



DEMOGRAPHIC RESEARCH

A peer-reviewed, open-access journal of population sciences

DEMOGRAPHIC RESEARCH

VOLUME 55, ARTICLE 7, PAGES 223–274

PUBLISHED 4 AUGUST 2026

<https://www.demographic-research.org/Volumes/Vol55/7/>

DOI: 10.4054/DemRes.2026.55.7

Research Article

Heterogeneity in women's public and private agency across sub-Saharan Africa

Jolene Tan

Shao-Tzu Yu

© 2026 Jolene Tan & Shao-Tzu Yu.

This open-access work is published under the terms of the Creative Commons Attribution 3.0 Germany (CC BY 3.0 DE), which permits use, reproduction, and distribution in any medium, provided the original author(s) and source are given credit.

See <https://creativecommons.org/licenses/by/3.0/de/legalcode>.

Contents

1	Introduction	224
2	Literature review	225
3	Empowerment as a latent process	227
3.1	Individual capabilities and resources: Education dimension	228
3.2	Agency within the household: Decision-making dimension	229
3.3	Agency within institutions	229
3.3.1	Economic dimension	229
3.3.2	Healthcare dimension	230
3.3.3	Land rights dimension	230
3.4	Agency within cultural contexts	231
3.4.1	Attitudinal dimension	231
3.4.2	Life-course dimension	231
4	Women's empowerment in sub-Saharan Africa	232
5	Study objectives	233
6	Data and methods	234
6.1	Research settings	234
6.2	Measures	234
6.2.1	The individual level	235
6.2.2	The household level	235
6.2.3	The institutional level	235
6.2.4	The cultural level	235
7	Statistical analysis	236
8	Results	237
8.1	Mismatches across empowerment contexts	238
8.1.1	Individual and institutional contexts vs. cultural contexts	238
8.1.2	Institutional vs. household contexts	239
8.1.3	Household vs. cultural contexts	239
8.2	Commonalities across classes and regions	240
8.2.1	Education and reproductive agency	242
8.2.2	Institutional barriers to agency	242
8.3	Comparing conventional empowerment metrics with latent typologies	242
9	Discussion and conclusion	245
	References	248
	Appendix	254

Heterogeneity in women's public and private agency across sub-Saharan Africa

Jolene Tan¹

Shao-Tzu Yu²

Abstract

BACKGROUND

The fifth United Nations sustainable development goal calls for gender equality and the empowerment of all women and girls. However, progress toward this goal remains difficult to assess, as empowerment is multidimensional, context-specific, and challenging to quantify.

OBJECTIVE

This study develops a framework to examine how women's empowerment manifests across intersecting domains and sociocultural contexts in sub-Saharan Africa (SSA).

METHODS

Using the Demographic and Health Survey, with data from 303,717 women in 34 SSA countries, we employ latent class analysis to identify distinct empowerment typologies by leveraging 23 survey indicators of agency across multiple dimensions and contexts. We then evaluate how well a smaller set of commonly applied survey items and country-level indicators of empowerment accurately predict the identified typologies.

RESULTS

Women who report taking part in household decisions also report a lower acceptance of intimate partner violence, but rejecting such violence does not always align with decision-making power. Education and employment are not consistently associated with greater domestic agency, and many women face healthcare barriers regardless of socioeconomic status. Commonly applied survey items of empowerment are able to predict only women in the less empowered typologies.

CONCLUSIONS

These findings highlight the complex expression of women's empowerment and illustrate

¹ Office of Population Research, Princeton University, Princeton, NJ, USA. Email: jolene.tan@princeton.edu.

² Office of Population Research, Princeton University, Princeton, NJ, USA. School of Demography, Australian National University, Canberra, ACT, Australia. Email: shaotzuyu@princeton.edu.

how it unfolds unevenly across public and private domains, as well as across diverse sociocultural contexts.

CONTRIBUTION

This study provides a framework to improve the monitoring of gender equity and emphasizes the need for a holistic approach in development research while highlighting the challenge of defining what constitutes an empowered woman alongside rapid socioeconomic change.

1. Introduction

Although women comprise about half of the world's population, they remain underrepresented in decision-making roles within households and across public institutions. In low- and middle-income countries (LMICs), women's attainment of such roles is heavily constrained by limitations placed on their education, employment, and access to resources (World Bank 2022). The fifth United Nations sustainable development goal prioritizes improving women's empowerment and gender equality to ameliorate these constraints and foster health and development.

Empowerment has been defined as an interactive process through which individuals gain greater autonomy and agency over decisions and actions that were previously denied or inaccessible to them (Kabeer 2005; Sen 1985). Emerging from the feminist movement in the 1970s, the approach has involved programs to increase women's visibility, provide them with support, and reduce their marginalization (Boserup 1970). This process of empowering women has differed across various sociocultural domains and contexts, encompassing areas such as education, employment, and healthcare access. It has also involved shifts in perceptions of gender roles and cultural norms worldwide (Desai et al. 2022; Nahar and Mengo 2022). So women's empowerment is by no means a straightforward concept to measure, with ongoing uncertainties about how best to conceptualize and capture its multifaceted and dynamic nature, including the different forms of agency it involves (Ewerling et al. 2020).

Previous studies have predominantly focused on assessing empowerment progress through aggregated national-level indices, such as the Gender Development Index (GDI) and the Gender Inequality Index (GII), or through in-depth evaluations of women's ability to negotiate daily circumstances with spouses and family members in private domains. (For an overview, see Nahar and Mengo 2022.) Recent empirical studies have emphasized capturing the multidimensionality of women's empowerment across economic, sociocultural, and health dimensions, attempting to develop uniform,

comparable indices to reflect the diverse facets of women's empowerment across different settings, particularly in LMICs (Ewerling et al. 2020; Miedema et al. 2018).

However, a significant portion of existing research has overlooked the potential interrelationships between the various dimensions of empowerment. For example, efforts to improve women's access to employment and health services are essential, but women are still less empowered if concomitant advances in the private sphere do not occur. Likewise, the utility of large-scale cash transfer programs designed to improve women's well-being may be limited if decisions regarding the allocation of household resources are still predominantly made by men (Niño-Zarazúa et al. 2012). These overlapping conditions illustrate how different dimensions could interact in substantial ways that shape women's empowerment across various social contexts (Desai et al. 2022).

How does women's empowerment operate within and across private and public domains, and how do different forms of agency co-occur across multiple contexts? The aim of this study is threefold. First, we introduce and develop a conceptual framework that summarizes the multidimensional and interdependent nature of women's empowerment within individual, household, institutional, and cultural contexts. This conceptual framework, which captures women's involvement in both the public and private spheres, may provide a more refined and context-specific understanding for assessing empowerment goals and progress toward gender equality. Second, we align this framework with a person-oriented method to identify typologies of women's empowerment in the Central, Eastern, Southern, and Western regions of sub-Saharan Africa (SSA). Third, we evaluate how well a reduced set of commonly applied survey items and country-level indicators adequately captures the complexities reflected in the identified empowerment typologies. To this end, this study harmonizes divergent theoretical perspectives and develops an integrated framework that considers the multidimensional, intersectional, and context-specific nature of women's empowerment.

2. Literature review

Early literature on women's empowerment defined the concept as an interactive process that enables individuals – particularly those considered powerless – to have control over their lives (Kabeer 1999; Sen and Batliwala 2000). This literature emphasized human agency: the ability to make choices and to take action based on them. The nature of agency has been conceptualized as both intrinsic and instrumental. For women, intrinsic agency (the power to be) is an internal sense of volition to challenge societal beliefs that contribute to gender inequality, while instrumental agency (the power to do) involves more tangible control over reproductive rights and sexual autonomy, participation in household and community decision-making, and freedom of movement (Gammage,

Kabeer, and van der Meulen Rodgers 2015). Thus attaining empowerment involves gaining control over or having the choice to access formal and informal resources as well as the ability to challenge institutionalized practices and ideologies (Narayan-Parker 2005).

However, earlier conceptualizations of empowerment often placed less emphasis on the broader social, institutional, and cultural conditions necessary for attaining empowerment. This is particularly relevant for women living in LMICs, where culturally defined social systems and a lack of institutional support may impede personal agency. Social and structural barriers may manifest in interpersonal relationships with spouses and families (Schatz, Madhavan, and Williams 2011), in educational and healthcare systems (Sen and Batliwala 2000), in labor markets with limited support resources (Mason 2005), and in environments where women's social and political participation is limited (Gammage, Kabeer, and van der Meulen Rodgers 2015). Thus the conceptualization of women's empowerment has extended beyond addressing individual constraints to instead considering other social and structural factors that reinforce barriers to equal opportunities. (For reviews, see Desai et al. 2022; Nahar and Mengo 2022; Upadhyay et al. 2014.)

More recently, there has been a growing recognition that women's empowerment encompasses multiple dimensions within household, community, and broader institutional contexts (Desai et al. 2022). From this perspective, individuals' ability to exercise and achieve personal agency may differ based on their capabilities, resources, interactions within their primary social environments, and the broader institutional milieu. This perspective differs from previous conceptualizations by defining agency within various contexts, ranging from the micro to the macro level (see also, Malhotra and Schuler 2005).

To date, studying women's empowerment remains challenging due to the absence of a singular, universally accepted definition. Although multidimensionality is a fundamental component of empowerment, there are debates about how best to define and measure its different dimensions (Heckert and Fabric 2013). A wide range of indicators has been used to measure women's empowerment in both the private and public domains. Commonly applied indicators include women's educational achievements, economic and occupational status (Boateng et al. 2014), and perceptions of safety and violence within the domestic sphere (Ewerling et al. 2020); women's ability to participate in household decisions, family planning, and managing household resources (Phan 2016); their access to healthcare and social support (Corroon et al. 2014); and their legal rights to own land and access broader institutional resources (Grabe, Grose, and Dutt 2015; for a detailed review, see Nahar and Mengo 2022).

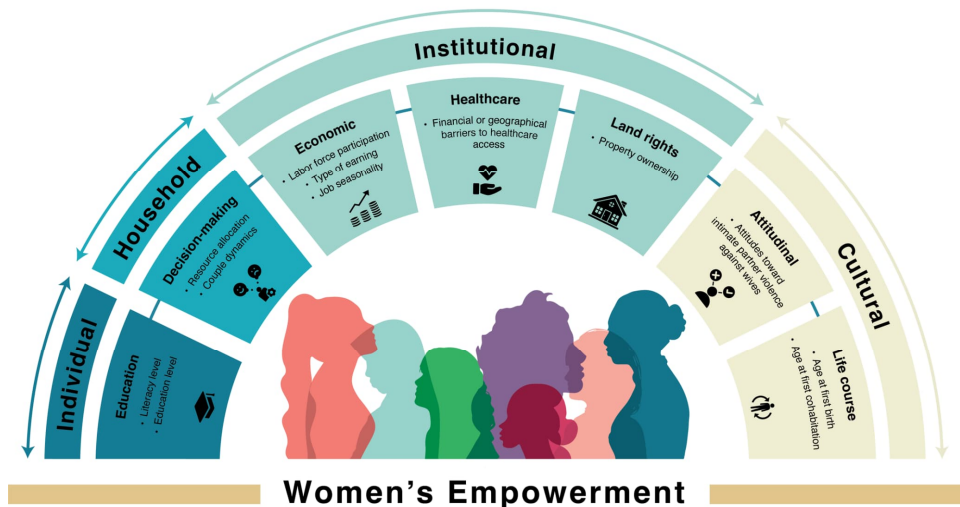
But previous approaches to measuring women's empowerment have often overlooked the potential intersection between different dimensions, placing less emphasis

on the subtle negotiations that may occur between women and men in their public and private lives (Kabeer 1999). For example, a woman's ability to engage in formal education and the labor market may signify her autonomy and the availability of resources, but it may not directly translate into her ability to exercise agency in other aspects of private and public life, such as resisting violence (Malhotra and Schuler 2005), navigating marriage arrangements (Jejeebhoy et al. 2012), or asserting her legal rights to own and inherit land (Grabe, Grose, and Dutt 2015). Consequently, the nature of agency is inherently difficult to measure directly, and the association between increased agency in the public and private domains is not always consistent.

3. Empowerment as a latent process

Recognizing the need for a holistic approach to women's empowerment, we conceptualize empowerment as a latent construct reflecting intrinsic and instrumental agency. From this perspective, empowerment, though not directly observable, is manifested through behaviors and outcomes across multiple dimensions and contexts. To address the complexities and potential measurement errors in observing how women express personal agency, our study adopts a latent-variable approach, building on recent research that uses latent or composite methods to measure empowerment. (For factor-based approaches, see Asaolu et al. 2018; Kazembe 2020; Adeyemi and Gayawan 2024; for principal component approaches, see Ewerling et al. 2020; for domain-specific analyses, see Rettig, Fick, and Hijmans 2020; Banks, Sweeney, and Meiring 2022.) Our goal is to *indirectly* infer women's capabilities, agency, and resource access by *directly* assessing observable responses within a framework that comprises seven distinct yet interconnected dimensions nested within individual, household, institutional, and cultural contexts (Figure 1).

Figure 1: An integrated framework of women's empowerment



3.1 Individual capabilities and resources: Education dimension

Women's empowerment involves fostering women's capabilities to make autonomous choices, thus exhibiting their agency. Education is closely linked to acquiring, exercising, and realizing both intrinsic and instrumental agency. Through education, women gain knowledge and information (intrinsic), which helps them make informed decisions about various aspects of their lives, including their health and well-being. Moreover, education equips women with practical skills (instrumental) that enable them to recognize their inherent potential, engage in decision-making processes, and assert their rights within their families, communities, and the broader social environment. Education may also compel women to challenge traditional gender roles and create pathways to greater economic opportunities.

However, while education is often considered a vital means of empowerment, its association with increased agency, particularly instrumental agency, may not apply uniformly across different social contexts. For example, as women become more educated and begin to question traditional gender roles, these inquiries may elicit varied and potentially harmful responses from men and other family members. This suggests that education may intersect with familial and social dimensions, thus limiting the transformative impact of education on women's empowerment.

3.2 Agency within the household: Decision-making dimension

A closely related example of when intrinsic agency might not translate into instrumental actions can be seen in women's ability to participate in decision-making processes with other household members (Mason 2005). One way to gain insight into this mismatch of personal agency is by examining the intrahousehold dynamics surrounding decision-making.

