Technical Brief 1: Designing gender-responsive data projects

Synthesis of key frameworks and guidelines

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Historically, data collection has excluded and invisibilized the experiences of women and marginalized communities.[1] For example, the exclusion of women's unpaid care work in labor force statistics and national income accounts has invisibilized women's contributions and led to the undervaluing of care work in public policy.[2] A lack of data on women—especially black and indigenous women—in health studies has resulted in inadequate risk-prediction models and a fatal under-diagnosing of women's risks of cancer, heart disease, and tuberculosis, among other conditions.[3] Likewise, evidence from Zika, Ebola, and now COVID-19 illustrate the differentiated impacts of infectious disease based on age, gender, ethnicity, and occupation. Yet, as of September 2020 only 27 percent of confirmed COVID-19 cases reported to the World Health Organization included data on sex and age, with far fewer including other vulnerability factors.[4] These types of historical and ongoing exclusions have ripple effects—creating and reinforcing social, economic, and political inequalities.

Data, in its many forms, shapes perceptions and actions. Data can help identify where action is needed, inform the design of policies, services, and programs, and be used to assess the impact of actions. Biased and incomplete data thus results in policies, services and programs, which fail to consider—or consciously ignore—the potential harms or risks to women and marginalized communities.[5]

Gender-responsive data projects seek to address these historical biases and gaps. Gender-responsive data projects do not merely address gender data gaps (see Box 1)—rather, they consider gender at all stages of the data lifecycle. Gender-responsive data projects are rights-based, and thus prioritize the protection of subjects' data rights. By leveraging feminist research methods, gender-responsive data projects reveal and respond to multiple and overlapping contextual

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[1] Criado-Perez 2019; D'Ignazio & Klein 2020; Fuentes & Cookson 2020

[2] Benería, Berik & Floro, 2016

[3] Criado-Perez 2019; Kalinowski et al 2019; Prince et al 2018

[4] Heidari et al 2020

[5] Criado-Perez 2019

dimensions of inequality (including gender, age, sexuality, race, ethnicity, geography, ability, and income). In doing so, gender-responsive data projects lay the foundation for more just, inclusive, and transformative policy, service, and program development, including more tailored and effective public health interventions.

The COVID-19 pandemic has highlighted the importance of gender-responsive data collection for an equitable and just response and recovery. On the one hand, the pandemic has made traditional methods of data collection more challenging or at times impossible, resulting in the use of remote methods that present new risks to women and marginalized communities.[6] On the other hand, the pandemic—similar to past infectious disease outbreaks[7]—has catalyzed experimental data initiatives to support a more evidence-driven approach to pandemic response.

This Technical Brief[8] signposts researchers and data producers to established and emerging best practice frameworks for designing gender-responsive data projects. Rather than focus on the 'what', this Brief provides a series of guiding questions that show researchers and data producers **how to operationalize gender-responsive, feminist, and intersectional principles and perspectives** throughout the project lifecyle. This Brief also seeks to highlight that these principles are not just catchy slogans: they can be put into practice in ways that improve research project processes and outcomes, including by ensuring that efforts to leverage data and AI maximize social good— and minimize harm.

Box 1: What are Gender Data Gaps?

A mainstream theory of change in international development is that progress on gender inequalities depends upon closing 'the gender data gap,' which is often taken to mean the lack of sex-disaggregated statistics (e.g., on mortality rates during climate disasters), or of statistics that reflect dynamics considered specific to women and girls' lives (e.g., on how a health crisis impacts rates of gender-based violence or child marriage).[9]

Yet the conflation of gender data with statistics reduces the gender data gap to a mere 'counting' problem that is resolvable with quantitative research methods alone,[10] neglecting qualitative methods that can and should be integrated into data projects—even, and perhaps especially, where these projects are leaning more heavily on quantitative data and data derived from new or unconventional technologies.

[6] Singh et al 2021
[7] Kozlakidis et al. 2020
[8] While Technical Brief #1 discusses the overarching principles of designing gender-responsive data projects, forthcoming Technical Briefs will go into further depth on making data **accessible**, **accountable**, and **actionable**.
[9] This framing of the gender data gap has also largely neglected to include the importance of data about gender diverse populations, or about men and boys.
[10] Fuentes & Cookson 2020.

