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Measuring gender inequality within the household using the Individual Deprivation Measure in Fiji

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Abstract

Poverty measurement focussed on the household results in data that obscures the circumstances and dynamics within a household and, therefore often results in data perpetuating gender-blind assessment of poverty. The Individual Deprivation Measure (IDM), a new individual-level, gender-sensitive measure of multidimensional poverty, can inform detailed analysis of the links between the individual, the household, and society, enabled by data collection at the individual-level with each adult member of a household, across multiple dimensions. By interviewing all adult household members, the IDM enables insights into variation and inequality within households, and a new perspective on gender inequality. To compare deprivation experienced by women to that of men in the same household and the extent of any potential inequality, a series of descriptive statistics and cumulative link mixed models (CLMM) are presented. Household composition is explored by describing the age, sex and disability status of individuals within a household. Separate unadjusted and adjusted models are applied to each dimension with the dimension score (on an ordinal 4-point scale from most to least deprived) used as the response variable. Household effects are assumed to be random, while the effect of sex, age and disability are considered fixed. Intraclass correlations were used to describe the degree to which individuals living in the same household experience deprivation differently. The analysis to be presented at the UNECE Gender Statistics Workshop uses data from Fiji to demonstrate that considerable variation and inequality is occurring within households, and that this within-household disparity varies considerably across dimensions often identified as particularly relevant to empowerment (voice, violence and family planning), and those relevant to meeting basic needs or fulfilling gender-normative roles (water, sanitation, food, fuel/energy). These findings have significant implications for unpacking links between intra-household inequality and women's empowerment.

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I. Introduction

1. One consequence of sustained inattention to gender inequality is gender-blind measurement; women and their circumstances are undervalued and consequently undercounted.

2. Current poverty measurement gives insight to households but masks the circumstances of individual members and the dynamics within the household, perpetuating gender-blind poverty assessment. Leading measures of poverty also have a limited focus on a few aspects of life such as money, health, or living standards. To promote and facilitate women's empowerment we need more granular insight into the multiple sites of power where women's circumstances are affected, including within the home, within the community and at the societal level. These insights can be achieved through the collection of relevant data at the individual level.

A. Fiji Context

3. Fiji is a middle-income Pacific Island country with a population of around 900,000 people[1]. Although trends in existing poverty indicators show overall improvement, poverty remains an important concern in Fiji. The latest data from the Asian Development Bank indicate that an estimated 28% of Fiji's population are below the National Poverty Line, ranking them third in the region in terms of poverty incidence after Timor-Leste and Federated States of Micronesia (Economic Research and Regional Cooperation Department, 2018). The reduction in national poverty incidence between 2002–03 and 2008–09 was not uniform throughout Fiji, with poverty increasing in rural areas (Asian Development Bank, 2014).

4. Currently, poverty data in Fiji is derived from household income and expenditure data, collected via periodic Household Income and Expenditure Surveys. Household level measurement, which assumes all household members have the same access to resources and opportunities, fails to account for gendered responsibilities and gender inequality within the household that can significantly impact on needs for, access to, and control over, resources. This in turn impacts overall inequality estimates; (Kanbur, 2016) estimates that approximately one third of all inequality is found within rather than between households. Household-level measurement also means accurate disaggregation of data is impossible. This makes the work of policy makers and advocates harder, masking differences rather than revealing them so they can be addressed. Individual-level measurement is essential to better understand deprivation and inequality, and the relationship between gender and deprivation.

B. Objectives

5. The objectives of this paper are to:

    i. investigate the extent to which individuals within a household experience deprivation differently and how this varies for the different dimensions of deprivation and

    ii. better understand inequalities in health, education, voice and work between men and women living in the same household

[1] Fiji's total population according to the 2017 Census conducted by the Fiji Bureau of Statistics is 884, 887.

using data collected from poverty hotspots in Fiji in 2015–16 .

II. Methodological Approaches

C. Individual Deprivation Measure

6. The Individual Deprivation Measure (IDM) is a new, gender-sensitive and multidimensional measure of poverty. The measure assesses deprivation at the individual level, in relation to 15 key dimensions of life (Figure 1).
7. The IDM was developed through an initial four-year (2009-2013), three-phase international research collaboration involving thousands of participants across 18 sites in 6 countries. The current phase IDM Program is a partnership between the Australian National University (ANU) and the International Women's Development Agency (IWDA) with strategic funding support from the Australian Government through the Department of Foreign Affairs and Trade (DFAT). See Acknowledgements for further information.
8. As a measure, the IDM comprises three main technical elements:
    i. a survey tool assessing 15 economic and social dimensions (Figure 1) measuring experiences of multidimensional deprivation,
    ii. sampling of every adult in a household (who are then asked the same questions) enabling within-household analyses,
    iii. a standardised system of indicator coding, dimension scoring, and composite index construction, enabling both gender-sensitive and intersectional analyses.

