”, is based on an online application and assessment process which can disadvantage and deter the digitally excluded.<sup>119</sup> Older women in particular may be unfamiliar with or unable to use digital systems. Providing evidence in support of a right to remain is largely based on a data mining exercise which matches applicants with an employment record via a National Insurance number. Women who may have been absent from the labour market while bringing up a family often have an incomplete or inaccurate record of employment, as highlighted by the Oxford University Migration Observatory.<sup>120</sup> According to 2017 estimates, 150,000 non-Irish EU citizens living in the UK were economically inactive, primarily because they were looking after family members; 90 percent of them are women.

### **Management and control of family resources**

Women are more likely to be the managers of household finances, but their partners may exercise greater financial control due to power imbalances in the relationship. While Universal Credit is a single monthly payment paid to an individual claimant or couple into one nominated single or joint bank account, this is not the case for other countries’ welfare systems or for other aspects of UK social security. Allowing the entirety of a household’s monthly benefit award to be paid by default into one bank account — as Universal Credit does — is highly problematic for women in abusive relationships. UC payments can be split between each partner in so-called “very exceptional circumstances” of domestic or financial abuse.<sup>121</sup> An estimated 50,000 female EU citizens in the UK reported experiencing some form of abuse (either once or repeatedly) in the year 2016-2017.<sup>122</sup> Although split payments do not prevent financial abuse, they may reduce its likelihood. For couples reliant on UC with no earnings or other source of income, having to ask a partner for money undermined the sense of equality in a relationship. Because women were less likely to be in paid work and more likely to be financially dependent on their partner, they were most affected, but men in this situation could be affected too.

---

<sup>119</sup> Oxford Centre on Migration Policy and Society 2018

<sup>120</sup> The Migration Observatory 2018

<sup>121</sup> Pope 2020; Howard 2018

<sup>122</sup> *ibid.*

# 3

## Case studies

---

While a discrete number of case studies about ADMS are beginning to emerge, few examine gendered inequalities. In general, considerations about the impact a particular ADMS has on women are lacking, as well as disaggregated data about it. The three case studies in this section identify whether there is a manifest form of gender inequality or discrimination encoded in the system. The first concerns the two-child limit policy within the UK social security system, a clause that puts high pressure on larger families and female victims of rape. The second one is about the automation of unemployed people ranking, a practice in place in many countries, which highly discriminate women. Finally, we move to Australia to investigate a case that sees ADMS applied on top of a service addressing parents living at the cross of different intersectional discriminations.

## The two-child limit (UK)

### The context

Women continue to be more likely to live in poverty than men (20 percent compared to 18 percent), and the proportion of single women living in poverty has stalled for three years at 25 percent, while for men it has decreased from 26 to 23 percent.<sup>123</sup> The UK also has a high rate of single-parent households: they make up nearly a quarter of families with dependent children.<sup>124</sup> Around 90 percent of single parents are women.<sup>125</sup> 45 percent of single parents are living in poverty.

The Universal Credit (UC) is a UK social security benefit that replaces six benefits and tax credits for working-age people with a low household income.<sup>126</sup> It was legislated in the Welfare Reform Act 2012 with gradual rollout beginning in 2013. Paid to both unemployed and employed claimants, UC has two main objectives: simplify the benefits system and incentivise paid employment. The first objective is met by replacing various former benefits with a single monthly payment, and an online interface for the initial application and on-going management of the claim. The second objective is addressed by a taper which gradually reduces entitlements as earnings increase, instead of stopping abruptly. This is intended to incentivise work and increase earnings by creating a transparent relationship between the Universal Credit and additional hours of work. Certain categories of claimants are also entitled to a “work allowance” – an amount they can earn before the taper is applied.

---

<sup>123</sup> Women's Budget Group 2019

<sup>124</sup> Eurostat 2017

<sup>125</sup> Gingerbread 2019

<sup>126</sup> Namely the income-based Employment and Support Allowance; income-based Jobseeker's Allowance, and Income Support; Child Tax Credit and Working Tax Credit; and Housing Benefit. See <https://www.gov.uk/universal-credit>

UC is the fruit of the 2009 policy report “Dynamic Benefits: Towards welfare that works” by the Centre for Social Justice.<sup>127</sup> The report highlighted the costs and inefficiencies of past benefit schemes, building a case for benefits that adjust to claimants’ changing needs and income in real time. The mentality behind this idea can be described as paternalistic: “Habituation to dependence damages both individuals and communities. (...) We must ensure that we do not remove reasons to work, or even worse, create good reasons not to work.”<sup>128</sup>

The number of Universal Credit claimants on 11 July 2019 was 2.3 million, 55 percent of which were women.<sup>129</sup> However, there has been an unprecedented surge of around 2 million new applications since the UK government advised people to stay at home due to Covid-19.

Universal Credit and tax credits provide extra financial support for children, with a limit of two children per family.<sup>130</sup> From the third child onwards, the state does not provide an additional contribution, unless the children were born before 6 April 2017. The Institute for Public Policy Research modelled the impact of the two-child policy on child poverty rates, estimating that by 2023-24, 300,000 more children will be in poverty as a result of the policy. The Child Poverty Action Group (CPAG) considers that the two-child limit “unlawfully discriminates against a number of different groups including, but not limited to, children, children with multiple siblings, large families and those with a religious or moral objection to the use of birth control.” CPAG’s first attempt to challenge the two-child limit was unsuccessful in the Court of Appeal and permission has been granted to appeal to the Supreme Court in October 2020.

## The “rape clause”

There are several exceptions to the two-child rule where a child element may be payable for a third or subsequent child or young person born on or after 6 April 2017. These include: adopted children, multiple births, children living with family, friends or in non-parental caring arrangements and children likely to have been conceived from a non-consensual sexual act.<sup>133</sup> Known as the “rape clause”, this controversial latter exception requires the mother to prove to government officials that the child was born out of rape. Only a third or subsequent child conceived through rape is granted an exception; if a first or second child is conceived out of rape, then the two-child limit still applies. Rape must be proven by submitting evidence about the conviction of the rapist, or proof that the victim is receiving state compensation allocations for rape victims. In case of a lack of evidence, the mother can have her situation “notarised” by a third party from a health or social services official chosen from a list of approved organisations. However, the exception does not apply if the mother continues to live with her rapist. Women’s groups and campaigners have argued that this fails to recognise that most rape occurs within abusive relationships from which the abused partner may be prevented from leaving.

---

<sup>127</sup> Centre for Social Justice 2009

<sup>128</sup> *ibid.*

<sup>129</sup> Department for Work and Pensions 2019

<sup>130</sup> Department for Work and Pensions 2019

<sup>131</sup> Barej 2017

<sup>132</sup> Child Poverty Action Group 2019

<sup>133</sup> Department for Work and Pensions 2019

The two-child limit was legislated by Parliament and introduced in April 2017, but the “rape clause” itself was not debated or voted upon, which caused considerable controversy.<sup>134</sup> The government argues that it is a fair policy, because it obliges families claiming means-tested benefits to make the same choices as working families not reliant on welfare payments, and thus incentivises claimants to move off benefits, earn more or find better paid work. However, 70 percent of those claiming tax credits and a large proportion of Universal Credit claimants are already in employment. They claim the benefit for the very reason that their work is low paid with limited opportunities for job or earnings progression, a fact which severely undermines such a fairness claim.<sup>135</sup>

## The impact

*Disempowerment, criminalisation and discrimination.* The charity Rape Crisis Scotland underlines how “hinging benefits on proving trauma isn’t a choice.”<sup>136</sup> The UK Equality and Human Rights Commission has also defined the ‘rape clause’ as a privacy violation, and a potential source of trauma for children who may find out in the process that they are the result of a rape.<sup>137</sup>

Furthermore, the rape exception does not consider local legislation in the UK. In Northern Ireland, for instance, failure to report a crime is a felony (punishable with up to two years of jail).<sup>138</sup> Although in the past few years the number of reported rapes grew, it is impossible to quantify how many women kept their rape a secret.<sup>139</sup> The application of the rape exception automatically punishes mothers who were not inclined to come forward after having been raped. Combined with Northern Ireland’s late legalisation of abortion in October 2019,<sup>140</sup> one might argue that children of rape are an undocumented and understudied phenomenon.

After making the news in 2017, Northern Ireland now follows a different procedure: the third party notarising the rape can leverage confidentiality as reasonable excuse to not report the rape to authorities.<sup>141</sup> Finally, the “rape clause” applies if the child born out of a rape is the third one; if the first or second child is born under these circumstances, the 2-child limit will still apply for the third child.<sup>142</sup>

*Gender oppression.* The clause does not apply to women living with their rapist. Unfortunately, this is the case for many victims. The UK Office for National Statistics reports that “for the majority of female victims of rape or assault by penetration (including attempts), the offender

<sup>134</sup> Walker 2017

<sup>135</sup> Child Poverty Action Group 2019

<sup>136</sup> Tapsfield 2017

<sup>137</sup> Equality and Human Rights Commission 2017

<sup>138</sup> Asthana 2017

<sup>139</sup> The Irish Times 2018

<sup>140</sup> Abortion was decriminalised and became lawful in October 2019. In March 2020, a framework for abortion services came into force. Previously, women victims of rape or incest had to carry on the pregnancy or travel to the UK to abort. Many were criminalised. The Guardian in 2019 reported: “A mother in Belfast faces a criminal conviction for procuring abortion medication for her 15-year-old daughter, who was seeking to terminate a pregnancy arising from an allegedly abusive relationship. In 2016, a woman who couldn’t afford to travel to England was given a three-month suspended prison sentence for ending her pregnancy using pills bought online when she was 19.”

<sup>141</sup> Department for Communities n.d.

<sup>142</sup> House of Commons Work and Pensions Committee 2019

<sup>143</sup> Office for National Statistics 2019

was a partner or ex-partner (45 percent) or someone who was known to them other than as a partner or family member (38 percent). One-seventh of female victims reported the offender as a stranger (13 percent).<sup>143</sup> Similar data are available to the police. For the Home Office Data Hub (which covers 35 police forces across the UK), approximately one third (33 percent) of rape offences against females were (suspected to be) committed by an intimate partner. The figures are smaller because rape within a relationship is even less likely to be reported to the police.<sup>144</sup> A 2019 survey on over 430 families affected by the two-child limit underlines how the policy can make it more difficult for victims of domestic violence to leave an abusive relationship.<sup>145</sup>

*Privacy violation.* By inserting an intermediary between the state and the claimant, the obligation to pass from a certified third party to prove the occurrence of rape is a procedure that violates privacy. Moreover, the clause forces women to disclose topics that they wished to keep secret until that moment.

*Novel discriminatory databases.* The “rape clause”, as well as the request for payment split due to financial and domestic abuse, create, de facto, two sensitive victim databases. Indeed, women, who would be under the radar, must be categorised by the state as victims of violence in order to benefit from these exemptions. Furthermore, they never provide formal consent, and the DWP does not specify further future utilisations of these data.



### Decision-making model

- Lack of gender impact assessment



### Design

- Lack of co-design
- Gendered barriers in participation
- Men as default recipient

Figure 6 – The rape clause: critical areas for gender equality. Image source: Digital Future Society

<sup>144</sup> Office for National Statistics 2017

<sup>145</sup> Rape Crisis 2019

<sup>146</sup> Penz et al. 2017

# Algorithmic profiling of job seekers (Austria)

## The context

Like many employment agencies across the Western world, the Austrian Public Employment Service (Arbeitsmarktservice, or AMS) has faced increasing austerity on public spending due to economic crises. Such constraints have been approached with an entrepreneurial spirit for which the “most important performance indicator consists in the fast (and sustainable) reintegration of jobseekers into the labour market.”<sup>146</sup> Austria’s unemployment rate is lower than the European Union average (4.4 percent vs 6.5 percent)<sup>147</sup> and has minor gender differences: 5 percent for women and 4.7 percent for men.<sup>148</sup>

## The initiative

Between 2016 and 2018 AMS outsourced an analysis of the chances of different social groups on the job market to the private provider Synthesis Forschung. The analysis was based on past employment records and socio-economic variables; it did not endeavour to collect extra data or seek to examine potential associated flaws, such as lack of transparency or privacy breaches. The objectives were to predict the employability of different types of job seekers more accurately, tailor services accordingly, and cut spending.<sup>149</sup>

The analysis led AMS to build an algorithm classifying job seekers from 2019 by assigning each of them a score. AMS only released two of the 96 statistical models claimed to be used to assess job seekers, attracting criticism for lack of transparency. The algorithm classifies job seekers into three categories:

- Group A: People who don’t need help finding a job (they have more than a 66 percent chance to find employment for at least 3 months within the next 7 months)
- Group B: People who may benefit from retraining and support (anyone not part of Group A or C)
- Group C: Unemployable (those who have less than a 25 percent chance to get employed for at least 6 months within the next 2 years)

---

<sup>147</sup> Eurostat 2020

<sup>148</sup> OECD n.d.