Indeed, gender-responsive data projects should incorporate insights from both quantitative and qualitative data sources and attend to the underlying power dynamics that shape a project through the lifecycle, including how (and by who) the priorities and methods for data collection are determined, and how (and by who) data is processed, analyzed, and used.

Box 2: Possibilities for gender-responsive (or even feminist) AI?

Predictive analytics and AI have been heralded as the 'future of public policy' and key for ensuring more efficient, effective, and data-driven governance.[11] Yet, in a world of incomplete and biased data sets—and from a feminist standpoint—AI presents a number of ethical concerns. Indeed, over the past several years, numerous studies have illustrated how biased AI systems are automating racism and misogyny, often with minimal regulation and oversight.[12]

Still, feminist movements are not only critiquing the current use of these new technologies: they're also presenting new ways to leverage AI technology for social change. For example, Josie Swords' **Feminist Chatbot Design Process (FCDP)** leverages feminist research methods and reflective practices to develop chatbots that help challenge—rather than reinforce—gender inequalities.[13] Research illustrates that when chatbots are represented as a woman, their design is based on gender stereotypes, which may reproduce and reinforce harmful norms and perceptions. To counter such practices, Sword's FCPD provides a series of reflective questions that encourage design and development teams to consider gender, inequalities, and personal as well as organizational biases at all phases of the design process. Questions include:

- Technology does not sit in isolation of political, social, economic, cultural, technological, legal, and environmental issues. Do you have a good understanding of the **ecosystem** your product will be part of?
- Rather than design a chatbot for 'universal usability' – aka a single, universal user – can you identify a **'marginal' user** who would benefit from your chatbot?
- What are the different **participatory methods** you have available to you so that your marginal user can co-create or have direct input into the development of your chatbot?
- In the design of the chatbot, are there any **assumptions** about how your user will engage or act towards the chatbot?

While these questions may be specific for feminist chatbot design, they illustrate how personal reflection remains an accessible first step for combatting the harmful biases often underlying AI-based technologies.

[11] Thapa, 2019
[12] D'Ignazio & Klein 2020; Cookson, Zulver, Fuentes & Langworthy 2020; Buolamwini and Gebru, 2018
[13] Swords, 2017

Designing gender-responsive data projects: Questions to consider[14]	
PLAN	• Which communities and perspectives are included within my data project's team? **Which are excluded?** How might our team's representation influence our data collection, analysis, and actionability? • How can we partner with or otherwise support and amplify the work of **local grassroots organizations**? • What potential risks might our proposed form of data collection present to data subjects and/or **target beneficiary communities**[15] and how can we reduce these? • Have we meaningfully **consulted** with data subjects and/or target communities (e.g., via participatory action research methods) concerning the design of the project, including its intended impacts and potential harmful unintended consequences? • How is our proposed data project balancing respect for local perspectives, national laws, as well as established international standards?
COLLECT	• Which communities are and *are not* represented in our data collection process? • How can we integrate other data sources to complement and help contextualize the proposed data collection method? • How is **informed consent** being confirmed from data subjects? • What are the possible risks (e.g., visibility, exposure) introduced by collecting and sharing data on marginalized communities? • How are **risks** or potential **unintended consequences** from data collection being monitored and mitigated?
PROCESS	• How have we documented the **assumptions and choices** that informed data cleaning and categorization processes?
ANALYZE	• Have we assessed whether our analysis relies on proxies that might introduce **bias or blindspots**?

[14] Please note that this is not a comprehensive list of questions for data projects. Additional guidelines should be consulted as well. For example, most data projects require the authorization of an institutional review board (IRB). We also recommend visiting The GovLab's Data Responsibility Journey, a user-friendly assessment tool that outlines the opportunities and risks to consider at each stage of the data lifecycle.

[15] Target community refers to the communities that will likely be impacted by your data project, which may or may not include the specific data subjects who directly participate in the project.

