The role of administrative data in gender statistics: Supporting inclusive development for women and children

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Highlights

- Gender statistics are essential for supporting improved development outcomes for women and children, however critical data gaps persist.
- Administrative data can help address unmet data needs, and their continuity and granularity make them particularly suitable to measuring gender equality.
- Challenges to producing gender statistics from administrative systems include those of data demand, supply, and quality, analytical capacity, and level of coordination and political engagement.
- The capacity of administrative data systems to generate gender statistics can be strengthened by leveraging growing international attention to administrative data systems, investing in digitization, and changing national statistical coordination processes.

Abstract

Gender data are essential for assessing gender-equitable outcomes among children and for understanding how the intergenerational effects of gender inequality impede the well-being of both girls and boys. However, despite their importance, significant gender data gaps exist vis-à-vis availability, granularity, timeliness, and adherence to international standards. These gaps compromise the ability of countries to both implement and monitor gender-responsive policies and programs and report against international commitments to gender equality, including the 2030 Sustainable Development Agenda. In response, administrative data systems are increasingly being recognised as an important source of gender statistics. Data from administrative systems are well suited to monitor gender equality due to their continuous nature, ability to provide longitudinal

data, capacity for disaggregation, and ability to provide updates on the characteristics of those accessing services. Administrative data also have the potential to fill critical gaps that are not being addressed through other sources and to support local programming.

However, substantial challenges remain to sourcing gender statistics from administrative data. While some challenges are related to the limitations of administrative data itself, several are specific to the production and use of gender statistics – notably those of poor demand, supply, and capacity; underpinned by limited coordination and political engagement. Opportunities to strengthen the production of gender statistics from administrative systems include localising international gender equality mandates, establishing coordination mechanisms, and building national capacity in gender statistics among key stakeholders. Improving the collection of sex-disaggregated data through digitising administrative records will also enhance both gender statistics and administrative systems more broadly. While administrative data alone cannot address all gender data gaps, they are a key part of a holistic approach to addressing national data needs on gender-relevant issues.

Keywords

Declaration of competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Gender data gaps in monitoring equitable outcomes

Gender data, and the statistics derived from them, are essential for assessing progress towards equality, including gender-equitable outcomes for girls and boys (1, 2). Equality particularly affects the lives of children by contributing to lifelong positive outcomes: girls who remain in school, for example, are more likely to marry and give birth at older ages, and less likely to experience violence (3). Equality also yields considerable inter-generational payoffs, as children's rights and well-being often depend on the rights and well-being of women (2). Conversely, gender inequality significantly limits the opportunities of children: with children born to adolescent mothers more likely to remain unregistered from birth, reducing their chances of obtaining formal identification and exposing them to new risks including child marriage (4). Statistics on the situation of children and their families across all dimensions of their lives, and how this varies by sex, are therefore imperative in identifying and addressing inequalities to support development (5).

Gender statistics are interdisciplinary by nature (6), and include data disaggregated by sex,[1] as well as measures that reflect the specific needs and experiences of women and girls (3), such as access to essential maternal health care, and menstrual hygiene management. At the international level, gender statistics track progress against commitments and identify gaps where more attention is needed. Along with core global frameworks such as the 1995 Beijing Declaration and Platform for Action (2), the 2030 Sustainable Development Goal (SDG) Agenda explicitly recognizes the critical role of gender data, with 54 indicators across 12 of the 17 goals either sex-disaggregated or gender-specific (7). At the national level, summary indicators on country priorities are needed to measure

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[1] Noting that, for many countries, biological sex is used as the basis for differentiation (male or female); while a smaller number of countries are also moving to toward measuring gender diverse groups.

progress and help hold governments accountable (8), and to support strategic planning and resource allocation (9). Timely and granular disaggregated data are also needed to guide planning and service provision at the local level (10), with national statistics often hiding entrenched inequalities and obscuring important patterns. This granular data helps to understand who is being left behind or excluded from services, and why (11), along with providing the locally-relevant and actionable data needed to implement gender-responsive services and programs at the subnational level (12).

The increasing demand for gender statistics, first globally articulated in 1975 with the adoption of the World Plan of Action by the International Conference on Women (1), has seen renewed attention on both the scope of gender data gaps, and means to strengthen the production, analysis and use of gender statistics – often referred to as the 'gender data revolution' (13). Significant gaps in gender data, vis-à-vis their availability, granularity, timeliness, and adherence to international standards (14), compromise the ability of countries to design gender-responsive policies and report on gender equality. Firstly and fundamentally, there remains an absence of adequate data for measuring many aspects of girl's and women's lives (15). This includes areas that are methodologically hard to conceptualise and measure, including gender-responsive measures of empowerment (16) and poverty (17), and topics that are sensitive or occur in sensitive contexts, particularly gender-based violence (18). There is also an absence of data on emerging areas such as the gendered impact of climate change or the digital divide. This is of particular concern as girls are often responsible for collecting water and firewood for household use (3, 19), and have traditionally poorer representation in science, technology, engineering, and mathematics (20). While less is known about data availability at national and subnational levels, these gaps have led to significant challenges at the international level: a 2016 review of the SDG indicator framework found the

availability of data for approximately two-thirds of indicators relevant to girls was either limited or non-existent (21).