In SSA settings, intrahousehold decisions are typically made by the household head, often reported as a male, the highest income earner, or the oldest member (Posel 2001). The household head holds a position of power and serves as the sole decision-maker, thus representing household members' shared interests (Vogler 1998). Under this household model, decision-making processes are contingent upon one's ability to contribute to the household economy. This results in a predominantly male-dominated household model, where women's participation is limited (Becker 1991; Posel 2001).

Household decisions may include managing the family's finances, and women's inclusion in these matters corresponds to their ability to access and allocate household resources. Women's household agency may also include the freedom to access healthcare and support networks, thus demonstrating how agency can directly translate into improved health and well-being. Importantly, under a male-dominated household model, a woman's ability to negotiate sex and family planning with her spouse correlates to her perceived control over the circumstances of her life (Hindin 2000). Therefore evaluating women's perceived ability to participate in household decision-making serves as an essential indicator of their empowerment.

3.3 Agency within institutions

3.3.1 Economic dimension

Beyond empowerment in the private domain, access to formal markets is also considered both an enabling factor and an outcome associated with personal agency. However, whether women can participate in the labor market is primarily influenced by the opportunity structures and culturally specific norms pertaining to women in both the private and public domains.

Despite general increases in education and labor force participation, many women across SSA continue to work in informal sectors, such as small-scale farming and unpaid care work (UN Women 2019). This may be attributed to a combination of limited job opportunities and various constraints that prevent women from seeking formal employment. For example, marital arrangements determined by families may require

women to enter into (in)formal unions and begin childbearing earlier than in other contexts. Women's predominantly unremunerated work, which often centers around childrearing, may exacerbate gender disparities, as women often bear overlapping and competing responsibilities, including employment, homemaking, and caregiving (Schatz, Madhavan, and Williams 2011). These constraints are more pronounced for women in rural areas, where public transportation is lacking and job opportunities are often scarce (Hosegood 2009; Mkhwanazi and Manderson 2020).

3.3.2 Healthcare dimension

Even if women can negotiate their reproductive behaviors in the private sphere, institutional factors could also serve as constraints for women to exercise their agency, both intrinsically and instrumentally. Healthcare policies, funding, and service availability play key roles in the empowerment process. However, the mere availability of such services does not guarantee their utilization (Tessema et al. 2022). For example, many women are obligated to care for other household members while working in the informal sector, thus limiting their own healthcare access. In addition, the societal stigma associated with women visiting healthcare facilities alone may prevent them from utilizing these services. (For a detailed review, see Nyblade et al. 2019.)

3.3.3 Land rights dimension

Land ownership can be viewed as an essential indicator of women's empowerment within a legal or political system (Brixiová, Kangoye, and Tregenna 2020). In many LMICs, neoliberal economic policies have induced a transition in land ownership from communal to private, undermining the limited customary land rights that women once had in many contexts (Englert and Daley 2008). As competition for fertile land intensifies, the lack of secure land tenure further jeopardizes women's residential security (Mubecua and Nojiyeza 2019). In SSA, land rights are predominantly held by men, perpetuating power disparities in property control that may reinforce women's subordinate status in both private and public spheres. Some suggest that women who own land have greater influence within their relationships and are less likely to experience violence (Grabe, Grose, and Dutt 2015).

3.4 Agency within cultural contexts

3.4.1 Attitudinal dimension

The extent to which women are able to exercise free choice may also depend on unobserved factors embedded within their broader cultural contexts. Cultural factors that reflect collective perceptions and acceptance of specific behaviors play an essential role in shaping women's perceptions of how they should behave and their roles within a given social environment.

One dimension of women's intrinsic agency, therefore, lies in their attitudes toward male-dominant power dynamics, a factor that is commonly observed in families across SSA (Ahinkorah, Dickson, and Seidu 2018). These attitudes, including women's perceptions of intimate partner violence against wives, are rooted in beliefs about marital gender roles. Societal norms have often depicted married women as occupying a more dependent or subordinate position (Koenig et al. 2003). Such traditional viewpoints may reflect patriarchal beliefs, which in turn contribute to a community's acceptance of intimate partner violence. At times, the ostensibly higher acceptance of intimate partner violence reported among women may partly stem from social desirability bias in men's responses, particularly their tendency to present themselves as more progressive or non-violent (Kilgallen et al. 2025; Paintsil et al. 2023). These dynamics may thus restrict women's capacity to exercise personal agency.

However, despite a substantial proportion of men and women in SSA still adhering to more male-dominated gender roles (see Uthman, Lawoko, and Moradi 2009), how these perceptions intersect with other aspects of empowerment, such as women's education and employment, remains unclear. These attitudes may be deeply entrenched in long histories of cultural development that are resistant to change.

3.4.2 Life-course dimension

Significant life events, such as marriage and childbearing, may also be influenced by culturally defined norms and practices (Upadhyay et al. 2014). How women navigate these events may indirectly indicate how they exercise and realize personal agency. For instance, forced marriages may compel young women into unions without their consent, denying them the right to make decisions about their lives and relationships. Arranged marriages, while less coercive, involve families selecting partners for their children with varying degrees of individual involvement. This may at times be considered a way of ensuring financial security and strengthening social ties between families, via practices such as lobola (bride wealth) in some SSA settings.

These cultural practices are closely related to early marriage and parenthood, which have been recognized as hindrances to women's access to education, employment, and improved well-being (UN Women 2019). However, despite women's increased educational attainments and labor force participation, an estimated 650 million girls across the globe marry before the age of 18, particularly in Southern and Eastern Africa (UNICEF 2022). Thus it remains unclear whether improvements in this life-course dimension are predominantly linked to improved agency in terms of one's education or economic standing or if other important dimensions at the individual, household, and institutional levels may intersect simultaneously.

4. Women's empowerment in sub-Saharan Africa

Conceptual works on women's empowerment have primarily drawn from studies conducted in South Asia and the Middle East, often highlighting the role of patriarchal beliefs and societal structures in shaping women's status in these regions (Asaolu et al. 2018; Desai et al. 2022; Yount et al. 2016). While patriarchal beliefs are also commonly observed across SSA, we know far less about how best to conceptualize and measure empowerment in these settings.

In SSA, many women have experienced improved autonomy due to their productive roles in household economic activities, interpersonal relationships, and access to education, healthcare, and institutional resources like pensions (Dolan 2001; Hosegood 2009; Larsen and Hollos 2003; Schatz, Madhavan, and Williams 2011). However, it may be difficult to generalize the productive role of women across SSA, as their access to resources often remains limited to low-revenue commodities that generate lower average incomes, while men continue to dominate commodities that are high income generators, especially in rural communities (Njuki et al. 2011). Changes in agricultural practices and economic activities in countries such as Kenya and Tanzania have enabled women to gain more control over income-generating activities and increased their relative power within households (Dolan 2001; Larsen and Hollos 2003). Nonetheless, variations in gender systems within SSA continue to highlight the tensions and negotiations between women's empowerment in both the public and private spheres. Further insights into diverse experiences with empowerment across geographically proximate yet culturally distinct gender systems would likely contribute to a better understanding of how human agency is perceived and expressed, specifically in under-resourced contexts.

5. Study objectives

Women's empowerment operates across overlapping dimensions that rarely move in a linear or uniform direction. Improvement in one sphere, specifically education or employment, may not translate directly into greater decision-making power or attitudinal change in another. These uneven and sometimes contradictory trajectories make empowerment difficult to measure using additive or one-dimensional indices.

How does women's empowerment operate within and across private and public domains, and how do different forms of agency co-occur across multiple contexts? To answer these questions, we conceptualize empowerment as an unobserved process that becomes observable through women's patterned responses across multiple domains of life. This framework evaluates whether empowerment represents a coherent, cross-dimensional process – as assumed in previous approaches to measuring empowerment – or a set of context-specific typologies that reflect distinct patterns of agency across individual, household, institutional, and cultural contexts (Figure 1). Guided by this framework, we expect that women's empowerment will not constitute a single, coherent process across all dimensions and that agency exercised in the private domain may not translate directly into agency in the public domain.

At the same time, women's experiences of empowerment are likely driven by broader structural and cultural contexts across SSA regions. For example, distinct gender regimes across Central, Eastern, Southern, and Western Africa may reflect differing intersections of kinship, economy, and state institutions. Identifying common empowerment typologies across these regions enables us to distinguish broader structural regularities that transcend local settings from region-specific expressions of agency rooted in local gender systems. From this perspective, our analysis seeks to assess whether empowerment in SSA reflects shared regional dynamics or remains deeply embedded within localized social and institutional arrangements.

Finally, we assess whether a smaller set of widely applied survey items and country-level indicators can adequately capture the empowerment typologies revealed by our analysis. This step connects empirical findings to ongoing debates about how empowerment should be monitored globally. If simplified metrics fail to distinguish more and less empowered typologies, this would suggest that existing tools underestimate the multidimensional nature of women's agency. So our study contributes not only to theoretical discussions about how empowerment operates but also to practical efforts to measure and promote gender equality in diverse contexts.

6. Data and methods

6.1 Research settings

Data were obtained from the Demographic and Health Survey (DHS). Since its inception, the DHS program has collected nationally representative, comparable, cross-sectional surveys that provide detailed sociodemographic and health information for selected LMICs. These surveys are typically administered in five-year intervals. To gain insight into women's empowerment, the DHS inquires about respondents' literacy, employment, decision-making capacities, and attitudes toward intimate partner violence against wives, among other relevant topics. The information we use was gathered through the women's empowerment module (<https://www.dhsprogram.com>). Partnered female respondents within the age range of 15–49 (reproductive ages) were directly interviewed for this module.

We used data collected in SSA settings between 2010 and 2021. Within each country, surveys were conducted with 5,000 to 30,000 eligible households. We organized countries into four broad categories: Central, Eastern, Southern, and Western SSA regions.³ We excluded four countries (Central African Republic, São Tomé and Príncipe, Eswatini, and Ethiopia) because the surveys in these countries either did not include the relevant items or they were conducted before 2010. To maintain comparability across countries, only one survey per country was included, resulting in a final sample of 34 countries. The analytic sample comprised 303,717 partnered respondents. Detailed observations for each country are provided in Table A-1.

6.2 Measures

We conceptualized seven empowerment dimensions within individual, household, institutional, and cultural contexts (Figure 1), leveraging a total of 23 binary and categorical indicators to capture these dimensions. A detailed description of all indicators and their response categories is provided in Table A-2.

³ We aligned our regional grouping with previous research on empowerment in SSA. However, meaningful variation likely exists within regions, which Figure A-6 helps to illustrate.

6.2.1 The individual level

We used three variables to capture the education dimension. These included categorical variables measuring respondents' literacy (unable to read; partially able to read; mostly able to read; able to read) and education level (no education; primary education; secondary education; tertiary education) and a binary variable that measures spousal differences in educational attainment (less than, greater than, or equal to their partner).

6.2.2 The household level

We used three categorical variables to assess the decision-making dimension, measuring whether household-related decisions were made by the partner or someone else, the respondent alone, or jointly by the respondent and her partner. These measures pertain to decisions regarding large household purchases, respondents' healthcare, and visits to family or relatives. We also included two binary variables that indicated whether respondents could negotiate intimate relations with their partner (i.e., whether they could refuse sex or ask to use a condom).

6.2.3 The institutional level

This level contains three dimensions. For the economic dimension, we used four indicators to measure respondents' labor force participation, type of earnings, seasonality of work, and spousal income difference. These categorical measures provided information about kinds of working arrangements (unemployed; worked for family; worked for others; self-employed), returns received (cash or in-kind), the stability of arrangements (seasonal or all-year), and respondents' overall income relative to their partners. To capture the health dimension, we used three binary indicators to determine if the respondent experienced challenges in accessing healthcare services, including financial, geographical, or other difficulties. Finally, we used a categorical variable to capture the land rights dimension, specifically property ownership (did not own any property; owned property jointly; owned property alone).

6.2.4 The cultural level

This level consists of two dimensions: attitudinal and life course. To capture the attitudinal dimension, we used five binary variables to assess whether respondents

believed intimate partner violence was justified in cases where a wife goes out without telling her partner, neglects her children, argues with her partner, refuses sex with her partner, or burns food. For the life-course dimension, we used two categorical variables: the respondent's age at first cohabitation and first birth (≤ 15 ; 16–20; ≥ 21).

7. Statistical analysis

We employed latent class analysis (LCA) to estimate observed responses across the 23 indicators to indirectly formulate the latent empowerment construct. Contrary to a variable-oriented approach, such as principal component analysis, LCA is based on the assumption that underlying latent constructs influence individual attitudes and behaviors (Collins and Lanza 2010). Furthermore, as opposed to prior latent models on women's empowerment, such as factor analysis, LCA identifies homogeneous and parsimonious population subgroups, also known as latent classes, based on a set of categorical observed indicators (McCutcheon 1987). This inductive, "ground-up" nature of LCA emphasizes a person-oriented perspective, focusing holistically on all observed responses to indirectly estimate the latent construct.

Formally, consider the latent construct of women's empowerment, C , for each respondent i . This latent construct aims to capture the underlying empowerment status inferred from respondent i 's observable responses across the 23 indicators indexed by j . These indicators represent the seven theorized dimensions of women's empowerment. We introduce K latent classes to delineate different empowerment types. Each latent class, denoted by k , characterizes a unique response pattern relating to i 's perception and expression of intrinsic and instrumental agency across contextual layers. The probability of i displaying a specific response pattern, y , over the 23 indicators is given by $P(Y = y_{ij})$. This probability was computed as a weighted sum of class-specific probabilities, with weights corresponding to the class proportions $P(C = k)$. Following these definitions, the general form of the latent class model for women's empowerment can be written as follows:

$$P(Y = y_i) = \sum_{k=1}^K P(C = k) \prod_{j=1}^{23} P(Y = y_{ij} | C = k) \quad (1)$$

In this equation, $P(Y_j = y_{ij} | C = k)$ represents the conditional probability of observing a response y_{ij} on an indicator j for respondent i , given their membership in a latent class k . Under this formulation, the model assumes that empowerment classes are constructed based on a series of conditional probabilities across all indicators (Celeux and Soromenho 1996). It also assumes that the relationships among indicators are

accounted for only by this unobserved empowerment construct (i.e., conditional independence; see Collins and Lanza 2010).