Figure 1: The 15 key dimensions of life measured and aggregated to form the Individual Deprivation Measure (IDM).

1. Dimension scoring

9. The IDM is hierarchical; dimensions are constructed from themes which are constructed from indicators which can correspond to one or more survey questions. The current method used to aggregate responses and assign dimension scores to an individual is as follows:
    i. To form indicators of multiple ordinal categories, responses to survey questions are ranked on an arbitrary scale. One indicator can be comprised of one or more survey questions and continuous responses are grouped before being ranked.
    ii. All indicators are normalised using min-max normalisation.

iii. Within each theme, normalised indicators are summed and the total is rescaled to define an individual's score for each theme.

iv. Within each dimension, scores from all themes are summed and the total is rescaled to define an individual's score for each dimension.

v. Dimension scores are grouped using equal intervals into 4 ordinal categories of deprivation from most to least deprived, to enable the ordinal analysis presented.

D. Fiji IDM study 2015–16

10. The Fiji IDM study was conducted in 2015–16 by IWDA working with the Fiji Bureau of Statistics, funded by the Australian Government.

2. Sampling and survey

11. The sampling strategy used in Fiji targeted poverty hotspots and used a stratified, multistage, cluster design. Tikina (areas) with high poverty incidence and prevalence were identified from the World Bank Poverty Mapping study from each of the provinces in Fiji (World Bank, 2011). Next, a two-stage sampling strategy was used; the sampling frame was divided into fifteen strata, each representing a different Tikina. Within each Tikina, Enumeration Areas (EAs) were selected using probability proportional to size based on the total number of households. Within each EA, a fixed number of fifteen households (HHs) were selected using systematic random sampling. This generated the sample size of 1125 households, 75 from each of the 15 selected Tikina.

12. Field supervisors and enumerators conducted surveys with participants one-on-one at participants' households, with men interviewing male participants, women interviewing female participants. The IDM instrument combines an individual survey answered by all adults (in Fiji, 18 +) and a household survey answered by one primary respondent in each household who is knowledgeable about the household.[2]

13. Data was collected on all 15 dimensions from all adult members of each selected household. For the purposes of brevity, only analysis from 4 dimensions, health, education, voice and work, are presented in this paper, given their relevance to the UNECE work session theme.

E. Statistical analysis

14. To explore household composition, distributions of responding households were described by relationships, age, sex and disability status of members. These were calculated for the entire sample and by number of adults in the household.

15. To compare deprivation experienced by women to that of men in the same household and the extent of any potential inequality, a series of cumulative link mixed models (CLMM) were used. Separate unadjusted and adjusted models were applied to each dimension with

[2] The IDM survey used in Fiji was part of a previous phase of IDM work. As part of the current IDM program (Acknowledgements) revisions have been made to the survey and dimension scoring. See (The Individual Deprivation Measure: Methodology Update 2017) for further information.

the ordinal dimension score used as the response variable. Household effects were assumed to be random, while the effect of sex, age and disability were considered fixed.

16. Intraclass correlations were calculated from the CLMM for each dimension to describe the degree to which individuals from the same household experience deprivation differently.
17. To better understand causes of potential inequalities between men and women from the same household in the Voice dimension, responses at the indicator level were disaggregated by sex. Intraclass correlations (ICCs) were calculated from a one-way ANOVA with HH as the clustering factor for all indicators within the Voice dimension.
18. All statistical analysis was performed in R version 3.5.2.

III. Results

F. Participants

19. The distribution of age, sector and ethnicity were similar among men and women (Table 1). Slightly fewer women than men completed the short household-level survey and men were notably more often the child of the household survey respondent than women. More women were living with a disability than men.

Table 1: Demographics of study participants by sex, Fiji IDM study (2015).

