

# Measuring Indices for Women Empowerment and Deprivation in the Philippines: Trends and Comparisons Using DHS Data

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## **Abstract**

Research, programs, and policies aiming for gender equality have focused on women empowerment. Deprivation in women has become an equally important topic that seeks to address inequalities in health care, security, and the right to choose. This study offers a quantitative analysis of indicators for women empowerment (WEI) development and women deprivation (WDI) indices in the Philippines, utilizing National Demographic and Health Surveys (NDHS) data from 2003 to 2022. Further, this study adapts core methodologies and indicators from the Kenya National Bureau of Statistics (2020) and Akiyenmi et al. (2021), which respectively estimated WEI and WDI using Demographic and Health Survey data from several African countries. Using exploratory factor analysis to weigh indicators for estimating indices, results indicated an overall trend of improved women empowerment and reduced deprivation among women in the Philippines, despite some fluctuations. Moreover, in 2022, women empowerment and

deprivation prevalence levels are, respectively, at their highest and lowest. The overall positive trend in women empowerment in the Philippines is promising, yet sustained progress requires ongoing monitoring and targeted interventions. Focused attention is necessary for specific issues causing fluctuations in deprivation in women, especially during times where prevalence is increased.

*Keywords:* Women empowerment, deprivation in women, national demographic and health survey, exploratory factor analysis

Women empowerment and deprivation in women have been central themes in numerous studies, policy-making efforts, and programs globally. Despite widespread recognition of these issues, a significant gap in the standardization, quantification, and replication of measures for women's deprivation and empowerment remains. Deprivation in women often encompasses barriers to accessing essential services and resources, such as clean energy, health care, and education. It is also impacted by social issues such as child marriage and violence (Economic & Political Weekly, 2019; Dutta, 2017; Akinyemi et al., 2021). Meanwhile, women empowerment has been conceptualized as a transformative process facilitating meaningful choices and changes in women's lives, covering various dimensions including political participation, economic independence, and educational attainment (Kabeer, 1999, 2005; United Nations, 2015).

Despite these existing frameworks, creating a universal and replicable model to measure and analyze these phenomena remains a challenge. This study addresses this gap by adopting a robust index that standardizes and quantifies women deprivation and empowerment, establishing a replicable approach for calculating these indices throughout diverse contexts. This standardization is crucial to ensure consistency and comparability across various temporal and geographical scales, both locally and internationally, enabling policymakers to accurately assess progress and identify areas requiring targeted interventions. A standardized metric not only facilitates the evaluation of policy and program effectiveness but also supports international benchmarking and encourages more rigorous studies.

Utilizing methodologies and indicators from Akinyemi et al. (2021) and the Kenya National Bureau of Statistics (KNBS) (2020), this study replicates their processes to measure women empowerment and deprivation in women in the Philippines, drawing on data from the National Demographic and Health Survey (NDHS) by the Philippine Statistics Authority (PSA). These methodologies are particularly apt for the Philippine setting for three reasons: first, they offer a framework adaptable to the nation's unique cultural, social, and economic contexts. This study's results can directly identify issues that can be addressed and integrated into national policies and international standards, such as the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and the Sustainable Development Goals (SDGs).

Second, by leveraging the standardized nature of Demographic and Health Surveys (DHS), the Philippines can develop and further enhance indices for women's empowerment and deprivation that are not only reliable and comprehensive but also globally comparable, as the DHS Program, established by USAID in 1984, has provided technical assistance to over 350 surveys in more than 90 countries (Croft et al., 2023).

Lastly, using existing DHS data makes these methodologies cost-effective and reduces the need for separate surveys, thereby providing valuable insights for a comprehensive analysis of trends without requiring additional collection of nationally representative data.

This article thus expands on the aforementioned research to critically examine the conceptualization and measurement of women's deprivation and empowerment indices to the Philippine context. Specifically, it aims to:

1. Estimate women empowerment and deprivation indices in the Philippines across different years and subpopulations;
2. Identify the underlying dimensions of women empowerment and deprivation from the indicators used in the index estimation; and
3. Provide regional and national trend comparisons for the prevalence of empowered and deprived women.

## Literature Review

### Women Empowerment and Deprivation in Women

The KNBS (2020) constructed the Women Empowerment Index (WEI) aligned with the fifth SDG (gender equality and women's empowerment) using DHS data, which integrates indicators such as attitudes toward domestic violence and decision-making capabilities within households. Its research demonstrated that 29% of women aged 15–49 in Kenya feel empowered, particularly those in urban areas. This empowerment is positively correlated with several socioeconomic factors, such as household income, marital status, and educational attainment, indicating that economic and social environments are significant determinants of empowerment levels.

On the other hand, Akinyemi et al. (2021) also used the DHS and developed a Women Deprivation Index (WDI) focused on socioeconomic factors such as resource access, income levels, and living conditions in urban West Africa. Their findings suggest that severe deprivation correlates with lower contraceptive prevalence among women, underscoring the profound impact on family planning usage as it highlights a critical gap in resources directly affecting women's autonomy over reproductive decisions.

These indices are supported by broader theoretical models. Kabeer (1999, 2005) conceptualized women empowerment as a transformative process involving agency, resources, and achievements and offered a comprehensive framework to understand these dynamics. VeneKlasen and Miller (2007) further established it as a shift from a state-limited power to that with enhanced power across three levels: personal, relational, and environmental. Dutta (2017) defined deprivation in women as a multidimensional issue across social, economic, and personal dimensions, measured by indicators like child marriage, gender disparity in household heads, workforce non-participation, and crimes against women. These frameworks have also been used in other literature concerning women empowerment (Lombardini et al., 2017; Kosec et al., 2020; Vonk, 2021) and deprivation in women (Peralta et al., 2019; Kosec et al., 2020).

In the Philippines, Hega et al. (2017) underscored the persistent struggle for gender equality in the country, noting significant advancements in economic, political, and social equality for women, alongside enduring challenges like political underrepresentation and patriarchal violence. They emphasized the crucial need for continued advocacy and adaptation within the women's movement to advance freedom, equality, and social justice in changing political and social landscapes.

Legislative efforts and policies in the country have collectively contributed to the observed improvements in women's empowerment and the reduction of deprivation. Although many pro-women laws were already established before Republic Act No. 9710, or the Magna Carta of Women (MCW) of 2009, the MCW has played a crucial role in eliminating discrimination and promoting the rights of Filipino women, especially those in marginalized sectors. The MCW emphasizes gender equality in government positions, non-discriminatory employment practices, and equal access to education (Philippine Commission on Women, 2009). Meanwhile, Republic Act No. 10354, or the Responsible Parenthood and Reproductive Health Act of 2012 (better known as the "RH Law"), further strengthened women's rights by ensuring access to reproductive health care and education, thereby promoting gender equality and women's health (PCW, 2012). Republic Act No. 11210, or the 105-Day Expanded Maternity Leave Law of 2019, provided extended maternity leave, supporting women's health and their role in the family and workforce. In the same year, Republic Act No. 11313, or the Safe Spaces Act, addressed gender-based sexual harassment, ensuring safety and respect for women in various environments (PCW 2021), such as the streets, public spaces, and even the online sphere. The most recent in the list, Republic Act 11648, was enacted in 2022 to increase the age for determining statutory rape from 12 to 16 years old, thereby providing heavier penalties and stronger protection against rape and sexual exploitation by amending existing laws including the Revised Penal Code, the Anti-Rape Law of 1997, and the Special Protection of Children Against Abuse, Exploitation, and Discrimination Act (PCW, 2022).

These issues saw an exacerbation in the country during the COVID-19 pandemic, as stressed by Valdez et al. (2022), who noted increased

violence against women and reduced access to services, which emphasized women's heightened vulnerability in crises. The Updated Gender Equality and Women's Empowerment (GEWE) Plan 2019–2025 serves as a crucial response framework, reinforcing strategies to protect advancements in gender equality and ensuring their empowerment in the wake of pandemic disruptions (PCW, 2022). GEWE Plan 2019–2025 seeks to safeguard these gains through strategically adapting to the changing needs due to the COVID-19 pandemic, aligning with broader national development goals, and supporting the efforts outlined in the Philippine Plan for Gender-Responsive Development (PPGD) to achieve gender equality and empower all women and girls.

### **Understanding Index Values**

An index number is a statistical value that consolidates and ranks various specific observations to represent a broader dimension (Babie, 2021). It is a composite measure designed to summarize a complex phenomenon by aggregating multiple indicators from given data (UNDP, 2009; Hawken and Munck, 2012). The process of indexing can be summarized in three steps: indicator selection, scoring and aggregation, and index validation (Mazziotta and Pareto, 2013; Babbie, 2021).

Typically, the aggregation of indicators within an index involves statistical techniques, such as Principal Component Analysis (PCA) or Exploratory Factor Analysis (EFA). PCA is primarily used for dimension reduction, effectively simplifying the data by transforming multiple indicators into a smaller set of uncorrelated components, each representing a linear combination of original variables (Jolliffe, 2002). To uncover and understand unobservable dimensions and link specific indicators to them, EFA is used. This technique reveals underlying factors that explain relationships among variables, simplifying data into interpretable factors that represent key dimensions of a concept or construct (Watkins, 2018). Given the study's objective to identify the underlying dimensions of women empowerment and deprivation, the researchers are specifically utilizing EFA for this reason.

The Gender Gap Index (GGI) from the World Economic Forum (WEF) is a key measure of gender equality on a national level, assessing

over a hundred countries on economic, educational, health, and political dimensions. The 2024 WEF report indicates that the global gender gap has closed by 68.5%; however, achieving full parity could take 134 years. The Philippines ranks 25th globally, having closed 77.9% of its gender gap, making it second in the East Asia and Pacific region.

## **Methodology**

### **Data and Variable Description**

This article utilizes data coming from the NDHS in the Philippines across several survey years (2003, 2008, 2013, 2017, 2022). NDHS is a national survey primarily used to provide data for key demographic and health indicators (PSA, 2018). Its data are available for download at [dhsprogram.com](https://dhsprogram.com). NDHS data, particularly the individual women's datasets, which are composed of women respondents aged 15–49 years old, are used in this study. Table 1 provides the empowerment and deprivation indicators used.

The current sampling scheme ensures national, urban, rural, and regional representation through a two-stage stratified sample design that utilizes the sampling frame based on the 2010 Census of Population and Housing and updated based on the listing of households from the 2015 Census of Population.

### **Exploratory Factor Analysis and Index Construction**

The study employed EFA to uncover the underlying dimensions of women empowerment and deprivation from the selected indicators contributing to empowerment and deprivation. The data's factorability is then confirmed through the determinant of the correlation matrix, which should be greater than 0.00001, and Bartlett's test of sphericity, which should have a p-value less than 0.05. The Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy, with values above 0.50 being acceptable and values of at least 0.70 being preferred, were then used. (Beavers et al., 2013; Watkins, 2018).