A second gap that presents a persistent challenge for gender statistics relates to the limited granularity of data. When disaggregated data does exist, it is not always tabulated by sex, or made available in user-friendly formats to allow for meaningful gender analyses (17, 22). In other instances, sex-disaggregated data may not be collected – for example, when data are collected at the household level – masking potential inequalities between women and men and girls and boys (23). This issue also presents itself through the lack of granular data that are simultaneously disaggregated by sex and other characteristics, including age, ethnicity, migration status, disability, and wealth, among others (3) – impeding analysis of how gender inequality intersects with other axes of discrimination and compromising the ability of the SDG Agenda to 'leave no one behind,' including the most marginalized women and girls.

Timeliness is also a pressing data gap. In 2017, only 24 percent of the data available for producing gender-related SDG indicators were from 2010 or later (22), with many countries relying on data collection mechanisms that are ad-hoc or done as one-off exercises (3). Between 2000 and 2012, for example, only five percent of nationally representative surveys collected information by sex on average hours spent on unpaid domestic work, with the majority of countries only collecting time-use data once or twice over the past few decades (24). Since 1995, only 40 countries have conducted more than one survey on violence against women (25), and looking specifically at SDG indicator 5.2.1 on intimate partner violence, only 32 percent of countries have data available that is less than 10 years old (26).

Finally, a lack of international standards, or adherence to international standards, also contributes towards current gender data gaps; with differences in sources, definitions, concepts and methods compromising the comparability of data across countries and time (3, 17). This is particularly problematic in the education sector, with internationally comparable measures of learning outcomes lacking, and no globally agreed standard on measuring foundational proficiency in reading and mathematics (27).

In response to these data gaps and as part of the gender data revolution, the international community has called for an open discussion on the types of data used for monitoring gender equality, with limitations of traditional sources (primarily household surveys and censuses) increasingly apparent (3, 28-31). These limitations are particularly challenging in respect to monitoring the 2030 SDG Agenda, with it neither realistic nor desirable to spend so much of annual aid budgets on measurement (32, 33). There is also increasing recognition at the international level that disaggregation by sex alone is not enough for understanding which women and girls are most at risk of being left behind due to the overlapping inequalities they face (2), with an increased push to identify those most vulnerable through intersectional analyses, requiring new approaches to data collection and analysis.

Data from administrative systems are increasingly being recognised as an important source of gender statistics, particularly in response to the persistent nature of gender data gaps and corresponding poor availability and quality of gender statistics globally (34). Despite this, there has been limited unpacking of why attempts to use data from administrative systems remain relatively

limited, or what it means to use administrative data for monitoring gender equality more broadly. In response, an Advisory Group within the Inter-Agency and Expert Group on Gender Statistics (IAEG-GS)[2] was established in 2019 to specifically explore the potential role of administrative data systems. Members of the Advisory Group include self-nominated country and agency representatives working in the field of gender statistics. Using findings from a literature review, and main themes identified through a short survey and series of interviews conducted with select Advisory Group members (see **Annex 1: Methods**), this paper explores opportunities for, and challenges to, using administrative data for gender statistics, with a focus on understanding why barriers to data quality, availability, accessibility, and use are yet to be resolved, and what the pathway to better gender data might entail.

The drive for better administrative data

While the increased demand for gender statistics has placed unparalleled demands on data producers and generated substantial statistical challenges, it also presents significant opportunities for data systems globally (7). The broader 'data revolution' called for by the UN Secretary-General as part of the Post-2015 Development Agenda (35) has also created a drive to better utilise existing data sources, with particular emphasis on administrative data. Collected routinely as part of the ongoing delivery of a service across a (usually large) defined population, administrative data offer a potential wealth of high quality and highly relevant gender data (25, 36-38) (**Box 1**). Sectoral, or line

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[2] The coordinating body of the United Nations Global Gender Statistics Programme comprising national statistical systems and international agencies, the IAEG-GS is mandated by the UN Statistical Commission to examine emerging and unaddressed key gender issues and related data gaps with the aim of developing proposals on how to fill those gaps.

ministries, such as ministries of health and education, routinely collect, compile and disseminate substantial amounts of data relevant to women and children (9), or have the potential to do so. Strengthening administrative data is also useful beyond measurement, with associated benefits of institutional strengthening and improved service delivery (31), such as the ability to track childhood health, development, and learning outcomes over time through effective and integrated health and education information management systems.

Box 1. Administrative data use in Canada

Statistics Canada has a sophisticated data linkage program based on administrative data, offering substantial insights into several areas of gender equality. Data on mothers (collected through birth registration) have been linked with census data on additional characteristics and variables to provide a more complete understanding of the lives of Canadian mothers. In the education sector, preliminary work has been done in linking administrative data on public postsecondary enrolments and graduates with census data to improve coverage on Indigenous status, which is currently poorly reported, allowing for more detailed gender analyses. Similarly, plans are underway to link postsecondary education data to administrative data on disability support to provide an understanding of postsecondary participation for students with disabilities.

Source: Administrative data systems and gender statistics: Canada country case study (39)

Data from administrative systems also have several characteristics that make them useful in monitoring gender equality, ranging from their continuous nature and subsequent ability to provide longitudinal data needed to track trends over time, to the high degree of disaggregation potentially possible through a well-designed system. These data are also able to provide updates on the characteristics of those accessing services, including types of services used. These and other characteristics are described in detail in **Box 2**.