We began our analysis by estimating latent class models ranging from two to ten classes. These models were performed separately for Central, Eastern, Southern, and Western Africa. (See Table A-3 for the summary statistics of indicators by region.) We ran a one-step LCA adjusting for women's age, country, and sample weights to account for possible variations in life course, cohort, and contextual factors that may influence empowerment.

To determine the number of classes that best represent empowerment typologies for each region, we primarily relied on the Bayesian information criterion, since it favors a more parsimonious class solution by penalizing complex models when the number of parameters and the sample size increase (Nylund, Asparouhov, and Muthén 2007). Moreover, to ensure adequate class separation and identification, we also evaluated the entropy index – an omnibus index where a value above 0.80 indicates a more appropriate classification of individual cases into classes – for the selected model (Celeux and Soromenho 1996). The final class solution was determined by a combination of these fit indices as well as the substantive interpretation of latent classes. (For detailed model fit statistics, see Table A-4 and Figure A-1.)

LCA models were performed using full-information maximum likelihood with robust maximum likelihood estimation, implemented in *Mplus* 8.6 (Enders 2010; Muthén and Muthén 2000). To avoid the issue of local maxima (low maximum likelihood), all models were estimated with at least 1,000 sets of starting values with 200 iterations for these random starts to ensure adequate replication of the best log-likelihood.

Following our primary analyses, we tested whether the commonly applied micro- and macro-level measures of women's empowerment could accurately reflect characteristics underlying the identified empowerment classes. Micro-level indicators included women's attitudes toward intimate partner violence, household decision-making autonomy, and control over earnings. Macro-level indices included the GDI, the GII, the Human Development Index (HDI), female mean years of schooling, and female labor force participation.

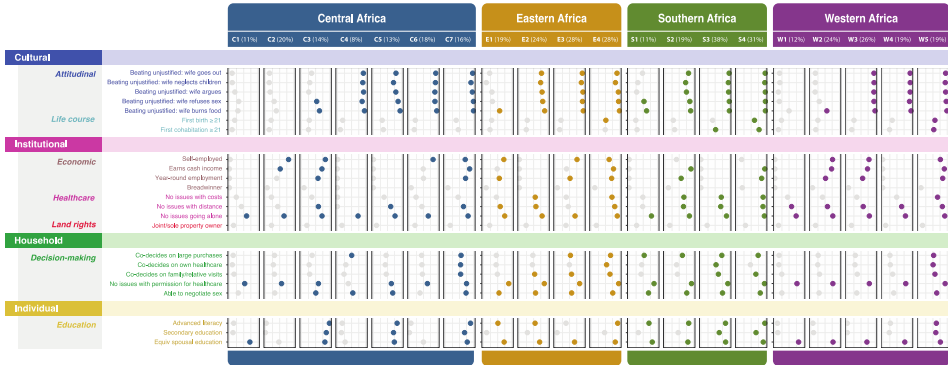
8. Results

We identified a seven-class solution for Central Africa, a five-class solution for Western Africa, and four-class solutions for both Eastern and Southern Africa. Figure 2 displays the empowerment classes derived from these models, presenting conditional probabilities for the most empowered category of each indicator – reflecting higher educational attainment, employment rates, and perceived agency across contexts. Probabilities

exceeding 50% are highlighted for ease of interpretation, with full tables provided in Figures A-2 to A-5.

Overall, the results reveal substantial heterogeneity across the individual, household, institutional, and cultural layers and their constituent dimensions, alongside pronounced mismatches in women's agency between the public and private spheres.

Figure 2: Conditional probabilities for empowerment indicators by class membership



Note: Probabilities exceeding 50% are highlighted in darker colors for easier interpretation.

8.1 Mismatches across empowerment contexts

8.1.1 Individual and institutional contexts vs. cultural contexts

Improvements in education and economic status do not consistently translate into reduced acceptance of norms justifying intimate partner violence. In Central Africa, for example, women who are more educated (87%) and self-employed (84%) report more permissive attitudes toward intimate partner violence than their less educated or unemployed counterparts (C3 vs. C4). A similar pattern emerges in Western Africa, where self-employed women (78%) and those earning a cash income (73%) hold more permissive attitudes than unemployed women (W2 vs. W4). These patterns, also observed in Eastern Africa (E1), suggest that gains in individual and institutional empowerment do not necessarily correspond to a rejection of entrenched gender norms in the cultural domain.

8.1.2 Institutional vs. household contexts

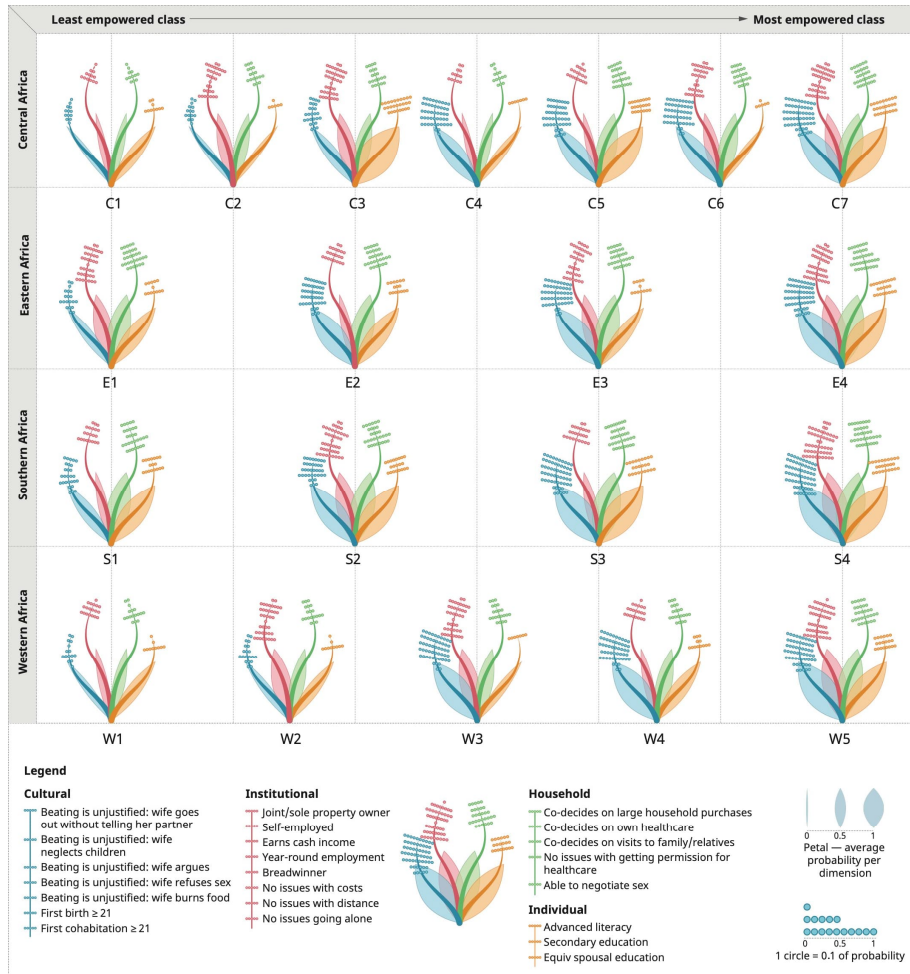
We find that women's economic participation in the institutional context does not consistently translate into agency within the private household domain. Even when women report employment or year-round income, household decisions are often made primarily by spouses or other household members (C2, C3, C6, E1, S2, W2, W4). Conversely, some women participate in household decision-making regardless of their employment status, as observed in S3 in Southern Africa. These findings suggest that domestic power is more closely tied to entrenched norms than to economic contributions alone.

8.1.3 Household vs. cultural contexts

A further discrepancy emerges between attitudes toward intimate partner violence and household authority. Women who participate in household decision-making consistently report less permissive attitudes toward violence, a pattern evident in the most empowered classes across all regions (C7, E4, S4, W5). However, the reverse does not always hold: Women who reject violence do not necessarily hold decision-making power within the household, as seen in Central (C4, C5, C6), Eastern (E2), Southern (S2), and Western Africa (W3, W4). This asymmetry suggests that while household authority and the rejection of harmful norms tend to co-occur, adopting more progressive attitudes does not automatically confer greater domestic power.

These patterns are illustrated in Figure 3, which presents a stylized visualization of empowerment heterogeneity across contextual layers. The size of each petal represents the average conditional probability of the most empowered category, while the circles denote indicator-level probabilities ranging from 0.1 (one circle) to 1 (ten circles). We also report sociodemographic characteristics of these empowerment typologies in Tables A-5 to A-8.

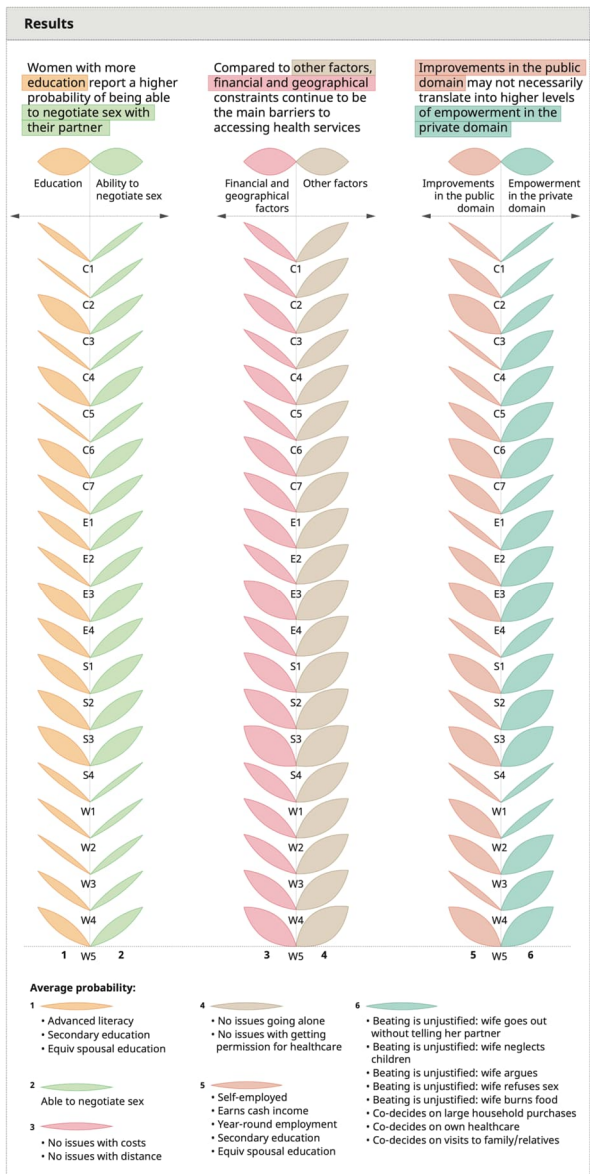
Figure 3: A summary of heterogeneity between dimensions



8.2 Commonalities across classes and regions

Despite regional differences, two consistent patterns emerge across empowerment classes and regions (Figure 4).

Figure 4: Commonalities across classes and regions



8.2.1 Education and reproductive agency

Education is consistently associated with greater reproductive agency. Women with secondary education are more likely to negotiate sexual activity with their partners, a pattern observed in Central Africa (C3, C5) and Western Africa (W5). Although most partnered women in Southern and Eastern Africa can negotiate sex regardless of educational attainment, the likelihood remains highest among those with higher education and literacy. More educated women also report a greater likelihood of delaying childbearing. Across diverse regional settings, these findings position education as a reliable lever for sexual and reproductive agency.

8.2.2 Institutional barriers to agency

Institutional barriers frequently hinder women's ability to exercise personal agency across all regions, primarily in the form of financial and geographic obstacles to accessing healthcare. These constraints are most pronounced among women with lower levels of education and those who are unemployed (C1, E1, S1, W1). Although the magnitude varies by region, the results suggest that institutional barriers constitute a widespread structural limitation on empowerment.

8.3 Comparing conventional empowerment metrics with latent typologies

Since survey-based studies rarely include identical empowerment indicators, we first assessed whether a reduced set of commonly used educational, economic, and attitudinal items could accurately identify latent class membership (Table 1).

Single indicators perform well in identifying the least empowered class. Permissive attitudes toward intimate partner violence, for instance, predict membership in the least empowered class with a sensitivity of 95.4% or higher across all regions. However, single indicators perform poorly in identifying the most empowered classes: Using secondary education alone yields sensitivity as low as 25.6% in Western Africa. Accurately identifying highly empowered women requires a combination of indicators, including education, decision-making power, and employment, which together achieve specificity above 90% across all regions. These results suggest that while lower empowerment follows a relatively consistent profile, higher empowerment is multidimensional and cannot be captured by any single indicator.