**Table 1**  
*Women Empowerment and Deprivation Indicators*

| <b>EMPOWERMENT<br/>INDICATORS</b>                                 | <b>DEPRIVATION<br/>INDICATORS</b>                    |
|-------------------------------------------------------------------|------------------------------------------------------|
| Currently employed household                                      | Belongs to poorer/poorest                            |
| Owens a house or land alone or jointly                            | None/primary education                               |
| Completed at least secondary education                            | Never used internet                                  |
| Exposed to media at least once a week                             | Unemployed                                           |
| Has exposure to family planning (FP) information                  | Never heard of FP on the radio                       |
| Knows at least five FP methods                                    | Never heard of FP on the TV                          |
| Permission for medical treatment for herself is not a big problem | Never heard of FP on magazine/newspaper              |
| Can refuse sex with husband/partner                               | Never heard of FP on mobile phone                    |
| Can ask partner to use condom during intercourse                  | Never heard of FP on social media                    |
| No unmet need for FP                                              | Permission for medical treatment is a big problem    |
| Knows source of any FP method                                     | Getting money for medical treatment is a big problem |

| <b>EMPOWERMENT INDICATORS</b>                                                       | <b>DEPRIVATION INDICATORS</b>                |
|-------------------------------------------------------------------------------------|----------------------------------------------|
| Decides alone or with partner about her own healthcare                              | Distance to health facility is a big problem |
| Decides alone or with partner about large household purchases                       |                                              |
| Decides alone or with partner about visiting family or friends                      |                                              |
| Decides alone or with partner about what to do with partner's earnings              |                                              |
| Woman thinks beating is not justified even if wife goes out without telling husband |                                              |
| Woman thinks beating is not justified even if wife neglects children                |                                              |
| Woman thinks beating is not justified even if wife argues with husband              |                                              |
| Woman thinks beating is not justified even if wife refuses to have sex with husband |                                              |
| Woman thinks beating is not justified even if wife burns the food                   |                                              |

The factors or dimensions of empowerment and deprivation are then identified and interpreted through EFA results. To calculate the indices, a weighting scheme is applied by assigning equal weights to each dimension and its constituting indicators. A general formula is provided below:

$$\begin{aligned}
 \text{Index value} &= \frac{1}{k} (\text{Dimension}_1 + \text{Dimension}_2 + \dots + \text{Dimension}_k) \\
 &= \frac{1}{k} \left[ \frac{1}{j_1} (\text{Indicator}_1 + \text{Indicator}_2 + \dots + \text{Indicator}_{j_1})_{\sim \text{Dimension}_1} \right. \\
 &\quad + \frac{1}{j_2} (\text{Indicator}_1 + \text{Indicator}_2 + \dots + \text{Indicator}_{j_2})_{\sim \text{Dimension}_2} + \dots \\
 &\quad \left. + \frac{1}{j_k} (\text{Indicator}_1 + \text{Indicator}_2 + \dots + \text{Indicator}_{j_k})_{\sim \text{Dimension}_k} \right]
 \end{aligned}$$

To classify the respondents as either empowered or deprived based on the indices developed, a threshold setting is applied. Women who meet or exceed scores on at least 80%<sup>1</sup> of the total weighted indicators in either WEI or WDI indices are classified accordingly. After identifying the dimensions and setting the thresholds, the study proceeds with a descriptive trend analysis at both national and regional levels, data visualizations, along with other findings and insights.

## Results and Discussion

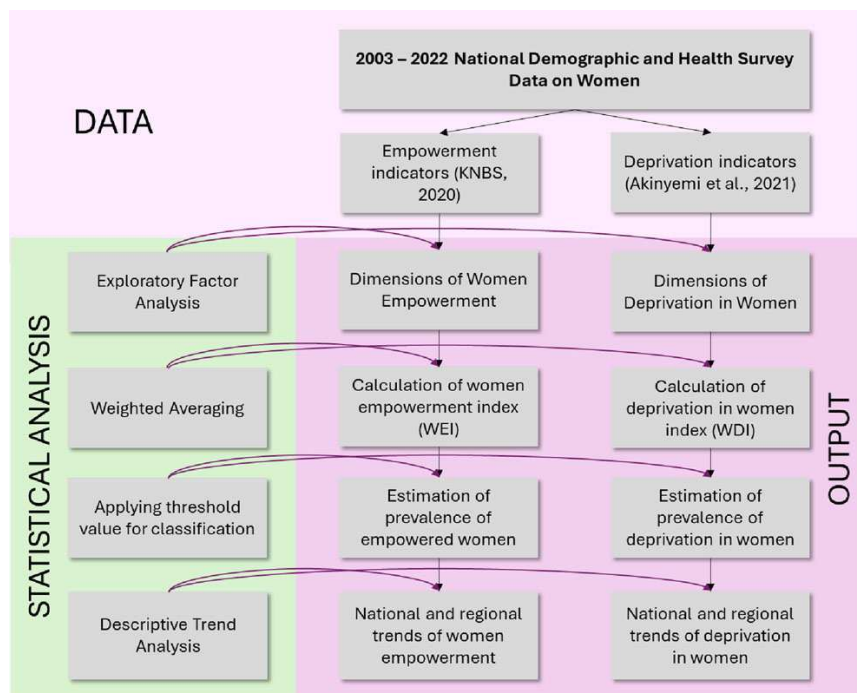
### Descriptive Statistics of the Indicators

Tables 2 and 3 provide a comprehensive view of the status and trends in various deprivation and empowerment indicators among the women respondents. The results shed light on both the advancements and ongoing challenges they faced over the years.

The proportion of women respondents for deprivation indicators highlights several critical issues. Although there have been significant

<sup>1</sup> This threshold is adopted following the methodology used in the KNBS (2020) report. Although a specific threshold requires further study, the 80% level application ensures that only women meeting a substantial level of the identified criteria are considered empowered or deprived.

**Figure 1**  
*Methodological Framework*



strides in educational attainment, with the percentage of women with no or only primary education decreasing notably (25.47% in 2003 to 11.81% in 2022), economic disparities appear to have widened, as a growing percentage of women now belong to the poorer or poorest households (36.65% in 2003 to 45.94% in 2022).

Employment trends among women show a slight increase in unemployment rates, from 54.35% in 2003 to 56.80% in 2022. Although the change is relatively small, it highlights that unemployment remains a persistent issue, affecting over half of the respondents.

Despite improvements in digital inclusion and internet usage, access to family planning (FP) information through traditional media remains limited, pointing to areas needing targeted intervention. Access to FP information presents a mixed scenario. There has been a substantial increase in the percentage of women who have never heard of FP on the

radio, from 41.63% in 2003 to 66.59% in 2022. Similarly, the percentage of women who have never heard of FP on TV has fluctuated, climbing higher in 2022 (47.18%) than in 2003 (37.92%). Moreover, those who have never encountered FP information through magazines or newspapers have also increased significantly, from 61.56% in 2003 to 87.05% in 2022. However, when it comes to mobile phones, data available from 2013 shows a decrease from 94.06% to 84.47% by 2022, suggesting a slow but positive trend in reaching women through newer communication technologies.

Internet usage among women has improved, as indicated by the data starting from 2017, which shows a decrease in the percentage of women who have never used the internet from 37.00% to 22.47% in 2022.

Issues related to medical treatment reveal some progress. The percentage of women who perceive getting permission for medical treatment as a big problem has decreased slightly from 11.77% in 2003 to 9.52% in 2022. Financial barriers to medical treatment have seen a more significant improvement, with the percentage of women reporting this as a big problem dropping from 68.81% in 2003 to 44.14% in 2022. Distance to health facilities has also become less of a problem, with the percentage decreasing from 29.21% in 2003 to 18.64% in 2022.

The findings for women empowerment, detailed in Table 3, presents a mixed picture. The percentage of women currently employed has declined slightly from 45.64% in 2003 to 43.20% in 2022, indicating limited improvement in employment opportunities. Property ownership for women, either alone or jointly, peaked in 2013 at 36.95% but dropped to 31.24% in 2022, highlighting economic empowerment challenges.

Women completing at least secondary education rose from 54.39% in 2003 to 60.22% in 2022, showing gradual progress. Media exposure at least once a week increased from 52.85% in 2003 to 66.17% in 2022, reflecting better access to information.

FP knowledge saw mixed trends: exposure to information and knowing at least five methods rose slightly to 76.21% and 83.64% respectively. Women's ability to refuse sex with their partner improved to 88.96% in 2022. The perception that obtaining medical treatment for oneself is not a big problem remained high at around 90.48%.

**Table 2**  
*Percentage of Women for Various Deprivation Indicators: 2003–2022*

|                                                      | 2003   | 2008   | 2013   | 2017   | 2022   | Average Annual Change |
|------------------------------------------------------|--------|--------|--------|--------|--------|-----------------------|
| Belongs to poorer/poorest household                  | 36.65  | 38.44  | 38.88  | 45.55  | 45.94  | 0.49                  |
| None/primary education                               | 25.47  | 22.50  | 18.98  | 16.61  | 11.81  | -0.72                 |
| Unemployed                                           | 54.35  | 52.32  | 52.10  | 54.63  | 56.80  | 0.13                  |
| Never heard of FP on the radio                       | 41.63  | 51.87  | 53.98  | 64.59  | 66.59  | 1.31                  |
| Never heard of FP on the TV                          | 37.92  | 26.90  | 31.66  | 39.69  | 47.18  | 0.49                  |
| Never heard of FP on magazine/newspaper              | 61.56  | 71.06  | 68.13  | 82.71  | 87.05  | 1.34                  |
| Never heard of FP on mobile phone                    |        |        |        | 94.06  | 84.47  | -1.92                 |
| Never heard of FP on social media                    |        |        |        |        | 40.54  |                       |
| Never used internet                                  |        |        |        | 37.00  | 22.47  | -2.91                 |
| Permission for medical treatment is a big problem    | 11.77  | 8.93   | 10.34  | 10.52  | 9.52   | -0.12                 |
| Getting money for medical treatment is a big problem | 68.81  | 56.94  | 49.33  | 46.72  | 44.14  | -1.30                 |
| Distance to health facility is a big problem         | 29.21  | 29.84  | 30.08  | 26.25  | 18.64  | -0.56                 |
| Total Respondents                                    | 13,633 | 13,594 | 16,155 | 25,074 | 27,821 |                       |

Women's participation in healthcare and household decision-making has also improved, with decisions on healthcare rising to 94.51% and large household purchases and visiting family or friends reaching 87.75% and 92.19%, respectively. However, decision-making about a partner's earnings slightly declined to 86.97%. Attitudes toward gender-based violence (GBV) have improved significantly, with over 90% of women rejecting GBV under various circumstances by 2022. Knowledge of family planning sources dramatically increased from 21.49% in 2003 to 74.72% in 2022, indicating better access to FP resources.