<sup>149</sup> Allhutter et al. 2020

<sup>150</sup> Austrian Academy of Science 2019

Investments in Groups A and C are not considered cost effective for two reasons. Those in the first group can provide for their own employability, whereas the chances of Group C members finding a job are so slim — according to the model — that they are not worth the investment. The supervision of people in Group C is externalised to the agency Beratungs- und Betreuungseinrichtung Neu (BBEN), “new care and advice facilities.” Unlike AMS support, BBEN services are accessed on a voluntary basis after a compulsory face-to-face meeting. The BBEN alternative was tested between 2017 and 2018 with a target group of jobseekers experiencing multiple job placement difficulties (determined without the algorithm, which was still in development). An evaluation of the service found 83 percent of BBEN users highly satisfied (with a telling 98 percent satisfaction for face-to-face meetings). Nonetheless, only 47 percent of the pilot candidates used BBEN services for more than six months, suggesting that jobseekers got lost in the process in the absence of regular face-to-face meetings.

The AMS algorithmic assessment can be overturned by caseworkers, who have the final word. This is controversial for many reasons. First, AMS was accused of adding human oversight after the system rollout. Secondly, the algorithm’s verdict can reinforce and legitimise caseworker bias towards certain demographics. Finally, case workers have no incentives to contest automated decisions, since moving a case to BBEN saves them time and allows them to declare the case closed, increasing their success rate. Despite warnings from the Austrian academic community — concerned by the ADMS’ opacity, absence of success indicators, and lack of clarity around the system’s social objectives — a full rollout of the AMS algorithm is expected for July 2020.<sup>150</sup>

## The impact

### Gender and intersectionality discrimination

The inclusion of gender in the ADMS algorithm variables has been pointed out as element of discrimination. The illustrative model included in the AMS documentation records “female” as a prejudicial variable in determining the chances of labour market integration, reducing the total score of this group (–0.14). If summed up with other point deductions (e.g. nationality), this approach can generate an intersectional disadvantage.

Secondly, women with children are penalised, while men with children are not.<sup>151</sup> Moreover, the Austrian Disability Council underlined in a submission to the UN Committee on the Elimination of Discrimination against Women (CEDAW) how women with disability are put at double risk of discrimination by the algorithm.<sup>152</sup> Lastly, the variable “obligations of care” is applied only to female profiles, reinforcing traditional gender roles.

---

<sup>151</sup> Kayser-Bril 2019

<sup>152</sup> Austrian Disability Council 2019

<sup>153</sup> Lopez 2017



## Self-fulfilling prophecies

By reproducing the disadvantage of women on the labour market, the algorithm decreases their chances of obtaining support. The model not only reproduces and reinforces existing labour market inequalities, but also creates new ones. People with fragmented employment histories (e.g. youth, immigrants, people returning to work after a long period) are more likely to be assigned to Group C (in Vienna, 29 percent of them).<sup>153</sup> A young person at the beginning of her career risks automated disadvantage in terms of future employment prospects.

## Evading regulation

By framing the algorithm as a second opinion, and acting in support of caseworkers' decisions, the AMS avoids infringing the GDPR, namely Article 22, which states that "the data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her about fully automated decision-making." The Equal Treatment Act forbids unequal treatment based on socio-economic variables such as gender, or parenthood. These cornerstone features of the algorithm are legal precisely because their use is framed as a decision support, rather than the decision itself.



### Datasets

- Under-exploitation of qualitative data



### Decision-making model

- Determinist approach to prediction
- Weight of gender variables
- Lack of gender impact assessment



### Design

- Lack of co-design

Figure 7 – Algorithmic profiling of job seekers: critical areas for gender equality.

Image source: Digital Future Society.

<sup>154</sup> EUR-Lex 2016

# ParentsNext (Australia)

## The context

From 2016 to 2017, 66 percent of women in Australia were in the workforce, as opposed to 78 percent of men.<sup>156</sup> Single-parent families, 82 percent of whom are headed by women, are one of the most disadvantaged demographics in Australia: they have the highest poverty rates at 32 percent (compared to 13 percent of double-parent families).<sup>157</sup> A wide gap divides indigenous and non-indigenous Australians who work. Government data from 2014-2015 show that 48.4 percent of working-age indigenous were in the labour market, compared to 72.6 percent of non-indigenous Australians.<sup>158</sup> Geographic remoteness causes variations in the employment rate among indigenous populations: for those living in cities, it almost doubles.<sup>159</sup> The gap is accompanied by a negative national perception of indigenous people, with a third of Australians thinking they are lazy.<sup>160</sup> Indigenous parents are five times more likely to be on parenting support.<sup>161</sup> When it comes to employment, indigenous women face lower rates than indigenous men.<sup>162</sup>

## The initiative

ParentsNext is a programme for parents already receiving state support, designed to help them identify and achieve education and employment goals. The reasoning behind the initiative is that without improved skills and opportunities, relying on welfare income can easily become the default option for parents in financial need.<sup>163</sup> Active since 2016 in 10 regions, the programme was expanded in 2018 to cover 68,000 parents annually, of which 96 percent were expected to be women, and a further 15 percent indigenous women. With the expansion, two streams were created: a Targeted Stream, operating as before, and an Intensive one, with additional financial assistance. Two thirds of the Intensive Stream services are delivered in regions with high numbers of Aboriginal and Torres Strait Islander people. Intensive Stream participants tend to have younger children (at least one child between six months and five years old) and about 95 percent are women.<sup>164</sup> The Australian government frames the programme as key in closing the indigenous employment gap.<sup>165</sup>

Beneficiaries are required to undertake tasks such as attending appointments or applying for a certain number of job positions as soon as their youngest child turns six months old or they risk having their payments suspended, reduced, or cancelled. The programme does not address structural barriers such as affordable childcare, employment discrimination, or limited job security.

<sup>155</sup> Lopez 2017

<sup>156</sup> Good Shepherd 2018

<sup>157</sup> *ibid.*

<sup>158</sup> Australian Government 2018

<sup>159</sup> Australian Government 2020

<sup>160</sup> Beyond Blue 2014

<sup>161</sup> Australian Government 2018

<sup>162</sup> *ibid.*

<sup>163</sup> *ibid.*

<sup>164</sup> Henriques-Gomes 2019

<sup>165</sup> Australian Government 2018

<sup>166</sup> The Power to Persuade 2019

ParentsNext is matched with the Targeted Compliance Framework (TCF), an automated system of notifications and sanctions active since July 2018 on various Australian welfare programmes.<sup>166</sup> It aims to support jobseekers in meeting their responsibilities and to help them engage with the system through a single interface. Approximately 95 percent of job plans include the obligation to self-report.<sup>167</sup>

TCF covers social security payments which have mandatory “participation requirements.” The TCF has three zones: the Green Zone, the Warning Zone and the Penalty Zone, with increasingly strict sanctions. A claimant commits a “mutual obligation failure” if they fail to meet participation requirements, which automatically results in a demerit point. Payment suspensions are automatically triggered by a person receiving a demerit point while in the Green or Warning Zones.<sup>168</sup> Payments are suspended without notice as the application of the suspension is referable only to the jobseeker’s failure to report and the system’s response to this failure, rather than to a human decision-maker.”<sup>169</sup>

## The impact

### Automated injustice

Data show that 85 percent of beneficiaries had payments suspended despite having a valid reason for not complying with participation requirements.<sup>170</sup> The Human Rights Law Centre reports cases where a single mother had her payment stopped for missing an appointment, even though her caseworker forgot to tell her about the meeting.<sup>171</sup> Aboriginal and Torres Strait Islander parents made up 24 percent of the 2018 payment suspensions.<sup>172</sup> The Australia’s Parliamentary Joint Committee on Human Rights is concerned that TCF is not compatible with human rights, especially due to the lack of waiver options, which imply a complete oversight of individual case circumstances.<sup>173</sup> According to the committee, “the financial penalty is likely to be incompatible with the right to social security insofar as there may be circumstances where a person is unable to meet basic necessities during the four-week non-payment period.” Finally, there is a disproportionate number of payment suspensions compared to the demerit points assigned: almost 2.5 million suspensions took place, but only 655,000 confirmed demerits were assigned.<sup>174</sup>

---

<sup>167</sup> Casey 2019

<sup>168</sup> Human Rights Law Centre 2019

<sup>169</sup> Casey 2019

<sup>170</sup> Henriques-Gomes 2019

<sup>171</sup> The Power to Persuade 2019

<sup>172</sup> *ibid.*

<sup>173</sup> Parliamentary Joint Committee on Human Rights 2018

<sup>174</sup> Australian Government 2019

<sup>175</sup> National Council of Single Mothers and their Children & the Council of Single

## Underserved beneficiaries

In the first quarter of 2019, 200 parents (from both Targeted and Intense Streams) participated in a survey by the National Council of Single Mothers and their Children, and the Council of Single Mothers and their Children.<sup>175</sup> The programme polled unpopular: 93 percent of those surveyed agreed that “ParentsNext has added additional stresses” to their lives; 87 percent disagreed with the proposition that “ParentsNext assisted them to build job ready confidence and skills”; if they were given the opportunity, 89 percent of respondents say they would not design a program like the current ParentsNext. The survey also reveals that caseworkers had little knowledge or empathy for the difficulties of lone motherhood. Moreover, in some cases they provided opaque information or obliged parents to sign privacy clauses.



### Datasets

- Under-exploitation of qualitative data



### Decision-making model

- Determinist approach to prediction
- Lack of gender impact assessment



### Design

- Lack of co-design
- Gendered barriers in participation

Figure 8 – ParentsNext: critical areas for gender equality. Image source: Digital Future Society.

## Case studies takeaways

The case studies present different forms of automated inequality. In line with the categories presented in Section 2, they all share three main pitfalls: a faulty approach to data, a lack of gender impact assessment, and the absence of co-design.

As a general observation, automation tends to be a streamlined process only if the claimant falls neatly into the default category or behavioural pattern defined by the ADMS' designers. Otherwise, in order to claim her rights, a beneficiary could be obliged to follow lengthy and invasive procedures that are anything but efficient (rape clause) or could see her benefits cut with no explanation (ParentsNext).

On the opposite side of the spectrum, the Austrian system automatically assumes the scarce employability of a woman with little consideration of her history. The AMS algorithm is similar to an initiative in Poland, which similarly was categorising workers in three groups. The analysis of the NGO Panoptykon found out that 60-70 percent of women were profiled as “disadvantaged”, and similar concerns about the discriminatory effect of these inferences were raised.<sup>176</sup>

This form of discrimination introduces another problem: the choice of what constitutes a default scenario. For instance, by institutionalising the two-child limit, the UK's Universal Credit system implies that families with more children do not deserve extra help. As we will see in the following section, ADMS assume a certain idea of the subject, often at the expense of her dignity and self-determination. Or, like in the case of ParentsNext, they reinforce inequalities embedded in a programme that is unfit to deal with the intersectional disadvantages experienced by its beneficiaries. The survey results highlight how adding a layer of automation on top of an already discriminatory programme only entrenches bias and negatively affects individuals and families by increasing the burden of their situations.

Even when human or digital interfaces are part of the process, ADMS tend to bypass both when applying pre-programmed rules. The ease with which the TCF cuts payments suggests that the system fails to consider the daily realities of welfare claimants. In Austria, the integration of the algorithm with human caseworkers was something of an afterthought. Following external pressure, Synthesis Forschung published a second paper on the social compatibility of the algorithm. A double standard is revealed:

**In the context of the efficiency narrative, the algorithm is framed as a tool to speed-up the counseling process due to its “precise” classification system and hence evidence-based decision-making abilities. In discourses on the embedding of the algorithm in social practices, however, the algorithm is described as a mere “second opinion” whose weaknesses need to be corrected by the human case worker.<sup>177</sup>**

---

<sup>176</sup> Panoptykon 2015

<sup>177</sup> Allhutter et al. 2020

In Poland, administrators only dare to override the algorithm's decision every 1 in 100 cases, stating "time constraints as one reason, but also feared repercussions from supervisors if a decision was later called into question."<sup>178</sup> This resonates with data about Austria's BBEN, finding 86 percent of case workers relieved to have this new external "fallback" resource. In every case, there is no straightforward system for claims and conflict resolution. This is a critical area of opportunity, since effective appeal procedures could ease the damages of automated procedures.

This systemic opacity is reflected by a lack of transparency on the part of governments. In Australia, the government embargoed the Jobseeker Compliance Data Report for six months, a reluctance that aggravated countless reports of claimants having their payments suspended. A previous official report excluded data that had been disclosed quarterly for a decade. A previous official report excluded data that has been disclosed quarterly for a decade. In Austria, only a few models used for determining the ranking were released.<sup>179</sup> In general, the third sector and journalists are a constant presence in judiciary cases files against ADMS. Activists are behind the most ground-breaking verdict pronounced so far: that which ordered the immediate halt of the Dutch benefit fraud detection system SyRI in the name of the European Convention on Human Rights, namely for its privacy infringements.<sup>180</sup> In the UK, the Child Poverty Action Group has an Early Warning System to flag problems with the information provided to Universal Credit claimants. In May 2020, the group won a case in the Court of Appeal on behalf of two women whose financial circumstances were worsened by the obligation of moving to Universal Credit.<sup>181</sup>

Finally, on the interface design side, there is no evidence that the colours and symbols signalling of TCF has been tested with people in poverty. Dr. Simone Casey, a volunteer policy advisor with the Australian Unemployed Workers Union (AUWU), argues that communicating a threat of additional poverty to somebody already experiencing it reduces self-sufficiency.<sup>182</sup> Similarly, the UC interface details the monthly payment with a breakdown of its contributory elements, but vital information about how entitlement has been assessed and payment calculated are excluded.<sup>183</sup> The "product" deployed by the digital welfare state may have a fresh new look, but the user experience lags behind and results in further discrimination.

