



Institute for Health
Metrics and Evaluation

Decomposition Analysis for Adolescent Sexual and Reproductive Health and Rights Exemplars (ASHER)

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ASHER: Background and motivation

- In LMICs, 11.5 million births among adolescents, with an estimated half unintended^{1,2}
- Adolescent pregnancy hinders girls' opportunities for education and employment³
- Adolescents face a higher maternal mortality rate than for older maternal ages and infants from adolescent pregnancies are more likely to be pre-term^{1,4}
- Adolescent Sexual and Reproductive Health and Rights Exemplars (ASHER)
 - Study six countries that out-performed peer countries in reducing adolescent fertility: Ghana, Cameroon, Malawi, Nepal and Rwanda + India (analysis ongoing)
 - How did these countries achieve these reductions?
 - Extensive literature review, key informant interviews and other analysis by in-country partners
 - **Our role: cross-country quantitative analysis**



1. GBD 2019, 2. Sully et al. (2022), 3. Klepinger et al. (1995), 4. Diabelková et al. (2023).

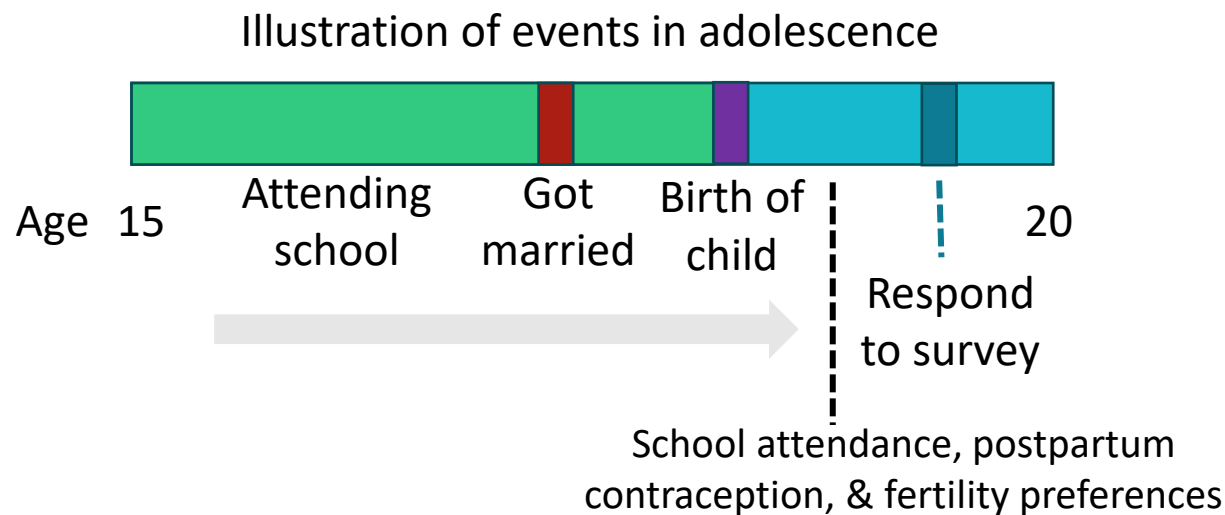
Methodology

- **Primary Outcome:** women 15-19 with a pregnancy, including terminations, miscarriages, and stillbirths,[†] in the 2 years prior to the survey, excluding women with a birth more than 2 years prior
- **Statistical approach:** Oaxaca-Blinder decomposition of difference between endline and baseline
 - Allows us to determine which explanatory factors have the largest impact on declines in the outcome in each country
 - Estimate association between outcome and explanatory factors with linear regression: **coefficients**
 - Calculate change in outcome and explanatory factors between endline and baseline: **change in means**
 - Attribute change in outcome: **coefficients*change in means = attribution**
 - Sensitivity analyses: Sub-populations: sexually active adolescents only, women ages 15-24; alternative estimates of association: pooled regression coefficients, logistic regression coefficients, and cox-proportional hazards model with contraceptive calendar data

[†]This is true except for in Malawi, where the outcome is current pregnancy or birth only and does not include terminations, miscarriages, and stillbirths because MICS is the endline survey. MICS does not capture terminations, miscarriages and stillbirths.