Box 2. Characteristics of administrative data systems

- **Readily available and pre-existing source of information**. A main component of the data revolution is the push to do more and better with existing data sources and systems as part of effective evidence-based decision-making (3). This push is also in recognition of the significant resource demands that one-off data collection mechanisms and surveys place on national statistical agencies. Almost every country globally has some system of administrative data collection, and statistically mature countries such as Denmark, Finland, Sweden and the Netherlands show the potential of using administrative data for generating gender-relevant statistics on income, education, violence, and family and household characteristics, among others (31, 40).

- **Continuous**. Administrative data are collected continuously as part of routine service delivery, and while there may be delays associated with compilation and analysis (particularly for paper-based systems), data are collected and updated on an ongoing basis. (41). This is particularly important for decision-makers and planners making daily decisions on services and programs that have a direct impact on the rights and opportunities of women and girls (7, 42).

- **Ability to provide longitudinal data needed for tracking trends over time**. Given their continuous nature, administrative systems are able to provide data over extended periods of time, allowing for a long-term perspective in monitoring changes in gender equality (16, 30). Countries such as Australia and Canada, with mature civil registration and vital statistics systems, for example, can show trends over several years for key outcome measures such as maternal mortality and life expectancy at birth, highlighting persistent issues as well as the impact of effective national policies and programs aimed at reducing gender inequalities.

- **Potential for granular disaggregated data through routine processes**. Administrative data systems primarily collect data at the individual level, and are increasingly disaggregating their records by sex and other characteristics (even when using aggregated or tabular reporting processes), supporting greater use of them in intersectional gender analyses (17). When combined with other sources of data, such as those from censuses and surveys, this allows for a more comprehensive understanding of the lives of women and girls. In Canada for example, graduate earnings (as measured through tax-file returns) have been used to demonstrate long-term learning outcomes for higher-education providers, while also offering an important insight into wage gaps (39).

- **Ability to provide regular updates on those accessing services and the types of services being accessed.** By default, the data can also indicate characteristics of those *not* accessing services, though it cannot explain why or the extent of unmet need (43, 44). As such, administrative data systems can play a critical role in transforming international and national gender strategies into subnational policies and priorities, while providing the evidence needed to monitor implementation (45). Regarding the persistent data gaps around violence against girls and women, police and court records can provide insights

> into the utilization of services and overall response to the problem by reporting on measures such as the number of incidents reported, persons charged, complaints filed, and civil injunctions or restraining orders issued (17).
> - **Inclusivity**. With their large sample sizes, administrative data systems have the advantage of including information on groups of people who are least likely to take part in traditional research, or those excluded from sampling frames (36). A notable example here is the relative lack of information on the reproductive health and nutrition of adolescent girls (aged below 15) who have traditionally been excluded from household surveys (22).

Challenges to the effective use of administrative data in gender statistics

Despite significant opportunities for using data from administrative systems in the production of gender statistics, a range of common challenges were identified through both the existing literature and reflections from Advisory Group members. Below, these challenges are grouped into those related to the production and use of gender statistics (primarily those of demand, supply, and capacity; underpinned by level of coordination and political engagement) and challenges related to the inherent limitations of using data from administrative systems. It should be noted that many of these challenges are interrelated, with for example, the lack of sex-disaggregated data often resulting from a lack of demand, which can result from the limited capacity of policymakers to recognise the need for gender data in their country or field of responsibility, and a gender-blind institutional environment.

Challenges related to the production and use of gender statistics

Data demand

As national policy and legal frameworks are the main drivers for the production and use of gender statistics, there remains a noticeable lack of demand for gender data for monitoring and evaluation in countries without them (37). This lack of demand also significantly limits the likelihood of administrative systems to collect sex-disaggregated data due to the correspondingly low priority attached to them (35). While it remains difficult to assess the scope of the challenge given the lack of available data, of the 53 countries included in one study presented as part of the 2019 Sustainable Development Goals Report (46), almost one-third had gaps in their overarching legal frameworks; including those related to discrimination, violence, employment and economic benefits, and marriage and family.

Without strong national demand and a clear mandate for the production of gender statistics among different ministries and agencies, many administrative data systems may also become 'reactionary' (6): either providing no gender-relevant information, or producing the bare minimum amount of data required for reporting obligations (47). In examining why disaggregation remained a challenge for many countries, the 2018 Global Advocates Survey of more than 600 gender advocates (48) for example, found that 91 percent of respondents agreed that collecting data on issues that affect girls and women was not prioritised, with 85 percent agreeing that government data on gender equality was somewhat or mostly incomplete. A lack of demand may also come from the gender blind nature of certain topics, with a 2019 study finding that 80 percent of policymakers agreed gender equality

was a 'high' or 'very high' priority in the education sector, while only 38 percent ranked public finance as a similar priority (42).

Demand-side challenges are also affected by a lack of clarity around what gender-relevant data are needed and by whom, particularly at the subnational level; along with what should be prioritised for sex-disaggregation when data are available. In part, this lack of clarity over data needs stems from the lack of prioritisation within SDG targets (49), and the aspiring yet challenging principle to disaggregate indicators where relevant by income, sex, age, race, ethnicity, migratory status, disability, and geographic location, among others (50). Examples and practical guidance on priorities for sex-disaggregation (and gender statistics more broadly) are rare, resulting in a general lack of clarity over data needs, affecting both data demand and supply. Within the Advisory Group, this lack of clarity resulted in countries reporting they were both overwhelmed with the volume of disaggregated data, which made it difficult to identify the data that should be acted on; and that there was a mismatch between what was possible to produce from their routine systems and what was actually made available; depending on their level of system maturity and digitization.[3] As one member stated in relation to their annual education census; "[we] only report on a small number of key performance indicators, while there is lots of data in the system; unless people specifically ask for the data, it remains unused" (51).