	Male N = 1481	Female N = 1485
Age	μ ± sd = 43 ± 16 n (%)	μ ± sd = 43 ± 16 n (%)
18-35	548 (38)	575 (39)
36-50	429 (29)	434 (29)
51-65	372 (25)	349 (24)
66+	132 (8.9)	126 (8.5)
Sector		
Urban	370 (25)	387 (26)
Rural	1040 (70)	1014 (68)
Informal	71 (4.8)	84 (5.7)
Ethnicity		
Fijian	748 (51)	795 (54)
Indian	711 (48)	669 (45)
Other	22 (1.5)	21 (1.4)
Relationship to primary respondent		
Primary respondent	571 (39)	553 (37)
Spouse	376 (25)	423 (29)
Child	318 (22)	163 (11)
Other	216 (15)	346 (23)
Living with a disability[3]		
Yes	91 (6.1)	128 (8.6)

[3] Living with a disability according to the Washington Group Short Set on Functioning using disability3 threshold (Washington Group on Disability Statistics, 2019).

G. Household composition

Table 2 Overview of composition by number of adults from households that participated in the IDM Fiji study (2015). It should be noted that that the number of children under 18 years old also living in each household was unknown as this question was not included in the survey

Household composition	Household size (number of adults)								Total	
	1		2		3-5		6+			
Male	61	51%							61	5%
Female	59	49%							59	5%
Couple only			444	84%					444	39%
Single person with other relative(s)			70	13%	63	14%	6	23%	139	12%
Couple with adult child(ren)/child-in-law[4]					230	51%	10	38%	240	21%
Other			14	3%	158	35%	10	39%	182	17%
Sex										
All male	61	51%	12	2%	1	0%	0	0%	74	7%
All female	59	49%	22	4%	3	1%	0	0%	84	7%
Males > Females					170	38%	9	35%	179	16%
Females > Males					163	36%	6	23%	169	15%
Males = Females			494	94%	114	25%	11	42%	619	55%
Disability										
None	102	85%	460	87%	343	76%	15	58%	920	82%
At least one person < 55 living with a disability[2]	5	4%	25	5%	38	8%	7	27%	75	7%
Only people aged 55+ living with a disability[2]	13	11%	43	8%	70	16%	4	15%	130	12%
Elderly										
At least one person 60+	44	37%	120	23%	197	44%	14	54%	375	33%
Total	120	11%	528	47%	451	40%	26	2%	1125	100 %

20. Almost 40% of households included in the study comprised of a couple living without other adults and 21% were a couple living with their adult children/children-in-law (Table 2).
21. 11% of all households were comprised of only one adult. Men and women were equally likely to be living alone, with 51% of 1 person households being male and 49% female.
22. One third of households had at least one member over the age of 60 and 7% of households had at least one adult member under 55 years living with a disability.

[4] May be other people living in the household in addition to the adult child(ren)/child(ren)-in-law.

H. Within household comparisons

Table 3: An overview of the themes and indicators that makeup the Health, Education, Voice and Work dimensions of the IDM and the intraclass correlation (ICC) of overall dimension scores from the IDM Fiji study (2015–16). The ICC quantifies how differently deprivation is experienced by individuals living in the same household from 0 (no correlation) to 1 (perfectly correlated).

Dimension	Themes	Indicators	Overview	ICC
Health	Health Status	Health status	When the last sickness occurred and how long this impacted daily activities	0.24
		Exposure to smoke	Severity of health problems due to smoke exposure from cooking	
	Healthcare	Healthcare	Receiving healthcare when required and any problems encountered	
Education	Attainment	Attainment	Years in formal schooling	0.50
	Quality	Reading	Test reading ability (any language)	
		Writing	Test writing ability (any language)	
		Numeracy	Test addition and multiplication	
Voice	In community	Raise opinion	Extent of ability to raise issues/opinions in the community	0.47
		Bring about change	Extent of ability to bring about change in the community	
	In household	Control	Control over personal decisions	
Work	Paid work	Security/hazards from paid work	Severity of any physical/mental illness or injury from paid work	0.05
		Status	Paid work is respected among community and treated with respect at work	
	Unpaid work	Hazards from unpaid work	Severity of any physical/mental illness or injury from unpaid work	
		Status	Unpaid work is respected among community and treated with respect at work	

23. Table 3 demonstrates that people within the same household have different experiences of deprivation and the degree to which this varies is different for each dimension. Of particular note are the Health and Work dimensions that have very low ICCs, showing high variation of dimension scores among members of the same household. This is also true but to a lesser extent for the Education and Voice dimensions. The especially low ICC for the Work dimension is unsurprising given that adult members of the same household are likely to have very different roles in regard to paid and unpaid work, given existing gendered norms and responsibilities.

24. These results provide evidence to support the increasingly prevalent view that household level data is not sufficient to accurately measure gendered deprivation, including, as illustrated here, in relation to Health, Education, Voice and Work.

25. More information and detailed indicator-level analysis of all data from the IDM Fiji study is presented in the IDM Fiji Study Report (Fisk & Crawford, 2017).