	• Before sharing any data or findings (next step), have we requested feedback from key stakeholder communities and front-line researchers? How does our data analysis reflect their concerns and lived experiences?
SHARE	• Even where data exists, this does not guarantee that they will be widely used. How have we addressed potential disconnects or technical capacity gaps among our expected **data users**? For example, have we considered producing "**data sheets**"[16] and user-friendly visualizations to ensure that the data is accessible for a range of data users? • What plans have we made to strengthen communication and collaboration between our team (the **data producers**) and data users?[17] Are there opportunities for iteration? For example, have we considered webinar engagements or administering a user-survey on our data portal site to generate feedback on how actionable the data is?

Box 3: Ladysmith's Cosas de Mujeres Project

Ladysmith's **Cosas de Mujeres**[18] project provides another example on how to practically design more gender-responsive data projects through co-design, thoughtful iteration, and feminist standards of care.[19] Driven by the expressed needs of grassroots women's organizations, Cosas de Mujeres leverages WhatsApp to connect Colombian and Venezuelan women with the empowerment and protection services they need, while generating actionable data on gender-based violence. Cosas de Mujeres was first piloted in January 2020 at the Colombia-Venezuela border, in the city of Cucuta. Since then, the project has expanded to two more Colombian cities: Cartagena and Bucaramanga.[20]

While the project is based on six key design principles, this brief highlights those that may be most relevant for new gender-responsive data initiatives:

1. **Technologies are tools, not solutions**. While Cosas de Mujeres may require a digital platform, this is just one of many tools the project leverages to address gender-based violence. For example, the vast majority of the project focuses on socializing and building trust in the platform through workshops with women's groups, or engaging with service-providers in order to more meaningfully connect data findings with policy change.

[16] To accommodate data users with lower levels of data literacy, researchers and data producers can include "data sheets" alongside data products (portals, visualizations, papers) with information on the **origins**, **limitations**, and **appropriate uses** of the data. This is also an important strategy for closing accessibility gaps for civil society stakeholders with fewer resources. See Cookson, Zulver, Fuentes & Langworthy 2020.

[17] See ESCAP/UN Women 2020, Chapter 3.

[18] Zulver, Cookson & Fuentes, 2021

[19] For more on feminist standards of care in GBV prevention and response programming, see UNFPA 2015.

[20] See Genderdatakit.org for more information on the Cosas de Mujeres project.

2. **Meet women's immediate needs.** The women who write Cosas de Mujeres are often facing urgent, potentially dangerous circumstances. To uphold women's rights, gender-responsive projects must place women's needs and wellbeing above data collection and research.
3. **Co-design with grassroots women's organizations.** Around the world, grassroots women's organizations are leading the social and political movements responsible for increased awareness of gender-based violence. Recognizing, respecting, and celebrating this legacy, Cosas de Mujeres prioritizes investments and relationship-building with grassroots women's organizations. Grassroots women's organizations co-designed the platform alongside Ladysmith, and continue to be actively consulted throughout the platform's management, iteration, and adaptation.

Box 4: Key resources for gender-responsive health research

The **World Health Organization's** *Incorporating Intersectional Gender Analysis into Research on Infectious Diseases of Poverty: A toolkit for health researchers* is a critical resource for infectious disease researchers new to intersectional gender analysis. Alongside educational modules, definitions of **gender-sensitive program indicators**, and recommended **participatory research tools and methods**, the toolkit also includes exemplary case studies across diverse world regions.

For example, the toolkit highlights a qualitative study in Malawi that examined how gender norms may influence how men living in marginalized urban communities do (or do not) seek health care for Tuberculosis.[21] Through focus group discussions (FGDs), key informant interviews (KIIs), and participatory workshops with key health stakeholders, the study found that "control was a key defining feature of adequate manhood, and efforts to achieve it also led men into side-lining their health." Another highlighted study sought to identify gaps in community knowledge, attitudes, and practices around human African trypanosomiasis (HAT) in South Sudan. Through surveys, KIIs, and FGDs, the study found that engagement in farming activities was one of the barriers to community participation in active screening for HAT, while gender and education were primary determinants of knowledge on HAT. As such, the study recommended more gender-responsive communication strategies, and the need to leverage time use analysis in order to schedule health activities.

Both of these studies—as well as the toolkit overall—illustrate the importance of **mixed-methods research** that incorporates **intersectional gender analysis** throughout data collection, analysis, and reporting in order to inform more gender-responsive—and thus more impactful—health interventions.