Table 1: Sensitivity and specificity for simplified empowerment indicators on predicted latent class memberships

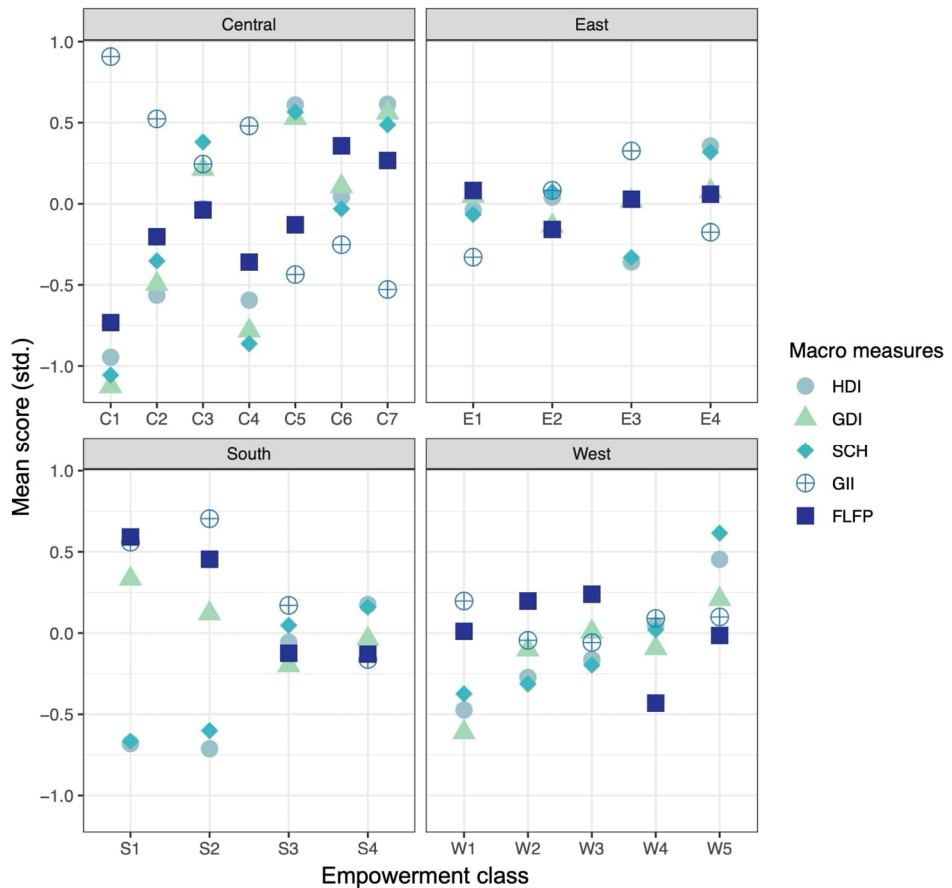
Empowerment indicators	Central	Eastern	Southern	Western
Any beating is justified (predicting the least empowered class)				
Sensitivity	99.9%	95.4%	95.5%	100%
95% CI	[99.7–99.9]	[95.1–95.7]	[94.2–96.6]	[100–100]
Specificity	46.7%	76.9%	85.4%	61.6%
95% CI	[46.2–47.1]	[76.6–77.2]	[84.6–86.2]	[61.3–61.9]
≥ secondary education (predicting the most empowered class)				
Sensitivity	79.7%	62%	97%	25.6%
95% CI	[78.7–80.6]	[61.4–62.5]	[96.3–97.6]	[25.1–26.2]
Specificity	75.0%	84.4%	45.7%	78.7%
95% CI	[74.6–75.4]	[84.2–84.7]	[44.6–46.9]	[78.4–78.9]
Combination of ≥ secondary education, joint/sole decision-making, and occasional/year-round employment (predicting the most empowered class)				
Sensitivity	56.5%	50.6%	90.7%	44%
95% CI	[55.4–57.7]	[50.1–51.2]	[89.6–91.8]	[43.3–44.6]
Specificity	95.3%	97.2%	91.6%	99%
95% CI	[95.1–95.5]	[97–97.3]	[90.9–92.2]	[98.9–99]

Notes: CI = confidence interval. Sensitivity: For those who belonged to a specific latent class, the proportion of respondents who gave a positive response to the set of empowerment indicators. Specificity: For those who did not belong to a specific latent class, the proportion of respondents who gave a negative response to the set of empowerment indicators.

We next compared a set of commonly used macro-level gender indices – GDI, GII, HDI, female mean years of schooling, and female labor force participation (Carlsen 2020; Castells-Quintana, Royuela, and Thiel 2019) – against the latent empowerment classes. Country-level indicators were aligned with the survey year for each region.

These comparisons reveal clear limitations of macro-level metrics, which can obscure heterogeneity in women’s agency at the micro level. In Central Africa, for example, women in C4 report less permissive attitudes toward intimate partner violence than those in C3, yet indices such as the GDI would rank C3 as more empowered. Similar mismatches appear in Eastern (E1/E2), Western (W2/W3), and Southern Africa (S1/S2). Overall, macro-level indices capture progress in public and economic domains but fail to reflect variation in the household and cultural dimensions of empowerment.

Figure 5: Descriptive patterns between country-level indicators and empowerment classes



Notes: Country-level indicators, including HDI, GDI, GII, average schooling years for women (SCH), and the female labor force participation (FLFP) rate, are derived from UNDP Human Development Reports 1990–2021. We standardized these indices and displayed the average values (y-axis) by empowerment class (x-axis) for the four African regions.

9. Discussion and conclusion

The post-2015 sustainable development agenda explicitly aims to ensure that no one is left behind. Achieving gender equality and women's empowerment are critical steps toward realizing this objective. However, it remains unclear how best to track and achieve this objective, given the inherently multifaceted and contextually sensitive nature of women's empowerment. In this study, we harmonized and developed a conceptual and empirical model of women's empowerment to better account for the complex interplay among multiple empowerment dimensions within multilayered social contexts (Figure 1).

Drawing on the DHS from women across 34 SSA countries, our models identified inconsistencies across various dimensions and contexts. Women who participated in household decision-making often exhibited negative attitudes toward undesirable cultural norms, such as intimate partner violence against wives. However, the reverse, where those who were against intimate partner violence had decision-making power in the household, was not consistently observed in all settings. Despite advances in education and employment, many women still adhere to traditional household roles and expectations. These patterns vary across SSA regions and may differ substantially between countries (see Figure A-6). Across all regions, accessing healthcare services remained a key challenge for women with limited personal resources, although different settings presented various barriers. These findings highlight the importance of considering the heterogeneity of women's perceptions and realizations of individual agency in both public and private spheres. To this end, our study extends the existing literature in three important ways.

First, we developed a conceptual framework for a multidisciplinary perspective to better understand women's empowerment. Existing theories on empowerment have emphasized human agency and defined empowerment as an interactive process (Batliwala 1994; Desai et al. 2022; Kabeer 1999; Mason 2005; Narayan-Parker 2005; Sen 1985). This process, shaped by power structures, is expressed differently between households and across broader institutional and cultural landscapes (Desai et al. 2022). Empowerment in one dimension, however, is likely dependent upon agency in other dimensions. Extending on these theories, our conceptual framework examines the interrelationships among dimensions and situates them within various contextual levels where they operate. Given the varied interpretations and operationalizations of women's empowerment, we propose the use of an integrated and holistic perspective to clearly define how agency is expressed and realized within social (e.g., spousal dynamics), institutional (e.g., access to facilities), and cultural (e.g., societal norms) contexts. The proposed conceptual framework calls for a more precise and context-specific evaluation of progress toward women's empowerment.

Second, our empirical approach to measuring women's empowerment provides avenues for future research to explore additional factors within each theorized dimension. LCA allowed us to examine the relationships between observed attitudes and behaviors to indirectly infer women's empowerment status. However, it is important to acknowledge that we were unable to fully assess several micro- to macro-level factors in this work. For example, although education is often perceived as a means to empower women and girls, it is also necessary to consider the quality of education one receives. Additionally, while employment is crucial for improving human agency, it is also imperative to assess the types of jobs available. While cultural ideologies might resist change in the short term, gaining insight into other structural constraints can lead to a more nuanced understanding of how agency is perceived and achieved. In this spirit, future research may delve deeper into these dynamics to understand the barriers to empowerment progress.

Third, our findings highlight the importance of reevaluating existing measurements of women's empowerment. On the micro level, we found that a reduced set of empowerment indicators served only to classify women into less empowered classes. On the macro level, country-level indices often fell short of capturing nuances within household and cultural contexts where empowerment manifests. These findings imply that while we may understand less empowered populations using a simplified set of commonly applied measures, our analysis of highly empowered women is much more limited. Practically, our findings suggest that the initial steps of identifying and reducing the vulnerability of less empowered women (e.g., shifts in normative beliefs) may be more prominent. However, further steps toward empowering women – whether through improved education, employment, or household dynamics – remain uncertain. In the pursuit of sustainable development, it may become increasingly imperative to have a more concrete understanding of what defines an empowered woman.

These observations raise questions about whether empowerment should be a uniform, universally applicable concept or if it should be recognized as inextricably entwined with the diverse cultural and contextual milieus in which it operates. The prevailing evidence, leaning toward the latter perspective, advocates for the deconstruction of essentialized notions surrounding empowerment. Western or Eurocentric paradigms may have unintentionally propagated a notion of women's empowerment that obscured the experiences of other marginalized groups, especially women of color (Syed 2010). While women in SSA may participate in the labor market and are considered empowered within the dominant feminist perspective, they face unique challenges in the domestic sphere despite their roles in the public sphere. The disconnect between institutional efforts and the complexity of women's experiences suggests a need for a deeper understanding of what empowerment means for people involved or targeted.

The results, however, must be interpreted in relation to their limitations. First, our findings may have limited generalizability, as the DHS questions are restricted to partnered women. Although the DHS serves as a valuable data source that allows for comparative analysis across many LMICs, there is a need for further research that expands the scope to include all women and girls. Second, although we have incorporated a country indicator into each region-specific LCA, it is important to acknowledge variation within SSA regions that have not been fully explored, such as the prevalence of empowerment classes at the subnational level (see Figure A-6). Future research at the subnational level can provide more context-specific insights into women's empowerment, including variations within regions. Lastly, the cross-sectional nature of the DHS limited our ability to assess the potential variations of empowerment classes throughout one's life course. The dimensions addressed in this work may not remain static throughout different life stages, and longitudinal data would be particularly useful for examining how changes in the public or private domain could interact to reinforce progress toward gender (in)equality over time.

In sum, our study highlights the importance of achieving a strategic balance between providing adequate measures of gender empowerment and recognizing variations among diverse groups of women. Excessive focus on either compartmentalizing empowerment dimensions or considering all possible combinations of indicators together may impede progress toward attaining the most accurate measurement of women's empowerment. Using the most widely available empowerment data across LMICs and an inductive person-centered approach, our study broadens research in this area by emphasizing the public-private landscape as spaces where women reside, negotiate, and engage in much of the empowerment process.

References

- Adeyemi, E.I. and Gayawan, E. (2024). Analysis of the geographical variations in women's empowerment in Nigeria. *African Geographical Review* 43(2): 333–349. doi:[10.1080/19376812.2022.2151478](https://doi.org/10.1080/19376812.2022.2151478).
- Ahinkorah, B.O., Dickson, K.S., and Seidu, A.-A. (2018). Women decision-making capacity and intimate partner violence among women in sub-Saharan Africa. *Archives of Public Health* 76: 5. doi:[10.1186/s13690-018-0253-9](https://doi.org/10.1186/s13690-018-0253-9).
- Asaolu, I.O., Alaofè, H., Gunn, J.K.L., Adu, A.K., Monroy, A.J., Ehiri, J.E., Hayden, M.H., and Ernst, K.C. (2018). Measuring women's empowerment in sub-Saharan Africa: Exploratory and confirmatory factor analyses of the Demographic and Health Surveys. *Frontiers in Psychology* 9: 994. doi:[10.3389/fpsyg.2018.00994](https://doi.org/10.3389/fpsyg.2018.00994).
- Banks, J., Sweeney, S., and Meiring, W. (2022). The geography of women's empowerment in West Africa. *Spatial Demography* 10(2): 387–412. doi:[10.1007/s40980-021-00099-2](https://doi.org/10.1007/s40980-021-00099-2).
- Batliwala, S. (1994). The meaning of women's empowerment: New concepts from action. In: Sen, G., Germain, A., and Chen, L.C. (eds.). *Population policies reconsidered: Health, empowerment and rights*. Boston, MA: Harvard Center for Population and Development Studies: 127–138.
- Becker, G.S. (1991). *A treatise on the family*. Cambridge, MA: Harvard University Press. doi:[10.4159/9780674020665](https://doi.org/10.4159/9780674020665).
- Boateng, G.O., Mumba, D., Asare-Bediako, Y., and Boateng, M.O. (2014). Examining the correlates of gender equality and the empowerment of married women in Zambia. *African Geographical Review* 33(1): 1–18. doi:[10.1080/19376812.2013.814188](https://doi.org/10.1080/19376812.2013.814188).
- Boserup, E. (1970). *Woman's role in economic development*. New York: St. Martin's Press.
- Brixiová, Z., Kangoye, T., and Tregenna, F. (2020). Enterprising women in Southern Africa: When does land ownership matter? *Journal of Family and Economic Issues* 41: 37–51. doi:[10.1007/s10834-020-09663-2](https://doi.org/10.1007/s10834-020-09663-2).
- Carlsen, L. (2020). Gender inequality and development. *Sustainability Science* 15(3): 759–780. doi:[10.1007/s11625-019-00767-9](https://doi.org/10.1007/s11625-019-00767-9).

- Castells-Quintana, D., Royuela, V., and Thiel, F. (2019). Inequality and sustainable development: Insights from an analysis of the Human Development Index. *Sustainable Development* 27(3): 448–460. doi:10.1002/sd.1917.
- Celeux, G. and Soromenho, G. (1996). An entropy criterion for assessing the number of clusters in a mixture model. *Journal of Classification* 13(2): 195–212. doi:10.1007/BF01246098.
- Collins, L.M. and Lanza, S.T. (2010). *Latent class and latent transition analysis: With applications in the social behavioral, and health sciences*. Hoboken, NJ: John Wiley. doi:10.1002/9780470567333.
- Corroon, M., Speizer, I.S., Fotso, J.C., Akiode, A., Saad, A., Calhoun, L., and Irani, L. (2014). The role of gender empowerment on reproductive health outcomes in urban Nigeria. *Maternal and Child Health Journal* 18(1): 307–315. doi:10.1007/s10995-013-1266-1.
- Desai, S., Chen, F., Reddy, S., and McLaughlin, A. (2022). Measuring women’s empowerment in the Global South. *Annual Review of Sociology* 48(1): 507–527. doi:10.1146/annurev-soc-030420-015018.
- Dolan, C. (2001). The ‘good wife’: Struggles over resources in the Kenyan horticultural sector. *The Journal of Development Studies* 37(3): 39–70. doi:10.1080/00220380412331321961.
- Enders, C.K. (2010). *Applied missing data analysis*. New York: Guilford Press.
- Englert, B. and Daley, E. (2008). *Women’s land rights and privatization in Eastern Africa*. Oxford: James Currey. doi:10.1017/9781846156809.
- Ewerling, F., Raj, A., Victora, C.G., Hellwig, F., Coll, C.V., and Barros, A.J. (2020). SWPER Global: A survey-based women’s empowerment index expanded from Africa to all low- and middle-income countries. *Journal of Global Health* 10(2): 020343. doi:10.7189/jogh.10.020434.
- Gammage, S., Kabeer, N., and van der Meulen Rodgers, Y. (2015). Voice and agency: Where are we now? *Feminist Economics* 22(1): 1–29. doi:10.1080/13545701.2015.1101308.
- Grabe, S., Grose, R.G., and Dutt, A. (2015). Women’s land ownership and relationship power: A mixed methods approach to understanding structural inequities and violence against women. *Psychology of Women Quarterly* 39(1): 7–19. doi:10.1177/0361684314533485.