Data & Covariate Selection

- 30 DHS & MICS conducted from 2000-present
- 46 indicators identified from conceptual framework
 - Omit those not available at endline and baseline or only applicable to sub-populations
 - Parsimony: omit covariates not statistically significant in any model
 - Omit covariates due to reverse causality



Country	Data Source	Sample Size Ages 15-19
Cameroon	DHS 2004*	2,684
	MICS 2006	2,016
	DHS 2011	3,589
	MICS 2014	2,120
	DHS 2018-2019*	3,309
Ghana	DHS 2003*	1,148
	MICS 2006	1,218
	DHS 2008	1,025
	MICS 2011	1,899
	DHS 2014	1,625
	MICS 2017-2018	2,927
	DHS 2022-2023*	2,682
Malawi	DHS 2000*	2,867
	DHS 2004-2005	2,392
	MICS 2006	5,124
	DHS 2010	5,005
	MICS 2013-2014	5,152
	DHS 2015-2016	5,263
	MICS 2019-2020*	5,548
Nepal	DHS 2006*	2,437
	MICS 2010	1,511
	DHS 2011	2,753
	MICS 2014	2,721
	DHS 2016-2017	2,598
	DHS 2022*	2,643
Rwanda	DHS 2000*	2,617
	DHS 2005	2,585
	DHS 2010-2011	2,945
	DHS 2014-2015	2,768
	DHS 2019-2020*	3,258

* Indicates baseline or endline survey

Covariates

- Age (years)
- Marital status (0/1 binary)
- Years of education (years)
- Ever had intercourse (0/1 binary)
- Wealth quintile (0/1 binary for each wealth quintile, where 1 is low and 5 is high): score constructed using same assets over time for each country
- “Beating justified”: respondent agreed that there are situations where a husband beating a wife is justified (0/1 binary)
- Unmet need (0/1 binary) OR Pre-partum contraception: any use prior to first pregnancy (0/1 binary)

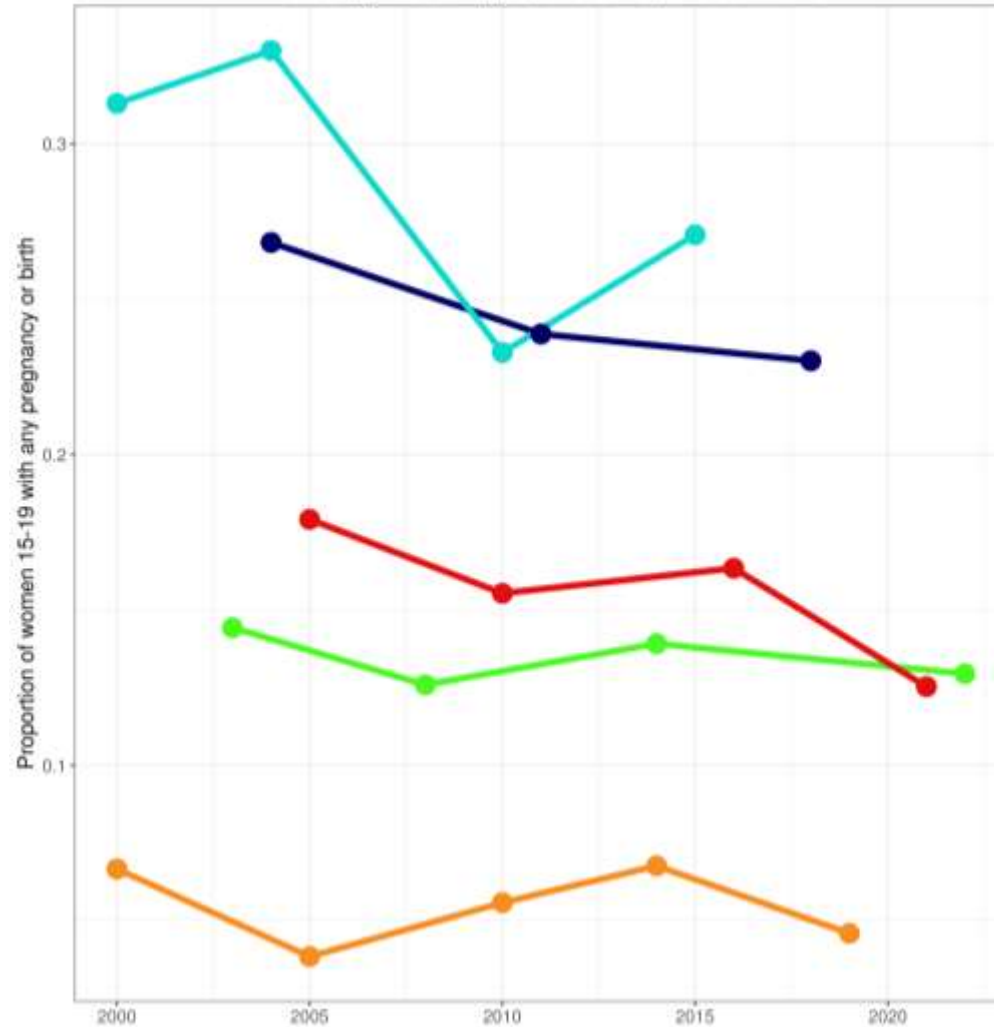
Unmet need: When a women with a need for contraception (based on report of not wanting a child in the next two years, being fecund, and sexual activity if unmarried) is not using any source of contraception.