When there is a demand for gender statistics, the emphasis on standardised definitions and comparable data needed for international monitoring and reporting mechanisms often mean that

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[3] Source: IAEG-GS Advisory Group member survey

the data available from administrative systems are not suitable (52). The diversity of national administrative systems, lack of international data collection approaches within these, and subsequent lack of international comparability means that data from administrative systems can often only play a limited role in reporting, with many countries producing indicators that are similar, but not adhering to international indicator definitions (7, 36, 40). This is a particularly noticeable challenge for countries who have not localized or adapted international monitoring frameworks, or those without their own strategy for monitoring gender equality. Conversely, countries that have harmonized international frameworks, such as Albania (53), are able to prioritise and institutionalize the collection of gender-relevant data through line ministries responsible for the implementation of national and international obligations in gender equality.

Finally, the sensitive nature of much of the data required to measure and monitor gender equality may also contribute to a lack of demand, particularly for policymakers. Despite the relative lack of evidence on this challenge, it is reasonable to expect that there will be political sensitivities around certain gender statistics in different countries and contexts, especially around reproductive health and gender-based violence (8). The sensitive nature of gender statistics in these domains can lead to available data not being used, and this lack of demand in return can undermine system ability to generate high quality and timely data in the future.

Supply of disaggregated data

The limited availability (and in some cases, total absence) of data disaggregated by sex is a significant barrier to sourcing gender statistics from administrative systems since sex-disaggregated data are the minimum requirement for generating gender statistics (35). At the point of data collection in any

administrative system, the extent that sex and other variables of interest are recorded is a reflection of local laws and regulations (41). If an administrative system has not been designed to capture data by sex, the process to change it is also generally difficult, requiring updating data capture forms, revising databases, and training staff (47). Further, the quality of available disaggregated data, particularly when cross-tabulated by multiple characteristics, generally decreases as it becomes further removed from the immediate data needs of the administrative system. It is also not reasonable to expect line ministries to change their data collection processes half-way through the year, or as new data is required, given the impact this has on the stability of data for internal administrative use (51).

Even when sex-disaggregated data are collected, they may remain at the subnational level, or be stored and shared in formats that are hard to use for statistical purposes (54, 55): a noted challenge for systems that are not electronic or centralized (3). This represents a significant challenge in the use of administrative data for gender statistics among less-mature systems (12), particularly regarding the demand for multi-dimensional disaggregated data to inform intersectional analyses, as many systems are still struggling to collect, compile, and report on data disaggregated by sex alone (34). This lack of digitization at the lowest levels of data collection in many countries often means that national statistical offices (NSOs) only receive aggregate tally records, with most of the granularity remaining at the facility or subnational level, making integration and cross-tabulation difficult if not impossible (51).

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Capacity in gender statistics

An overarching challenge relates to the significant capacity gaps among line ministries, NSOs, and policymakers in the field of gender statistics more broadly. The Advisory Group commented that limited understanding of the importance and relevance of gender statistics among line ministries often leads to gender data being collected poorly (if at all); while a lack of capacity in how to integrate a gender perspective into the data production process (**Box 3**) results in data not being presented in a compelling way to policymakers (34, 56). In Brazil for example,[4] it was noted that a lack of awareness among statisticians on how to develop indicators that are sensitive to the situation of women is a critical barrier to effective data use, despite the availability of sex-disaggregated data in their administrative systems, a situation anecdotally reflected in many other settings. This is a significant challenge that has important downstream consequences, as gender statistics may remain largely peripheral in NSOs, with data collection primarily focused on ad-hoc surveys, often with limited integration into the broader statistical system (57).

Box 3. Integrating a gender perspective into the data production process	
Stages of data production	**Gender considerations**
Assessment of gender data needs	• Policy-relevant questions or issues related to gender equality have been identified and prioritised • An assessment has been made of weather a) existing data need to be better utilized or reprocessed through recoding, retabulation or reanalysis of microdata; b) the methodology of existing data collections needs to be improved; or c) a new data collection is needed, either a completely new instrument or additions to existing instruments
Data collection planning	• A gender specialist with subject-matter expertise is part of the planning team identifying objectives and scope of the data collection
Instrument design	• Concepts and methods needed to adequate the realities of women and girls and men and boys have been considered • Questions are devoid of gender-biased language

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[4] Source: Brazil IAEG-GS Advisory Group member survey

	• Probing questions are used to reduce gender bias
Field operations	• Training in gender-sensitive concepts and methods has been provided to staff, including supervisors and administrative offices, and has been reflected in training materials
Data processing	• Assumptions based on gender stereotypes are avoided during data processing, including coding and imputation
Data analysis	• Analysis of the data facilitates an understanding of differences between girls and boys and women and men, and the drivers or consequences of those differences • Measures of association between variables are used to assess whether differences observed for women and girls and men and boys are statistically significant • Data are simultaneously disaggregated by sex and other relevant variables to inform analyses of how gender inequality intersects with other inequalities, such as those based on class, ethnicity, or disability

Data dissemination and communication	• Data dissemination and communication facilitates the use of gender statistics by:
	  o presenting meaningful comparisons between women and girls and men and boys in a transparent and impartial manner
	  o aiming to reach a wide range of users, including policymakers, advocates, researchers, and analysts whose primary concerns are not necessarily focused on gender equality
	  o assessing the different needs and statistical capabilities of gender statistics users and tailoring dissemination strategies accordingly

Source: adapted from Every Child Counts. Using gender data to drive results for children (UNICEF 2020) (2)	

Level of coordination and political engagement

The production of gender statistics is a complex and multi-actor process (34), requiring engagement

and coordination not only between NSOs and line ministries, but often with a third agency or

department responsible for promoting gender equality and women's empowerment more broadly.