Table 4 Unadjusted and adjusted (for age and disability) odds ratios (OR) with 95% confidence intervals (CI) from CLMM showing the effect of sex on each dimension score within a household.

Dimension	Frequency of dimension score					Unadjusted OR (95% CI)	Adjusted OR (95% CI)
		Most deprived	Deprived	Somewhat deprived	Least deprived		
Health (N=2,966)	Male	30 (2.0%)	126 (8.5%)	525 (35%)	800 (54%)	1.13 (0.98, 1.31)	1.18 (1.01, 1.36)
	Female	21 (1.4%)	143 (9.6%)	463 (31%)	858 (58%)		
	Total	51 (1.7%)	269 (9.1%)	988 (33%)	1,658 (56%)		
Education (N=2,965)	Male	94 (6.4%)	533 (36%)	351 (24%)	502 (34%)	1.27 (1.10, 1.46)	1.26 (1.08, 1.47)
	Female	115 (7.7%)	456 (30%)	366 (25%)	548 (37%)		
	Total	209 (7.0%)	989 (33%)	717 (24%)	1,050 (35%)		
Voice (N=2,818)	Male	412 (29%)	413 (29%)	363 (26%)	232 (16%)	0.42 (0.36, 0.48)	0.42 (0.36, 0.49)
	Female	497 (36%)	436 (31%)	360 (26%)	105 (7.5%)		
	Total	909 (32%)	849 (30%)	723 (26%)	337 (12%)		
Work (N=2,965)	Male	25 (1.7%)	378 (26%)	60 (4.1%)	1,018 (69%)	0.17 (0.14, 0.20)	0.16 (0.14, 0.19)
	Female	103 (6.9%)	920 (62%)	62 (4.2%)	399 (27%)		
	Total	128 (4.3%)	1,298 (44%)	122 (4.1%)	1,417 (48%)		

26. Men and women from the same average household report similar levels of deprivation in the Health dimension. Among individuals from the same household, women tend to be slightly less deprived in the Education dimension than men. However, women are significantly more deprived than men from the same household in the Voice and Work dimensions (Table 4).

27. While the results from Table 3 demonstrate the extent of within-household variation, the odds ratios presented in Table 4 begin to reveal the extent to which gender inequality is driving this variation. Although people from the same household report different degrees of Health deprivation (ICC = 0.24), the OR (95% CI) = 1.13 (0.98, 1.31) suggests that gender inequality is not the underlying cause and further investigation into other drivers such as age is required.

28. A better understanding of the significant difference in deprivation of Voice between men and women from the same household (OR (95% CI) = 0.42 (0.36, 0.48)) can be found by investigating the themes and indicators that form this dimension. These results are presented in Section I below as an illustrative example relating to the theme of empowerment. Item-level results for Work and Health are available in Fisk & Crawford (2017).

I. Item level analysis – Voice

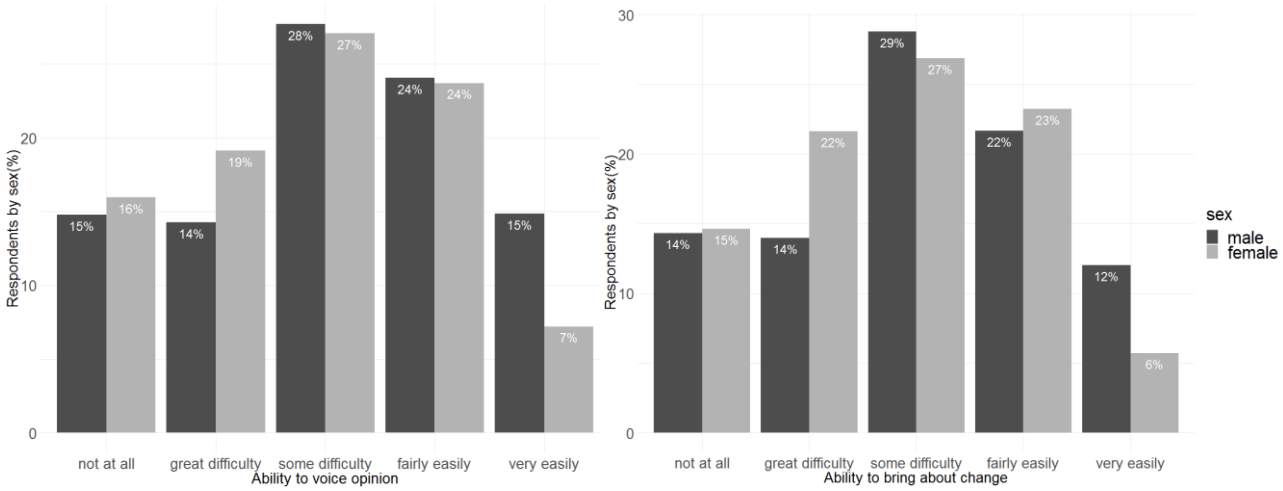

Figure 2 Distribution of respondents by ability to voice their opinion in their community by sex and distribution of respondents by ability to bring about change in their community by sex, Fiji 2015.