**Table 3**

*Percentage of Women for Various Empowerment Indicators: 2003–2022*

|                                                                   | 2003  | 2008  | 2013  | 2017  | 2022  | Average Annual Change |
|-------------------------------------------------------------------|-------|-------|-------|-------|-------|-----------------------|
| Currently employed                                                | 45.64 | 47.62 | 47.90 | 45.37 | 43.20 | -0.13                 |
| Owns a house or land alone or jointly                             |       |       | 36.09 | 36.95 | 31.24 | -0.54                 |
| Completed at least secondary education                            | 54.39 | 58.39 | 62.31 | 58.32 | 60.22 | 0.31                  |
| Exposed to media at least once a week                             | 52.85 | 46.94 | 85.99 | 79.82 | 66.17 | 0.70                  |
| Has exposure to FP information                                    | 75.30 | 79.34 | 74.59 | 65.45 | 76.01 | 0.04                  |
| Knows at least five FP methods                                    | 79.37 | 75.86 | 82.14 | 82.62 | 83.64 | 0.22                  |
| Can refuse sex with husband/partner*                              |       |       |       | 86.72 | 88.96 | 0.45                  |
| Can ask partner to use condom during intercourse*                 |       |       |       | 73.47 | 73.12 | -0.07                 |
| Permission for medical treatment for herself is not a big problem | 88.18 | 91.00 | 89.59 | 89.48 | 90.48 | 0.12                  |
| No unmet need for family planning                                 | 39.44 | 42.12 | 42.74 | 43.16 | 40.21 | 0.04                  |

|                                                                                     | 2003   | 2008   | 2013   | 2017   | 2022   | Average Annual Change |
|-------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|-----------------------|
| Decides alone or with partner about her own healthcare*                             | 93.88  | 93.10  | 96.21  | 94.75  | 94.51  | 0.03                  |
| Decides alone or with partner about large household purchases*                      | 77.37  | 85.37  | 85.74  | 88.43  | 87.75  | 0.55                  |
| Decides alone or with partner about visiting family or friends*                     | 85.90  | 92.60  | 93.03  | 92.31  | 92.19  | 0.33                  |
| Decides alone or with partner about what to do with partner's earnings*             |        | 89.12  | 90.33  | 88.65  | 86.97  | -0.15                 |
| Woman thinks beating is not justified even if wife goes out without telling husband | 88.92  | 93.11  | 94.31  | 94.19  | 95.03  | 0.32                  |
| Woman thinks beating is not justified even if wife neglects children                | 76.67  | 85.99  | 87.33  | 88.80  | 90.38  | 0.72                  |
| Woman thinks beating is not justified even if wife argues with husband              | 92.84  | 95.52  | 95.51  | 95.75  | 95.05  | 0.12                  |
| Woman thinks beating is not justified even if wife refuses to have sex with husband | 94.98  | 96.20  | 96.90  | 96.22  | 96.07  | 0.06                  |
| Woman thinks beating is not justified even if wife burns the food                   | 95.78  | 96.76  | 97.15  | 97.36  | 96.94  | 0.06                  |
| Knows source of any family planning method                                          | 21.49  | 22.05  | 23.80  | 25.55  | 74.72  | 2.80                  |
| Total Respondents                                                                   | 13,633 | 13,594 | 16,155 | 25,074 | 27,821 |                       |
| Total Respondents currently in union                                                | 8,764  | 8,564  | 9,866  | 15,455 | 16,421 |                       |

*Note:* The percentages of indicators marked by (\*) are taken among total respondents who are currently in union.

Deriving the Women Deprivation and Empowerment Indices

To determine if the survey data are suitable for EFA, three summary measures are used. Table 4 shows that all datasets across different years are factorable, with 2017 and 2008 empowerment indicators having KMOs slightly below 0.70 but are still acceptable.

**Table 4**  
*Factorability of the Indicators to be Used for WEI and WDI*

| Set of Indicators                                   | Determinant of Correlation Matrix <sup>(i)</sup> | Bartlett’s Test of Sphericity (p-value) <sup>(ii)</sup> | Kaiser-Meyer-Olkin Index <sup>(iii)</sup> |
|-----------------------------------------------------|--------------------------------------------------|---------------------------------------------------------|-------------------------------------------|
| Factorability of Indicators of Deprivation in Women |                                                  |                                                         |                                           |
| 2022                                                | 0.219                                            | 42214.038 (0.000)                                       | 0.725                                     |
| 2017                                                | 0.216                                            | 38428.064 (0.000)                                       | 0.723                                     |
| 2013                                                | 0.335                                            | 17650.446 (0.000)                                       | 0.704                                     |
| 2008                                                | 0.362                                            | 13809.116 (0.000)                                       | 0.732                                     |
| 2003                                                | 0.282                                            | 17233.890 (0.000)                                       | 0.743                                     |
| Factorability of Indicators of Women Empowerment    |                                                  |                                                         |                                           |
| 2022                                                | 0.062                                            | 43231.096 (0.000)                                       | 0.765                                     |
| 2017                                                | 0.072                                            | 40539.907 (0.000)                                       | 0.696                                     |
| 2013                                                | 0.001                                            | 111000.000 (0.000)                                      | 0.876                                     |
| 2008                                                | 0.002                                            | 87943.912 (0.000)                                       | 0.697                                     |
| 2003                                                | 0.060                                            | 38337.795 (0.000)                                       | 0.735                                     |

Notes: (i) Values greater than 0.00001 indicate stability of factor analysis.  
(ii) p-values less than 0.05 indicate factorability of the indicators.  
(iii) KMO values above 0.5 are acceptable; values above 0.7 are preferred for sampling adequacy.

Exploratory factor analysis reveals the underlying dimensions of the deprivation and empowerment indicators. Equal weights are assigned to each dimension and their respective indicators. The results, presented in Tables 5 and 6, identify four dimensions for deprivation and six dimensions for empowerment. The analysis shows robust results over the years, consistently revealing the same dimensions despite some indicators' absence in earlier surveys. Few indicators show slight weighing deviations, which were adjusted in favor of a standardized calculation. Complete EFA factor loadings are provided in the Appendix section.

In Table 5, EFA reveals the following dimensions:

**Dimension 1: Socioeconomic and Educational Deprivation.** This encompasses the dual aspects of economic status (poorer/poorest households) and educational level (none/primary education) and access to information through the internet, highlighting the deprivation in both socioeconomic resources and educational opportunities.

**Dimension 2: Economic Opportunity Deprivation.** This highlights the lack of employment and income-earning opportunities, indicating a situation where the individual is deprived of a source of livelihood and financial stability.

**Dimension 3: Information Deprivation in FP.** This suggests a lack of exposure or access to FP information through various media channels, indicating a potential gap in awareness and knowledge regarding FP methods and resources.

**Dimension 4: Health Care Accessibility Deprivation.** This encapsulates the challenges women face in obtaining medical treatment due to barriers such as difficulties in obtaining permission, financial constraints, and geographical distance to health facilities. It underscores the deprivation or limitations in accessing necessary health care services.

**Table 5**  
*Dimensions of Deprivation in Women  
with Indicator Percentage Weights*

| DIMENSION                                       | EMPOWERMENT<br>INDICATOR                             | NDHS PHILIPPINES YEAR |       |       |       |       |
|-------------------------------------------------|------------------------------------------------------|-----------------------|-------|-------|-------|-------|
|                                                 |                                                      | 2022                  | 2017  | 2013  | 2008  | 2003  |
| Socioeconomic<br>and Educational<br>Deprivation | Belongs to poorer/poorest household                  | 8.33                  | 8.33  | 12.5  | 12.5  | 12.5  |
|                                                 | None/primary education                               | 8.33                  | 8.33  | 12.5  | 12.5  | 12.5  |
|                                                 | Never used the internet                              | 8.33                  | 8.33  |       |       |       |
| Economic<br>Opportunity<br>Deprivation          | Unemployed                                           | 25.00                 | 25.00 | 25.00 | 25.00 | 25.00 |
| Information<br>Deprivation<br>in FP             | Never heard of FP on the radio                       | 5.00                  | 6.25  | 8.33  | 8.33  | 8.33  |
|                                                 | Never heard of FP on the TV                          | 5.00                  | 6.25  | 8.33  | 8.33  | 8.33  |
|                                                 | Never heard of FP on magazine/newspaper              | 5.00                  | 6.25  | 8.33  | 8.33  | 8.33  |
|                                                 | Never heard of FP on mobile phone                    | 5.00                  | 6.25  |       |       |       |
|                                                 | Never heard of FP on social media                    | 5.00                  |       |       |       |       |
| Healthcare<br>Accessibility<br>Deprivation      | Permission for medical treatment is a big problem    | 8.33                  | 8.33  | 8.33  | 8.33  | 8.33  |
|                                                 | Getting money for medical treatment is a big problem | 8.33                  | 8.33  | 8.33  | 8.33  | 8.33  |
|                                                 | Distance to health facility is a big problem         | 8.33                  | 8.33  | 8.33  | 8.33  | 8.33  |
| Weight Totals                                   |                                                      | 100                   | 100   | 100   | 100   | 100   |

For women empowerment, the following dimensions can be derived from Table 6:

**Dimension 1: Economic Engagement.** This implies participating actively in the workforce, engaging in productive activities, and contributing to economic endeavors and underscores women's current connection to the workforce and their role in economic activities.

**Dimension 2: Health Literacy.** This covers characteristics that collectively suggest women who have acquired a certain level of education are informed about FP methods and are comfortable seeking medical treatment for themselves. In this context, women appear to be empowered with knowledge, making informed choices about education, FP, and health care.

**Dimension 3: Reproductive Agency.** This concerns women having the power and control to make decisions about their own reproductive and sexual health, including the ability to refuse or consent to sexual activity, set boundaries, and communicate preferences regarding contraception or protection.

**Dimension 4: Fulfillment of FP Needs.** This covers attributes that indicate that women have access to and are content with their chosen FP method, both the absence of unmet needs and the awareness of reliable sources for obtaining FP methods. It reflects a state where the woman's reproductive and FP preferences are effectively met.

**Dimension 5: Autonomy in Decision-Making.** This concerns women able to make decisions independently or in collaboration with their partners. Whether these decisions involve health care choices, household purchases, social activities, or financial decisions, the underlying theme is the autonomy and action of the woman or the couple in determining the course of action.

**Dimension 6: Denouncement Against GBV.** This dimension aims to measure women's perceptions of the acceptability of violence within intimate partnerships and their stance on GBV prevention. It provides an assessment whether women believe that physical punishment or violence is justified in response to a wife's certain behaviors or actions in a conjugal relationship.

**Table 6**  
*Dimensions of Women Empowerment  
with Indicator Percentage Weights*

| DIMENSION               | EMPOWERMENT INDICATOR                                             | NDHS PHILIPPINES YEAR |      |       |       |       |
|-------------------------|-------------------------------------------------------------------|-----------------------|------|-------|-------|-------|
|                         |                                                                   | 2022                  | 2017 | 2013  | 2008  | 2003  |
| Economic Empowerment    | Currently employed                                                | 8.33                  | 8.33 | 10.00 | 20.00 | 20.00 |
|                         | Owns a house or land alone or jointly                             | 8.33                  | 8.33 | 10.00 |       |       |
| Health Literacy         | Completed at least secondary education                            | 3.33                  | 3.33 | 4.00  | 4.00  | 4.00  |
|                         | Exposed to media at least once a week                             | 3.33                  | 3.33 | 4.00  | 4.00  | 4.00  |
|                         | Has exposure to FP information                                    | 3.33                  | 3.33 | 4.00  | 4.00  | 4.00  |
|                         | Knows at least five family planning methods                       | 3.33                  | 3.33 | 4.00  | 4.00  | 4.00  |
|                         | Permission for medical treatment for herself is not a big problem | 3.33                  | 3.33 | 4.00  | 4.00  | 4.00  |
| Reproductive Agency*    | Can refuse sex with husband/partner                               | 8.33                  | 8.33 |       |       |       |
|                         | Can ask partner to use condom during intercourse                  | 8.33                  | 8.33 |       |       |       |
| Fulfillment of FP Needs | No unmet need for family planning                                 | 8.33                  | 8.33 | 20.00 | 10.00 | 10.00 |
|                         | Knows source of any family planning method                        | 8.33                  | 8.33 |       | 10.00 | 10.00 |

| DIMENSION                    | EMPOWERMENT INDICATOR                                                               | NDHS PHILIPPINES YEAR |      |      |      |      |
|------------------------------|-------------------------------------------------------------------------------------|-----------------------|------|------|------|------|
|                              |                                                                                     | 2022                  | 2017 | 2013 | 2008 | 2003 |
| Autonomy in Decision-Making* | Decides alone or with partner about her own healthcare                              | 4.17                  | 4.17 | 5.00 | 5.00 | 6.67 |
|                              | Decides alone or with partner about large household purchases                       | 4.17                  | 4.17 | 5.00 | 5.00 | 6.67 |
|                              | Decides alone or with partner about visiting family or friends                      | 4.17                  | 4.17 | 5.00 | 5.00 | 6.67 |
|                              | Decides alone or with partner about what to do with partner's earnings              | 4.17                  | 4.17 | 5.00 | 5.00 |      |
| Denouncement Against GBV     | Woman thinks beating is not justified even if wife goes out without telling husband | 3.33                  | 3.33 | 4.00 | 4.00 | 4.00 |
|                              | Woman thinks beating is not justified even if wife neglects children                | 3.33                  | 3.33 | 4.00 | 4.00 | 4.00 |
|                              | Woman thinks beating is not justified even if wife argues with husband              | 3.33                  | 3.33 | 4.00 | 4.00 | 4.00 |
|                              | Woman thinks beating is not justified even if wife refuses to have sex with husband | 3.33                  | 3.33 | 4.00 | 4.00 | 4.00 |
|                              | Woman thinks beating is not justified even if wife burns the food                   | 3.33                  | 3.33 | 4.00 | 4.00 | 4.00 |
| Weight Totals                |                                                                                     | 100                   | 100  | 100  | 100  | 100  |

*Note:* Dimensions with (\*) are applied only women who are currently in union due to data availability. WEI values among women not in union (never been, formerly in union) are adjusted accordingly

## **Prevalence of Deprivation in Women and Women Empowerment**

Adapting the threshold level of the KNBS report on women empowerment, a woman is considered empowered if she exhibits empowerment of at least 80% of the total weighted indicators. Similarly, she is considered deprived if she exhibits being deprived of at least 80% of the total weighted indicators.