This added layer of coordination is a significant challenge and a contributing factor to the persistent

and systematic weaknesses found within other complex systems that require coordination and

political engagement from multiple stakeholders, such as systems of civil registration and vital

statistics (CRVS) (32). The challenge of coordination becomes more pronounced when attempting to

source data from administrative systems due to the various agencies and organisations often found within one sector alone (58), and the separation of data producers and data users. In Morocco for example,[5] even when producers and users belong to the same department, they rarely have the opportunity to work collaboratively. Countries with decentralised systems of governance may also face additional issues related to coordination. In Canada, ministries of health and education are managed by their respective provincial or territorial governments, meaning that without a nationally agreed standard, every administrative data file may not be collected the same way, making usability at the national level more challenging and requiring greater coordination (39).

There is a clear need for an enabling environment that prioritises gender equality and its monitoring, as many issues of significance to women and girls are challenging to conceptualise (poverty, empowerment), sensitive (gender-based violence), or occur in sensitive contexts (armed conflict); compounding the challenges of defining what to measure and how to measure it (18). While effective coordination mechanisms are essential in the production of gender statistics, the use of administrative data for official statistics must also be based on legislative provisions in the law that define roles and responsibilities and grant access to datasets (59) – requiring active political engagement, support and resourcing. When they do exist, the poor recognition of gender departments or agencies can result in low institutional legitimacy awarded to gender statistics. This issue is intensified if there is a lack of understanding from senior decision-makers about the need for gender-relevant data, and limited demand for periodic reports on gender equality at the national level (6). This failure to place gender at the centre of macro-level processes is both a contributing

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[5] Source: Morocco IAEG-GS Advisory Group member semi-structured interview

factor to, and a product of inadequate funding, with gender focal points often marginalised and under-resourced (3, 37). The 2018 Partner Report on Support to Statistics by PARIS21, for example, found that only four percent of statistical projects reviewed had gender equality as a main objective, 10 percent contained any activities related to the production of gender statistics, and the approximate budget for these activities represented three percent of total project budgets reported (34).

Limitations of administrative data

There are several inherent limitations of administrative data, as the collection of data for statistical purposes is not the primary reason that the administrative data system exists. Often, the 'found' nature of administrative data means that it is more likely to be messy and in need of substantial data management (14); while its multidimensional nature means the data is likely to be fragmented across many different systems, making consistent data collection practices difficult (47, 60). While administrative systems have the advantage of including those least-likely to take part in traditional research, considerable data quality challenges relating to coverage and completeness remain (41). This refers to the extent to which certain populations may be systematically excluded from datasets (61), and is of particular concern for women and girls who are particularly vulnerable to being excluded from administrative systems based on discriminatory legal frameworks (10). Data from national identification systems that require authorisation from male family members as part of registration, for example, generally under-represent women and girls (4). Issues of equity can further compound these challenges, with children born to mothers from the poorest wealth quintiles least-likely to have their births registered, excluding them from such administrative datasets (10).

Changes to the political context can also have an impact on how administrative data are collected; with overall data quality only as reliable as the record keeping and registration practices at the point of entry or service provision (58). A service may change its eligibility criteria, thus including or excluding different population groups from the administrative data system, while the end of a government funding cycle may entirely close-down a service and its associated data collection processes. By its very nature, administrative data are not able to identify the extent to which services are responding to user's needs (22, 62), or highlight 'hidden' patterns in the data (40), including data relating to the needs, activities and interests of girls and women (61). Administrative data are also unsuitable for determining the overall prevalence of issues within a population, such as the burden from violence or mental health issues, and struggle to define the extent of underreporting (25).

Access to administrative data

The limited access to administrative data files and their microdata, and documentation on administrative systems more generally, is a common challenge cited by potential users outside of the line ministry responsible for the system (36, 63). While a 'cultural history' of poor information sharing between sectors is often blamed for the poor use of administrative data by the international community (37), for countries such as Ghana who have limited formal data sharing agreements in place, the process to gain access to new administrative data files is complex, requiring official endorsements from relevant line ministers.[6] This results in the persistence of informal data sharing

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[6] Source: Ghana semi-structured interviews

agreements, which, while functioning relatively well, are not able to rapidly adapt to new requests for data, do not allow for enforcement of late or missing data, and are neither an institutionalised or sustainable approach to data access.

Capacity and trust in using data from administrative systems

There remains an overall need to strengthen capacity within NSOs for working with data from administrative systems, both in terms of skills and resourcing, given their traditional roles in the design and implementation of large surveys (31), and budgeting tied to these processes. Capacity is also limited due to the noticeable gap in robust guidance on how to integrate a gender perspective into administrative systems in the available tools, guidance, and methods for assessing and improving administrative data such as the education management information system tools from the World Bank (64), and CRVS system assessment tools developed by WHO (65). While Advisory Group members commented on the need to assess the suitability of administrative data sources before using them for statistical purposes, only Canada indicated it has a framework in place for doing so (39).[7] This lack of capacity, along with limited access or ability to interrogate or influence how data is collected by line ministries in many countries, contributes to significant issues of trust in using data from administrative systems.