For more guidelines on gender-responsive public health research, please see:

- Navigating the Ethics of Big Data in Public Health (The Oxford Handbook of Public Health Ethics 2019)
- Gender Analysis Toolkit for Health Systems (Jhpiego 2016)

[21] Chikovore et al 2014

- Scientific Excellence in Applying Sex- and Gender-Sensitive Methods in Biomedical and Health Research (Nieuwenhoven & Klinge 2010)
- Violence against women and girls data collection during COVID-19 (UN Women 2020)
- How to do (or not to do)…gender analysis in health systems research (Morgan & SSali 2016)

Designing gender-responsive data projects: Key frameworks	
Principles of Data Feminism[22]	1. **Examine Power:** Analyze how power operates in the world. 2. **Challenge Power:** Commit to challenging unequal power structures and working toward justice. 3. **Elevate Emotion and Embodiment:** Value multiple forms of knowledge, including the knowledge that comes from people as living, feeling bodies in the world. 4. **Rethink Binaries and Hierarchies:** Challenge the gender binary, along with other systems of counting and classification that perpetuate oppression. 5. **Embrace Pluralism:** The most complete knowledge comes from synthesizing multiple perspectives, with priority given to local, Indigenous, and experiential ways of knowing. 6. **Consider Context:** Data are not neutral or objective. They are the products of unequal social relations, and this context is essential for conducting accurate, ethical analysis. 7. **Make Labor Visible:** The work of data science, like all work in the world, is the work of many hands. Data feminism makes this labor visible so that it can be recognized and valued. *For more data collection and use guidelines from feminist perspectives, please see*: • Feminist Data Manifest-No (Cifor et al 2019) • Feminist Internet Ethical Resarch Practices (Association for Progressive Communication 2019) • Feminist Data Visualization (D'Ignazio & Klein 2016) • Design Justice Network Principles (2018) • Data collection and COVID-19: What's gender got to do with it? (Undie et al 2020)

[22] These principles come from D'Ignazio & Klein 2020.

How to Design AI for Social Good[23]	1. **Falsifiability and incremental deployment:** We cannot know for sure that a given AI for Social Good (AI4SG) application is safe unless we can test the application in all possible contexts. Therefore, AI4SG designers should identify falsifiable requirements and test them in incremental steps from the lab to the "outside world". 2. **Safeguards against the manipulation of predictors:** Adopt safeguards which (i) ensure that non-causal indicators do not inappropriately skew interventions, and (ii) limit, when appropriate, knowledge of how inputs affect outputs from AI4SG systems, to prevent manipulation. 3. **Receiver-contextualised intervention:** AI4SG designers should build decision-making systems in consultation with users interacting with, and impacted, by these systems; with understanding of users' characteristics, of the methods of coordination, and the purposes and effects of an intervention; and with respect for users' right to ignore or modify interventions. 4. **Receiver-contextualised explanation and transparent purposes:** AI4SG designers should choose a Level of Abstraction for AI explanation that fulfils the desired explanatory purpose and is appropriate to the system and the receivers; then deploy arguments that are rationally and suitably persuasive for the receivers to deliver the explanation; and ensure that the goal (the system's purpose) for which an AI4SG system is developed and deployed is knowable to receivers of its outputs by default. 5. **Privacy protection and data subject consent:** AI4SG designers should respect the threshold of consent established for the processing of datasets of personal data. 6. **Situational fairness:** AI4SG designers should remove from relevant datasets variables and proxies that are irrelevant to an outcome, except when their inclusion supports inclusivity, safety, or other ethical imperatives. 7. **Human-friendly semanticization:** AI4SG designers should not hinder the ability for people to semanticize (that is, to give meaning to, and make sense of) something.

[23] These principles come from Floridi, Cowls, King & Taddeo (2020).

	For more guidelines on the design, management, and application of AI systems, please see: • A People's Guide to Artificial Intelligence (Onuoha & Nucera 2018) • AI4People—An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles, and Recommendations (Floridi et al 2018) • OECD AI Principles • OECD Policy Responses to Coronavirus (COVID-19): Using artificial intelligence to help combat COVID-19 (2020)