### ***National Trends***

The Philippines' DHS data indicate that, despite some fluctuations, the overall trend reflects an improved women's empowerment and reduced deprivation in the country. Moreover, empowerment and deprivation prevalence are, respectively, at their highest and lowest levels in 2022. It is encouraging to see that the overall positive trend in women's empowerment is increasing, but continued monitoring and targeted interventions are necessary to ensure its sustained progress. Focused attention may be needed to address specific issues leading to fluctuations in women deprivation, especially at times where an increase will be observed.

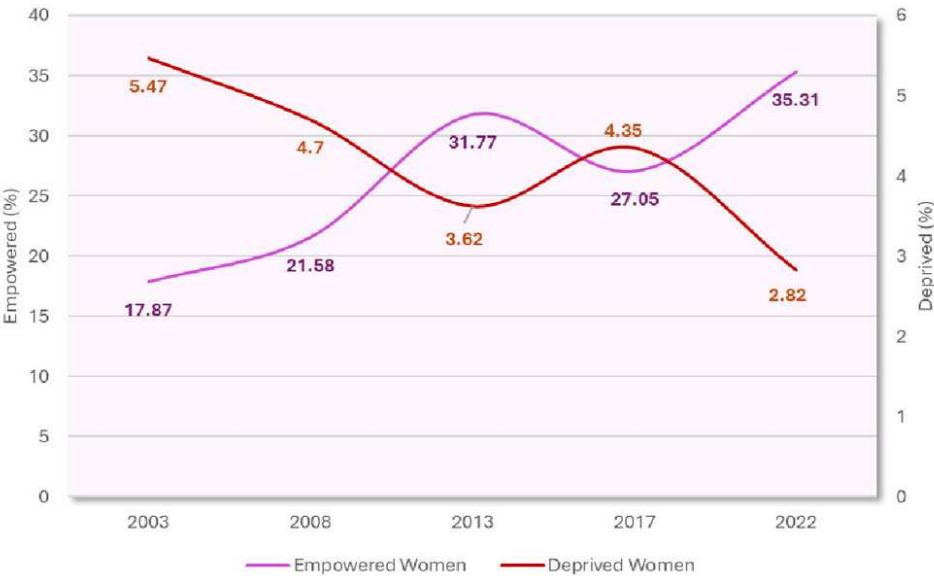
In 2003, the percentage of deprived women stood at 5.47%, but this figure gradually decreased over the years, reflecting a positive trend. By 2008, the prevalence of deprived women dropped to 4.7%, and this downward trajectory continued, reaching 3.62% in 2013. Although there was a slight increase in 2017 to 4.35%, the overall trend remained downward, culminating in a low of 2.82% in 2022.

Conversely, the data on empowered women shows an upward trend. In 2003, 17.87% of women were considered empowered. This percentage rose significantly to 21.58% in 2008 and further to 31.77% in 2013, indicating substantial progress. Despite a slight dip to 27.05% in 2017, the trend rebounded strongly, with 35.31% of empowered women by 2022.

Previously mentioned is the United Nations Development Programme (UNDP)'s (2023) own methodology for calculating two indices: WEI and the Global Gender Parity Index (GGPI). These indices

cover key aspects of gender equality, which include indicators from modern contraception access, demographic indicators, political and managerial representation, educational attainment, labor force participation in households, financial inclusion, and intimate partner violence prevalence. For the Philippines in 2022, the respective index values are 0.618 and 0.772, respectively, for WEI and GGPI. When the average is calculated rather than prevalence, the mean WEI value using NDHS 2022 data is 0.689, providing external consistency and validity of the methodology.

**Figure 2**  
*Prevalence of Deprived and Empowered Women in the Philippines  
Throughout the Years: 2003–2022*



- Notes:
- (i) Women empowerment and deprivation in women are defined with respect to the indicators included in the study.
  - (ii) Source data is from the PSA's NDHS.
  - (iii) Survey weights are used in the calculation of prevalence rates.

### ***Regional Trends***

The data on women deprivation throughout various regions in the Philippines from 2003 to 2022 reveals significant trends and regional disparities (see Figures 3 and 5a). There is an overall positive trend, indicating progress in improving women's living conditions and access to resources. The regions with consistently high prevalence of women empowerment are Region XI (Davao Region), Region XIII (Caraga), and Region II (Cagayan Valley). Meanwhile, Region III (Central Luzon), Region IV-A (Calabarzon), and the National Capital Region (NCR) have the consistently lowest prevalence of deprived women.

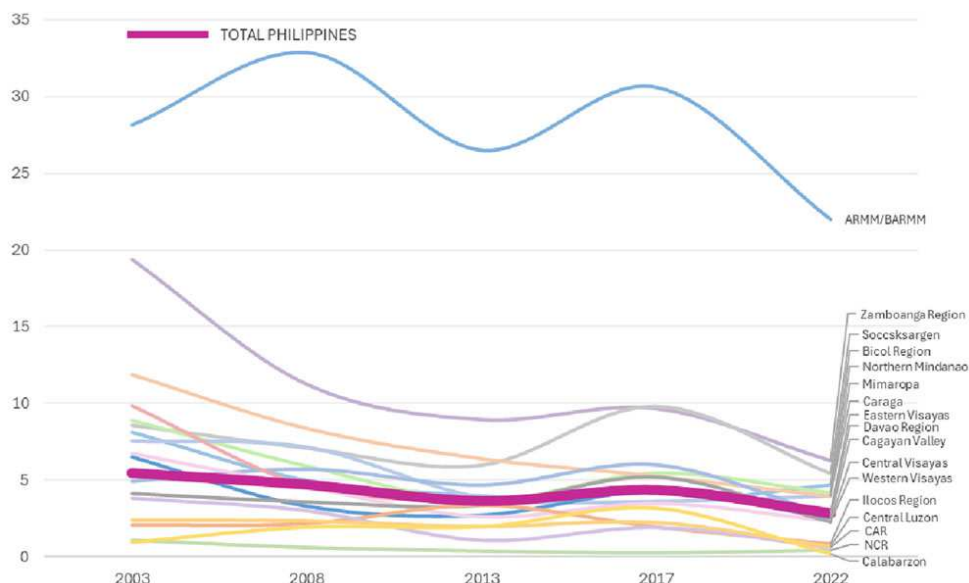
In the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM), formerly the Autonomous Region in Muslim Mindanao (ARMM), women deprivation decreased from 28.14% in 2003 to 21.99% in 2022, with the highest decrease observed from 2017 to 2022. However, it still remains the highest in women deprivation, highlighting the need for continued and focused interventions. In contrast, Region IX (Zamboanga Region) shows significant improvement, with deprivation levels decreasing from 19.36% in 2003 to 6.28% in 2022, reflecting successful efforts to enhance women's well-being in this region.

Other regions, such as Region XII (Soccsksargen) and Region VIII (Eastern Visayas), have also demonstrated substantial progress. Soccsksargen's deprivation levels have dropped from 8.57% in 2003 to 5.43% in 2022, whereas Eastern Visayas experienced a decrease from 9.85% in 2003 to 2.92% in 2022. These reductions underscore the effectiveness of targeted initiatives reducing deprivation in women in these regions.

Region X (Northern Mindanao) and Region XIII (Caraga) have shown fluctuating but generally downward trends, with the former's levels decreasing from 8.91% in 2003 to 4.19% in 2022 and the latter's levels decreasing from 7.51% in 2003 to 3.95% in 2022. Meanwhile, Region I (Ilocos Region), the Cordillera Administrative Region (CAR), and Region III (Central Luzon) have consistently exhibited low levels of deprivation, achieving 0.83%, 0.58%, and 0.69%, respectively, in 2022.

Women's empowerment data throughout various regions of the Philippines from 2003 to 2022 reveals several key trends (Figures 4 and 5b). Over the years, the trends reflect significant progress overall. Regions

**Figure 3**  
*Regional Trends of Deprivation in Women in the Philippines:  
2003–2022*



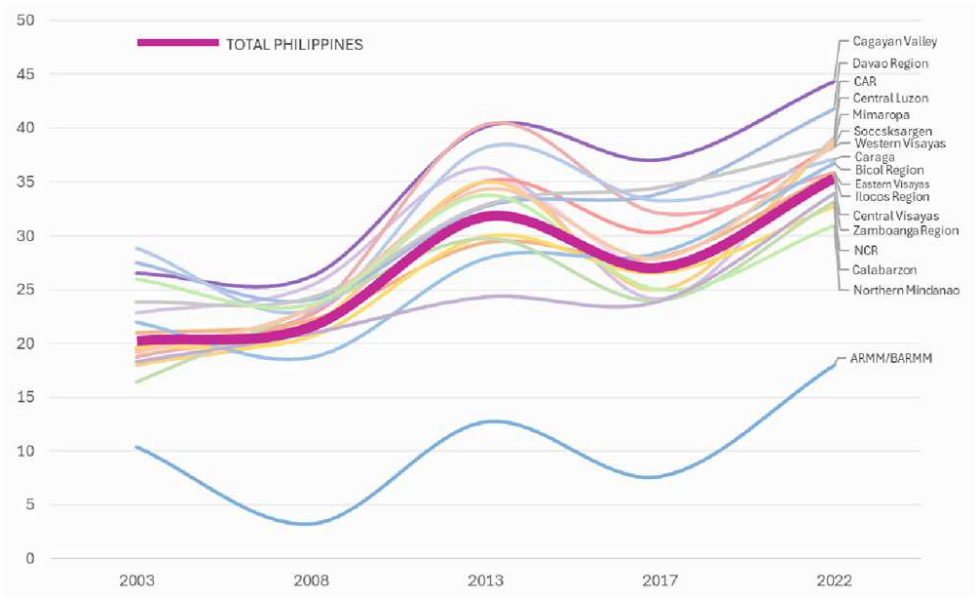
- Notes:* (i) Women empowerment and deprivation in women are defined with respect to the indicators included in the study.  
(ii) Source data is from the PSA's NDHS.  
(iii) Survey weights are used in the calculation of prevalence rates.

such as Region II (Cagayan Valley), Region XI (Davao Region), Region XII (Soccsksargen), and Region XIII (Caraga) have consistently performed well, surpassing the national average. Notably, Region II (Cagayan Valley) reached 44.36% in 2022, making it one of the highest-performing regions. Region XI (Davao Region) also showed substantial progress, reaching 41.81% in 2022.