---

<sup>178</sup> AlgorithmWatch 2019

<sup>179</sup> Henriques-Gomes 2019

<sup>180</sup> Blauw 2020

<sup>181</sup> Child Poverty Action Group 2020

<sup>182</sup> Casey 2019

<sup>183</sup> Pope 2020

# 4

## **Gender equality principles for the digital welfare state**

---

**“In the social protection field we mostly see examples of ADMS application negatively affecting human rights. But, in theory, new technologies have great potential to help us better understand and serve groups living in poverty and marginalization. What you need for that to happen is serious political will.”**

**- Christiaan van Veen, New York University**

We live in the “datacene”: a world where even vacuum cleaners collect data.<sup>184</sup> It would make little sense for welfare services to forego ADMS’ capacity to navigate and extract “value” from such an unprecedented mass of data. The seeming objectivity of data is an appealing Occam’s razor to cut through the complexity of welfare systems. Still, policymakers should not be tempted to delegate important political decisions to statistical projections.

A policy agenda articulating objectives, beneficiaries, risk management, cost benefit analysis and impact indicators (including indicators based on human rights) must precede any consideration of ADMS. Instead, the case studies outlined in this report, as well as those reported by researchers, investigative journalists, and UN special rapporteurs, show that the case for applying ADMS to welfare has rarely been stated with precision. A general aspiration to optimise (mostly budgets) seems to be the main motive. But even that argument lacks evidence in the form of cost benefit analyses. Further, complex and opaque tendering processes show that automation takes a considerable toll on public budgets. Poor planning is also a costly decision: redesigning a system, like in the case of the Universal Credit in 2013<sup>185</sup> or the Idaho Medicaid<sup>186</sup>, costs more than getting it right from the start.

Human rights and social justice are hard to quantify. Despite the proliferation of artificial intelligence ethics frameworks and toolkits, research shows that neither are compatible with existing legal non-discrimination frameworks.<sup>187</sup> In order to move from philosophy lectures to business realities, ethics had to be boiled down to a risk management strategy, generating new professional roles (Chief Ethics Officer, Corporate Social Responsibility Manager) charged with facing external pressure on the social consequences of products, while working within the rules of the same industry logic that created them.<sup>188</sup>

In the public sector, ethics is not a matter of cutting costs or market positioning. Clear goals, impact indicators and appeal procedures — in a word, transparency — are what make public administrations accountable. Accountability to citizens should be implicit within welfare systems given their dependency upon taxpayer funding. When an institution lacks the trust of the citizens it serves, it fuels inequalities by preventing vulnerable people from exposing themselves for fear of worsening their condition by being discriminated against or abused.<sup>189</sup>

The state should assure the wellbeing and equality of its citizens. No real wellbeing is possible for women without the achievement of gender equality. Gender equality refers to the outcome of policies, and not to equal conditions, acknowledging the differences between men and women, and within “women” as complex and intersectional category.

---

<sup>184</sup> Whittaker 2019

<sup>185</sup> National Audit Office 2013

<sup>186</sup> Our Health and Welfare n.d.

<sup>187</sup> Wachter et al. 2020

<sup>188</sup> Metcalf et al. 2019

<sup>189</sup> Equality and Human Rights Commission



What does it mean to account for these differences and serve women in the context of welfare automation? How can policymakers innovate and leverage the power and speed of recent artificial intelligence developments to deliver more social justice? First, the following four basic principles should be respected:

- 1** Gender-relevant datasets and statistics
- 2** Gender mainstreaming in planning
- 3** Co-design, oversight, and feedback
- 4** Equality by default

## Principle 1: Gender-relevant datasets and statistics

Algorithms reproduce their creators' biases. If an algorithm is trained with datasets where gender data are missing, or not considered by the model, they cannot be blamed for discriminating. Without specific information, it is impossible to formulate adequate policy responses to inequality.



Figure 9 - Principle 2: Gender mainstreaming. Image source: Digital Future Society

Putting together gendered datasets starts with leadership and a changed approach: looking at a specific problem that welfare wants to solve through a gendered lens. This is often the lens of marginality, not in numbers, but instead embedded into how public services are designed by default. For instance, a study by Data2X about gender gaps in urban mobility shed light on female mobility behaviours, which allows for better urban planning.<sup>190</sup> This kind of research requires collecting gender-disaggregated data. But separating male and female data subjects may not be enough; research suggests that analysing similar demographics in groups can increase the precision of the inferences generated from the dataset.<sup>191</sup> This is even more likely when the dataset is used to select who should be a beneficiary, or to rank individuals' likelihood of exhibiting a certain behaviour:

**“You can’t compare things at face value since there is a lot of bias in the data. How do you put a number to someone’s experience in life? You can only ever hope to have an accurate comparison when you compare similar people. ”**

**- Swati Gupta, Georgia Tech**

In its guidelines for integrating gender perspectives in national statistics, the UN defines gender statistics as “statistics that adequately reflect differences and inequalities in the situation of women and men in all areas of life.”<sup>192</sup> Sex-disaggregated data are only the first component. The following criteria must be met before a dataset can be considered to contain gender statistics:

- Data are collected and presented by sex as a primary and overall classification;
- Data reflect gender issues;
- Data are based on concepts and definitions that reflect the diversity of women and men and capture all aspects of their lives;
- Data collection methods consider stereotypes and social and cultural factors that may induce gender bias in the data.

Building a representative dataset includes contextualising data within broader cultural and socio-economic realities. For instance, welfare policy research shows a mismatch between assumptions about the economic risks of single motherhood and the life stage during which single motherhood is more common.<sup>193</sup>

Another variable that can affect the precision of a gendered dataset is relying solely on official statistics. Many cultural and practical reasons can influence how a woman’s life is registered in official records- for instance, being or having been victim of violence; as the object of poverty shame; being unemployed but occupied full time with care tasks; or being a sex worker. All must be taken into account when building datasets. Finally, survey data can also help governments understand welfare access barriers:

<sup>190</sup> Gauvin et al. 2019

<sup>192</sup> UN 2016

<sup>191</sup> Salem and Gupta 2019

<sup>193</sup> Zabel and Hübgen 2018

**“Combining welfare data with survey data can provide a better picture not only of the active claimants, but also of the potential ones.”**

**- Chris Clifton, Purdue University**

Adding a gender dimension to datasets is not a box to tick. The AMS case study shows how the use of gender as a variable increased the likelihood of discrimination, because it was factored in as a reason for unemployment instead of as a matter of fact.

Collecting gender data and designing for “feminine needs” is not enough if it does not reflect the diversity and contextuality of those needs. The booming sector of “femtech” (technology solutions for female health) underserves many women and perpetuates a stereotyped version of their needs and ambitions.<sup>194</sup> For instance, period tracking apps operate under the assumption that fertility and the desire of motherhood is always part of the equation. This is a subtle message suggesting that women who are queer, single, infertile, or uninterested in procreating are not really women.<sup>195</sup>

Finally, data create subjects. Gender is a common basic identifier in a person’s documentation in the eyes of the state, from passports to public health cards. But as we learn from intersectional feminism, data subjects are a mixture of other characteristics, and failing to acknowledge them can lead to the integration of women as a very general category in welfare, extrapolated from other aspects of their experience and identity, such as ethnicity or sexual orientation. Moreover, in the case of trans people, there is often a discrepancy between the gender of their experience and their officially recorded gender,<sup>196</sup> which at best is a psychological affront, and at worst leads to actual discrimination. Eliminating differences and elaborating policies for a generic “female” user persona can underserve women.<sup>197</sup>

---

<sup>194</sup> Jaramillo 2020

<sup>196</sup> Privacy International 2019

<sup>195</sup> Delano 2015

<sup>197</sup> Flaherty 2018

## Principle 2: Gender mainstreaming in planning

The Global Platform for Action adopted in Beijing in 1995 asked governments and other actors to “mainstream a gender perspective into all policies and programmes, so that, before decisions are taken, an analysis is made of the effects on women and men respectively.” In 1998, the Council of Europe defined gender mainstreaming as the incorporation of a gender equality perspective in policymaking. Equality is a sought-after policy outcome, and does not refer to individual starting conditions, acknowledging they can differ significantly.



Figure 10 - Principle 2: Gender mainstreaming. Image source: Digital Future Society

Starting gender mainstreaming from the policy planning phase is not only logical, but the timeliest and most cost-effective approach since it reduces the likelihood of problems in the implementation phase. Gender mainstreaming has two components: gender analysis, which captures the status quo, and gender impact assessment, which evaluates the possible effects of a policy.

**“The public sector should ask women how technology can improve their lives. It is a matter of values to be promoted, more than understanding or regulating the algorithm. What should be at the centre: efficiency or the capability to create wellbeing?”**

**- Laia Serra, lawyer**

Gender mainstreaming requires the creation of gender-savvy databases (see Principle 1), paired with an examination of the causes and effects of gender inequalities. For instance, a gender analysis of malaria not only captures quantified data about contagion, death, and recoveries, but also accounts for the risk incurred by pregnant women, the influence of gendered sleeping patterns and dress codes, or gender roles in polygamous families.<sup>198</sup>

Gender impact assessment follows gender analysis and considers qualitative criteria like the norms and values that influence gender roles, divisions of labour, and behaviours and inequalities in the value attached to gender characteristics. It also accounts for normative aspects, evaluating differences in the exercise of human rights and in the degree of access to justice. While avoiding negative effects of policies is its main objective, gender impact assessment also involves risk management strategies that can mitigate or eliminate discrimination. The European Institute for Gender Equality (EIGE) toolkit is a useful reference that identifies five key steps (see Figure 11).

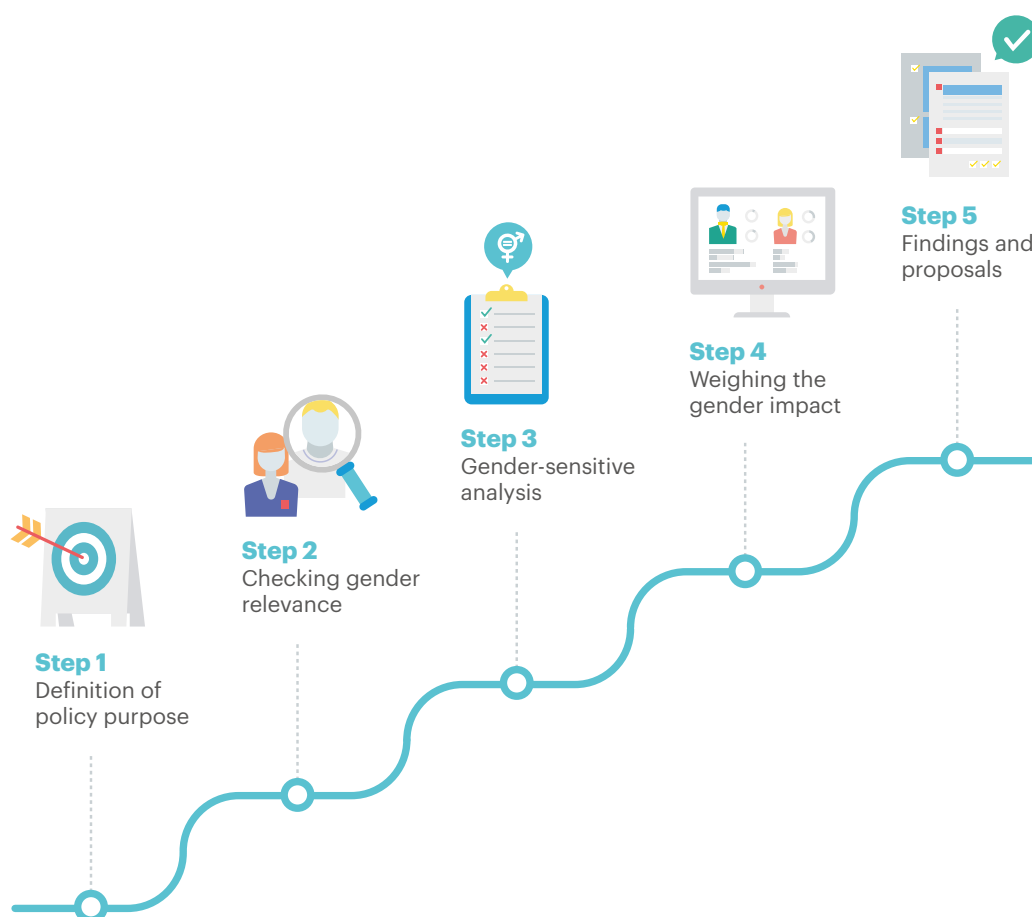


Figure 11 – Gender impact assessment steps. Image source: EIGE 2016.