- Heckert, J. and Fabric, M.S. (2013). Improving data concerning women's empowerment in sub-Saharan Africa. *Studies in Family Planning* 44(3): 319–344. doi:10.1111/j.1728-4465.2013.00360.x.
- Hindin, M.J. (2000). Women's autonomy, women's status and fertility-related behavior in Zimbabwe. *Population Research and Policy Review* 19: 255–282. doi:10.1023/A:1026590717779.
- Hosegood, V. (2009). The demographic impact of HIV and AIDS across the family and household life-cycle: Implications for efforts to strengthen families in sub-Saharan Africa. *AIDS Care* 21(Suppl 1): 13–21. doi:10.1080/09540120902923063.
- Jejeebhoy, S.J., Santhya, K.G., Acharya, R., and Prakash, R. (2012). Marriage-related decision-making and young women's marital relations and agency: Evidence from India. *Asian Population Studies* 9(1): 28–49. doi:10.1080/17441730.2012.736699.
- Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and Change* 30(3): 435–464. doi:10.1111/1467-7660.00125.
- Kabeer, N. (2005). Gender equality and women's empowerment: A critical analysis of the third millennium development goal 1. *Gender and Development* 13(1): 13–24. doi:10.1080/13552070512331332273.
- Kazembe, L.N. (2020). Women empowerment in Namibia: Measurement, determinants and geographical disparities. *World Development Perspectives* 19: 100211. doi:10.1016/j.wdp.2020.100211.
- Kilgallen, J.A., Schaffnit, S.B., Kumogola, Y., Urassa, M., and Lawson, D.W. (2025). Understanding gender differences in acceptance of intimate partner violence against women: Are women truly more accepting than men? *Journal of Interpersonal Violence* 41(9–10). doi:10.1177/08862605251324964.
- Koenig, M.A., Ahmed, S., Hossain, M.B., and Khorshed Alam Mozumder, A.B.M. (2003). Women's status and domestic violence in rural Bangladesh: Individual- and community-level effects. *Demography* 40(2): 269–288. doi:10.1353/dem.2003.0014.
- Larsen, U. and Hollos, M. (2003). Women's empowerment and fertility decline among the Pare of Kilimanjaro region, Northern Tanzania. *Social Science and Medicine* 57(6): 1099–1115. doi:10.1016/S0277-9536(02)00488-4.

- Malhotra, A. and Schuler, S.R. (2005). Women's empowerment as a variable in international development. In: Narayan, D. (ed.). *Measuring empowerment: cross-disciplinary perspectives*. Washington, DC: World Bank: 71–88.
- Mason, K.O. (2005). Measuring women's empowerment: Learning from cross-national research. In: Narayan, D. (ed.). *Measuring empowerment: Cross-disciplinary perspectives*. Washington, DC: World Bank: 89–102.
- McCutcheon, A.L. (1987). *Latent class analysis*. Thousand Oaks: SAGE. doi:10.4135/9781412984713.
- Miedema, S.S., Haardörfer, R., Girard, A.W., and Yount, K.M. (2018). Women's empowerment in East Africa: Development of a cross-country comparable measure. *World Development* 110: 453–464. doi:10.1016/j.worlddev.2018.05.031.
- Mkhwanazi, N. and Manderson, L. (2020). *Connected lives: Families, households, health and care in South Africa*. Cape Town: HSRC Press.
- Mubecua, M.A. and Nojiyeza, S. (2019). Land expropriation without compensation: The challenges of Black South African women in land ownership. *Journal of Gender, Information and Development in Africa* 8(3): 7–19. doi:10.31920/2050-4284/2019/8n3a1.
- Muthén, B. and Muthén, L.K. (2000). Integrating person-centered and variable-centered analyses: Growth mixture modeling with latent trajectory classes. *Alcoholism, Clinical and Experimental Research* 24(6): 882–891. doi:10.1111/j.1530-0277.2000.tb02070.x.
- Nahar, S. and Mengo, C.W. (2022). Measuring women's empowerment in developing countries: A systematic review. *Journal of International Development* 34(2): 322–333. doi:10.1002/jid.3594.
- Narayan-Parker, D. (2005). *Measuring empowerment: Cross-disciplinary perspectives*. Washington, DC: World Bank. doi:10.1037/e597202012-001.
- Niño-Zarazúa, M., Barrientos, A., Hickey, S., and Hulme, D. (2012). Social protection in sub-Saharan Africa: Getting the politics right. *World Development* 40(1): 163–176. doi:10.1016/j.worlddev.2011.04.004.
- Njuki, J., Kaaria, S., Chamunorwa, A., and Chiuri, W. (2011). Linking smallholder farmers to markets, gender and intra-household dynamics: Does the choice of commodity matter? *European Journal of Development Research* 23(3): 426–443. doi:10.1057/ejdr.2011.8.

- Nyblade, L., Stockton, M.A., Giger, K., Bond, V., Ekstrand, M.L., Lean, R.M., Mitchell, E.M.H., Nelson, L.R.E., Sapag, J.C., Siraprapasiri, T., Turan, J., and Wouters, E. (2019). Stigma in health facilities: Why it matters and how we can change it. *BMC Medicine* 17(1): 25. doi:10.1186/s12916-019-1256-2.
- Nylund, K.L., Asparouhov, T., and Muthén, B.O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling* 14(4): 535–569. doi:10.1080/10705510701575396.
- Paintsil, J.A., Adde, K.S., Ameyaw, E.K., Dickson, K.S., and Yaya, S. (2023). Gender differences in the acceptance of wife-beating: Evidence from 30 countries in Sub-Saharan Africa. *BMC Women's Health* 23(1): 451. doi:10.1186/s12905-023-02611-w.
- Phan, L. (2016). Measuring women's empowerment at household level using DHS data of four Southeast Asian countries. *Social Indicators Research* 126(1): 359–378. doi:10.1007/s11205-015-0876-y.
- Posel, D.R. (2001). Who are the heads of households, what do they do, and is the concept of headship useful? An analysis of headship in South Africa. *Development Southern Africa* 18(5): 651–670. doi:10.1080/03768350120097487.
- Rettig, E.M., Fick, S.E., and Hijmans, R.J. (2020). The Female Empowerment Index (FEMI): Spatial and temporal variation in women's empowerment in Nigeria. *Heliyon* 6(5): e03829. doi:10.1016/j.heliyon.2020.e03829.
- Schatz, E., Madhavan, S., and Williams, J. (2011). Female-headed households contending with AIDS-related hardship in rural South Africa. *Health and Place* 17(2): 598–605. doi:10.1016/j.healthplace.2010.12.017.
- Sen, A. (1985). Well-being, agency and freedom: The Dewey lectures 1984. *The Journal of Philosophy* 82(4): 169–221. doi:10.2307/2026184.
- Sen, G. and Batliwala, S. (2000). Empowering women for reproductive rights. In Presser, H.B. and Sen, G. (eds.). *Women's empowerment and demographic processes: Moving beyond Cairo*. New York: Oxford University Press: 15–16. doi:10.1093/oso/9780198297314.003.0002.
- Syed, J. (2010). Reconstructing gender empowerment. *Women's Studies International Forum* 33(3): 283–294. doi:10.1016/j.wsif.2010.03.002.

- Tessema, Z.T., Worku, M.G., Tesema, G.A., Alamneh, T.S., Teshale, A.B., Yeshaw, Y., Alem, A.Z., Ayalew, H.G., and Liyew, A.M. (2022). Determinants of accessing healthcare in sub-Saharan Africa: A mixed-effect analysis of recent Demographic and Health Surveys from 36 countries. *BMJ Open* 12(1): e054397. doi:10.1136/bmjopen-2021-054397.
- UNICEF (2022). Child marriage in Eastern and Southern Africa. New York: United Nations Children's Fund. <https://data.unicef.org/resources/child-marriage-in-eastern-and-southern-africa-a-statistical-overview-and-reflections-on-ending-the-practice/>.
- UN Women (2019). Progress of the world's women 2019–2020. New York: United Nations Entity for Gender Equality and the Empowerment of Women. <https://www.unwomen.org/sites/default/files/Headquarters/Attachments/Sections/Library/Publications/2019/Progress-of-the-worlds-women-2019-2020-en.pdf>.
- Upadhyay, U.D., Gipson, J.D., Withers, M., Lewis, S., Ciaraldi, E.J., Fraser, A., Huchko, M.J., and Prata, N. (2014). Women's empowerment and fertility: A review of the literature. *Social Science and Medicine* 115: 111–120. doi:10.1016/j.socscimed.2014.06.014.
- Uthman, O.A., Lawoko, S., and Moradi, T. (2009). Factors associated with attitudes towards intimate partner violence against women: A comparative analysis of 17 sub-Saharan countries. *BMC International Health and Human Rights* 9(1): 14. doi:10.1186/1472-698X-9-14.
- Vogler, C. (1998). Money in the household: Some underlying issues of power. *The Sociological Review* 46(4): 687–713. doi:10.1111/1467-954X.00136.
- World Bank. (2022). Girls' education. Washington, DC: World Bank Group. <https://www.worldbank.org/en/topic/girlseducation>.
- Yount, K.M., VanderEnde, K.E., Dodell, S., and Cheong, Y.F. (2016). Measurement of women's agency in Egypt: A national validation study. *Social Indicators Research* 128(3): 1171–1192. doi:10.1007/s11205-015-1074-7.

Appendix

Table A-1: Distribution of respondents by region and country (N = 303,717)

Region in Africa	Year	Sample
Central Africa		
Angola	2015–2016	8,033
Cameroon	2018	8,060
Chad	2014–2015	13,439
Republic of the Congo	2011–2012	6,750
Democratic Republic of the Congo	2013–2014	12,448
Gabon	2012	4,749
Eastern Africa		
Burundi	2016–2017	9,559
Comoros	2012	3,291
Kenya	2014	19,036
Madagascar	2021	11,618
Malawi	2015–2016	15,306
Mozambique	2011	7,849
Rwanda	2019–2020	7,290
Tanzania	2015–2016	7,205
Uganda	2016	11,379
Zambia	2018–2019	5,799
Zimbabwe	2015	6,015
Southern Africa		
Lesotho	2014	3,609
Namibia	2013	3,803
South Africa	2016	2,841
Western Africa		
Benin	2017–2018	11,170
Burkina Faso	2010	13,392
Côte d'Ivoire	2011–2012	6,453
Gambia	2019–2020	8,083
Ghana	2014	5,456
Guinea	2018	7,812
Liberia	2019–2020	4,654
Mali	2018	8,332
Mauritania	2019–2020	9,759
Niger	2012	9,509
Nigeria	2018	28,888
Senegal	2019	5,933
Sierra Leone	2019	9,837
Togo	2013–2014	6,360
Sub-Saharan Africa		303,717

Table A-2: Women's empowerment dimensions, indicators, and response categories

Context	Dimension: indicator	Response categories
Individual	Education: literacy	Could not read at all Able to read part of a sentence Able to read an entire sentence Did not need a reading card
	Education: level	No formal education Primary education Secondary education Tertiary education
	Education: spousal difference in educational attainment	Less than her partner Equal to or higher than her partner
Household	Decision-making: large household purchases	Partner alone, someone else, or other Jointly by respondent and her partner Respondent alone
	Decision-making: respondent's healthcare	Partner alone, someone else, or other Jointly by respondent and her partner Respondent alone
	Decision-making: visits to family or relatives	Partner alone, someone else, or other Jointly by respondent and her partner Respondent alone
	Decision-making: ability to negotiate sex	Could not refuse sex or ask her partner to use a condom Could refuse sex and ask her partner to use a condom
	Decision-making: whether getting permission to go for medical treatment is a problem in accessing healthcare	Faced difficulties in getting permission No difficulties in getting permission
Institutional	Economic: labor force participation	Unemployed Worked for a family member Worked for someone else Self-employed
	Economic: type of earning	Unemployed Paid in-kind only Paid cash and in-kind Paid in cash only
	Economic: job seasonality	Unemployed Worked occasionally or seasonally Worked all year
	Economic: spousal income difference	Unemployed Partner had no income Earned less than her partner Earned about the same as her partner Earned more than her partner
	Healthcare: whether getting money needed for medical treatment is a problem in accessing healthcare	Faced difficulties in getting money No difficulties in getting money
	Healthcare: whether distance to health facilities is a problem in accessing healthcare	Faced difficulties with distance No difficulties with distance
	Healthcare: whether not wanting to go alone is a problem in accessing healthcare	Faced difficulties in going alone No difficulties in going alone

Table A-2: (Continued)

Context	Dimension: indicator	Response categories
Cultural	Land rights: property ownership	Did not own a home or land Owned home/land jointly Owned alone or alone/jointly
	Attitudinal: whether beating is justified if a wife goes out without telling her partner	Justified/don't know Unjustified
	Attitudinal: whether beating is justified if a wife neglects her children	Justified/don't know Unjustified
	Attitudinal: whether beating is justified if a wife argues with her partner	Justified/don't know Unjustified
	Attitudinal: whether beating is justified if a wife refuses sex from her partner	Justified/don't know Unjustified
	Attitudinal: whether beating is justified if a wife burns food	Justified/don't know Unjustified
	Life course: age at first birth	≤ 15 years old Between 16 and 20 ≥ 21 years old
	Life course: age at first cohabitation	≤ 15 years old Between 16 and 20 ≥ 21 years old

Table A-3: Summary statistics of indicators by region (N = 303,717)