Similarly, Region IV-B (Mimaropa) and Region VI (Eastern Visayas) and have maintained strong upward trends, consistently exceeding the national average since 2008. The National Capital Region (NCR) has remained slightly below the national average but has shown a steady increase, reaching 33.14% in 2022.

Conversely, ARMM/BARMM remains significantly below the national average, despite showing some improvement, increasing from 10.37% in 2003 to 17.96% in 2022. This highlights a critical area needing focused intervention. Notably as well, the recent annual percentage change for BARMM (2.07%) from 2017 to 2022 is faster than the national average (1.65%).

**Figure 4**  
*Regional Trends of Women Empowerment in the Philippines:  
2003–2022*



Notes: (i) Women empowerment and deprivation in women are defined with respect to the indicators included in the study.  
(ii) Source data is from the PSA's NDHS.  
(iii) Survey weights are used in the calculation of prevalence rates.

## On Measures of Violence Against Women

Including measures related to violence against women (VAW) is crucial, as the absence of violence is a key indicator of women's empowerment (Lombardini et al., 2017). The survey results show both concerning and encouraging trends. Statistically, a small percentage of women (3.06% to 9.62%) in 2022 believe that physical violence is justified in certain situations, such as going out without informing the husband, neglecting children, arguing with the husband, refusing sex, or burning food. These low percentages suggest progress in challenging harmful attitudes and promoting healthier relationships.

Nonetheless, it is troubling that some women still believe that physical violence can still be justified. Efforts should be directed towards understanding the reasons behind these misconceptions and addressing these attitudes through education, awareness campaigns, and initiatives promoting gender equality, respectful relationships, and non-violence.

Lombardini et al. (2017) cautioned about interpreting survey data on VAW, highlighting potential limitations in accurately capturing its prevalence. They noted that respondents' willingness to discuss the issue could influence reported rates of violence, with women interviewed without interruptions more likely to disclose instances compared to those interviewed in the presence of others. To improve reliability, they recommended supplementing survey data with qualitative information.

A rather intriguing result is observed using the NDHS data. Table 7 reveals that women respondents were more likely to say that GBV is justifiable when someone else was listening during the interview compared to those interviewed without interruptions. The most significant discrepancies are observed when children under age 10 years or other females are listening in the interview, where there is a higher percentage of respondents who say that GBV is justified for at least one reason when a child under 10 years old; and during when another female is listening.

**Table 7**  
*Percentage Difference of Women Who Think  
that GBV Is Justifiable: 2003–2022*

| INDIVIDUALS LISTENING IN THE INTERVIEW |                          |         |                |                  |
|----------------------------------------|--------------------------|---------|----------------|------------------|
| Year                                   | Children Under<br>Age 10 | Husband | Other<br>Males | Other<br>Females |
| 2022                                   | 3.34*                    | -3.24*  | -4.02*         | 0.09*            |
| 2017                                   | 6.12*                    | 0.24*   | 4.99*          | 3.53*            |
| 2013                                   | 2.71*                    | 2.55*   | 7.87*          | 3.19*            |
| 2008                                   | 4.18*                    | -3.65*  | -1.92*         | 6.09*            |
| 2003                                   | 7.68*                    | 3.86*   | 5.17*          | 3.00*            |

Notes: (i) Differences marked by (\*) are significant at 5% level.  
(ii) Differences are calculated as “percentage of those with others listening – uninterrupted interview”

A part of such variability may be attributed to social desirability bias. In the findings of Visschers et al. (2015), social desirability bias, particularly impression management, influences reports of intimate partner violence (IPV). Their study found that respondents consciously alter their answers to be viewed more favorably when others are present.

The respondents in this survey might have adjusted their responses to justifying managing the impression they give to the listeners, aligning with societal expectations or avoiding negative judgments. Other potential reasons for this phenomenon are largely unexplored by the authors, such as a sense of shared experiences or solidarity with other females, or a heightened sense to conform to certain roles and behaviors. These can be a potential subject of discourse and research in the future.

**On the Conflict in Mindanao.** Results show that women living in Muslim Mindanao are the ones who are least empowered and most deprived. Conflicts in Mindanao, particularly the ARMM/BARMM have not only hindered economic development but also disrupted the delivery

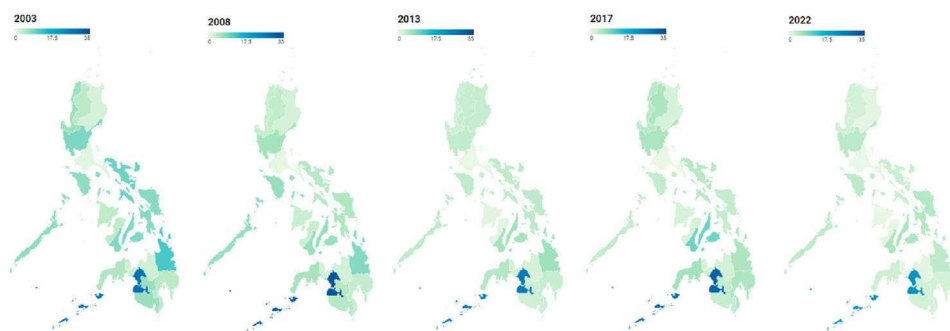
of basic services such as healthcare, education, and infrastructure, exacerbating the poor living conditions in the region. Women, as one of the most vulnerable groups during conflicts, face multiple burdens and increased susceptibility to violence.

According to the paper by Javate-De Dios (2015), women in conflict-affected areas of Mindanao experience heavier domestic tasks, family responsibilities, and economic burdens, leading to a decrease in their quality of life. Marginalization of women is evident in their health, socioeconomic status, education, and participation in governance and leadership roles. They have higher maternal mortality rates, lower employment rates, and lower levels of education compared to other regions. The conflict in Mindanao has thus severely affected women's empowerment and exacerbated their deprivation.

Attributing low empowerment and high deprivation to Islam requires careful consideration and further investigation. It is noteworthy that Indonesia, a country with a predominantly high Muslim population of around 87% (2010 Census of Population; 2023 Civil Registry Data), has high empowerment and a low prevalence of deprived women (see Figure 6). This suggests that the issues in Muslim Mindanao are more closely linked to the ongoing conflict and socioeconomic disruptions rather than the religious context alone.

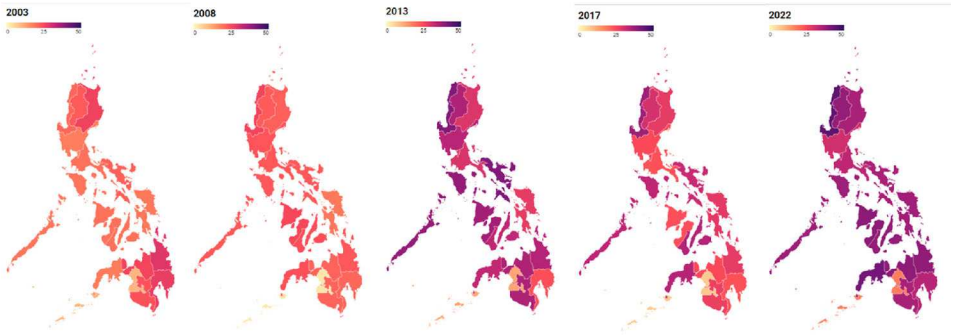
**Figure 5a**

*Choropleth Map of Regional Prevalence of Deprivation  
in Women in the Philippines: 2003–2022*



Note: Choropleth maps are generated from: <https://app.datawrapper.de/>

**Figure 5b**  
*Choropleth Map of Regional Prevalence of Women  
 Empowerment in the Philippines: 2003–2022*

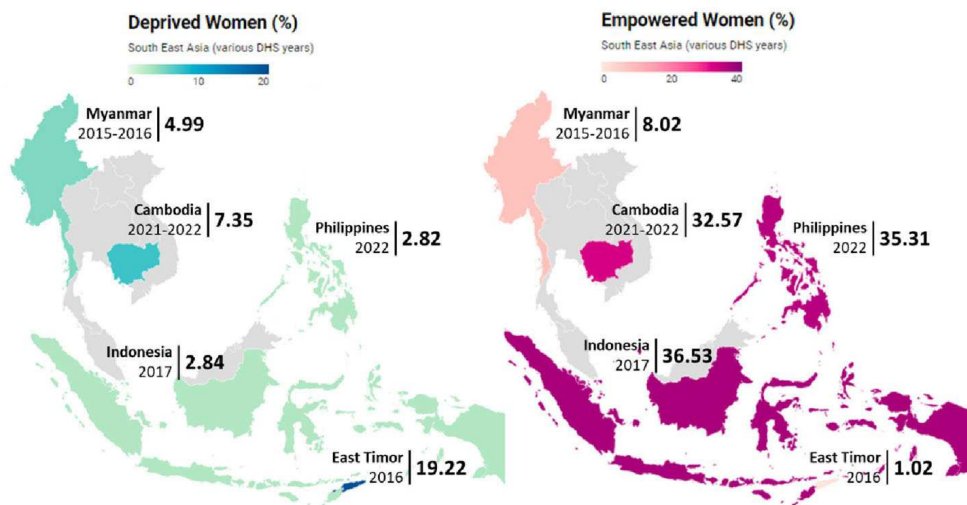


*Note:* Choropleth maps were generated from <https://app.datawrapper.de/>

***Philippines and Southeast Asia.*** In examining deprivation and empowerment throughout select Southeast Asian countries based on their respective most recent DHS (Figure 6), significant disparities emerge. Myanmar, during 2015–2016, reported moderate levels of deprivation at 4.99% yet with relatively low empowered women prevalence at 8.02%, suggesting ongoing challenges alongside efforts toward women empowerment. Timor Leste, in 2016, faced higher deprivation at 19.22 paired with low empowerment at 1.02, indicating substantial barriers and large room for improvement. Indonesia, as of 2017, showed relatively low deprivation at 2.84 and high empowerment at 36.53, highlighting successful initiatives in improving living conditions and fostering empowerment. Cambodia, for 2021–2022, reported moderate deprivation at 7.35 and significant empowerment at 32.57, reflecting ongoing efforts to enhance socioeconomic conditions.

These figures underscore varied socioeconomic landscapes and stress the importance of understanding local contexts to interpret these prevalence estimates effectively. Factors such as history and current events, politics, economic policies, and culture shape deprivation and empowerment levels, guiding targeted interventions and strategies.

**Figure 6**  
*Choropleth Map of Prevalence of Deprived and Empowered Throughout Select Southeast Asian Countries*



- Notes: (i) Women empowerment and deprivation in women are defined with respect to the indicators included in the study.  
(ii) Source data are from the DHS of Southeast Asian countries where it is available.  
(iii) Survey weights are used in the calculation of prevalence rates.  
(iv) Most recent DHS data are used for each country.  
(v) Choropleth maps are generated from: <https://app.datawrapper.de/>

### **Misclassifications**

We define misclassification in this context where women are identified as both empowered and deprived. This occurs when respondents score higher than 80% in both indices. According to Table 8, recent surveys have shown fluctuations over the years: 0.46% in 2022, 0.44% in 2017, and notably lower percentages in earlier years such as 0.22% in 2013, with no instances recorded in 2008 and 2003.