<sup>198</sup> World Health Organisation 2011

## Principle 3: Co-design, oversight and feedback

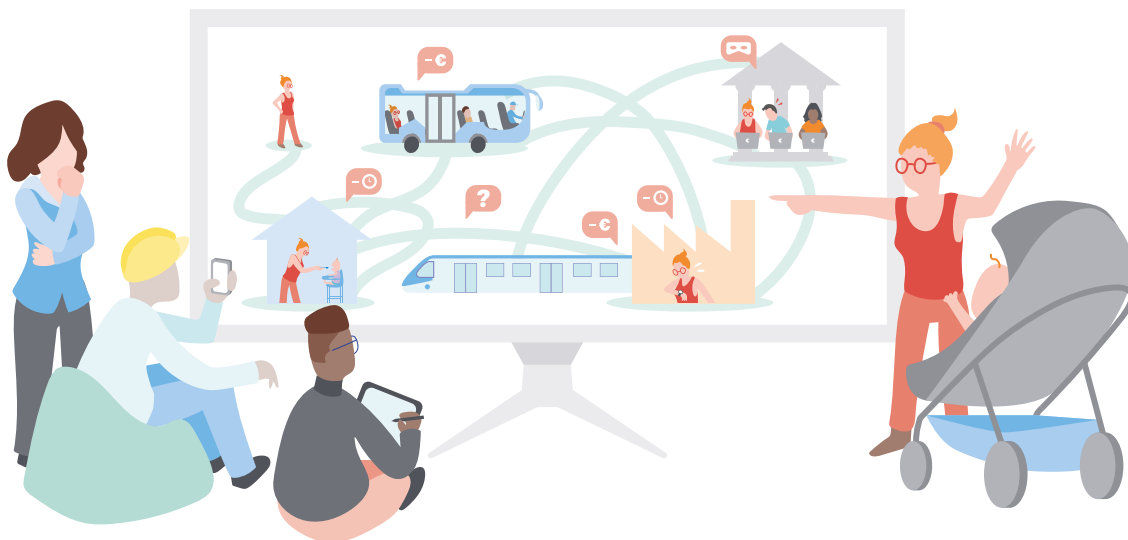


Figure 12 - Principle 3: Co-design, oversight and feedback. Image source: Digital Future Society.

As seen in Australia's ParentsNext programme, or in the Panoptikon report, surveys taking place after the rollout of the programme account for many unintended negative impacts of ADMS. While co-design as a practice is gaining popularity, it seems that little or no effort to co-design ADMS has been undertaken. This is probably due to a cognitive bias that views any algorithm-related development as a purely technical matter.

**“In the policy space, when technology solutions are introduced, they are tackled as technical challenges, resulting in a disproportionate focus on the contribution of engineers (who statistically, are mostly men). But bringing social justice in a system is not a technical problem: a combination of designers, social workers with first-hand expertise and public servants would be more suitable for the purpose. ”**

**- Caroline Sindors, Convocation Design+Research**

Since ADMS follow human psychologies and prejudices, many pitfalls can be avoided by co-designing the rules they should apply and the interfaces that these systems use to interact with claimants.

Human oversight is fundamental in avoiding the automation of errors and inequalities. Precisely because of their binary reasoning for which they are perceived as neutral, ADMS cannot capture or react to the countless nuances of every welfare claimant's case. For instance, in the Netherlands in 2014, 232 families were wrongly accused of defrauding *Kinderopvangtoeslag* (the childcare benefits system). It took years to resolve the dispute, during which the families were forced to repay the benefits received.<sup>200</sup> Fraud can be a passive felony; in over 50 percent of welfare fraud cases, clients of social protection systems are unaware that they are breaking the rules.<sup>201</sup> Most of the time, claimants fail to notify the system of changes to their situations, an omission that is less likely to occur with regular interaction with a public agent.

The experience of caseworkers could also be instructive, as they deal with claimants face-to-face, and are used to bending the rules when necessary. Digital welfare should build entry points for caseworkers in ADMS, and improve their interactions with the systems instead of replacing them altogether. On the other hand, caseworker oversight should not be exploited in order to circumvent the law, as in the case of Austria where it is used to defend the ADMS from accusations of infringing Article 22 of the GDPR.

After entering the system, citizens have little awareness of what happens to their request or to their data. They are shown the entry point, and the final delivery of the benefit, without knowing the processes that lead to the benefit (or its denial). In rejection cases, they may only find out when it's too late. Citizens need agency over their own rights and should be able to exercise those rights in the digital world. Interactions with system should be possible at any step of the process, and these should not be left to chatbots or other forms of AI. Even the opaque way in which the interaction is designed can expose claimants to undue stress. For instance, in UC, text messages say that the claimant should consult their online journal, but do not specify why. Such ambiguities can create anxiety if the person cannot access or use a computer or smartphone easily, which is more likely for women. Claimants face all sorts of barriers when submitting a mandatory reconsideration (a request for the decision to be looked at again).

**“Explainability is useless without the concept of understanding: the process needs to be understandable. Moreover, there needs to be visibility of how and where the system is being used, people are not aware.”**

**- Dr. Rumman Chowdhury, Accenture**

A 2019 survey of UC claimants found that 23 percent of them felt that the decision about their claim had either not been explained at all, or had not been explained clearly.<sup>202</sup> Yet, in the UC online account, users can see a detailed and clearly designed breakdown of how the payment has been calculated. Nonetheless, making the calculation understandable is a challenge: even staff members are often unable to explain it.<sup>203</sup> Similarly, going through all the exceptions and understanding if one claimant situation falls under them is a difficult task for welfare

---

<sup>200</sup> Jansen 2020

<sup>201</sup> *ibid.*

<sup>202</sup> Child Poverty Action Group 2019

<sup>203</sup> Pope 2020

agents. Finally, digital interfaces assume a certain level of digital skills and literacy, which is not reflective of reality even in Western societies. As many as 44 percent of Europeans aged 16-74 do not have basic digital skills.<sup>204</sup> In the Netherlands, 1.8 million employees struggle with reading and writing, and 80 percent of them are unable to work with computers.<sup>205</sup> In Italy, the gender divide in internet usage in 2019 was 64.2 percent for women, and 71.7 percent for men.<sup>206</sup>

Digital barriers can emerge even at the very entrance of the system: online registration can be a hurdle, especially for low-income women. For instance, pay-as-you-go mobile subscriptions are a commonly used means to access the internet. The choice between food and data is a common one, especially at the height of the Covid-19 pandemic. One charity supporting women in Manchester reported that 75 percent of them rely solely on pay-as-you-go plans.<sup>207</sup> Pay-as-you-go plans can also reinforce poverty; in 2014, the French Senate estimated that 1 minute of usage is 15 to 30 percent more expensive than with a long-term contract, only accessible for those with sufficient income.<sup>208</sup>

An alternative is completing online forms in computers hosted in public spaces, like libraries. The latter raises severe privacy concerns, from analogue (somebody in the room could read and grab important personal data) to digital (personal data can be left on the computer e.g. on filled-out forms stored locally and sent to print). In the UK, while the UC business case<sup>209</sup> claimed an increased face-to-face quality of the service, on the ground, 100 job centres have been closed since 2017. Many are now hosted by public libraries. Besides the privacy concerns cited above, this reduced availability means that claimants have fewer options to find one close to their domicile or work.<sup>210</sup> Women caring for children can have an especially hard time finding a way to get to the library. For some mothers, the only option would be to bring them to a place requiring silence, with the risk of being stigmatised by other library visitors, or of being distracted while filling the forms, providing erroneous data for which they might pay a high price later in the process.

---

<sup>204</sup> Electronic Platform for Adult Learning in Europe 2017

<sup>205</sup> Jansen 2020

<sup>206</sup> ISTAT 2019

<sup>207</sup> Kelly 2020

<sup>208</sup> Sénat 2014

<sup>209</sup> Department for Work and Pensions 2018

<sup>210</sup> Pope 2020



## Principle 4: Equality by default

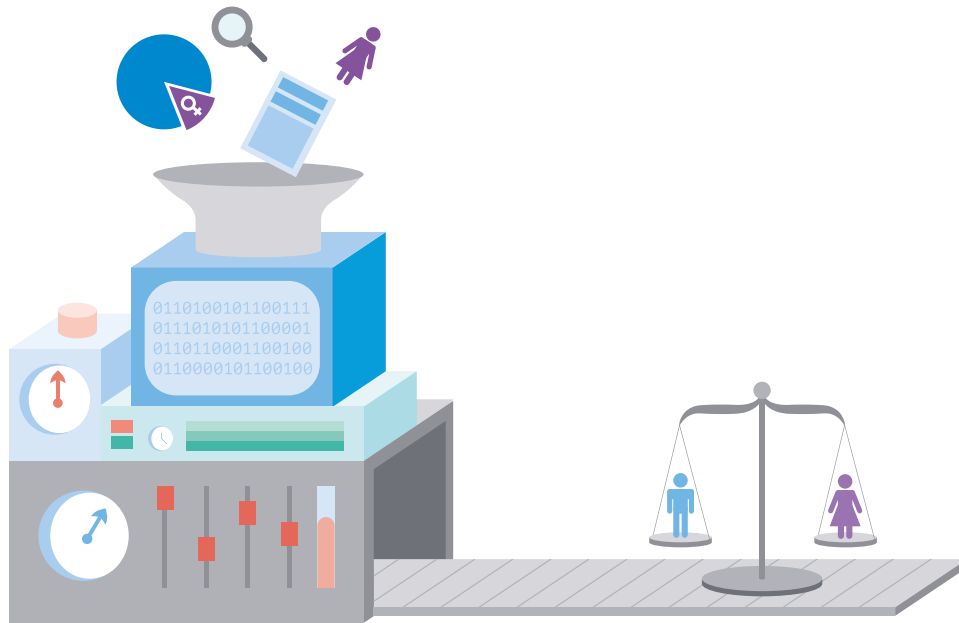


Figure 13- Principle 4: Equality by default. Image source: Digital Future Society.

If the previous principles are followed, a certain degree of equality should be automated. The system must consider data that are representative of the situation in order to support decisions based on gender-responsive policies, as well as interface with frontline workers and citizens in an accessible and understandable way. The “fairness” of the ADMS would not be intentional, but rather the result of better processes behind its creation. With careful planning, we can do away with the “computer says no” effect,<sup>211</sup> and purposefully automate certain parts of the system.

What is the added value of ADMS on gendered forms of disadvantage? First, they can serve in design fiction exercises and help reverse-engineer a situation of disadvantage. Historical data further embed biases, and the status quo is not favourable for women. In this sense, working with desirable scenarios can spark fresh policy ideas. Planning for desired realities can reveal correlations that are less evident with historical data. For instance, imagine planning for a desired scenario in which all single mothers have found a job, but they are part-time jobs that do not pay well enough to emancipate these women from welfare. How would appointments be organised? Would welfare payments be adjusted according to work income? Would additional support for children vary according to their age? Answering speculative questions may help system designers understand gendered barriers to finding a job that depend on the way welfare is delivered.

<sup>211</sup> “Computer says no !” is a catchphrase from the TV show Little Britain. The expression came into popular use to represent the deliberately uncooperative attitude of customer service and public services staff when they blame a digital system for something they don’t want to do. It is also the title the British NGO Child Action Poverty Group used for a report about the opacity of the UC process.

**“There is a great disconnect between historical reality and desired reality. If you are just going to pull in more historical data about any disadvantaged group, you run the risk of more strongly embedding their historical disadvantage. You need to push the system towards a desired scenario.”**

**-Angsar Koene, University of Nottingham**

Secondly, ADMS can contribute to categorising women as full financial beneficiaries: meaning as individuals with financial autonomy. Husbands are the legally designated heads of household in 29 out of 143 countries. In the case of mixed-sex couples, instead of reproducing the historical dependency of women on their male partner, split or separate payments can become the default. On the implementation side, delivering benefits to a specific bank account is a technical feature. Nonetheless, the default is often paying them to one bank account. Requesting a split or separate payment – like under Universal Credit, is a rare exception that, in this instance, requires evidence of domestic abuse or serious financial mismanagement. It would be a quick win to advance the cause of gender equality by making split or separate payments in couples default. Gender mainstreaming also teaches us that there should be an examination of the context and measures to ensure that the money is actually being accessed by the woman and not extorted by her male partner.<sup>212</sup>

---

<sup>212</sup> Rubalcava et al. 2002

# Conclusion

---

Every technological innovation in modern media history — the telephone, radio, television, satellites, the internet — stirred similar euphoric predictions. All were expected to usher in an age of enlightenment. All were seen as fulfilling the promise of democracy.<sup>213</sup>

The belief that technology can not only “level the playing field” and “create broad-based economic and social equality” but also “nurture transparency and accountability in democratic governance”<sup>214</sup> precedes digital technology. It is no surprise to find such expectations among public servants in charge of welfare. On the contrary, its social mission makes welfare an ideal space for such hopes. In this report, current developments of the digital welfare state were framed within the history of welfare, and of the gendered forms of inequalities that it encapsulates. The digital welfare state was examined through the lens of intersectionality, looking at complex problems that ADMS are expected to solve, and the cascading gender discriminations their application can generate. Making ADMS more equal for women can serve other socially marginalised groups because they also lack full financial autonomy.