	Region			
	Central	Eastern	Southern	Western
Individual context				
Education dimension				
Literacy	%	%	%	%
Could not read at all	51.5	31.5	7.1	70.3
Able to read part of a sentence	9.9	10.0	7.8	10.2
Able to read entire sentence	37.4	58.3	84.3	19.1
Did not need reading card	0.8	0.1	0.7	0.3
Missing	0.4	0.2	0.2	0.1
Education level				
No formal education	34.4	19.7	5.4	59.7
Primary education	33.3	52.0	29.8	18.2
Secondary education	30.0	23.6	55.2	18.8
Tertiary education	2.3	4.7	9.6	3.4
Missing	0.0	0.0	0.0	0.0
Spousal education difference				
< partner	32.7	23.5	13.6	22.7
≥ partner	62.0	64.9	83.5	73.0
Missing	5.3	11.5	3.0	4.3
Household context				
Decision-making dimension				
Large household purchases				
Partner alone, someone else, or other	41.0	28.6	12.9	59.2
Jointly by respondent and her partner	37.8	49.0	66.4	31.0
Respondent alone	21.0	12.7	20.2	9.8
Missing	0.2	9.6	0.4	0.0
Respondent's healthcare				
Partner alone, someone else, or other	53.3	22.1	10.5	58.5
Jointly by respondent and her partner	34.0	44.5	48.5	30.2
Respondent alone	12.5	23.8	40.5	11.2
Missing	0.2	9.6	0.4	0.0
Visits to family or relatives				
Partner alone, someone else, or other	39.4	20.1	17.1	45.7
Jointly by respondent and her partner	36.7	51.4	56.8	37.5
Respondent alone	23.7	18.8	25.7	16.8
Missing	0.2	9.6	0.4	0.0
Ability to negotiate sex				
Could not refuse sex/ask for condom	43.5	32.1	22.4	56.4
Could refuse sex/ask for condom	40.0	51.4	77.1	34.9
Missing	16.5	16.5	0.5	8.7
Permission to access healthcare				
Faced difficulties in getting permission	32.3	9.3	5.5	19.2
No difficulties in getting permission	50.1	81.1	80.0	80.8
Missing	17.6	9.6	14.5	0.0
Institutional context				
Economic dimension				
Labor force participation				
Unemployed	31.3	23.4	53.0	30.8
Worked for a family member	6.6	8.1	2.4	11.8
Worked for someone else	4.0	11.5	32.1	4.4
Self-employed	46.8	47.4	12.3	52.9
Missing	11.4	9.6	0.3	0.1

Table A-3: (Continued)

	Region			
	Central	Eastern	Southern	Western
Type of earning				
Unemployed	32.4	25.1	53.5	32.4
Paid in-kind	3.6	5.3	0.6	2.0
Paid cash and in-kind	19.4	13.9	1.6	8.7
Paid in cash only	34.0	28.3	40.4	39.9
Missing	10.6	27.5	3.9	17.0
Job seasonality				
Unemployed	31.3	23.4	53.0	30.8
Worked occasionally or seasonally	32.4	27.5	12.5	27.4
Worked all year	35.9	39.5	34.3	41.8
Missing	0.4	9.6	0.2	0.0
Spousal income difference				
Unemployed	32.9	25.5	53.7	32.7
Partner had no income	0.9	1.0	4.8	0.6
Earned less than her partner	39.4	27.5	25.1	39.1
Earned about the same as her partner	6.4	8.2	4.6	3.2
Earned more than her partner	4.1	4.6	6.3	3.2
Missing	16.3	33.2	5.6	21.2
Healthcare dimension				
Financial barriers				
Faced difficulties in getting money	58.0	41.9	24.1	54.9
No difficulties in getting money	24.4	48.5	61.4	45.1
Missing	17.6	9.6	14.5	0.0
Geographical barriers				
Faced difficulties with distance	41.6	34.9	26.6	37.2
No difficulties with distance	40.7	55.5	59.0	62.8
Missing	17.6	9.6	14.5	0.0
Barriers to accessing healthcare independently				
Faced difficulties in going alone	26.2	19.0	9.9	20.5
No difficulties in going alone	56.1	71.3	75.6	79.5
Missing	17.6	9.6	14.5	0.0
Land rights dimension				
Property ownership				
Did not own a home or land	46.2	25.1	39.6	65.7
Owned home/land jointly	22.8	42.1	36.6	19.7
Owned alone or alone/jointly	16.0	23.2	23.7	14.6
Missing	15.1	9.6	0.0	0.0
Cultural context				
Attitudinal dimension				
Whether beating is justified if a wife goes out without telling her partner				
Justified/don't know	41.1	23.3	11.8	33.4
Unjustified	58.9	67.1	88.2	66.6
Missing	0.0	9.6	0.0	0.0
Whether beating is justified if a wife neglects her children				
Justified/don't know	43.6	28.3	17.0	33.5
Unjustified	56.4	62.1	83.0	66.5
Missing	0.1	9.6	0.0	0.0
Whether beating is justified if a wife argues with her partner				
Justified/don't know	35.5	19.7	15.9	34.0
Unjustified	51.8	70.7	84.1	66.0
Missing	12.7	9.6	0.0	0.0

Table A-3: (Continued)

	Region			
	Central	Eastern	Southern	Western
Whether beating is justified if a wife refuses sex from her partner				
Justified/don't know	32.5	19.1	9.0	30.0
Unjustified	67.4	71.3	90.9	70.0
Missing	0.0	9.6	0.0	0.0
Whether beating is justified if a wife burns food				
Justified/don't know	23.3	11.3	7.3	17.2
Unjustified	64.1	79.1	92.6	82.8
Missing	12.7	9.6	0.0	0.0
Life course dimension				
Age at first birth				
≤ 15	17.0	10.1	4.4	13.1
16–20	53.3	53.6	47.2	49.9
≥ 21	22.8	30.1	36.6	29.5
Missing	7.0	6.1	11.8	7.5
Age at first cohabitation				
≤ 15	30.8	18.1	7.4	29.2
16–20	47.2	53.7	40.6	46.5
≥ 21	22.0	28.3	52.1	24.3
Missing	0.0	0.0	0.0	0.0
Total	53,479	104,347	10,253	135,638

Table A-4: Entropy and smallest average latent class posterior probability by class and region

Class	Central		Eastern		Southern		Western	
	S	SS	S	SS	S	SS	S	SS
2	0.99	1.00	0.92	0.97	1.00	1.00	0.99	1.00
3	0.93	0.95	0.87	0.92	0.96	0.95	0.96	0.97
4	0.92	0.95	0.85	0.87	0.91	0.92	0.96	0.97
5	0.92	0.95	0.85	0.86	0.87	0.88	0.94	0.95
6	0.92	0.92	0.84	0.83	0.88	0.87	0.93	0.92
7	0.92	0.92	0.83	0.83	0.87	0.87	0.93	0.92
8	0.91	0.89	0.84	0.80	0.86	0.85	0.92	0.92
9	0.91	0.89	0.83	0.78	0.86	0.85	0.90	0.86
10	0.91	0.89	0.82	0.68	0.86	0.84	0.91	0.86

Notes: S = entropy; SS = smallest off-diagonal value of the average latent class posterior probability matrix. An entropy value close to 1 indicates higher classification certainty.

Table A-5: Central Africa typology by sample demographics and household arrangement

	C1 %	C2 %	C3 %	C4 %	C5 %	C6 %	C7 %	Total %
Respondent's age								
15–19	910	783	518	658	745	695	197	4,506
	15.03	7.26	7.54	12.91	11.9	6.52	2.76	8.52
20–24	1,303	1,708	1,317	937	1,699	1,609	848	9,421
	21.52	15.83	19.17	18.38	27.14	15.09	11.86	17.82
25–29	1,330	2,415	1,463	1,073	1,557	2,175	1,559	11,572
	21.97	22.38	21.3	21.05	24.87	20.4	21.81	21.88
30–34	892	2,017	1,107	830	982	1,924	1,480	9,232
	14.73	18.69	16.12	16.28	15.69	18.04	20.7	17.46
35–39	745	1,654	1,094	700	642	1,745	1,348	7,928
	12.31	15.33	15.93	13.73	10.26	16.36	18.86	14.99
40–44	511	1,240	813	515	371	1,337	1,010	5,797
	8.44	11.49	11.84	10.1	5.93	12.54	14.13	10.96
45–49	363	972	557	384	264	1,179	707	4,426
	6	9.01	8.11	7.53	4.22	11.06	9.89	8.37
Relation to household head								
Head	548	1,079	660	633	650	1,369	1,045	5,984
	9.05	10	9.61	12.42	10.38	12.84	14.62	11.32
Spouse	4,746	8,871	5,223	3,931	4,273	8,536	5,157	40,737
	78.39	82.22	76.04	77.12	68.26	80.05	72.14	77.03
Parent-headed	552	532	633	384	808	480	575	3,964
	9.12	4.93	9.22	7.53	12.91	4.5	8.04	7.5
Other	208	307	353	149	529	279	372	2,197
	3.44	2.85	5.14	2.92	8.45	2.62	5.2	4.15
Household head sex								
Male	5,258	9,406	5,828	4,265	5,061	9,023	5,695	44,536
	86.85	87	84.84	84	81	85	80	84
Female	796	1,383	1,041	832	1,199	1,641	1,454	8,346
	13	13	15	16	19	15	20	16
Household wealth								
Lowest quintile	1,243	3,852	1,536	1,035	810	3,789	736	13,001
	21	36	22	20	13	36	10	25
2nd lowest quintile	1,203	2,966	1,546	1,096	1,019	3,122	1,070	12,022
	19.87	27.49	22.51	21.5	16	29	14.97	23
Middle quintile	1,226	2,068	1,308	1,227	1,355	2,152	1,391	10,727
	20.25	19.17	19.04	24.07	22	20.18	19.46	20
2nd highest quintile	1,329	1,383	1,269	1,226	1,410	1,202	1,730	9,549
	22	13	18	24	23	11	24	18
Highest quintile	1,053	520	1,210	513	1,666	399	2,222	7,583
	17.39	4.82	17.62	10.06	26.61	3.74	31.08	14.34
Household size (se.)								
	6.84	6.81	6.31	6.68	6.15	6.55	6	
	(3.59)	(3.45)	(3.26)	(3.46)	(3.50)	(3.24)	(3.28)	
N of children [iqr.]								
	4	4	3	4	2	4	3	
	[2–6]	[2–7]	[2–5]	[2–6]	[1–4]	[3–7]	[2–5]	
Total N	6,054	10,789	6,869	5,097	6,260	10,664	7,149	52,882

Table A-6: Eastern Africa typology by sample demographics and household arrangement

	E1 %	E2 %	E3 %	E4 %	Total %
Respondent's age					
15–19	1,140	1,979	502	833	4,454
	6.24	10.33	2.03	12.75	6.48
20–24	3,157	4,803	3,118	1,523	12,601
	17.28	25.07	12.6	23.31	18.34
25–29	3,374	4,088	6,017	1,390	14,869
	18.47	21.34	24.31	21.27	21.64
30–34	3,393	3,159	5,559	1,024	13,135
	18.57	16.49	22.46	15.67	19.12
35–39	3,072	2,422	4,367	809	10,670
	16.82	12.64	17.64	12.38	15.53
40–44	2,420	1,568	3,103	564	7,655
	13.25	8.18	12.53	8.63	11.14
45–49	1,711	1,140	2,089	391	5,331
	9.37	5.95	8.44	5.98	7.76
Relation to household head					
Head	1,605	2,794	4,271	983	9,653
	8.79	14.58	17.25	15.04	14.05
Spouse	15,737	13,702	18,489	4,612	52,540
	86.15	71.52	74.69	70.58	76.46
Parent-headed	671	1,853	1,432	654	4,610
	3.67	9.67	5.78	10.01	6.71
Others	254	810	563	285	1,912
	1.39	4.23	2.27	4.36	2.78
Household head sex					
Male	16,321	15,126	19,593	5,158	56,198
	89	79	79.15	79	81.78
Female	1,946	4,033	5,162	1,376	12,517
	11	21	20.85	21	18.22
Household wealth					
Lowest quintile	4,004	3,410	1,494	2,079	10,987
	21.92	17.8	6.04	32	15.99
2nd lowest quintile	4,318	3,183	2,817	1,276	11,594
	23.64	16.61	11.38	19.53	16.87
Middle quintile	4,134	3,325	3,838	1,163	12,460
	22.63	17.35	15.5	17.8	18.13
2nd highest quintile	3,684	4,262	5,770	1,162	14,878
	20.17	22.25	23.31	17.78	21.65
Highest quintile	2,127	4,979	10,836	854	18,796
	11.64	25.99	43.77	13.07	27.35
Household size (se.)					
	5.67	5.45	5.05	5.73	
	(2.40)	(2.62)	(2.23)	(2.77)	
N of children [iqr.]					
	4	3	3	3	
	[2–6]	[1–4]	[1–4]	[1–5]	
Total N	18,267	19,159	24,755	6,534	68,715

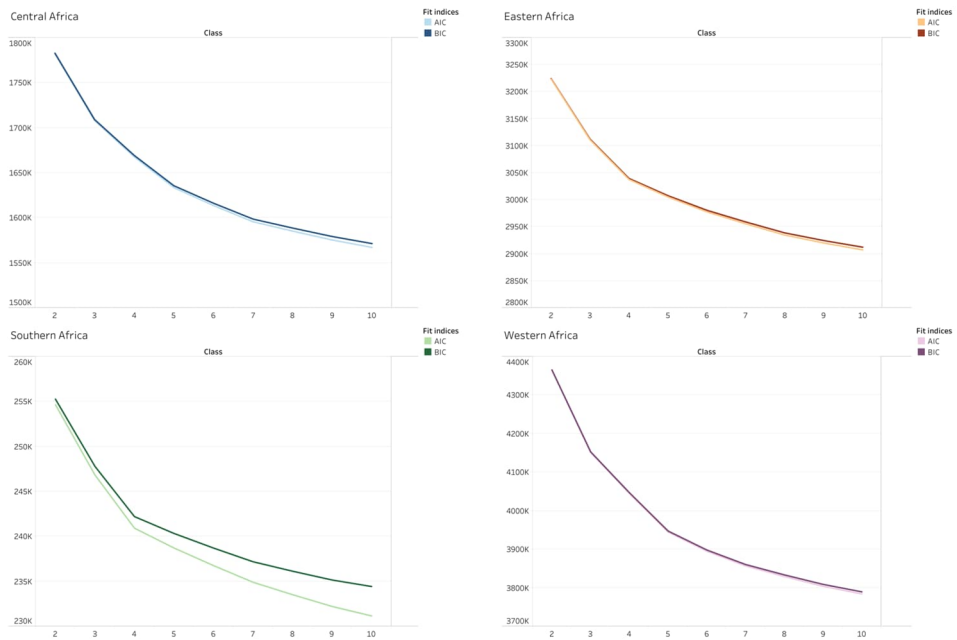
Table A-7: Southern Africa typology by sample demographics and household arrangement