**Table 8**  
*Misclassification Rates of Respondents*

| NDHS Year | Misclassification Rate |
|-----------|------------------------|
| 2022      | 0.46%                  |
| 2017      | 0.44%                  |
| 2013      | 0.22%                  |
| 2008      | 0.00%                  |
| 2003      | 0.00%                  |

*Note:* A misclassified respondent is defined as a respondent both identified as empowered and deprived.

**Conclusions and Recommendations**

**Conclusions**

This study aimed to develop deprivation in women and women empowerment indices for the Philippines based on the NDHS from 2003–2022 and utilized methodologies and indicators from previous research conducted in African countries. Findings indicate viability of exploratory factor analysis as a method in (1) revealing the different dimensions of deprivation and empowerment, and (2) standardizing the measurement women empowerment and deprivation in women using DHS data.

The results reveal four dimensions of deprivation in women: information deprivation in family planning, socioeconomic and educational deprivation, healthcare accessibility deprivation, and economic opportunity deprivation; and six dimensions of women empowerment: economic engagement, health literacy, reproductive agency, fulfillment of family planning needs, autonomy in decision-making, and denouncement against violence.

The study found increasing women’s empowerment and decreasing deprivation trends in the Philippines. In 2022, empowerment reached

its peak, whereas deprivation hit its lowest recorded levels. Notably, Cagayan Valley, Davao Region, Soccsksargen, and Caraga showed consistently high women's empowerment rates, whereas Central Luzon, Calabarzon, and the NCR had the lowest rates of deprived women. Conversely, ARMM/BARMM exhibited the highest percentage of deprived women and the lowest prevalence of empowered women.

### **Recommendations**

This article serves as a foundational step toward quantitatively measuring, and standardizing the indices of women deprivation and empowerment in the Philippines. However, further analysis and improvement of the indicators are necessary. It is recommended to engage in dialogues with relevant authorities, institutions specializing in women's studies, and various academic disciplines to enhance and refine the indicators used in the study, to capture the intricate nuances and lived experiences of women that quantitative methods may overlook.

Although the study has effectively utilized EFA to derive weights for indicators and reveal relationships, it acknowledges the potential of unexplored dimensions that could offer a more comprehensive understanding of women's empowerment and deprivation indices. To address this limitation, future research could incorporate Confirmatory Factor Analysis (CFA) to rigorously test and validate the hypothesized factor structures, refining the indices further.

Additionally, expanding the indicators for measuring women's empowerment and deprivation is crucial. Including a wider array related to economic empowerment, education, political participation, and access to resources would offer a more thorough assessment. This could be facilitated through additional research and input from experts, potentially integrating new items into the NDHS. Future studies should also account for diverse cultural, social, and economic contexts throughout different Philippine regions when developing interventions and policies to address the specific needs of women in each region.

Furthermore, it is recommended to replicate the methodology employed in this study throughout future iterations of the NDHS in the

Philippines, as well as existing DHS data of other countries for further validation and improvement. Examining trends and changes in women deprivation and empowerment over time would provide a clearer understanding of progress and identify areas that require targeted interventions.

Overall, this study provides valuable insights into women deprivation and empowerment in the Philippines, setting the stage for further research and collaborative efforts to improve the indices and promote gender equality in the country and close the gap in deprivation.

### Acknowledgments

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## Appendix A

### Regional Trends in Deprivation in Women and Women Empowerment: 2003 – 2022

| EMPOWERMENT       | 2003  | 2008  | 2013  | 2017  | 2022  |
|-------------------|-------|-------|-------|-------|-------|
| Philippines       | 20.28 | 21.58 | 31.77 | 27.05 | 35.31 |
| Ilocos Region     | 20.98 | 22.19 | 29.37 | 28.02 | 35.8  |
| CAR               | 22.83 | 25.38 | 36.33 | 24.14 | 39.15 |
| Cagayan Valley    | 26.48 | 26.17 | 40.14 | 37.05 | 44.36 |
| Central Luzon     | 17.94 | 21.55 | 34.99 | 24.96 | 38.86 |
| Calabarzon        | 19.59 | 20.6  | 29.94 | 26.55 | 32.72 |
| Bicol Region      | 21.93 | 18.65 | 27.87 | 28.39 | 36.74 |
| Mimaropa          | 19.18 | 23.32 | 34.36 | 27.94 | 38.47 |
| Western Visayas   | 19.5  | 22.69 | 35.05 | 30.35 | 38.28 |
| Central Visayas   | 19.48 | 21.51 | 34.99 | 26.91 | 35.62 |
| Eastern Visayas   | 18.73 | 22.89 | 40.35 | 32.09 | 35.86 |
| Zamboanga Region  | 18.31 | 20.94 | 24.33 | 23.95 | 33.96 |
| Northern Mindanao | 25.96 | 23.62 | 33.78 | 24.98 | 30.92 |
| Davao Region      | 27.51 | 24.05 | 32.74 | 33.94 | 41.81 |
| Soccsksargen      | 23.88 | 24.27 | 32.9  | 34.54 | 38.32 |
| Caraga            | 28.83 | 23.08 | 38.2  | 33.21 | 37.08 |
| ARMM/BARMM        | 10.37 | 3.2   | 12.69 | 7.61  | 17.96 |
| NCR               | 16.39 | 23.21 | 29.75 | 23.95 | 33.14 |

| <b>DEPRIVATION</b> | <b>2003</b> | <b>2008</b> | <b>2013</b> | <b>2017</b> | <b>2022</b> |
|--------------------|-------------|-------------|-------------|-------------|-------------|
| Philippines        | 5.47        | 4.7         | 3.62        | 4.35        | 2.82        |
| Ilocos Region      | 2.07        | 2.16        | 3.37        | 1.94        | 0.83        |
| CAR                | 3.82        | 3           | 1.05        | 1.89        | 0.58        |
| Cagayan Valley     | 6.5         | 3.3         | 2.72        | 4.27        | 2.52        |
| Central Luzon      | 2.42        | 2.36        | 2           | 2.26        | 0.69        |
| Calabarzon         | 0.96        | 1.95        | 1.97        | 3.19        | 0.2         |
| Mimaropa           | 11.86       | 8.37        | 6.41        | 5.28        | 3.97        |
| Bicol Region       | 8.12        | 5           | 4           | 3.55        | 4.71        |
| Western Visayas    | 4.12        | 3.57        | 3.34        | 5.19        | 2.26        |
| Central Visayas    | 6.75        | 4.56        | 2.6         | 3.47        | 2.32        |
| Eastern Visayas    | 9.85        | 4.62        | 3.71        | 4.46        | 2.92        |
| Zamboanga Region   | 19.36       | 11.25       | 8.95        | 9.67        | 6.28        |
| Northern Mindanao  | 8.91        | 5.93        | 3.68        | 5.47        | 4.19        |
| Davao Region       | 4.93        | 5.73        | 4.68        | 6.01        | 2.67        |
| Soccsksargen       | 8.57        | 7.08        | 5.97        | 9.81        | 5.43        |
| Caraga             | 7.51        | 7.12        | 3.86        | 3.6         | 3.95        |
| ARMM/BARMM         | 28.14       | 32.86       | 26.5        | 30.6        | 21.99       |
| NCR                | 1.08        | 0.59        | 0.36        | 0.23        | 0.42        |

## Appendix B

### Exploratory Factor Analysis Results for Women Empowerment Dimensions

#### EMPOWERMENT - 2022

| Indicator | Variable                                                          | Factor1 | Factor2 | Factor3       | Factor4       | Factor5       | Factor6       | Uniqueness |
|-----------|-------------------------------------------------------------------|---------|---------|---------------|---------------|---------------|---------------|------------|
| e_01      | Currently employed                                                | 0.0589  | 0.0337  | 0.0689        | 0.0327        | 0.212         | <b>0.2045</b> | 0.9028     |
| e_02      | Owens a house or land alone or jointly                            | -0.0164 | -0.0279 | -0.0733       | -0.021        | -0.1001       | <b>0.2595</b> | 0.9158     |
| e_03      | Completed at least secondary education                            | 0.0865  | 0.0267  | 0.1476        | 0.0196        | <b>0.3782</b> | -0.0549       | 0.8236     |
| e_04      | Exposed to media at least once a week                             | 0.0395  | 0.0094  | 0.1137        | 0.1731        | <b>0.304</b>  | 0.038         | 0.8616     |
| e_05      | Has exposure to FP information                                    | 0.0571  | 0.0354  | 0.1391        | 0.1982        | <b>0.3885</b> | -0.0034       | 0.7859     |
| e_06      | Knows at least five FP methods                                    | 0.0859  | 0.136   | 0.1868        | 0.3061        | <b>0.2323</b> | 0.0814        | 0.7849     |
| e_07      | Can refuse sex with husband/partner                               | 0.0579  | 0.1195  | <b>0.5139</b> | 0.1842        | 0.0768        | 0.0069        | 0.6784     |
| e_08      | Can ask partner to use condom during intercourse                  | 0.0669  | 0.072   | <b>0.4939</b> | 0.108         | 0.0822        | -0.0173       | 0.7277     |
| e_09      | Permission for medical treatment for herself is not a big problem | 0.0939  | -0.0127 | 0.1951        | 0.0404        | <b>0.1615</b> | -0.0587       | 0.9218     |
| e_10      | No unmet need for FP                                              | 0.0166  | 0.039   | 0.0647        | <b>0.4424</b> | 0.0062        | -0.0632       | 0.7943     |

| Indicator | Variable                                                                            | Factor1       | Factor2       | Factor3 | Factor4       | Factor5 | Factor6 | Uniqueness |
|-----------|-------------------------------------------------------------------------------------|---------------|---------------|---------|---------------|---------|---------|------------|
| e_11      | Decides alone or with partner about her own healthcare                              | 0.0055        | <b>0.6723</b> | 0.0572  | 0.0813        | 0.0246  | -0.0063 | 0.5374     |
| e_12      | Decides alone or with partner about large household purchases                       | 0.0159        | <b>0.6552</b> | 0.0179  | 0.0005        | 0.008   | 0.0207  | 0.5697     |
| e_13      | Decides alone or with partner about visiting family or friends                      | 0.02          | <b>0.6839</b> | 0.039   | 0.0215        | 0.0233  | 0.0003  | 0.5294     |
| e_14      | Decides alone or with partner about what to do with partner's earnings              | 0.0159        | <b>0.5614</b> | 0.0174  | 0.0338        | -0.0305 | -0.0229 | 0.6817     |
| e_15a     | Woman thinks beating is not justified even if wife goes out without telling husband | <b>0.5911</b> | 0.0279        | 0.0625  | 0.0127        | 0.0451  | -0.0556 | 0.6407     |
| e_15b     | Woman thinks beating is not justified even if wife neglects children                | <b>0.5164</b> | 0.0208        | 0.0296  | -0.0324       | 0.0341  | -0.0782 | 0.7237     |
| e_15c     | Woman thinks beating is not justified even if wife argues with husband              | <b>0.6057</b> | 0.0157        | 0.0159  | 0.0093        | 0.0199  | 0.0152  | 0.6319     |
| e_15d     | Woman thinks beating is not justified even if wife refuses to have sex with husband | <b>0.596</b>  | 0.0167        | 0.0449  | 0.0569        | 0.0118  | 0.0466  | 0.637      |
| e_15e     | Woman thinks beating is not justified even if wife burns the food                   | <b>0.5867</b> | 0             | -0.0047 | 0.0336        | 0.0067  | 0.0419  | 0.6529     |
| e_16      | Knows source of any FP method                                                       | 0.0445        | 0.123         | 0.1962  | <b>0.5273</b> | 0.083   | 0.0232  | 0.6589     |