**“Feminism starts with valuing lived experiences, since women’s experience has been mostly ignored. Instead, lived experience is form of expertise. Representing women only in numbers would be irresponsible since data about them are not collected, you need qualitative data.”**

**- Catherine D’Ignazio, MIT**

By limiting people across the world to a restricted set of living spaces and activities, Covid-19 has exposed existing inequalities. If constraints were equal, factors like the dimensions of an apartment, the quality of an internet connection, or living with an abusive partner, make a significant difference. The global reaction to the pandemic has also triggered a new wave of digitalisation, forcibly transforming face-to-face experiences into virtual ones. Despite starting as a response to the constraints of quarantine, the dematerialisation process is here to stay. The digitalisation of the welfare state will likely be accelerated too, for instance by reducing physical interactions between citizens and caseworkers, and by shifting to online processes. Moreover, the increased collection of health data as part of Covid-19 prevention efforts increases the risk of discrimination, creating new categories intersecting with previous disadvantages. As the majority of frontline social and health workers, as well as informal carers, women are at a higher risk of stigmatisation and suffering from restrictions of movement. In this context, our goal to investigate how to avoid the “computer says no!” effect while providing guidance to ensure that the risks of welfare automation do not affect women disproportionately is even more relevant.

---

<sup>213</sup> Barnouw 1978

<sup>214</sup> Eubanks 2011

Starting from the factors of gender inequality in digital welfare outlined in Section 2 the report offers four guiding principles to tackle them, outlining how a certain degree of automation could help transform welfare services into an empowering platform for women. Digital welfare can be a springboard enabling women to exert their human and digital rights, to be respected, and to lead a decent life. To do so, women's actual conditions must be profoundly understood and reflected in the design of welfare systems, regardless of their level of automation. Encapsulated in the notion of welfare is the mission of improving the lives of vulnerable individuals, families and communities. Women have been historically treated as passive agents, often relegated to the domestic private space. Hence, agency and freedom are particularly important as guiding goals for gender justice.<sup>215</sup>

The women convened in Beijing were looking to the future with confidence. The momentous global events unfolding during the 25<sup>th</sup> anniversary of the conference encourages us to renew this trusting outlook. As the pandemic continues to unveil existing inequalities and systemic limitations, public servants are called to leverage such awareness together with novel opportunities offered by digital tools.

---

<sup>215</sup> Nussbaum 2003

# References

Abbott, E., Bompas, K. (1943). *The Woman Citizen and Social Security: A Criticism of the Proposals Made in the Beveridge Report as They Affect Women*. London: Bompas.

Adams, R. (2017). Michel Foucault: Biopolitics and Biopower. *Critical Legal Thinking*. [online] Available at: <https://criticallegalthinking.com/2017/05/10/michel-foucault-biopolitics-biopower/>

Adams-Prassl, A., Boneva, T., Golin, M. and Rauh, C. (2020). *Inequality in the Impact of the Coronavirus Shock: Evidence from Real Time Surveys*. Cambridge: Cambridge Institute for New Economic Thinking. [PDF] Available at: <https://www.inet.econ.cam.ac.uk/working-paper-pdfs/wp2018.pdf>

Addati, L., Cattaneo, U., Esquivel, V., and Valarino, I. (2018). *Care Work and Care Jobs for the Future of Decent Work*. ILO. [PDF] Available at: [https://www.ilo.org/wcmsp5/groups/public/-dgreports/-dcomm/-publ/documents/publication/wcms\\_633135.pdf](https://www.ilo.org/wcmsp5/groups/public/-dgreports/-dcomm/-publ/documents/publication/wcms_633135.pdf)

AI Now Institute. (2019). *Litigating Algorithms: Challenging Governments Use of Algorithmic Decision Making*. [PDF] Available at: <https://ainowinstitute.org/litigatingalgorithms.pdf>

AlgorithmWatch. (2019). *Automating Society: Taking Stock of Automated Decision-Making in the EU*. [PDF] Available at: [https://algorithmwatch.org/wp-content/uploads/2019/02/Automating\\_Society\\_Report\\_2019.pdf](https://algorithmwatch.org/wp-content/uploads/2019/02/Automating_Society_Report_2019.pdf)

AlgorithmWatch. (2019). *Submission to the Report of the United Nations Special Rapporteur on Extreme Poverty and Human Rights*. [PDF] Available at: <https://www.ohchr.org/Documents/Issues/Poverty/DigitalTechnology/AlgorithmWatch.pdf>

Allhutter D., Cech F., Fischer F., Grill G. and Mager A. (2020) *Algorithmic Profiling of Job Seekers in Austria: How Austerity Politics Are Made Effective*. *Front. Big Data* 3:5. [online] Available at: <https://www.frontiersin.org/articles/10.3389/fdata.2020.00005/full>

Alston, P. (2019). *Annual Reports - Special Rapporteur on Extreme Poverty and Human Rights - Digital Welfare States and Human Rights*. A/74/493. [PDF] Available at: <https://undocs.org/A/74/493>

Alston, P. (2019). *Brief by the United Nations Special Rapporteur on Extreme Poverty and Human Rights as Amicus Curiae in the Case of NJCM c.s./De Staat der Nederlanden (SyRI) Before the District Court of The Hague (Case Number C/09/550982/ HA ZA / 18/388)*. OHCHR. [PDF] Available at: <https://www.ohchr.org/Documents/Issues/Poverty/Amicusfinalversionsigned.pdf>

Ammerman, C., Groysberg, B. (2020). *Why the Crisis Is Putting Companies at Risk of Losing Female Talent*. *Harvard Business Review*. [online] Available at: <https://hbr.org/2020/05/why-the-crisis-is-putting-companies-at-risk-of-losing-female-talent>

Andrew, A., Cattan, S., Costa Dias, M., Farquharson, C., Kraftman, L., Krutikova, S., Phimister, A. and Sevilla, A. (2020). How Are Mothers and Fathers Balancing Work and Family Under Lockdown? IFS Briefing Note. The Institute for Fiscal Studies. [PDF] Available at: <https://www.ifs.org.uk/uploads/BN290-Mothers-and-fathers-balancing-work-and-life-under-lockdown.pdf>

Angwin J., Larson J., Mattu S. and Kirchner L. (2016). Machine Bias. ProPublica. [online] Available at: <https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>

Asthana, A. (2017). Labour Sounds Alarm over Rollout of Universal Credit Rape Clause into N Ireland. The Guardian. [online] Available at: <https://www.theguardian.com/uk-news/2017/jul/23/labour-sounds-alarm-universal-credit-rape-clause-northern-ireland>

Australian Government. (2018). Social Security (Parenting Payment Participation Requirements – Classes of Persons) Instrument 2018 (No. 1). [online] Available at: [https://www.legislation.gov.au/Details/F2018L00238/Explanatory%20Statement/Text#\\_ftn8](https://www.legislation.gov.au/Details/F2018L00238/Explanatory%20Statement/Text#_ftn8)

Australian Government. (2019). Targeted Compliance Framework Public Data Report—1 July 2018 to 30 June 2019. [PDF] Available at: [https://docs.employment.gov.au/system/files/doc/other/tcf\\_public\\_data\\_report\\_-\\_full\\_year\\_2018-19\\_0.pdf](https://docs.employment.gov.au/system/files/doc/other/tcf_public_data_report_-_full_year_2018-19_0.pdf)

Australian Government. (2020). Closing the Gap. [PDF] Available at: <https://ctgreport.niaa.gov.au/sites/default/files/pdf/closing-the-gap-report-2020.pdf>

Australian National Audit Office. (2018). The Implementation and Performance of the Cashless Debit Card Trial. [PDF] Available at: <https://www.anao.gov.au/work/performance-audit/implementation-and-performance-cashless-debit-card-trial>

Austrian Academy of Science. (2019). AMS Algorithm – a Sociotechnical Study. [online] Available at: <https://www.oeaw.ac.at/en/ita/projects/current-projects/ams-algorithm/>

Austrian Disability Council. (2019). Submission of the Austrian Disability Council to the 73rd session of the CEDAW Committee. [online] Available at: [https://tbinternet.ohchr.org/Treaties/CEDAW/Shared%20Documents/AUT/INT\\_CEDAW\\_CSS\\_AUT\\_35144\\_E.docx](https://tbinternet.ohchr.org/Treaties/CEDAW/Shared%20Documents/AUT/INT_CEDAW_CSS_AUT_35144_E.docx)

Bakker, I. (2007). Social Reproduction and the Constitution of a Gendered Political Economy. *New Political Economy*, 12:4, 541-556. [PDF] Available at: <https://www.tandfonline.com/doi/abs/10.1080/13563460701661561?src=recsys&journalCode=cnpe20>

Ball, J., Hopkins, N. (2013). GCHQ and NSA targeted charities, Germans, Israeli PM and EU chief. The Guardian. [online] Available at: <https://www.theguardian.com/uk-news/2013/dec/20/gchq-targeted-aid-agencies-german-government-eu-commissioner>

Barej, A. (2017). Universal Credit ‘Two-Child Rule’ Could Force 200,000 Children into Poverty. Public Finance. [online] Available at: <https://www.publicfinance.co.uk/news/2017/04/universal-credit-two-child-rule-could-force-200000-children-poverty>

Barnouw, E. (1978). *The sponsor: Notes on a modern potentate*. New York, NY: Oxford University Press.

Beck, J. (2016). *The Different Stakes of Male and Female Birth Control*. The Atlantic. [online] Available at: <https://www.theatlantic.com/health/archive/2016/11/the-different-stakes-of-male-and-female-birth-control/506120/>

Bennett, F. (2015). *The Impact of Austerity on Women*. In *Defence of Welfare 2*, Social Policy Association, pp. 59-61. [PDF] Available at: [http://www.social-policy.org.uk/wordpress/wp-content/uploads/2015/04/16\\_bennett.pdf](http://www.social-policy.org.uk/wordpress/wp-content/uploads/2015/04/16_bennett.pdf)

Bennett, F., Daly, M. (2014). *Poverty through a Gender Lens: Evidence and Policy Review on Gender and Poverty*. University of Oxford, Department of Social Policy and Intervention. [PDF] Available at: [https://www.spi.ox.ac.uk/sites/default/files/Gender\\_and\\_poverty\\_Bennett\\_and\\_Daly\\_final\\_12\\_5\\_14\\_28\\_5\\_14.pdf](https://www.spi.ox.ac.uk/sites/default/files/Gender_and_poverty_Bennett_and_Daly_final_12_5_14_28_5_14.pdf)

Beyond Blue. (2014). *Discrimination against Indigenous Australians: A snapshot of the views of non-Indigenous people aged 25-44*. [PDF] Available at: <https://www.beyondblue.org.au/docs/default-source/research-project-files/bl1337-report---tns-discrimination-against-indigenous-australians.pdf?sfvrsn=2/>

Blauw, S. (2020). *How a small group of activists put Big Brother on trial – and won*. The Correspondent. [online] Available at: <https://thecorrespondent.com/344/how-a-small-group-of-activists-put-big-brother-on-trial-and-won/43683320912-4dab9852>

Bridges, K. M. (2017). *The poverty of privacy rights*. Stanford, CA: Stanford University Press.

Bruehl, N. (2020). *Sie posten dicke Rechnung im Netz Eltern wollen Geld für Corona-Betreuung ihrer Kinder*. Express. [online] Available at: <https://www.express.de/news/panorama/sie-posten-dicke-rechnung-im-netz-eltern-wollen-geld-fuer-corona-betreuung-ihrer-kinder-36683694>

Buolamwini, J. (2016). *How I am fighting bias in algorithms*. TEDxBeaconStreet. [video] Available at: [https://www.ted.com/talks/joy\\_buolamwini\\_how\\_i\\_m\\_fighting\\_bias\\_in\\_algorithms](https://www.ted.com/talks/joy_buolamwini_how_i_m_fighting_bias_in_algorithms)

Butler, P. (2019). *Welfare Changes Drive Rising Poverty and Food Bank Use, Study Finds*. The Guardian. [online] Available at: <https://www.theguardian.com/society/2019/nov/05/welfare-changes-key-factor-rising-poverty-food-bank-use-study-finds>

Carter, J. (1998). *Postmodernity and the Fragmentation of Welfare*. London: Routledge.