29. The overall ICC of ability to voice opinion was found to be ICC [95% CI] = 0.25 [0.20, 0.29] using 1113 households and an average household size of 2.5. This implies that the ability to voice opinion in the community is significantly different for individuals within a household. Women more often report having great difficulty or no ability to voice their opinion in their community than men (Figure 2).

30. The overall ICC of ability to bring about change using 1113 households and an average household size of 2.5 is ICC [95% CI] = 0.25 [0.20, 0.29]. This implies that the ability to bring about change in the community is significantly different for individuals within a household. Most men (29%) and women (27%) reported experiencing some difficulty bringing about change in their community (Figure 2). However, 22% of women reported having great difficulty bringing about change in their community compared to 14% of men.

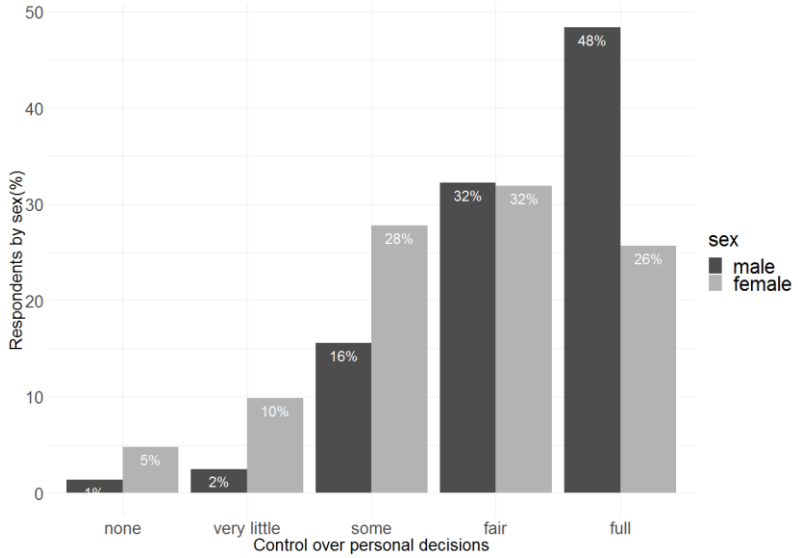

Figure 3 Distribution of respondents by their control over personal decisions disaggregated by sex, Fiji 2015.

31. The overall ICC of control over personal decisions using 1125 households and an average household size of 2.6 is ICC [95% CI] = 0.07 [0.03, 0.11]. This implies that control over personal decisions is significantly different for individuals within a household. Control is highly gendered; 15% of women reported having no or very little control over personal decisions compared to 4% of men and over 80% of men reported having full or a fair amount of control over their personal decisions compared to 58% of women.

IV. Concluding remarks

32. Many commonly used measures of poverty are derived from data collected on households. The assumption that data collected at a household level is an appropriate proxy for every member of that household is inappropriate, particularly when it comes to measuring poverty in all its forms everywhere (SDG Goal 1). This becomes particularly stark when seeking evidence to inform interventions to address women's empowerment. Accurate assessment of the individual experience within multiple sites of power (home, community, society) are needed to understand inhibitors and enablers of empowerment. The results presented in this paper provide a level of evidence to support this statement that would not be possible without individual level data. We have shown that individuals from the same household experience deprivation differently and that addressing gender inequality will benefit from more granular data on within-household disparity and deprivation associated with gendered norms and responsibilities and differences of power.

V. Acknowledgements

33. The original research that developed the IDM was funded by the Australian Research Council (Linkage Grant LP0989385) from 2009-13, hosted by the Australian National University (ANU) and conducted in partnership with the International Women's Development Agency (IWDA), Oxfam GB, Oxfam America, the Philippines Health Social

Science Association and the University of Boulder Colorado, with significant additional support from the University of Oslo.

34. The IDM Global Use Program (2016-2020) is a strategic partnership between ANU, IWDA and the Australian Government through the Department of Foreign Affairs and Trade.

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