# EMPOWERMENT - 2017

| Indicator | Variable                                                          | Factor1       | Factor2 | Factor3       | Factor4       | Factor5       | Factor6       | Uniqueness |
|-----------|-------------------------------------------------------------------|---------------|---------|---------------|---------------|---------------|---------------|------------|
| e_01      | Currently employed                                                | 0.0129        | 0.0041  | -0.0145       | 0.154         | 0.0773        | <b>0.2262</b> | 0.9187     |
| e_02      | Owens a house or land alone or jointly                            | -0.0159       | -0.0301 | -0.0034       | -0.0664       | 0.0282        | <b>0.3218</b> | 0.8901     |
| e_03      | Completed at least secondary education                            | 0.0399        | 0.1144  | 0.0026        | <b>0.3798</b> | 0.0788        | -0.1351       | 0.8166     |
| e_04      | Exposed to media at least once a week                             | 0.0336        | 0.0397  | 0.0477        | <b>0.4367</b> | 0.1386        | -0.012        | 0.7849     |
| e_05      | Has exposure to FP information                                    | -0.0277       | 0.0009  | 0.0589        | <b>0.411</b>  | 0.1064        | 0.0479        | 0.8132     |
| e_06      | Knows at least five FP methods                                    | 0.02          | 0.0528  | 0.0987        | <b>0.329</b>  | 0.1632        | 0.0992        | 0.8423     |
| e_07      | Can refuse sex with husband/partner                               | -0.004        | 0.035   | 0.0343        | 0.101         | <b>0.538</b>  | 0.0212        | 0.6975     |
| e_08      | Can ask partner to use condom during intercourse                  | 0.0236        | 0.0364  | 0.0266        | 0.0721        | <b>0.5316</b> | -0.0085       | 0.7096     |
| e_09      | Permission for medical treatment for herself is not a big problem | 0.0599        | 0.0791  | 0.0095        | <b>0.2541</b> | 0.0668        | -0.0223       | 0.9205     |
| e_10      | No unmet need for FP                                              | 0.0048        | 0.0087  | <b>0.6631</b> | 0.0163        | 0.0176        | -0.0446       | 0.5577     |
| e_11      | Decides alone or with partner about her own healthcare            | <b>0.6389</b> | 0.0084  | 0.0037        | 0.0261        | 0.0028        | -0.0021       | 0.591      |
| e_12      | Decides alone or with partner about large household purchases     | <b>0.641</b>  | 0.0195  | 0.0028        | -0.0067       | 0.0079        | 0.012         | 0.5884     |

| Indicator | Variable                                                                            | Factor1       | Factor2       | Factor3       | Factor4 | Factor5 | Factor6 | Uniqueness |
|-----------|-------------------------------------------------------------------------------------|---------------|---------------|---------------|---------|---------|---------|------------|
| e_13      | Decides alone or with partner about visiting family or friends                      | <b>0.6269</b> | 0.0083        | -0.011        | 0.0123  | 0.0037  | -0.0265 | 0.6059     |
| e_14      | Decides alone or with partner about what to do with partner's earnings              | <b>0.5929</b> | 0.03          | 0.0287        | -0.0027 | 0.0052  | 0.0137  | 0.6465     |
| e_15a     | Woman thinks beating is not justified even if wife goes out without telling husband | 0.0173        | <b>0.5764</b> | 0.0153        | 0.0773  | 0.0416  | -0.0945 | 0.6506     |
| e_15b     | Woman thinks beating is not justified even if wife neglects children                | 0.011         | <b>0.56</b>   | 0.0033        | 0.0271  | 0.0293  | -0.0984 | 0.675      |
| e_15c     | Woman thinks beating is not justified even if wife argues with husband              | 0.0226        | <b>0.5437</b> | -0.0187       | -0.0066 | 0.0154  | 0.0265  | 0.7025     |
| e_15d     | Woman thinks beating is not justified even if wife refuses to have sex with husband | 0.0243        | <b>0.5493</b> | 0.0068        | -0.0086 | 0.0054  | 0.0922  | 0.689      |
| e_15e     | Woman thinks beating is not justified even if wife burns the food                   | 0.0169        | <b>0.5308</b> | 0.0078        | 0.0147  | 0.0002  | 0.0903  | 0.7096     |
| e_16      | Knows source of any FP method                                                       | 0.009         | -0.0019       | <b>0.6658</b> | 0.026   | 0.0194  | 0.0439  | 0.5537     |

### EMPOWERMENT - 2013

| Indicator | Variable                                                          | Factor1 | Factor2       | Factor3       | Factor4       | Factor5 | Uniqueness |
|-----------|-------------------------------------------------------------------|---------|---------------|---------------|---------------|---------|------------|
| e_01      | Currently employed                                                | 0.0123  | 0.1316        | 0.0703        | <b>0.2975</b> | 0.0063  | 0.889      |
| e_02      | Owens a house or land alone or jointly                            | -0.0109 | -0.0581       | 0.0835        | <b>0.316</b>  | 0.0045  | 0.8897     |
| e_03      | Completed at least secondary education                            | 0.088   | <b>0.4349</b> | 0.0144        | -0.0732       | -0.0423 | 0.7958     |
| e_04      | Exposed to media at least once a week                             | 0.0589  | <b>0.4869</b> | 0.0004        | -0.012        | 0.0217  | 0.7589     |
| e_05      | Has exposure to FP information                                    | 0.05    | <b>0.4597</b> | 0.0041        | 0.0058        | -0.0121 | 0.7859     |
| e_06      | Knows at least five FP methods                                    | 0.108   | <b>0.4192</b> | 0.0451        | 0.1443        | 0.0231  | 0.7892     |
| e_09      | Permission for medical treatment for herself is not a big problem | 0.0996  | <b>0.2752</b> | 0.0511        | -0.005        | -0.0073 | 0.9116     |
| e_10      | No unmet need for FP                                              | -0.0059 | 0.1296        | 0.0351        | -0.075        | 0.0305  | 0.9754     |
| e_11      | Decides alone or with partner about her own healthcare            | 0.016   | 0.0606        | <b>0.4554</b> | 0.0104        | -0.0125 | 0.7884     |
| e_12      | Decides alone or with partner about large household purchases     | 0.0165  | -0.0035       | <b>0.4751</b> | 0.0635        | 0.009   | 0.7699     |

| Indicator | Variable                                                                            | Factor1       | Factor2 | Factor3       | Factor4 | Factor5 | Uniqueness |
|-----------|-------------------------------------------------------------------------------------|---------------|---------|---------------|---------|---------|------------|
| e_13      | Decides alone or with partner about visiting family or friends                      | 0.0306        | 0.0092  | <b>0.4119</b> | 0.014   | -0.0133 | 0.829      |
| e_14      | Decides alone or with partner about what to do with partner's earnings              | 0.0259        | -0.0021 | <b>0.4732</b> | -0.0119 | 0.0094  | 0.7752     |
| e_15a     | Woman thinks beating is not justified even if wife goes out without telling husband | <b>0.6387</b> | 0.0674  | 0.012         | -0.0185 | -0.0965 | 0.5777     |
| e_15b     | Woman thinks beating is not justified even if wife neglects children                | <b>0.5834</b> | 0.0719  | 0.023         | -0.0245 | -0.1272 | 0.6371     |
| e_15c     | Woman thinks beating is not justified even if wife argues with husband              | <b>0.6032</b> | 0.0017  | 0.0173        | 0.0251  | 0.0897  | 0.6271     |
| e_15d     | Woman thinks beating is not justified even if wife refuses to have sex with husband | <b>0.5451</b> | 0.0032  | 0.0044        | 0.0201  | 0.1509  | 0.6796     |
| e_15e     | Woman thinks beating is not justified even if wife burns the food                   | <b>0.4781</b> | 0.0725  | 0.0002        | 0.0287  | 0.1158  | 0.7519     |

EMPOWERMENT - 2008

| Indicator | Variable                                                          | Factor1 | Factor2       | Factor3       | Factor4       | Factor5 | Uniqueness |
|-----------|-------------------------------------------------------------------|---------|---------------|---------------|---------------|---------|------------|
| e_01      | Currently employed                                                | -0.0133 | 0.0714        | 0.0585        | 0.1623        | -0.0164 | 0.9647     |
| e_03      | Completed at least secondary education                            | 0.0941  | 0.0784        | 0.0223        | <b>0.4283</b> | -0.0243 | 0.8005     |
| e_04      | Exposed to media at least once a week                             | -0.0002 | 0.0338        | -0.0073       | <b>0.1967</b> | 0.0495  | 0.9577     |
| e_05      | Has exposure to FP information                                    | 0.0885  | 0.106         | -0.0107       | <b>0.4486</b> | -0.0088 | 0.7795     |
| e_06      | Knows at least five FP methods                                    | 0.0715  | 0.128         | 0.043         | <b>0.385</b>  | 0.022   | 0.828      |
| e_09      | Permission for medical treatment for herself is not a big problem | 0.1251  | 0.0522        | 0.0583        | <b>0.2018</b> | -0.0276 | 0.9367     |
| e_10      | No unmet need for family planning                                 | 0.0152  | <b>0.6305</b> | -0.0025       | 0.0484        | -0.0018 | 0.5999     |
| e_11      | Decides alone or with partner about her own healthcare            | 0.0604  | 0.033         | <b>0.4087</b> | 0.0619        | 0.0215  | 0.824      |
| e_12      | Decides alone or with partner about large household purchases     | 0.0244  | 0.0225        | <b>0.52</b>   | -0.0031       | -0.0078 | 0.7284     |

| Indicator | Variable                                                                            | Factor1       | Factor2       | Factor3       | Factor4 | Factor5 | Uniqueness |
|-----------|-------------------------------------------------------------------------------------|---------------|---------------|---------------|---------|---------|------------|
| e_13      | Decides alone or with partner about visiting family or friends                      | 0.0527        | 0.0109        | <b>0.4728</b> | 0.0111  | -0.0106 | 0.7733     |
| e_14      | Decides alone or with partner about what to do with partner's earnings              | 0.0367        | 0.0247        | <b>0.3995</b> | -0.0044 | 0.0145  | 0.8382     |
| e_15a     | Woman thinks beating is not justified even if wife goes out without telling husband | <b>0.6058</b> | 0.0152        | 0.0234        | 0.0839  | -0.1805 | 0.5927     |
| e_15b     | Woman thinks beating is not justified even if wife neglects children                | <b>0.5566</b> | 0.0151        | 0.018         | 0.0601  | -0.2226 | 0.6365     |
| e_15c     | Woman thinks beating is not justified even if wife argues with husband              | <b>0.546</b>  | 0.0047        | 0.0386        | -0.0176 | 0.1055  | 0.689      |
| e_15d     | Woman thinks beating is not justified even if wife refuses to have sex with husband | <b>0.5476</b> | 0.0128        | 0.0145        | 0.0392  | 0.2107  | 0.6538     |
| e_15e     | Woman thinks beating is not justified even if wife burns the food                   | <b>0.5728</b> | -0.0085       | 0.0311        | 0.004   | 0.1359  | 0.6524     |
| e_16      | Knows source of any FP method                                                       | 0.0008        | <b>0.6364</b> | 0.034         | 0.0502  | 0.0003  | 0.5914     |