Casey, S. (2019). *Automating Inequality, the Australian Way*. The Mandarin. [online] Available at: <https://www.themandarin.com.au/110574-automating-inequality-the-australian-way/>

Casey, S. (2019). *The Targeted Compliance Framework – Implications for Job Seekers*. National Social Security Rights Network. [online] Available at: <https://www.nssrn.org.au/social-security-rights-review/the-targeted-compliance-framework-implications-for-job-seekers/>

Centre for Social Justice. (2019). *Dynamic Benefits: Towards Welfare that Works*. [PDF] Available at: <https://www.centreforsocialjustice.org.uk/library/dynamic-benefits-towards-welfare-works>



Child Poverty Action Group. (2019). Computer Says 'No!' Stage one: Information Provision. [PDF] Available at: <https://cpag.org.uk/sites/default/files/files/policypost/Computer%20says%20%27no%21%27%20Stage%20one%20-%20information%20provision.pdf>

Child Poverty Action Group. (2019). Two-Child Limit Challenge. [online] Available at: <https://cpag.org.uk/welfare-rights/legal-test-cases/two-child-limit-challenge>

Child Poverty Action Group. (2020). Households Worse Off on Universal Credit Win Court of Appeal Test Case. [online] Available at: <https://cpag.org.uk/news-blogs/news-listings/households-worse-universal-credit-win-court-appeal-test-case>

Chuck, E. (2018). How Training Doctors in Implicit Bias Could Save the Lives of Black Mothers. NBC News. [online] Available at: <https://www.nbcnews.com/news/us-news/how-training-doctors-implicit-bias-could-save-lives-black-mothers-n873036>

Clinton, H. (1995). First Lady Hillary Rodham Clinton's Remarks to the Fourth Women's Conference in Beijing, China. Official YouTube channel of the William J. Clinton Presidential Library. [video] Available at: <https://www.youtube.com/watch?v=xXM4E23Efvk>

Cox, J. (2019). The California DMV Is Making \$50M a Year Selling Drivers' Personal Information. VICE. [online] Available at: [https://www.vice.com/en\\_us/article/evjekz/the-california-dmv-is-making-dollar50m-a-year-selling-drivers-personal-information](https://www.vice.com/en_us/article/evjekz/the-california-dmv-is-making-dollar50m-a-year-selling-drivers-personal-information)

Creasy, S. (2018). The Only Northern Irish Woman with a Choice About Abortion? Arlene Foster. The Guardian. [online] Available at: <https://www.theguardian.com/commentisfree/2018/may/29/northern-ireland-abortion-choice-arlene-foster-dup-rape-pregnancy>

Crenshaw, K. (1989). Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics. University of Chicago Legal Forum: Vol. 1989: Iss. 1, Article 8. [PDF] Available at: <https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=1052&context=uclf>

Crenshaw, K. (2016). The Urgency of Intersectionality. TED. [video] Available at: <https://www.youtube.com/watch?v=akOe5-UsQ2o>

Criado-Perez, C. (2019). The deadly truth about a world built for men – from stab vests to car crashes. The Guardian. [online] Available at: <https://www.theguardian.com/lifeandstyle/2019/feb/23/truth-world-built-for-men-car-crashes>

D'Ignazio, C., Klein, L., F. (2020). Data Feminism. Cambridge, MA: The MIT Press.

D'Ignazio, C. (2020). 5 Questions on Data and Accountability with Julia Angwin. Medium. [online] Available at: <https://medium.com/data-feminism/5-questions-on-data-and-accountability-with-julia-ON-angwin-89826cf74eca>

Deeming, C. (2015). Foundations of the workfare state — Reflections on the political transformation of the welfare state in Britain. Social Policy & Administration, 49, 862–886.

Deeming, C., Smyth, P. (2015). Social investment After Neoliberalism: Policy Paradigms and Political Platforms. *J. Soc. Policy* 44, 297–318. [PDF] Available at: [https://www.cambridge.org/core/services/aop-cambridge-core/content/view/C8E670BB1FOE2185FOEDDFB4B8C5AB8E/S0047279414000828a.pdf/social\\_investment\\_after\\_neoliberalism\\_policy\\_paradigms\\_and\\_political\\_platforms.pdf](https://www.cambridge.org/core/services/aop-cambridge-core/content/view/C8E670BB1FOE2185FOEDDFB4B8C5AB8E/S0047279414000828a.pdf/social_investment_after_neoliberalism_policy_paradigms_and_political_platforms.pdf)

Delano, M. (2015). I Tried Tracking My Period and It Was Even Worse Than I Could Have Imagined. Medium. [online] Available at: <https://medium.com/@maggied/i-tried-tracking-my-period-and-it-was-even-worse-than-i-could-have-imagined-bb46f869f45>

Della Mea, V. (2001). What is e-Health (2): The Death of Telemedicine? *Journal of Medical Internet Research*, 2001 Apr-Jun; 3(2): e22. [online] Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1761900/>

Department for Communities. (n.d.) Support for a child conceived without your consent. [PDF] Available at: [https://www.nidirect.gov.uk/sites/default/files/publications/bgc-forms-ncc1ni-is\\_1.pdf](https://www.nidirect.gov.uk/sites/default/files/publications/bgc-forms-ncc1ni-is_1.pdf)

Department for Work and Pensions. (2011). Welfare Reform Bill Universal Credit: Equality Impact Assessment. [online] Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/220152/eia-universal-credit-wr2011.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/220152/eia-universal-credit-wr2011.pdf)

Department for Work and Pensions. (2018). Policy Paper: Universal Credit Programme Full Business Case Summary. [online] Available at: <https://www.gov.uk/government/publications/universal-credit-programme-full-business-case-summary/universal-credit-programme-full-business-case-summary>

Department for Work and Pensions. (2019). Families with More than 2 Children: Claiming Benefits. [online] Available at: <https://www.gov.uk/guidance/claiming-benefits-for-2-or-more-children>

Department for Work and Pensions. (2019). Universal Credit Statistics: 29 April 2013 to 11 July 2019. [online] Available at <https://www.gov.uk/government/publications/universal-credit-29-april-2013-to-11-july-2019/universal-credit-statistics-29-april-2013-to-11-july-2019>

Digital Future Society. (2019). Measuring the margins: A global framework for digital inclusion. [online] Available at: <https://digitalfuturesociety.com/reports/an-updated-framework-to-measure-digital-inclusion-globally/>

Digital Future Society. (2019). Where emerging tech meets government: Automated decision-making systems and distributed ledger technologies in public innovation. [online] Available at: <https://digitalfuturesociety.com/reports/where-emerging-tech-meets-government/>

Donegan, M. (2019). It's Time for Men to Step Up and Share Responsibility for Birth Control. *The Guardian*. [online] Available at: <https://www.theguardian.com/commentisfree/2019/jun/05/male-birth-control-step-up-responsibility>

Dowd, T. (2020). Snowden Warns Governments Are Using Coronavirus to Build 'the Architecture of Oppression'. *Vice*. [online] Available at: [https://www.vice.com/en\\_us/article/bvge5q/snowden-warns-governments-are-using-coronavirus-to-build-the-architecture-of-oppression](https://www.vice.com/en_us/article/bvge5q/snowden-warns-governments-are-using-coronavirus-to-build-the-architecture-of-oppression)

Eddington, P. (2019). The Snowden Effect, Six Years On. Just Security. [online] Available at: <https://www.justsecurity.org/64464/the-snowden-effect-six-years-on/>

Electronic Platform for Adult Learning in Europe. (2017). Nearly Half of Europeans don't Have Basic Digital Skills. [online] Available at: <https://epale.ec.europa.eu/en/content/nearly-half-europeans-dont-have-basic-digital-skills>

Encyclopédie d'histoire numérique de l'Europe. (n.d.) Gender, nationality and naturalisation. Available at: <https://ehne.fr/en/article/gender-and-europe/gender-citizenship-europe/gender-nationality-and-naturalization>

Equality and Human Rights Commission. (2017). Letter to: Minister of State for Employment–Damian Hinds MP: Child Tax Credit (Amendment) Regulations 2017. [PDF] Available at: <https://www.equalityhumanrights.com/sites/default/files/letter-to-damian-hinds-child-tax-credits-rape-clause-21-april-2017.pdf>

Equality and Human Rights Commission. Provision of Goods, Facilities and Services to Trans People Guidance for Public Authorities: Meeting Your Equality Duties and Human Rights Obligations. [PDF] Available at: [https://www.ilga-europe.org/sites/default/files/provision\\_of\\_goods\\_facilities\\_and\\_services\\_to\\_trans\\_people\\_equality\\_and\\_human\\_rights\\_commission.pdf](https://www.ilga-europe.org/sites/default/files/provision_of_goods_facilities_and_services_to_trans_people_equality_and_human_rights_commission.pdf)

Eubanks, V. (2011). Digital Dead End: Fighting for Social Justice In The Information Age. Cambridge, MA: MIT Press.

Eubanks, V. (2018). Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor. New York, NY: St. Martin's Press.

EUR-Lex. (2016). Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation). [online] Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016R0679>

Euronews. (2020). Domestic Violence Cases Jump 30% During Lockdown in France. Euronews. [online] Available at: <https://www.euronews.com/2020/03/28/domestic-violence-cases-jump-30-during-lockdown-in-france>

European Commission. (2017). Europe's Digital Progress Report: Digital Public Services. [PDF] Available at: [http://ec.europa.eu/newsroom/document.cfm?doc\\_id=44393](http://ec.europa.eu/newsroom/document.cfm?doc_id=44393).

European Commission. (2017). The Gender Pay Gap Situation in the EU. [online] Available at: [https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/equal-pay/gender-pay-gap-situation-eu\\_en](https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/equal-pay/gender-pay-gap-situation-eu_en)

European Commission. (2017). The Gender Pay Gap Situation in the EU. [online] Available at: [https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/equal-pay/gender-pay-gap-situation-eu\\_en](https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/equal-pay/gender-pay-gap-situation-eu_en)

European Institute for Gender Equality. (2016). Gender Impact Assessment: Gender Mainstreaming Toolkit. [PDF] Available at: <https://genderinsite.net/sites/default/files/eigegenderimpactassessment.pdf>

European Institute for Gender Equality. (2016). Gender in Poverty and Social Inclusion. [PDF] Available at: <https://eige.europa.eu/publications/gender-poverty-and-social-inclusion>

European Institute for Gender Equality. (2017). Gender, Skills and Precarious Work in the EU: Research Note. [PDF] Available at: [https://eige.europa.eu/resources/ti\\_pubpdf\\_mh0217250enn\\_pdfweb\\_20170503163908.pdf](https://eige.europa.eu/resources/ti_pubpdf_mh0217250enn_pdfweb_20170503163908.pdf)

European Standard on Gender Mainstreaming in the ESF. (2014). Closing Gender Gaps. [online] Available at: <http://standard.gendercop.com/about-the-standard/why-gender-mainstreaming-is-important-in-the-esf/closing-gender-gaps/index.html>

European Union. (2017). Regulation (Eu) 2016/679 Of the European Parliament and of the Council of 27 April 2016 On The Protection of Natural Persons with Regard to the Processing Of Personal Data And On The Free Movement Of Such Data, And Repealing Directive 95/46/ Ec (General Data Protection Regulation). [online] Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R0679&from=EN#d1e2803-1-1>

Eurostat. (2017). Families with Children in the EU. [online] Available at: <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20170531-1>

Eurostat. (2019). Life Expectancy at Birth in the EU: Men vs. Women. [online] Available at: <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190725-1>

Eurostat. (2020). Euro Area Unemployment at 7.3%. [PDF] Available at: <https://ec.europa.eu/eurostat/documents/2995521/10662618/3-01042020-AP-EN.pdf/be3d73ee-6715-824b-2c23-f0512f12bdc6>

Evidence and Policy Review on Gender and Poverty. London: Joseph Rowntree Foundation. [PDF] Available at: [https://ora.ox.ac.uk/objects/uuid:2bc67a22-73a1-414e-9a87-c18b9ead2bce/download\\_file?file\\_format=pdf&safe\\_filename=Gender-and-poverty-Bennett-and-Daly-final.pdf&type\\_of\\_work=Working+paper](https://ora.ox.ac.uk/objects/uuid:2bc67a22-73a1-414e-9a87-c18b9ead2bce/download_file?file_format=pdf&safe_filename=Gender-and-poverty-Bennett-and-Daly-final.pdf&type_of_work=Working+paper)

Finn, E. (2017). How Predictions Can Change the Future. Slate. [online] Available at: <https://slate.com/technology/2017/09/when-computer-predictions-end-up-shaping-the-future.html>

Flaherty, K. (2018). Why Personas Fail. Nielsen Norman Group. [online] Available at: <https://www.nngroup.com/articles/why-personas-fail/>

Gaiaschi, C. (2014). Oltre il modello dual earner-dual carer: dalla conciliazione condivisa pertutt\* alla conciliazione condivisa fra tutt\*. About Gender, V. 3, N. 6. [PDF] Available at: <https://air.unimi.it/retrieve/handle/2434/246951/335622/186-1161-1-PB.pdf>

Gauvin, L., Tizzoni, M., Piaggese, S., Young, A., Adler, N., Verhulst, S., Ferres, L. and Cattuto, C. (2019). Gender Gaps in Urban Mobility. [PDF] Available at: [https://data2x.org/wp-content/uploads/2019/11/GenderGapsinUrbanMobility\\_GovLab-1.pdf](https://data2x.org/wp-content/uploads/2019/11/GenderGapsinUrbanMobility_GovLab-1.pdf)

Gingerbread. (2019). Single parents: facts and figures. [online] Available at: <https://www.gingerbread.org.uk/what-we-do/media-centre/single-parents-facts-figures/>

Glinser, B., Sauer, B., Gaitsch, M., Penz, O., and Hofbauer, J., (2018). Doing Gender in Public Services: Affective Labour of Employment Agents. Gender, Work and Organisation, Volume 26, Issue 7. [online] Available at: <https://onlinelibrary.wiley.com/doi/full/10.1111/gwao.12263#gwao12263-bib-0018>

Goedhart, N., Broerse, J., Kattouw, R., and Dedding, C. (2019). 'Just Having A Computer Doesn't Make Sense': the Digital Divide from the Perspective of Mothers with a Low Socio-Economic Position. *new media & society* 2019, Vol. 21(11-12) 2347 –2365. [PDF] Available at: <https://journals.sagepub.com/doi/pdf/10.1177/14614444819846059>