	S1 %	S2 %	S3 %	S4 %	Total %
Respondent's age					
15–19	159	70	186	4	419
	12.52	3.71	4.73	0.15	4.27
20–24	261	262	660	154	1,337
	21	14	17	6	14
25–29	230	320	803	492	1,845
	18.11	16.95	20.41	18.06	18.8
30–34	181	378	723	640	1,922
	14	20	18	23	20
35–39	181	339	591	571	1,682
	14	18	15	21	17
40–44	145	277	507	483	1,412
	11	15	13	18	14
45–49	113	242	464	380	1,199
	9	13	12	14	12
Relation to household head					
Head	134	241	523	524	1,422
	10.55	13	13	19	14
Spouse	748	1,266	2,514	1,883	6,411
	58.9	67.06	63.9	69	65
Parent-headed	265	216	638	204	1,323
	20.87	11	16.22	7	13
Other	123	165	259	113	660
	10	9	7	4	7
Household head sex					
Male	956	1,468	2,979	2,039	7,442
	75.28	77.75	75.72	75	76
Female	314	420	955	685	2,374
	25	22	24	25	24
Household wealth					
Lowest quintile	555	341	842	127	1,865
	43.7	18.06	21.4	4.66	19
2nd lowest quintile	315	380	879	268	1,842
	24.8	20	22	10	19
Middle quintile	236	476	861	450	2,023
	18.58	25.21	21.89	16.52	20.61
2nd highest quintile	128	408	786	683	2,005
	10.08	21.61	19.98	25.07	20.43
Highest quintile	36	283	566	1,196	2,081
	2.83	14.99	14.39	43.91	21
Household size (se.)					
	6.19	5.37	5.2	4.51	
	(3.07)	(2.57)	(2.61)	(2.40)	
N of children [iqr.]					
	3	3	2	2	
	[1–4]	[2–4]	[1–4]	[1–3]	
Total N	1,270	1,888	3,934	2,724	9,816

Table A-8: Western Africa typology by sample demographics and household arrangement

	W1 %	W2 %	W3 %	W4 %	W5 %	Total %
Respondent's age						
15–19	2,397	2,068	1,710	2,949	477	9,601
	14.76	6.17	4.67	11.52	2.02	7.08
20–24	3,630	4,877	4,738	5,692	2,831	21,768
	22.36	14.54	12.93	22.24	11.98	16.05
25–29	3,606	6,663	6,810	5,827	5,656	28,562
	22.21	19.87	18.59	22.77	23.93	21.06
30–34	2,539	6,168	6,641	4,200	5,122	24,670
	15.64	18.39	18.13	16.41	21.67	18.19
35–39	1,907	5,891	6,774	3,169	4,389	22,130
	11.75	17.57	18.49	12.38	18.57	16.32
40–44	1,239	4,258	5,338	2,127	2,937	15,899
	7.63	12.7	14.57	8.31	12.42	11.72
45–49	918	3,609	4,626	1,627	2,228	13,008
	5.65	10.76	12.63	6.36	9.42	9.59
Relation to household head						
Head	1,180	2,338	3,014	2,417	2,886	11,835
	7.27	6.97	8.23	9.44	12.21	8.73
Spouse	11,404	25,418	28,506	16,559	16,742	98,629
	70.24	75.8	77.81	64.71	70.82	72.71
Parent-headed	2,236	3,067	2,573	4,257	2,456	14,589
	13.77	9.15	7.02	16.63	10.39	10.76
Other	1,416	2,711	2,544	2,358	1,556	10,585
	8.72	8.08	6.94	9.21	6.58	7.8
Household head sex						
Male	14,132	29,852	32,294	20,916	19,280	116,474
	87	89	88	81.73	82	85.87
Female	2,104	3,682	4,343	4,675	4,360	19,164
	13	11	12	18	18	14.13
Household wealth						
Lowest quintile	4,398	9,876	9,989	5,160	1,273	30,696
	27.09	29.45	27.26	20.16	5.38	22.63
2nd lowest quintile	3,862	8,221	9,128	4,695	2,408	28,314
	23.79	24.52	24.91	18.35	10.19	20.87
Middle quintile	3,281	6,985	7,992	5,081	4,076	27,415
	20.21	20.83	21.81	19.85	17.24	20.21
2nd highest quintile	2,686	5,424	6,057	5,094	6,350	25,611
	16.54	16.17	17	20	27	19
Highest quintile	2,009	3,028	3,471	5,561	9,533	23,602
	12.37	9.03	9	22	40	17
Household size (se.)						
	7.90	8.25	7.73	7.48	6.06	
	(4.61)	(4.58)	(4.45)	(4.52)	(3.64)	
N of children [iqr.]						
	3	4	4	3	3	
	[1–5]	[2–6]	[2–6]	[1–5]	[2–4]	
Total N	16,236	33,534	36,637	25,591	23,640	135,638

Figure A-1: Information criteria by class and region



Notes: The points of inflection are at classes 3, 5, and 7 for Central Africa; classes 3 and 4 for Eastern Africa; class 4 for Southern Africa; and classes 3 and 5 for Western Africa. When there are multiple points of inflection, we select the higher class number if the additional groups provide substantively meaningful interpretations.

Figure A-2: Conditional probabilities for each empowerment indicator by most likely predicted class membership, Central region

Context	Dimensions and indicators	Class C1	Class C2	Class C3	Class C4	Class C5	Class C6	Class C7
Individual	Education dimension							
	Literacy							
	Could not read at all	79%	84%	0%	91%	6%	78%	3%
	Able to read part of a sentence	5%	12%	2%	6%	10%	15%	9%
	Able to read entire sentence	15%	3%	98%	1%	84%	6%	89%
	Did not need reading card	1%	1%	0%	2%	0%	1%	0%
	Education level							
	No formal education	63%	49%	0%	78%	1%	47%	0%
	Primary education	24%	51%	10%	22%	20%	52%	19%
	Secondary education	13%	0%	87%	0%	71%	1%	68%
	Tertiary education	0%	0%	2%	0%	8%	0%	13%
	Spousal education difference							
	< partner	28%	53%	18%	27%	26%	50%	23%
	≥ partner	72%	47%	83%	73%	74%	50%	77%
Household	Decision-making dimension							
	Decision-making on large household purchases							
	Partner alone, someone else or other	73%	48%	39%	70%	29%	35%	15%
	Jointly by respondent and her partner	13%	32%	38%	17%	45%	44%	56%
	Respondent alone	14%	20%	23%	13%	26%	22%	29%
	Decision-making on respondent's health care							
	Partner alone, someone else or other	88%	61%	60%	79%	44%	41%	24%
	Jointly by respondent and her partner	10%	28%	27%	15%	42%	45%	54%
	Respondent alone	4%	12%	12%	6%	14%	14%	22%
	Decision-making on visits to family or relatives							
	Partner alone, someone else or other	65%	48%	44%	56%	26%	30%	14%
	Jointly by respondent and her partner	16%	31%	29%	27%	46%	46%	54%
	Respondent alone	19%	20%	27%	17%	28%	24%	32%
	Ability to negotiate sex							
	Could not refuse sex/ask for condom	69%	67%	49%	70%	32%	62%	27%
	Could refuse sex/ask for condom	31%	33%	51%	30%	68%	38%	73%
	Permission to access to healthcare							
	Faced difficulties in getting permission	46%	43%	40%	50%	37%	36%	25%
	No difficulties in getting permission	54%	57%	60%	51%	63%	64%	75%
Institutional	Economic dimension							
	Labor force participation							
	Unemployed	95%	0%	0%	93%	99%	0%	0%
	Worked for a family member	3%	17%	6%	5%	0%	14%	4%
	Worked for someone else	0%	2%	10%	0%	0%	3%	26%
	Self-employed	3%	81%	84%	2%	1%	84%	70%
	Type of earning							
	Unemployed	100%	0%	0%	100%	100%	0%	0%
	Paid in-kind	0%	7%	4%	0%	0%	10%	2%
	Paid cash and in-kind	0%	40%	23%	0%	0%	41%	12%
	Paid in cash only	0%	52%	72%	0%	0%	49%	86%
	Job seasonality							
	Unemployed	95%	0%	0%	93%	99%	0%	0%
	Worked occasionally or seasonally	5%	60%	42%	7%	1%	50%	29%
	Worked all year	0%	40%	58%	0%	0%	50%	71%
	Spousal income difference							
	Unemployed	100%	2%	1%	100%	100%	2%	0%
	Partner had no income	0%	2%	1%	0%	0%	2%	2%
	Earned less than her partner	0%	78%	79%	0%	0%	76%	77%
	Earned about the same as her partner	0%	10%	10%	0%	0%	13%	11%
	Earned more than her partner	0%	7%	10%	0%	0%	7%	10%
	Healthcare dimension							
	Financial barriers in accessing healthcare							
	Faced difficulties in getting money	76%	79%	63%	78%	62%	76%	55%
	No difficulties in getting money	24%	21%	37%	24%	38%	24%	45%
	Geographical barriers in accessing healthcare							
	Faced difficulties with distance	58%	57%	40%	62%	39%	56%	36%
	No difficulties with distance	42%	43%	60%	39%	61%	45%	64%
	Barriers to accessing healthcare independently							
	Faced difficulties in going alone	40%	35%	28%	46%	24%	33%	20%
	No difficulties in going alone	60%	65%	73%	54%	76%	67%	80%

Figure A-2: (Continued)

Context	Dimensions and indicators	Class C1	Class C2	Class C3	Class C4	Class C5	Class C6	Class C7
Cultural	Land rights dimension							
	Property ownership							
	Did not own a home or land	51%	46%	57%	66%	74%	52%	60%
	Owned home/land jointly	34%	33%	23%	18%	15%	28%	22%
	Owned alone or alone/jointly	15%	22%	20%	16%	12%	20%	18%
	Attitudinal dimension							
	Whether beating is justified if a wife goes out without telling her partner							
	Justified/don't know	91%	85%	64%	9%	20%	7%	4%
	Unjustified	10%	15%	36%	91%	80%	93%	96%
	Whether beating is justified if a wife neglects her children							
	Justified/don't know	90%	87%	70%	11%	29%	8%	10%
	Unjustified	10%	14%	30%	89%	71%	92%	90%
	Whether beating is justified if a wife argues with her partner							
	Justified/don't know	81%	83%	74%	8%	21%	10%	5%
	Unjustified	19%	17%	26%	92%	79%	90%	95%
	Whether beating is justified if a wife refuses sex from her partner							
	Justified/don't know	67%	69%	46%	13%	13%	10%	1%
	Unjustified	33%	31%	54%	87%	87%	90%	99%
	Whether beating is justified if a wife burns food							
	Justified/don't know	70%	62%	36%	5%	6%	4%	1%
	Unjustified	30%	38%	64%	95%	94%	96%	99%
Life course dimension	Age at first birth							
	≤ 15	26%	24%	12%	24%	10%	20%	10%
	16–20	55%	56%	61%	57%	58%	58%	52%
	≥ 21	19%	20%	28%	19%	31%	22%	39%
	Age at first cohabitation							
	≤ 15	48%	41%	21%	47%	15%	34%	11%
	16–20	43%	46%	53%	42%	50%	49%	43%
	≥ 21	10%	14%	25%	11%	35%	18%	46%
Total N		5,860	10,702	7,261	4,317	6,736	9,769	8,237
%		11%	20%	14%	8%	13%	18%	16%

Figure A-3: Conditional probabilities for each empowerment indicator by most likely predicted class membership, Eastern region

Context	Dimensions and indicators	Class E1	Class E2	Class E3	Class E4
Individual	Education dimension				
	Literacy				
	Could not read at all	38%	33%	50%	1%
	Able to read part of a sentence	11%	11%	12%	6%
	Able to read entire sentence	51%	55%	38%	93%
	Did not need reading card	0%	0%	0%	0%
	Education level				
	No formal education	25%	19%	31%	0%
	Primary education	63%	50%	63%	37%
	Secondary education	12%	28%	7%	47%
	Tertiary education	0%	3%	0%	16%
	Spousal education difference				
	< partner	27%	29%	33%	16%
	≥ partner	73%	71%	68%	84%
Household	Decision-making dimension				
	Decision-making on large household purchases				
	Partner alone, someone else or other	40%	40%	35%	16%
	Jointly by respondent and her partner	46%	48%	53%	68%
	Respondent alone	14%	13%	12%	16%
	Decision-making on respondent's health care				
	Partner alone, someone else or other	30%	31%	28%	11%
	Jointly by respondent and her partner	45%	46%	50%	54%
	Respondent alone	25%	23%	23%	35%
	Decision-making on visits to family or relatives				
	Partner alone, someone else or other	31%	27%	22%	11%
	Jointly by respondent and her partner	49%	54%	57%	66%
	Respondent alone	20%	19%	21%	23%
	Ability to negotiate sex				
	Could not refuse sex/ask for condom	45%	43%	43%	25%
	Could refuse sex/ask for condom	55%	57%	58%	75%
	Permission to access to healthcare				
	Faced difficulties in getting permission	11%	13%	15%	4%
	No difficulties in getting permission	89%	88%	85%	96%
Institutional	Economic dimension				
	Labor force participation				
	Unemployed	0%	100%	0%	0%
	Worked for a family member	14%	0%	16%	5%
	Worked for someone else	14%	0%	8%	32%
	Self-employed	72%	0%	76%	63%
	Type of earning				
	Unemployed	4%	100%	7%	0%
	Paid in-kind	12%	0%	19%	3%
	Paid cash and in-kind	36%	0%	35%	18%
	Paid in cash only	49%	0%	40%	78%
	Job seasonality				
	Unemployed	0%	100%	0%	0%
	Worked occasionally or seasonally	44%	0%	48%	28%
	Worked all year	56%	0%	52%	72%
	Spousal income difference				
	Unemployed	6%	100%	10%	0%
	Partner had no income	2%	0%	3%	2%
	Earned less than her partner	65%	0%	58%	68%
	Earned about the same as her partner	18%	0%	21%	17%
	Earned more than her partner	10%	0%	8%	13%
	Healthcare dimension				
	Financial barriers in accessing healthcare				
	Faced difficulties in getting money	54%	44%	62%	27%
	No difficulties in getting money	46%	56%	39%	73%
	Geographical barriers in accessing healthcare				
	Faced difficulties with distance	41%	42%	55%	18%
	No difficulties with distance	59%	58%	46%	83%
	Barriers to accessing healthcare independently				
	Faced difficulties in going alone	25%	20%	31%	9%
	No difficulties in going alone	75%	80%	69%	91%