### EMPOWERMENT - 2003

| Indicator | Variable                                                          | Factor1 | Factor2       | Factor3       | Factor4       | Factor5 | Uniqueness |
|-----------|-------------------------------------------------------------------|---------|---------------|---------------|---------------|---------|------------|
| e_01      | Currently employed                                                | -0.0289 | 0.0386        | 0.0914        | 0.0938        | 0.063   | 0.9766     |
| e_03      | Completed at least secondary education                            | 0.1258  | 0.0604        | -0.0108       | <b>0.4257</b> | -0.0189 | 0.7988     |
| e_04      | Exposed to media at least once a week                             | 0.0355  | 0.049         | -0.0287       | <b>0.2019</b> | 0.021   | 0.9543     |
| e_05      | Has exposure to FP information                                    | 0.0751  | 0.1032        | 0.0032        | <b>0.392</b>  | -0.0501 | 0.8275     |
| e_06      | Knows at least five FP methods                                    | 0.0986  | 0.1598        | 0.0132        | <b>0.3817</b> | 0.0368  | 0.8176     |
| e_09      | Permission for medical treatment for herself is not a big problem | 0.1534  | 0.0516        | -0.0007       | <b>0.2549</b> | -0.0087 | 0.9088     |
| e_10      | No unmet need for FP                                              | 0.0061  | <b>0.6636</b> | -0.0107       | 0.0379        | -0.0068 | 0.558      |
| e_11      | Decides alone or with partner about her own healthcare            | 0.0865  | 0.0153        | <b>0.3944</b> | 0.0363        | 0.0268  | 0.8347     |
| e_12      | Decides alone or with partner about large household purchases     | 0.0254  | 0.0079        | <b>0.5729</b> | -0.0097       | 0.0147  | 0.6707     |
| e_13      | Decides alone or with partner about visiting family or friends    | 0.0255  | -0.0066       | <b>0.5578</b> | -0.0022       | -0.0215 | 0.6877     |

| Indicator | Variable                                                                            | Factor1       | Factor2       | Factor3 | Factor4 | Factor5 | Uniqueness |
|-----------|-------------------------------------------------------------------------------------|---------------|---------------|---------|---------|---------|------------|
| e_15a     | Woman thinks beating is not justified even if wife goes out without telling husband | <b>0.6278</b> | 0.0126        | -0.0025 | 0.1319  | -0.177  | 0.5569     |
| e_15b     | Woman thinks beating is not justified even if wife neglects children                | <b>0.5397</b> | -0.001        | 0.0166  | 0.0668  | -0.2317 | 0.6502     |
| e_15c     | Woman thinks beating is not justified even if wife argues with husband              | <b>0.6281</b> | -0.0015       | 0.0488  | -0.0076 | 0.0573  | 0.5997     |
| e_15d     | Woman thinks beating is not justified even if wife refuses to have sex with husband | <b>0.5863</b> | 0.0132        | 0.0164  | 0.003   | 0.1606  | 0.63       |
| e_15e     | Woman thinks beating is not justified even if wife burns the food                   | <b>0.561</b>  | -0.0008       | 0.0253  | 0.0064  | 0.1369  | 0.6658     |
| e_16      | Knows source of any FP method                                                       | 0.0003        | <b>0.6698</b> | 0.015   | 0.04    | 0.0068  | 0.5496     |

## Appendix C

### Exploratory Factor Analysis Results for Deprivation in Women Dimensions

#### DEPRIVATION - 2022

| Indicator | Variable                                             | Factor1       | Factor2       | Factor3       | Factor4       | Uniqueness |
|-----------|------------------------------------------------------|---------------|---------------|---------------|---------------|------------|
| i_01      | Belongs to poorer/poorest household                  | <b>0.4703</b> | 0.0197        | 0.2428        | 0.145         | 0.6984     |
| i_02      | None/primary education                               | <b>0.4993</b> | 0.0288        | 0.122         | -0.0037       | 0.735      |
| i_03      | Unemployed                                           | 0.0438        | 0.1311        | 0.0919        | <b>0.2307</b> | 0.9192     |
| i_04      | Never heard of FP on the radio                       | -0.0532       | <b>0.5706</b> | -0.0199       | 0.0037        | 0.6711     |
| i_05      | Never heard of FP on the TV                          | 0.1613        | <b>0.5877</b> | 0.0424        | 0.0381        | 0.6254     |
| i_06      | Never heard of FP on magazine/newspaper              | 0.1049        | <b>0.452</b>  | 0.0105        | -0.0261       | 0.7839     |
| i_07      | Never heard of FP on mobile phone                    | 0.184         | <b>0.3225</b> | 0.0411        | -0.1057       | 0.8493     |
| i_07b     | Never heard of FP on social media                    | 0.5254        | <b>0.3681</b> | 0.0345        | -0.0366       | 0.586      |
| i_08      | Never used internet                                  | <b>0.6159</b> | 0.0204        | 0.084         | -0.0164       | 0.6129     |
| i_09      | Permission for medical treatment is a big problem    | 0.0756        | 0.0259        | <b>0.4734</b> | 0.0086        | 0.7694     |
| i_10      | Getting money for medical treatment is a big problem | 0.1243        | 0.0005        | <b>0.5203</b> | 0.0038        | 0.7138     |
| i_11      | Distance to health facility is a big problem         | 0.1465        | 0.0266        | <b>0.52</b>   | 0.0164        | 0.7072     |

## DEPRIVATION - 2017

| Indicator | Variable                                             | Factor1       | Factor2       | Factor3       | Factor4       | Uniqueness |
|-----------|------------------------------------------------------|---------------|---------------|---------------|---------------|------------|
| i_01      | Belongs to poorer/poorest household                  | 0.0756        | <b>0.5103</b> | 0.2506        | 0.053         | 0.6682     |
| i_02      | None/primary education                               | 0.0899        | <b>0.5483</b> | 0.134         | -0.0365       | 0.672      |
| i_03      | Unemployed                                           | 0.1247        | -0.027        | 0.1309        | <b>0.0115</b> | 0.9665     |
| i_04      | Never heard of FP on the radio                       | <b>0.6232</b> | -0.0224       | -0.0147       | -0.0104       | 0.6108     |
| i_05      | Never heard of FP on the TV                          | <b>0.5486</b> | 0.1777        | 0.0762        | -0.0658       | 0.6573     |
| i_06      | Never heard of FP on magazine/newspaper              | <b>0.5175</b> | 0.1488        | 0.0534        | 0.1506        | 0.6846     |
| i_07      | Never heard of FP on mobile phone                    | <b>0.3199</b> | 0.1168        | 0.0422        | 0.2098        | 0.8382     |
| i_08      | Never used internet                                  | 0.0788        | <b>0.6165</b> | 0.1375        | 0.0219        | 0.5943     |
| i_09      | Permission for medical treatment is a big problem    | 0.0293        | 0.1146        | <b>0.4767</b> | -0.0666       | 0.7543     |
| i_10      | Getting money for medical treatment is a big problem | 0.0419        | 0.1667        | <b>0.5537</b> | 0.0479        | 0.6616     |
| i_11      | Distance to health facility is a big problem         | 0.0215        | 0.2012        | <b>0.5833</b> | 0.0026        | 0.6188     |

## DEPRIVATION - 2013

| Indicator | Variable                            | Factor1       | Factor2 | Factor3       | Factor4       | Uniqueness |
|-----------|-------------------------------------|---------------|---------|---------------|---------------|------------|
| i_01      | Belongs to poorer/poorest household | 0.1517        | 0.277   | <b>0.4707</b> | 0.0506        | 0.6762     |
| i_02      | None/primary education              | 0.1622        | 0.1722  | <b>0.4452</b> | -0.0537       | 0.7429     |
| i_03      | Unemployed                          | 0.1041        | 0.0883  | 0.0178        | <b>0.1982</b> | 0.9418     |
| i_04      | Never heard of FP on the radio      | <b>0.6008</b> | 0.0046  | -0.0487       | 0.0102        | 0.6366     |

| Indicator | Variable                                             | Factor1       | Factor2       | Factor3 | Factor4 | Uniqueness |
|-----------|------------------------------------------------------|---------------|---------------|---------|---------|------------|
| i_05      | Never heard of FP on the TV                          | <b>0.5768</b> | 0.0887        | 0.2043  | -0.0241 | 0.6171     |
| i_06      | Never heard of FP on magazine/newspaper              | <b>0.537</b>  | 0.0985        | 0.1606  | 0.0484  | 0.6738     |
| i_09      | Permission for medical treatment is a big problem    | 0.0474        | <b>0.4366</b> | 0.1083  | -0.016  | 0.7952     |
| i_10      | Getting money for medical treatment is a big problem | 0.0851        | <b>0.5252</b> | 0.1153  | 0.0273  | 0.7028     |
| i_11      | Distance to health facility is a big problem         | 0.0586        | <b>0.5293</b> | 0.1916  | 0.001   | 0.6796     |

#### DEPRIVATION - 2008

| Indicator | Variable                                             | Factor1       | Factor2       | Factor3       | Factor4       | Uniqueness |
|-----------|------------------------------------------------------|---------------|---------------|---------------|---------------|------------|
| i_01      | Belongs to poorer/poorest household                  | 0.1577        | <b>0.5153</b> | 0.2214        | 0.0364        | 0.6592     |
| i_02      | None/primary education                               | 0.1732        | <b>0.4714</b> | 0.1544        | -0.0444       | 0.722      |
| i_03      | Unemployed                                           | 0.1148        | -0.0115       | 0.0681        | <b>0.1576</b> | 0.9572     |
| i_04      | Never heard of FP on the radio                       | <b>0.5536</b> | 0.0654        | 0.0179        | -0.0012       | 0.689      |
| i_05      | Never heard of FP on the TV                          | <b>0.4404</b> | 0.4017        | 0.0935        | -0.0201       | 0.6355     |
| i_06      | Never heard of FP on magazine/newspaper              | <b>0.511</b>  | 0.1884        | 0.0877        | 0.0331        | 0.6946     |
| i_09      | Permission for medical treatment is a big problem    | 0.0421        | 0.1184        | <b>0.3612</b> | -0.0231       | 0.8532     |
| i_10      | Getting money for medical treatment is a big problem | 0.0795        | 0.1973        | <b>0.4247</b> | 0.0057        | 0.7743     |
| i_11      | Distance to health facility is a big problem         | 0.0778        | 0.3049        | <b>0.4562</b> | 0.0166        | 0.6926     |

## DEPRIVATION - 2003

| Indicator | Variable                                             | Factor1       | Factor2       | Factor3       | Factor4       | Uniqueness |
|-----------|------------------------------------------------------|---------------|---------------|---------------|---------------|------------|
| i_01      | Belongs to poorer/poorest household                  | 0.2601        | <b>0.5072</b> | 0.2226        | 0.0382        | 0.6241     |
| i_02      | None/primary education                               | 0.2223        | <b>0.4386</b> | 0.1395        | -0.0685       | 0.734      |
| i_03      | Unemployed                                           | 0.0407        | -0.0171       | 0.0778        | <b>0.2028</b> | 0.9509     |
| i_04      | Never heard of FP on the radio                       | <b>0.5945</b> | -0.0523       | 0.0171        | -0.0073       | 0.6435     |
| i_05      | Never heard of FP on the TV                          | <b>0.6549</b> | 0.2282        | 0.1101        | -0.0115       | 0.5068     |
| i_06      | Never heard of FP on magazine/newspaper              | <b>0.5563</b> | 0.2104        | 0.092         | 0.0495        | 0.6353     |
| i_09      | Permission for medical treatment is a big problem    | 0.0867        | 0.1211        | <b>0.414</b>  | -0.0017       | 0.8064     |
| i_10      | Getting money for medical treatment is a big problem | 0.1152        | 0.2488        | <b>0.3561</b> | 0.0595        | 0.7945     |
| i_11      | Distance to health facility is a big problem         | 0.1586        | 0.2856        | <b>0.456</b>  | 0.0018        | 0.6854     |