GSMA. (2019). Connected Women: The Mobile Gender Gap Report 2019. [PDF] Available at: <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/02/GSMA-The-Mobile-Gender-Gap-Report-2019.pdf>

Hao, K. (2020). AI can't predict how a child's life will turn out even with a ton of data. *MIT Technology Review*. [online] Available at: <https://www.technologyreview.com/2020/04/02/998478/ai-machine-learning-social-outcome-prediction-study/>

Harkness, S. (2016). The Effect of Motherhood and Lone Motherhood on the Employment and Earnings of British Women: A Lifecycle Approach. *European Sociological Review*, 32(6), pp.850-863. [online] Available at: <https://doi.org/10.1093/esr/jcw042>

Henriques-Gomes, L. (2019). Coalition Accused of Hiding Welfare Compliance Data in Jobseeker Report. *The Guardian*. [online] Available at: <https://www.theguardian.com/australia-news/2019/sep/25/coalition-accused-of-hiding-welfare-compliance-data-in-jobseeker-report>

Henriques-Gomes, L. (2019). ParentsNext: 80% of Recipients Who Had Payments Suspended Not at Fault, Data Shows. *The Guardian*. [online] Available at: <https://www.theguardian.com/australia-news/2019/sep/15/parentsnext-80-of-recipients-who-had-payments-suspended-not-at-fault-data-shows>

Henriques-Gomes, L. (2019). ParentsNext: Woman Caring for Sister's Seven Children Had Payments Cut Off. *The Guardian*. [online] Available at: <https://www.theguardian.com/australia-news/2019/jul/03/parentsnext-woman-caring-for-dead-sisters-children-had-payments-cut-off>

House of Commons Work and Pensions Committee. (2016). Concentrix: Fourth Report of Session 2016-2017. [PDF] Available at: <https://publications.parliament.uk/pa/cm201617/cmselect/cmworpen/720/720.pdf>

House of Commons Work and Pensions Committee. (2019). The Two-Child Limit: Third Report of Session 2019. [PDF] Available at: <https://publications.parliament.uk/pa/cm201919/cmselect/cmworpen/51/51.pdf>

Howard, M. (2018). Universal Credit & Financial Abuse: Exploring the links. [PDF] The Women's Budget Group. Available at: <https://wbg.org.uk/wp-content/uploads/2018/09/FINAL-full-report-financial-abuse-and-uc.pdf>

Hoyert, D., Uddin, S., and Miniño, A. (2020). Evaluation of the Pregnancy Status Checkbox on the Identification of Maternal Deaths. *National Vital Statistics Report*, Volume 69, Number 1. [PDF] Available at: [https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69\\_01-508.pdf](https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69_01-508.pdf)

Human Rights Law Centre. (2019). Preventing Technology from Entrenching Inequality: Submissions to the UN Special Rapporteur on Extreme Poverty and Human Rights. [PDF] Available at: <https://www.ohchr.org/Documents/Issues/Poverty/DigitalTechnology/HumanRightsLawCentre.pdf>

Humpage, L. (2018). Youth Service and Money Management in New Zealand: Preliminary Research Findings. [PDF] Available at: <https://www.ohchr.org/Documents/Issues/Poverty/DigitalTechnology/UniversityAucklandAppendix1.pdf>

ILO. (2000). C183 - Maternity Protection Convention, 2000 (No. 183). [online] Available at: [https://www.ilo.org/dyn/normlex/en/f?p=NORMLXPUB:12100:0::NO::P12100\\_ILO\\_CODE:C183](https://www.ilo.org/dyn/normlex/en/f?p=NORMLXPUB:12100:0::NO::P12100_ILO_CODE:C183)

International Encyclopaedia of Social Policy. (n.d.) Male breadwinner model. Routledge. [online] Available at: <http://cw.routledge.com/ref/socialpolicy/male.html>

Irion, K. (2012). Government Cloud Computing and National Data Sovereignty. Policy and Internet, 4(3-4), 40-71. [PDF] Available at: [https://pure.uva.nl/ws/files/2700969/166437\\_SSRN\\_IRION\\_Government\\_Cloud\\_Computing.pdf](https://pure.uva.nl/ws/files/2700969/166437_SSRN_IRION_Government_Cloud_Computing.pdf)

ISTAT. (2019). Aumenta l'Uso di Internet ma il 41,6% Degli Internauti Ha Competenze Digitali Basse. Cittadini e ICT 2019. [PDF] Available at: <https://www.istat.it/it/files//2019/12/Cittadini-e-ICT-2019.pdf>

ITU. (2017). ICT Facts and Figures 2017. [PDF] Available at: <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2017.pdf>

Jansen, N. (2019). Call for submissions: On Digital Technology, Social Protection and Human Rights. A Report from the Netherlands. [PDF] Available at: <https://www.ohchr.org/Documents/Issues/Poverty/DigitalTechnology/ITCU.pdf>

Jaramillo, E. (2020) Femtech in 2020: Investors Share Trends and Opportunities In Women's Health Technology. Forbes. [online] Available at: <https://www.forbes.com/sites/estrellajaramillo/2020/01/08/femtech-2020-investors-trends-and-opportunities-in-womens-health-technology/#6877b8017d54>

Kayser-Bril, N. (2019). Austria's Employment Agency Rolls out Discriminatory Algorithm, Sees No Problem. AlgorithmWatch. [online] Available at: <https://algorithmwatch.org/en/story/austrias-employment-agency-ams-rolls-out-discriminatory-algorithm/>

Kelly, E. (2020). Digital Divide 'Isolates and Endangers' Millions of UK's Poorest. The Guardian. [online] Available at: <https://www.theguardian.com/world/2020/apr/28/digital-divide-isolates-and-endangers-millions-of-uk-poorest>

Kingma, B., van Marken Lichtenbelt, W. (2015). Energy consumption in buildings and female thermal demand. Nature Clim Change 5, 1054–1056.

Lopes, P. (2019). Reinforcing Intersectional Inequality via the AMS Algorithm in Austria. Proceedings of the STS Conference Graz 2019. [PDF] Available at: <https://diglib.tugraz.at/download.php?id=5e29a88e0e34f&location=browse>

Metcalf, J., Moss, E., and Boyd, D. (2019). Owning Ethics. Data & Society. [PDF] Available at: <https://datasociety.net/wp-content/uploads/2019/09/Owning-Ethics-PDF-version-2.pdf>

National Audit Office. (2013). Universal Credit: early progress. [PDF] Available at: <https://www.nao.org.uk/wp-content/uploads/2013/09/10132-001-Universal-credit.pdf>

National Council of Single Mothers and their Children & the Council of Single Mothers and their Children. (2019). ParentsNext: Help or hindrance? [PDF] Available at: <https://www.csmc.org.au/wp-content/uploads/2019/08/ParentsNext-Survey-Report-August-2019.docx.pdf>



Northern Ireland Human Rights Commission. (2019). Submission to the Special Rapporteur on Extreme Poverty and Human Rights' Thematic Report to the UN General Assembly on Digital Technology, Social Protection and Human Rights. [online] Available at: <https://www.ohchr.org/EN/Issues/Poverty/Pages/DigitalTechnology.aspx>

Nussbaum, M. (2003). Capabilities as Fundamental Entitlements: Sen and Social Justice. *Feminist Economics* 9(2 – 3), 2003, 33 – 59. [PDF] Available at: <https://philpapers.org/archive/nuscaf.pdf>

Observatory of Public Sector Innovation. (n.d.) Toolkit: Digital Transformation. [online] Available at: <https://oecd-opsi.org/guide/digital-transformation/>

OECD. (2016). OECD Comparative Study: Digital Government Strategies for Transforming Public Services in the Welfare Areas. [PDF] Available at: <https://www.oecd.org/gov/digital-government/Digital-Government-Strategies-Welfare-Service.pdf>

OECD. (2019). OECD Family Database: PF2.1. Parental Leave Systems. [PDF] Available at: [https://www.oecd.org/els/soc/PF2\\_1\\_Parental\\_leave\\_systems.pdf](https://www.oecd.org/els/soc/PF2_1_Parental_leave_systems.pdf)

OECD. (n.d.) Employment: Unemployment Rate, by Sex and Age Group. [online] Available at: <https://stats.oecd.org/index.aspx?queryid=54743>

Office for National Statistics (2017). Sexual Offences in England and Wales: Year Ending March 2017. [online] Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/articles/sexualoffencesinenglandandwales/yearendingmarch2017>

Office for National Statistics. (2019). Crime Survey for England and Wales: Year Ending September 2019. [online] Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/bulletins/crimeinenglandandwales/yearendingseptember2019>

OHCHR. (2020). Ireland's Public Services Card Discriminates Against the Marginalised, Warns UN Rights Expert. [online] Available at: <https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25811&LangID=E>

Our Health and Welfare. (n.d.) [online] Available at: <https://ourhealthandwelfare.org/>

Oxford Centre on Migration, Policy and Society. (2018). Unsettled Status? Which EU Citizens are at Risk of Failing to Secure their Rights after Brexit? [online] Available at: <https://migrationobservatory.ox.ac.uk/resources/reports/unsettled-status-which-eu-citizens-are-at-risk-of-failing-to-secure-their-rights-after-brexist/>

Panoptykon. (2015). Profiling the Unemployed in Poland: Social and Political Implications of Algorithmic Decision Making. [PDF] Available at: [https://panoptykon.org/sites/default/files/leadimage-biblioteka/panoptykon\\_profiling\\_report\\_final.pdf](https://panoptykon.org/sites/default/files/leadimage-biblioteka/panoptykon_profiling_report_final.pdf)

Parliamentary Joint Committee on Human Rights. (2018). Human Rights Scrutiny Report. [PDF] Available at: [https://www.aph.gov.au/~media/Committees/Senate/committee/humanrights\\_ctte/reports/2018/Report%2010/Report.pdf?la=en&usg=AOvVawOH042iKmRVsx\\_6TPv68TIM](https://www.aph.gov.au/~media/Committees/Senate/committee/humanrights_ctte/reports/2018/Report%2010/Report.pdf?la=en&usg=AOvVawOH042iKmRVsx_6TPv68TIM)

Pearce, D. (1978). The Feminization of Poverty: Women, Work and Welfare. Urban and Social Change Review, 11, 1-2, 28-36, 78. [PDF] Available at: [http://www5.galib.uga.edu/reserves/docs/scanner%20pc%20shelter/ill%20scans/12-9-19/odeyemi\\_the%20feminization.pdf](http://www5.galib.uga.edu/reserves/docs/scanner%20pc%20shelter/ill%20scans/12-9-19/odeyemi_the%20feminization.pdf)

Penz, O., Sauer, B., Gaitsch, M., Hofbauer, J., and Glinsner, B. (2017). Post- bureaucratic encounters: affective labour in public employment services. Crit. Soc. Policy 37, 540–561. [PDF] Available at: [https://www.researchgate.net/publication/312409662\\_Post-bureaucratic\\_encounters\\_Affective\\_labour\\_in\\_public\\_employment\\_services](https://www.researchgate.net/publication/312409662_Post-bureaucratic_encounters_Affective_labour_in_public_employment_services)

Pope, R. (2020). Universal Credit: Digital Welfare. [online] Available at: <https://pt2.works/reports/universal-credit-digital-welfare>

Pritchard, S. (2020). The Latest Government Data Breaches in 2019/2020. The Daily Swig. [online] Available at: <https://portswigger.net/daily-swig/the-latest-government-data-breaches>

Privacy International. (2018). From Oppression to Liberation: Reclaiming the Right to Privacy. [PDF] Available at: <https://privacyinternational.org/sites/default/files/2018-11/From%20oppression%20to%20liberation-reclaiming%20the%20right%20to%20privacy.pdf>

Privacy International. (2019). Privacy International's Submission on Digital Technology, Social Protection and Human Rights. Submissions for the Thematic Report to the UN General Assembly on Digital Technology, Social Protection and Human Rights. [PDF] Available at: <https://www.ohchr.org/Documents/Issues/Poverty/DigitalTechnology/PrivacyInternational.pdf>

Privacy International. (2019). Reclaiming the Right to Privacy: an Opportunity to Challenge Gender Inequality. [online] Available at: <https://privacyinternational.org/news-analysis/2762/reclaiming-right-privacy-opportunity-challenge-gender-inequality>

Rape Crisis. (2019). All Kids Count: The Impact of the Two-Child Limit After Two Years. [online] Available at: <https://rapecrisis.org.uk/get-informed/reports-briefings/all-kids-count-the-impact-of-the-two-child-limit-after-two-years/>

Razavi, S. (1998). Gendered Poverty and Social Change: An Issues Paper. United Nations Research Institute for Social Development Discussion Paper No. 9. [PDF] Available at: [http://www.unrisd.org/80256B80256B3C005BCCF9/\(httpAuxPages\)/OE53CA577A663DA780256B67005B6FB5/\\$file/dp94.pdf](http://www.unrisd.org/80256B80256B3C005BCCF9/(httpAuxPages)/OE53CA577A663DA780256B67005B6FB5/$file/dp94.pdf)