Figure A-3: (Continued)

Context	Dimensions and indicators	Class E1	Class E2	Class E3	Class E4
Cultural	Land rights dimension				
	Property ownership				
	Did not own a home or land	22%	36%	15%	38%
	Owned home/land jointly	56%	40%	47%	44%
	Owned alone or alone/jointly	22%	24%	38%	18%
	Attitudinal dimension				
	Whether beating is justified if a wife goes out without telling her partner				
	Justified/don't know	78%	22%	5%	10%
	Unjustified	22%	78%	95%	90%
	Whether beating is justified if a wife neglects her children				
	Justified/don't know	90%	25%	9%	15%
	Unjustified	11%	75%	91%	85%
	Whether beating is justified if a wife argues with her partner				
	Justified/don't know	70%	20%	3%	5%
	Unjustified	30%	80%	97%	95%
	Whether beating is justified if a wife refuses sex from her partner				
	Justified/don't know	68%	18%	5%	4%
	Unjustified	32%	82%	95%	96%
	Whether beating is justified if a wife burns food				
	Justified/don't know	43%	11%	2%	1%
	Unjustified	57%	89%	98%	99%
Life course dimension	Age at first birth				
	≤ 15	10%	12%	17%	3%
	16–20	61%	60%	63%	46%
	≥ 21	29%	28%	20%	51%
	Age at first cohabitation				
	≤ 15	18%	20%	27%	5%
	16–20	59%	56%	57%	46%
	≥ 21	23%	25%	16%	49%
	Total N	20,278	25,330	29,022	29,718
	%	19%	24%	28%	28%

Figure A-4: Conditional probabilities for each empowerment indicator by most likely predicted class membership, Southern region

Context	Dimensions and indicators	Class S1	Class S2	Class S3	Class S4
Individual	Education dimension				
	Literacy				
	Could not read at all	15%	7%	5%	0%
	Able to read part of a sentence	14%	9%	8%	2%
	Able to read entire sentence	70%	83%	86%	98%
	Did not need reading card	2%	1%	0%	0%
	Education level				
	No formal education	10%	5%	4%	1%
	Primary education	57%	48%	26%	3%
	Secondary education	33%	46%	64%	67%
	Tertiary education	0%	2%	6%	29%
	Spousal education difference				
	< partner	19%	20%	14%	8%
	≥ partner	82%	80%	87%	92%
Household	Decision-making dimension				
	Decision-making on large household purchases				
	Partner alone, someone else or other	25%	14%	12%	5%
	Jointly by respondent and her partner	53%	61%	73%	75%
	Respondent alone	21%	25%	14%	21%
	Decision-making on respondent's health care				
	Partner alone, someone else or other	22%	13%	9%	3%
	Jointly by respondent and her partner	45%	41%	53%	48%
	Respondent alone	33%	46%	38%	50%
	Decision-making on visits to family or relatives				
	Partner alone, someone else or other	34%	26%	14%	5%
	Jointly by respondent and her partner	42%	44%	61%	66%
	Respondent alone	24%	31%	25%	29%
	Ability to negotiate sex				
	Could not refuse sex/ask for condom	32%	24%	24%	18%
	Could refuse sex/ask for condom	68%	76%	76%	82%
	Permission to access to healthcare				
	Faced difficulties in getting permission	12%	7%	6%	3%
	No difficulties in getting permission	88%	93%	94%	97%
Institutional	Economic dimension				
	Labor force participation				
	Unemployed	99%	0%	100%	0%
	Worked for a family member	1%	7%	0%	4%
	Worked for someone else	0%	53%	0%	79%
	Self-employed	1%	40%	0%	17%
	Type of earning				
	Unemployed	100%	3%	100%	0%
	Paid in-kind	0%	2%	0%	0%
	Paid cash and in-kind	0%	4%	0%	2%
	Paid in cash only	0%	91%	0%	98%
	Job seasonality				
	Unemployed	99%	0%	100%	0%
	Worked occasionally or seasonally	1%	43%	0%	13%
	Worked all year	0%	57%	0%	87%
	Spousal income difference				
	Unemployed	100%	4%	100%	0%
	Partner had no income	0%	17%	0%	8%
	Earned less than her partner	0%	61%	0%	59%
	Earned about the same as her partner	0%	6%	0%	14%
	Earned more than her partner	0%	12%	0%	19%
	Healthcare dimension				
	Financial barriers in accessing healthcare				
	Faced difficulties in getting money	52%	34%	29%	8%
	No difficulties in getting money	49%	66%	71%	92%
	Geographical barriers in accessing healthcare				
	Faced difficulties with distance	52%	35%	31%	9%
	No difficulties with distance	48%	65%	70%	91%
	Barriers to accessing healthcare independently				
	Faced difficulties in going alone	21%	14%	10%	4%
	No difficulties in going alone	79%	86%	90%	96%

Figure A-4: (Continued)

Context	Dimensions and indicators	Class S1	Class S2	Class S3	Class S4
Cultural	Land rights dimension				
	Property ownership				
	Did not own a home or land	37%	33%	45%	39%
	Owned home/land jointly	36%	50%	33%	31%
	Owned alone or alone/jointly	27%	17%	22%	30%
	Attitudinal dimension				
	Whether beating is justified if a wife goes out without telling her partner				
	Justified/don't know	53%	17%	1%	1%
	Unjustified	47%	83%	99%	99%
	Whether beating is justified if a wife neglects her children				
	Justified/don't know	69%	28%	4%	2%
	Unjustified	31%	72%	96%	98%
	Whether beating is justified if a wife argues with her partner				
	Justified/don't know	73%	25%	3%	1%
	Unjustified	27%	75%	97%	99%
	Whether beating is justified if a wife refuses sex from her partner				
	Justified/don't know	47%	13%	1%	0%
	Unjustified	53%	87%	99%	100%
	Whether beating is justified if a wife burns food				
	Justified/don't know	38%	10%	1%	0%
	Unjustified	62%	90%	100%	100%
	Life course dimension				
	Age at first birth				
	≤ 15	9%	7%	4%	2%
	16–20	67%	64%	55%	36%
	≥ 21	24%	29%	41%	62%
	Age at first cohabitation				
	≤ 15	14%	11%	7%	2%
	16–20	57%	55%	42%	20%
	≥ 21	28%	34%	52%	78%
Total N		1,128	1,896	3,771	3,021
%		11%	19%	38%	31%

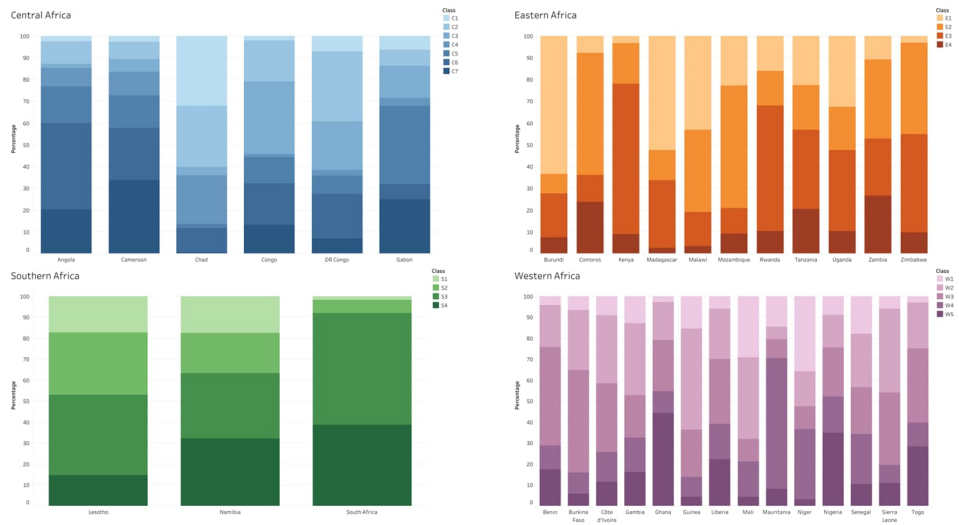
Figure A-5: Conditional probabilities for each empowerment indicator by most likely predicted class membership, Western region

Context	Dimensions and indicators	Class W1	Class W2	Class W3	Class W4	Class W5
Individual	Education dimension					
	Literacy					
	Could not read at all	83%	85%	94%	61%	14%
	Able to read part of a sentence	7%	8%	5%	12%	24%
	Able to read entire sentence	10%	8%	2%	27%	62%
	Did not need reading card	1%	0%	0%	0%	0%
	Education level					
	No formal education	75%	74%	82%	53%	2%
	Primary education	14%	16%	17%	21%	22%
	Secondary education	11%	10%	2%	23%	60%
	Tertiary education	1%	1%	0%	4%	16%
	Spousal education difference					
	< partner	17%	22%	29%	23%	24%
	≥ partner	83%	78%	71%	77%	76%
Household	Decision-making dimension					
	Decision-making on large household purchases					
	Partner alone, someone else or other	81%	63%	61%	66%	33%
	Jointly by respondent and her partner	15%	26%	30%	26%	53%
	Respondent alone	4%	11%	9%	9%	14%
	Decision-making on respondent's health care					
	Partner alone, someone else or other	82%	65%	59%	64%	31%
	Jointly by respondent and her partner	14%	25%	29%	27%	51%
	Respondent alone	4%	11%	12%	9%	19%
	Decision-making on visits to family or relatives					
	Partner alone, someone else or other	63%	52%	44%	50%	22%
	Jointly by respondent and her partner	25%	31%	37%	35%	57%
	Respondent alone	12%	18%	19%	15%	21%
	Ability to negotiate sex					
	Could not refuse sex/ask for condom	75%	71%	65%	61%	37%
	Could refuse sex/ask for condom	25%	29%	35%	39%	63%
	Permission to access to healthcare					
	Faced difficulties in getting permission	22%	23%	21%	19%	7%
	No difficulties in getting permission	78%	77%	79%	81%	93%
Institutional	Economic dimension					
	Labor force participation					
	Unemployed	100%	0%	0%	100%	0%
	Worked for a family member	0%	20%	20%	0%	6%
	Worked for someone else	0%	3%	3%	0%	18%
	Self-employed	0%	76%	78%	0%	76%
	Type of earning					
	Unemployed	100%	4%	2%	100%	1%
	Paid in-kind	0%	5%	6%	0%	1%
	Paid cash and in-kind	0%	18%	19%	0%	9%
	Paid in cash only	0%	73%	73%	0%	90%
	Job seasonality					
	Unemployed	100%	0%	0%	100%	0%
	Worked occasionally or seasonally	0%	48%	44%	0%	16%
	Worked all year	0%	52%	56%	0%	84%
	Spousal income difference					
	Unemployed	100%	6%	3%	100%	1%
	Partner had no income	0%	1%	1%	0%	1%
	Earned less than her partner	0%	83%	83%	0%	80%
	Earned about the same as her partner	0%	4%	6%	0%	9%
	Earned more than her partner	0%	6%	6%	0%	8%
	Healthcare dimension					
	Financial barriers in accessing healthcare					
	Faced difficulties in getting money	55%	59%	65%	51%	34%
	No difficulties in getting money	45%	41%	35%	49%	66%
	Geographical barriers in accessing healthcare					
	Faced difficulties with distance	41%	42%	42%	34%	17%
	No difficulties with distance	59%	59%	58%	66%	83%
	Barriers to accessing healthcare independently					
	Faced difficulties in going alone	25%	23%	21%	20%	9%
	No difficulties in going alone	75%	77%	79%	80%	91%

Figure A-5: (Continued)

Context	Dimensions and indicators	Class W1	Class W2	Class W3	Class W4	Class W5
Cultural	Land rights dimension					
	Property ownership					
	Did not own a home or land	69%	61%	61%	76%	71%
	Owned home/land jointly	17%	23%	23%	13%	15%
	Owned alone or alone/jointly	13%	17%	17%	10%	14%
	Attitudinal dimension					
	Whether beating is justified if a wife goes out without telling her partner					
	Justified/don't know	83%	84%	5%	4%	6%
	Unjustified	17%	16%	95%	96%	95%
	Whether beating is justified if a wife neglects her children					
	Justified/don't know	82%	84%	4%	4%	7%
	Unjustified	18%	16%	96%	96%	93%
	Whether beating is justified if a wife argues with her partner					
	Justified/don't know	88%	85%	5%	4%	6%
	Unjustified	13%	15%	95%	96%	94%
	Whether beating is justified if a wife refuses sex from her partner					
	Justified/don't know	84%	70%	5%	6%	4%
	Unjustified	16%	30%	95%	94%	96%
	Whether beating is justified if a wife burns food					
	Justified/don't know	50%	44%	1%	1%	1%
	Unjustified	50%	56%	99%	99%	99%
Life course dimension	Age at first birth					
	≤ 15	19%	17%	16%	14%	6%
	16–20	58%	58%	59%	52%	37%
	≥ 21	23%	25%	25%	33%	57%
	Age at first cohabitation					
	≤ 15	43%	34%	32%	32%	10%
Total N	16–20	44%	49%	50%	44%	37%
	≥ 21	13%	18%	18%	24%	53%
Total N		16,629	32,547	35,734	25,435	25,293
%		12%	24%	26%	19%	19%

Figure A-6: Class prevalence by region and country



Note: These figures display the latent class prevalence for all countries within each of the four SSA regions.