The pathway to better gender data

Overcoming the identified challenges and improving the availability and quality of gender statistics from administrative data is largely a function of investment in broader administrative systems. The

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[7] Source: IAEG-GS Advisory Group member survey

capacity of administrative systems to generate high quality, granular disaggregated data in a timely manner depends on both the maturity of core systems and the overall national administrative data landscape; that is, cross-sectoral elements such as the legislative framework, infrastructure capacity, governance and coordination, data standards, and capacity underpinning sectoral systems and their ability to interact. Defining system maturity by what the national data landscape should be able to deliver for children, communities, and statistical structures, UNICEF has developed an administrative data maturity model (66) that identifies 20 'components' or 'desired outcomes' of system maturity. Because the model adopts a cross-sectoral approach to improving administrative data systems, it is particularly suited to assessing the ability of administrative data systems to produce and coordinate gender statistics on children and women across a wide range of sectors. Using this model as a basis, 12 characteristics of a mature gender-responsive national administrative data landscape are presented (**Box 4**) and discussed below.

Box 4. Defining a mature gender-responsive national administrative data landscape for children
Outcome statement

1. Core administrative data systems for children exist at the national level, with national coverage
2. Administrative data are integrated as part of a broader national statistical system
3. Systems create and recognise a legal identity for every child from birth, including provisions for those whose birth was either un-registered or who enter the territory and are unable to provide a legally recognised identity
4. Data required to support the realisation and protection of children's rights under the international convention and development commitments are produced and available
5. National administrative data systems provide timely data for national planning and accountability
6. Systems are inclusive; effectively monitoring that 'no child is left behind', as well as providing the data needed for systems to effectively address disparities where they exist
7. Data are actively used in national (and subnational) planning, monitoring and evaluation
8. Data are used to identify local needs, and to inform and improve local services and programmes
9. Cross-sectoral collaboration supports a holistic approach to data for planning, innovation, and service provision
10. Data are used to generate broader 'public good', contributing to research and knowledge generation on topics of benefit to the community
11. Administrative data can be integrated effectively with other data sources in decision making processes
12. Supports a holistic approach to services and care to support better outcomes through coordination across programs, locations, and sectors

Source: Guidance on strengthening administrative data systems for better gender statistics: Improving development data for children (UNICEF; pending publication)

Administrative data systems of particular concern for gender statistics – addressing critical data reporting needs or gender-specific issues for children – include community and hospital health information systems, child protection and gender-based violence databases, education information systems, and systems for social welfare. At a minimum, these systems should be able to provide sex-disaggregated data on key aspects of child development. These systems should also be recognised as part of the national data landscape, with clear provisions for sharing statistical data beyond the line ministry to the NSO and national planning authorities. Countries are recommended to review and update their relevant regulatory and legislative frameworks, as the use of administrative data for official statistics must be based on clearly defined provisions in the law (59).

A holistic data landscape that recognises the importance of data sharing and communication between sectors and is supported by a culture of collaboration around administrative data issues, should also be a priority. The development of a national data strategy that supports the use of national data standards and routine data dissemination (59), and one that has an effective coordination mechanism between line ministries, the NSO, and department or agency responsible for gender more broadly (34), is essential. Such national strategies provide countries with opportunities to better utilise existing data sources and build on data analysis skills by focussing on comprehensive, coordinated interventions, as opposed to small-scale statistical projects and programs (49, 52). Investments in National Strategies for the Development of Statistics (NSDS), for example, can improve data standards and definitions across sectors and support data sharing by documenting and improving methodological and conceptual differences between data sources, and improving the relevance of data by linking it with local decision-making cycles (38).

Improved gender statistics also rely heavily on the capacity of administrative systems to disaggregate data by sex at national and subnational levels (35). Further, as gender-based deprivations are likely to be compounded by deprivations based on other demographic characteristics, disaggregation by multiple characteristics (age, ethnicity, disability, location, etcetera) it is critically important to ensure policymakers understand who is being left behind, and determine what services and resources they require (58, 67-69). Highly granular disaggregated data requires administrative systems to collect data either at the unit record level (allowing subsequent aggregations to be adapted once in the system) or through increasingly detailed aggregate data collections; thus increasing the time and training required to collect the data in a reliable manner,

and requiring increasingly complex data checks, governance mechanisms, and storage capacity to manage the data as volume increases.

Improving the availability and quality of disaggregated data is greatly facilitated by the digitization of administrative data systems. Digitization can increase the amount of data available for gender analysis, particularly granular disaggregated data, and improve timeliness – both facilitating data access and usability. Many countries are investing in the digitization of systems for CRVS, education information management, and community health programs. While these investments are not gender specific – they should be encouraged by gender statisticians as a key enabler of improving the quality and availability of gender statistics. Global investments in national identity systems and unique identifiers, including large-scale loans and financial support, are also facilitating broader conversations around strengthening administrative data systems, particularly those relating to civil registration, with corresponding improvements in the availability of gender-relevant data. Specific programs such as ID4Africa, as well as increased commitments from governments to a lifecycle approach to identity management (70), provide opportunities for improving administrative data systems that will benefit gender statistics.