Rubalcava, L., Teruel, G., Thomas, D. (2002). Welfare Design, Women's Empowerment and Income Pooling. [PDF] Available at: [https://www.researchgate.net/publication/252544326\\_Welfare\\_Design\\_Women's\\_Empowerment\\_and\\_Income\\_Pooling](https://www.researchgate.net/publication/252544326_Welfare_Design_Women's_Empowerment_and_Income_Pooling)

Salem, J., Gupta, S. (2019). Closing the Gap: Group-Aware Parallelization for the Secretary Problem with Biased Utilities. [PDF] Available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3444283](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3444283)

Sénat. (2014). Comment Enrayer le Cycle de la Pauvreté ? Osons la Fraternité ! [online] Available at: [https://www.senat.fr/rap/r13-388/r13-388\\_mono.html](https://www.senat.fr/rap/r13-388/r13-388_mono.html)



Snijder, M. (2016). Biometrics, Surveillance and Privacy. European Joint Research Centre, ERNCIP Thematic Group Applied Biometrics for the Security of Critical Infrastructure. [PDF] Available at: [https://erncip-project.jrc.ec.europa.eu/sites/default/files/JRC104392\\_biometrics\\_surveillance\\_and\\_privacy\\_final.pdf](https://erncip-project.jrc.ec.europa.eu/sites/default/files/JRC104392_biometrics_surveillance_and_privacy_final.pdf)

Statista. (2020). Number of Countries Where the Highest Position of Executive Power Was Held by a Woman, in Each Year from 1960 to 2020. [online] Available at: <https://www.statista.com/statistics/1058345/countries-with-women-highest-position-executive-power-since-1960/>

Tapsfield, J. (2017). Fury as Government Unveils 'Demaneing' Form Asking Rape Victims to Prove Their Child Was 'Conceived Without Consent' to Get Benefits. The Daily Mail. [online] Available at: <https://www.dailymail.co.uk/news/article-4386664/Rape-victims-prove-child-conceived-without-consent.html>

Tatman, R. (2016). Google's speech recognition has a gender bias. [online] Available at: <https://makingnoiseandhearingthings.com/2016/07/12/googles-speech-recognition-has-a-gender-bias/>

The African American Policy Forum. (2015). #SayHerName. [online] Available at: <https://aapf.org/shn-campaign>

The Irish Times. (2018). Number of Reported Rapes in Northern Ireland Rises. [online] Available at: <https://www.irishtimes.com/news/crime-and-law/number-of-reported-rapes-in-northern-ireland-rises-1.3587273>

The Power to Persuade. (2019). Supercharging Discrimination: The Targeted Compliance Framework and the Impact of Automated Decision-making. [online] Available at: <https://www.powertopersuade.org.au/blog/supercharging-discrimination-the-targeted-compliance-framework-and-the-impact-of-automated-decision-making/20/8/2019>

The Trussel Trust. (2019). The State of Hunger: Introduction to a Study of Poverty and Food Insecurity in the UK. [PDF] Available at: <https://www.trusselltrust.org/wp-content/uploads/sites/2/2019/06/SoH-Interim-Report-Final-2.pdf>

Thomas, E. (2018). Tagged, Tracked and in Danger: How the Rohingya Got Caught in the UN's Risky Biometric Database. Wired. [online] Available at: <https://www.wired.co.uk/article/united-nations-refugees-biometric-database-rohingya-myanmar-bangladesh>

TUC. (2017). Personal protective equipment and women. Guidance for workplace representatives on ensuring it is a safe fit. [PDF] Available at: <https://www.tuc.org.uk/sites/default/files/PPEandwomenguidance.pdf>

UN High Commissioner for Human Rights. (2017). Impact of Multiple and Intersecting Forms of Discrimination and Violence in the Context of Racism, Racial Discrimination, Xenophobia and Related Intolerance on the Full Enjoyment of All Human Rights by Women and Girls: Report of the United Nations High Commissioner for Human Rights. A/HRC/35/10. [PDF] Available at: <https://digitallibrary.un.org/record/1298043?ln=en>

UN Statistics Division. (2015). The World's Women 2015: Trends and Statistics. Chapter 8: Poverty. [online] Available at: <https://unstats.un.org/unsd/gender/chapter8/chapter8.html>

UN Women. (2015). Infographic: Human Rights of Women. [image] Available at: <https://www.unwomen.org/en/digital-library/multimedia/2015/12/infographic-human-rights-women>

UN Women. (2020). Why do we still need to talk about gender equality in the shadow of the COVID-19 pandemic? [online] Available at: <https://eca.unwomen.org/en/news/stories/2020/4/why-do-we-still-need-to-talk-about-gender-equality-in-the-shadow-of-the-covid19-pandemic>

UN. (1985). The Nairobi Forward-looking Strategies for the Advancement of Women (excerpts). Available at: <https://www.un.org/unispal/document/auto-insert-207862/>

UN. (1995). Beijing Declaration and Platform for Action: Beijing+5 Political Declaration and Outcome. [PDF] Available at: [https://beijing20.unwomen.org/~media/headquarters/attachments/sections/csw/pfa\\_e\\_final\\_web.pdf](https://beijing20.unwomen.org/~media/headquarters/attachments/sections/csw/pfa_e_final_web.pdf)

UN. (2016). Integrating a Gender Perspective into Statistics. [PDF] Available at: <https://unstats.un.org/unsd/demographic-social/Standards-and-Methods/files/Handbooks/gender/Integrating-a-Gender-Perspective-into-Statistics-E.pdf>

UN. (2020). Press Release: Member States Agree to Fully Implement the Beijing Declaration On Gender Equality, Addressing Gaps That Hold Women Back. [online] Available at: <https://www.unwomen.org/en/news/stories/2020/3/press-release-csw64-adopts-political-declaration>

Uniting Communities. (2019). Submission to the United Nations Special Rapporteur on Extreme Poverty and Human Rights, for the Thematic Report to the UN General Assembly on Digital Technology, Social Protection and Human Rights. [PDF] Available at: <https://www.ohchr.org/Documents/Issues/Poverty/DigitalTechnology/UnitingCommunities.pdf>

van Ark, T. (2020). Kamerbrief naar aanleiding van vonnis rechter inzake SyRI. [PDF] Available at: [https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/kamerstukken/2020/04/23/kamerbrief-naar-aanleiding-van-vonnis-rechter-inzake-syri/Kamerbrief+naar+aanleiding+van+vonnis+rechter+inzake+SyRI\\_definitief.pdf](https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/kamerstukken/2020/04/23/kamerbrief-naar-aanleiding-van-vonnis-rechter-inzake-syri/Kamerbrief+naar+aanleiding+van+vonnis+rechter+inzake+SyRI_definitief.pdf)

Varley, G. (2019). Why are women leaving technology jobs? European Women in Technology blog. [online] Available at: <https://www.europeanwomenintech.com/blog/why-are-women-leaving-technology-jobs>

Vervloesem, K. (2020). How Dutch Activists Got an Invasive Fraud Detection Algorithm Banned. AlgorithmWatch. Available at: <https://algorithmwatch.org/en/story/syri-netherlands-algorithm/>

Vincent, J. (2015). Google's algorithms advertise higher paying jobs to more men than women. The Verge. [online] Available at: <https://www.theverge.com/2015/7/7/8905037/google-ad-discrimination-adfisher>

Wachter, S., Mittelstadt, B. and Russell C. (2020). Why Fairness Cannot Be Automated: Bridging the Gap Between EU Non-Discrimination Law and AI. [PDF] Available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3547922](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3547922)

Walker, P. (2017). Tax Credit 'Rape Clause' Becomes Law Without Parliamentary Vote. The Guardian. [online] Available at: <https://www.theguardian.com/law/2017/mar/16/tax-credit-clause-becomes-law-without-parliament-vote>

Weinberg, L. (2017). Rethinking Privacy: A Feminist Approach to Privacy Rights after Snowden. Westminster Papers in Communication and Culture, 12(3), pp.5–20. [PDF] Available at: <https://www.westminsterpapers.org/articles/10.16997/wpcc.258/>

Wezerek, G., and Ghodsee K., R. (2020). Women's Unpaid Labor is Worth \$10,900,000,000,000. The New York Times. [online] Available at: <https://www.nytimes.com/interactive/2020/03/04/opinion/women-unpaid-labor.html>

Whiteside, N. (2014). The Beveridge Report and Its Implementation: A Revolutionary Project? Histoire@Politique. Politique, culture, société, n°24. [PDF] Available at: [https://www.histoire-politique.fr/documents/24/dossier/pdf/HP\\_Dossier\\_Noel\\_Whiteside\\_def.pdf](https://www.histoire-politique.fr/documents/24/dossier/pdf/HP_Dossier_Noel_Whiteside_def.pdf)

Whittaker, Z. (2019). Many Smart Home Device Makers Still Don't Say if They Give Your Data to the Government. TechCrunch. [online] Available at: <https://techcrunch.com/2019/12/11/smart-home-tech-user-data-government/>

Whittle, S., Turner, L., and Al-Alami, M. (2007). Engendered Penalties: Transgender and Transsexual People's Experiences of Inequality and Discrimination. London, UK: Press for Change. [PDF] Available at: <http://www.pfc.org.uk/pdf/EngenderedPenalties.pdf>

Women's Budget Group. (2019). DWP Data Reveals: Women and Children Continue to be Worst Affected by Poverty. [online] Available at: <https://wbg.org.uk/blog/dwp-data-reveals-women-continue-to-be-worst-affected-by-poverty/>

World Bank. (2018). Gender Differences in Poverty and Household Composition through the Life-cycle: A Global Perspective. Available at: <http://documents.worldbank.org/curated/en/135731520343670750/pdf/WPS8360.pdf>

World Health Organisation. (2011). Annex 5. Handout – Sample Gender Analysis Matrix: Malaria. Gender Mainstreaming Manual for Health Managers: a practical approach. [PDF] Available at: [https://www.who.int/gender/mainstreaming/Module\\_2\\_Handout\\_Gender\\_and\\_Malaria.pdf](https://www.who.int/gender/mainstreaming/Module_2_Handout_Gender_and_Malaria.pdf)

Zabel, H., Hübgen, S. (2018). A Life-Course Approach to Singlemothers' Economic Wellbeing in Different Welfare States, in: Nieuwenhuis, Rense Maldonado, Laurie C. (Eds.): The Triple Bind of Single-Parent Families: Resources, Employment And Policies to Improve Well-Being, ISBN 978-1-4473-3365-4, Policy Press, Bristol, pp. 171-193. [PDF] Available at: [https://www.econstor.eu/bitstream/10419/179004/1/f-21208-full-text-Zabel-et\\_al-Approach-v3.pdf](https://www.econstor.eu/bitstream/10419/179004/1/f-21208-full-text-Zabel-et_al-Approach-v3.pdf)

Zhao, J., Wang, T., Yatskar, M., Ordonez, V., and Chang, K. (2017). Men Also Like Shopping: Reducing Gender Bias Amplification using Corpus-level Constraints. [online] Available at: <https://arxiv.org/abs/1707.09457>

# Acknowledgements

## Lead author

- **Marta Arniani** - Founder, Futuribile

## Co-authors

- **Tanya Alvarez** - Researcher, Digital Future Society Think Tank

## Expert contributors

This report draws on the expertise and inputs of the following expert contributors:

- **Anne Kaun** – researcher and lecturer, Södertorn University
- **Dr. Ansgar Koene** – senior research fellow at the Horizon Digital Economy Research institute, University of Nottingham, UK
- **Belén Arribas** – lawyer specialist in technology law, Barcelona Bar Association (ICAB)
- **Catherine d’Ignazio** – director, Data + Feminism Lab, Massachusetts Institute of Technology (MIT)
- **Caroline Sindors** – machine-learning-design researcher and artist, Convocation Design + Research
- **Chris Clifton** – professor, Purdue University
- **Christiaan van Veen** – director, Digital Welfare State and Human Rights Project, New York University (NYU)
- **Janet Veitch** – chair, Women’s Budget Group
- **Karma Peiró** – tech journalist
- **Laia Serra** – lawyer specialist in gender equality, Barcelona Bar Association (ICAB)
- **Naomi Appelman** – PhD researcher, University of Amsterdam
- **Rita Griffiths** – independent researcher and policy expert

- **Dr. Ronan Fahy** – senior researcher at the Institute for Information Law (IViR), University of Amsterdam
- **Dr. Rumman Chowdhury** – responsible AI lead, Accenture
- **Sally Dyson** – head of digital and programs, Scotland Council for Voluntary Organisations
- **Dr. Swati Gupta** – assistant professor, Georgia Tech
- **Tijmen Wisman** – assistant professor of privacy law, Vrije Universiteit of Amsterdam

## Digital Future Society Think Tank team

Thank you to the following Digital Future Society Think Tank colleagues for their input and support in the production of this report:

- **Carina Lopes** - Head of the Digital Future Society Think Tank
- **Nicole Harper** - Editor, Digital Future Society Think Tank
- **Olivia Blanchard** - Researcher, Digital Future Society Think Tank

## Citation

Please cite this report as:

- Digital Future Society. (2020). Towards gender equality in digital welfare. Barcelona, Spain.