As administrative data systems become more sophisticated and national identity systems increasingly support data linkage across sectors through functional identity, the capacity to link data based on individual records offers a significant opportunity to better utilise existing administrative sources, even when data quality is poor. Details in a population register can be matched with health records; data can be linked to contextual information, such as the district or region where a person resides (or service was provided); or linked to household survey data or the census, providing

detailed and rich information, while at the same time, helping to strengthen administrative datasets by highlighting data quality issues, particularly around coverage and completeness (31). Opportunities for increased data linkage are becoming more widespread given the drive for strengthening systems as part of the SDGs and broader investments in data systems, including the push for increased digitization and implementation of national identity systems. In Morocco, for example, the World Bank is supporting data linkage for social protection programs to facilitate service provision across agencies.[8] Digitization has also enabled statistically mature countries such as Canada to implement sophisticated data linkage programs, offering substantial insights into several areas of gender equality (39).

While important, these broad administrative data investments are insufficient to 'move the needle' on many of the most pervasive and intractable gender data gaps and challenges; and gender specific investments will be needed alongside general system-strengthening if real change is to occur. This work requires dedicated efforts from gender statisticians to engage with line ministries to better define their data needs and engage ministries as key stakeholders in filling gaps at both the national and programmatic levels. Ensuring that data from administrative systems are actively used in national and subnational planning, monitoring, and evaluation generally requires the development of a results-orientated strategic plan to achieve gender equality, endorsed by senior leadership, and developed through broad consultation with government and non-governmental stakeholders. Strategies at the national and subnational levels should also have measurable goals and indicators linked to high-level outcome targets to achieve gender equality, with a defined set of

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[8] Source: Morocco IAEG-GS Advisory Group member semi-structured interview

responsibilities, timelines, action plans and monitoring mechanisms to achieve identified priorities (71). The Philippines, for example, have developed a national indicator set and analytical report on women's economic empowerment through the use of the generic Policy-Data Integration Tool (EPIC), which identifies data needs and gaps through policy content analysis (72).

Commitments to reporting against international mandates, such as the Beijing Declaration and Platform for Action and 2030 SDG Agenda, provide the needed global momentum for the production and use of gender statistics, and these can be leveraged to develop national policy frameworks that define the data and corresponding indicators needed for monitoring gender equality. This need to localise international monitoring frameworks was raised by several Advisory Group members, with one country representative commenting that; "The SDG framework was very important to leverage discussions and involve official statistics producers to find methodological solutions and information availability for the proposed indicators. However, countries' commitment and adherence to building a national monitoring agenda from an international one (such as the 2030 Agenda) may vary with changes in national governments and priorities".[9] Investing in national policy frameworks also helps to create an enabling environment, clarify data needs, and increase data demand, particularly when administrative systems are a prioritised data source. Through the process of localisation, global commitments are more likely to become institutionalised and sustainable, while also acknowledging the role of gender statistics in the national data landscape. Countries with strong national commitments to gender equality who have shown a willingness to convert commitments into practical actions, such as Canada and Morocco, have also linked their national gender frameworks to

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[9] Source: IAEG-GS Advisory Group member survey

budgetary and financial management decision-making processes to ensure that gender equality is considered in all government departments (39, 57).

Countries are strongly recommended to develop coordination mechanisms through the development of specific gender statistics forums, such as the Brazilian SDG 5 Working Group, which has recently been reactivated to assist in monitoring gender equality in the country.[10] Alternatively, countries can improve coordination through the inclusion and integration of gender into existing national statistical mechanisms, with frameworks such as that developed by PARIS21 (34) offering practical guidance on methods, activities, and tools NSOs may wish to implement. Wide-scale investments in the development of NSDS, which take a whole-of-government approach to statistical development for monitoring the SDGs (49, 52), are creating opportunities for agencies responsible for the promotion of gender equality and women's rights to engage with counterparts on data-related issues. Within a country's NSDS, for example, opportunities to integrate gender into statistical processes include revising or expanding data sources to better focus on gender issues, revising definitions and concepts to ensure they are gender-sensitive, and improving the presentation and dissemination of results (34).

Capacity to analyse and use gender-specific data is a pervasive challenge, requiring targeted investments to increase national capacity in in gender statistics among policymakers, statistical agencies, and line ministries. Such national capacity is critical as, even with increased availability of sex-disaggregated data, a gendered approach to data analysis is required to understand problems,

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[10] Source: Brazil IAEG-GS Advisory Group member survey

interpret data and help inform a gender-responsive policy approach (5, 35, 41). Several manuals and toolkits on integrating a gender perspective into national statistical systems already exist (34, 71), along with online and face-to-face training programs offered through international agencies. However, most of these resources have been developed to assist in building statistical capacity in the development, implementation, and analysis of gender-specific surveys or modules within larger household surveys and censuses. While sectoral guidance on using administrative data in the production of gender statistics is increasing, for example in monitoring gender-based violence (40, 58), and strengthening systems of civil registration to address issues of gender inequality (4, 10, 32), more work is needed in this area to help outline specific guidance and opportunities when using administrative data for gender statistics, including examples of international best practice.

The international community has an important role to play in supporting several of these investments, including overall system strengthening and improving guidance and clarity on how data from administrative systems can be used. Alongside the more obvious political platforms and visibility, this includes investments in methodological work to identify examples and adjust definitions where administrative data could: fill a data gap with a locally adjusted indicator definition; act as a proxy to produce more timely measures or improve estimates in between surveys, or; provide important contextual information either alone, or linked with other data sources. Further, the development of internationally harmonized methodologies and data collection forms could provide guidance on core data and indicators needed at a sectoral level for monitoring gender equality, which countries could adapt and localise. These have the potential to standardise and strengthen administrative data systems following a similar pathway as what has been taken with surveys. Recent guidelines on the use of administrative data for improved statistics on violence

against women and girls (40, 58), for example, provide detailed and practical guidance on when administrative data should and should not be used in the construction of indicators and how countries can strengthen administrative systems for better data. The development of similar guidelines for priority topics and other sectors, particularly health and education, would greatly improve the use of administrative data in the production of gender statistics, support countries to prioritise critical investments, and begin to resolve some of the current gender data gaps.

Conclusion

Data from administrative systems have a critical role to play in monitoring gender equality and addressing persistent gender data gaps that need to be addressed if countries are to achieve the targets set under the 2030 Sustainable Development Agenda for children and their families. Well managed and resourced administrative data systems are able to provide regular and granular data at the subnational level – essential for effective policymaking and program management. Such data may also assist in addressing existing gaps in monitoring by providing important contextual information and proxy indicators to measure progress between surveys. Despite the noted challenges, strengthening administrative systems for better gender statistics generally does not require 'standalone' investments, with, for example, large associated benefits in ensuring administrative systems are supported by effective regulatory and legal frameworks that take a holistic approach to the national data landscape. Increasing the capacity of NSOs and line ministries to work with administrative data and strengthen the production of proxy indicators for policy, along with implementing digital systems, also improve immediate data availability and quality while helping to strengthen the underlying systems.

Gender-specific investments are still required though, and these include developing national policy frameworks around gender equality that clearly define local data needs, along with improving coordination mechanisms and ensuring a basic level of national capacity in gender statistics. Given inherent limitations, administrative data will not replace the role of surveys in establishing who is not being reached through routine systems and why. Nor will it replace data that is better sourced through surveys, such as prevalence-based measures or data on the behaviours, opinions, and attitudes of women and girls. However, adopting a multi-modal approach to data collection, and integrating administrative data into routine statistical processes will provide for a wider and stronger development approach to gender equality. Such an approach reflects the essence of the gender data revolution to do more and better with existing data sources, while helping to ensure that no one, including boys and girls, are being left behind.

Annex 1: Methods

Literature review

The literature review was conducted from July to September 2019, focussing on peer-reviewed and publicly available literature accessed via several databases including Applied Social Sciences Index and Abstracts, Google Scholar, Journals@Ovid, JSTOR, SAGE Journals, Scopus, SpringerOpen, Taylor & Francis Journals, Web of Science, and Wiley Online Library Journals. Grey literature (including web pages, case studies, published international agency and government policy statements, and country reports) were also deemed relevant if they addressed how administrative data systems can or have been maximized as a source of sex disaggregated and gender-specific indicators – with a specific focus on systems most relevant to children. A keyword search was conducted across various academic databases and websites belonging to agencies such as UN Women, Open Data Watch, Data 2X, Centre of Excellence for CRVS systems, CARE USA, Plan International, Population Council, and Gender and Development Network.

Keywords used in the search strategy included:

- Gender OR girl OR women AND; Data OR statistic OR indicator OR disaggregation AND; Administrative data source OR administrative data system OR routine system OR information system
- Gender AND data OR statistic OR indicator AND; Administrative data source OR administrative data system OR routine system OR information system AND; Issues OR challenges OR barriers OR problems OR difficulties
- Gender AND data OR statistic OR indicator AND; Administrative data source OR administrative data system OR routine system OR information system AND; Opportunity OR benefit OR potential OR future

- Gender OR gender statistics OR gender specific indicator OR women OR female AND; Sustainable development goal OR SDG OR data OR statistics OR indicator OR information OR measure OR measurement
- Disaggregation OR data disaggregation AND; Disability OR ethnicity OR race OR gender OR sex.

Key documents provided by UNICEF were also included. A snowballing technique was applied, which allowed for the sourcing of full-text resources, relevant news articles and websites referenced by key resources from the initial search. Only English-language sources were used, resulting in 168 references of direct interest.

Survey

A short statistical survey was developed to complement the literature review and expand on emerging themes identified. The survey was sent to all IAEG-GS Advisory Group members in late September 2019, and had nine responses, representing six countries (Brazil, Canada, Ghana, Jordan, Morocco, and Zimbabwe) and three agencies (International Labour Organization, UN Women East and Southern Africa Regional Office, and World Bank). The survey was designed and sent to the members by email for completion and is included in the **Supplementary Materials**.

Case studies

To identify best practices in the use of administrative data to generate gender statistics and fill specific gender data gaps, two IAEG-GS member countries (Canada and Ghana) were selected as country case studies, based on country willingness and availability to participate in the given timeframe. A series of in-depth, semi-structured interviews with technical staff from statistical

agencies and line ministries were conducted between December 2019 and January 2020. The countries were chosen to represent different levels of administrative and statistical system maturity, and in total, nine people were interviewed, representing five different agencies, ministries, or departments. The interview guide is also available in the **Supplementary Materials**.

Limitations

The paper has potential limitations and may be subject to biases that may have affected the findings and conclusions. First, the practices and experiences of IAEG-GS member countries, particularly the two selected as case studies, may not fully reflect the practices and experiences of other countries regarding the production and use of gender statistics from administrative data systems. Therefore, not all the study findings can be generalized. Second, key informant interviews can be used to gather research information in person or remotely, but there may be biases if key informants are not carefully selected. Key informants were selected based on their roles in statistical and line ministries, but it should not be assumed that they are the most knowledgeable persons in the area.

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