Wealth quintile: calculated based on an asset-based wealth score with the same assets and quintiles used in all survey years.

Declines in the proportion of women 15-19 with any pregnancy or birth in the two years prior to the survey in all countries

Includes terminations, miscarriages and stillbirths

Change in proportion of women 15-19 with any pregnancy or birth over time, including miscarriages, abortions, and stillbirths



- DHS
- ▲ MICS
- Cameroon
- Ghana
- Malawi
- Nepal
- Rwanda

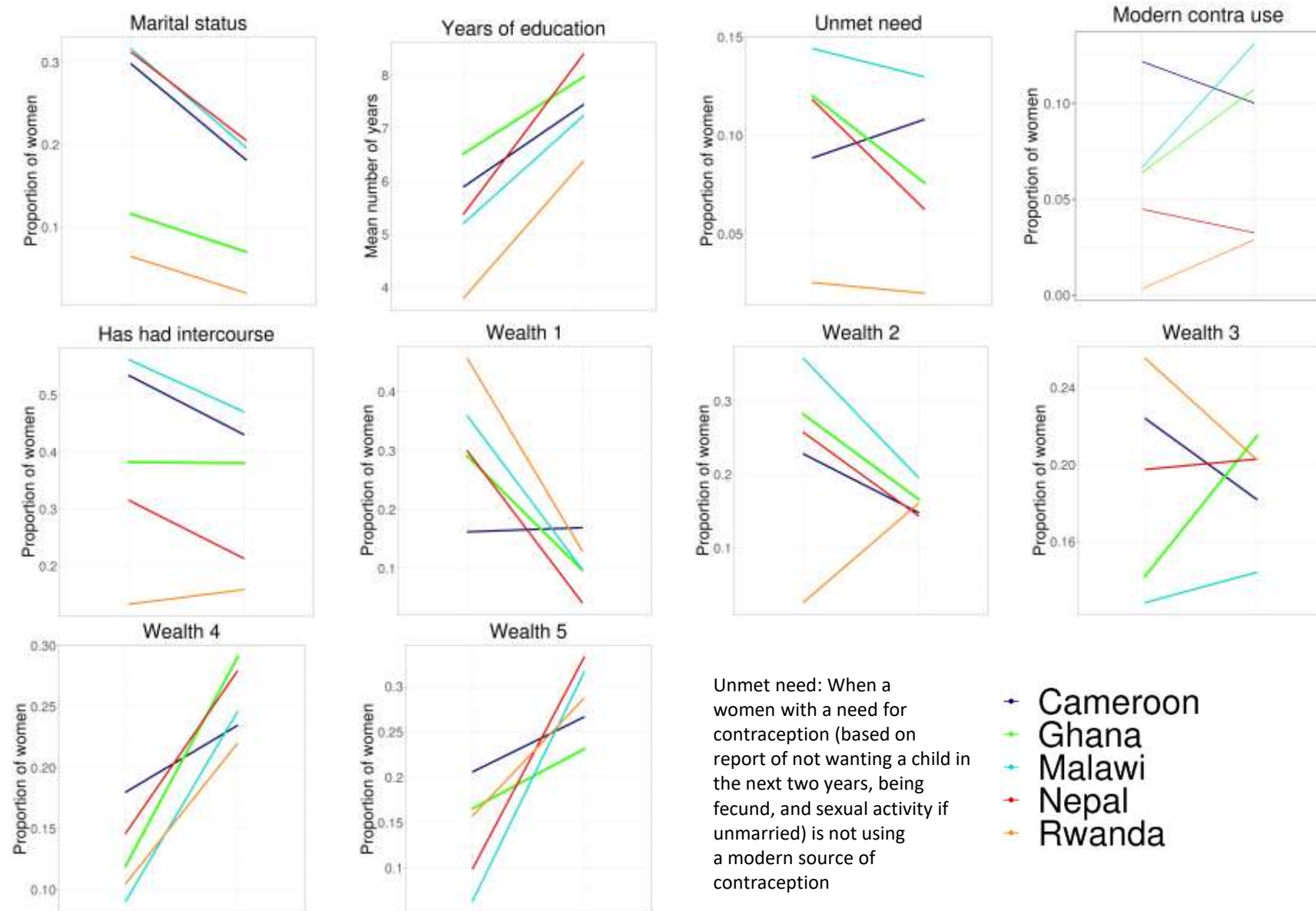
Endline vs. Baseline: Decreases in adolescent marriage and increases in educational attainment in all countries

Marriage and education trends consistent across countries:

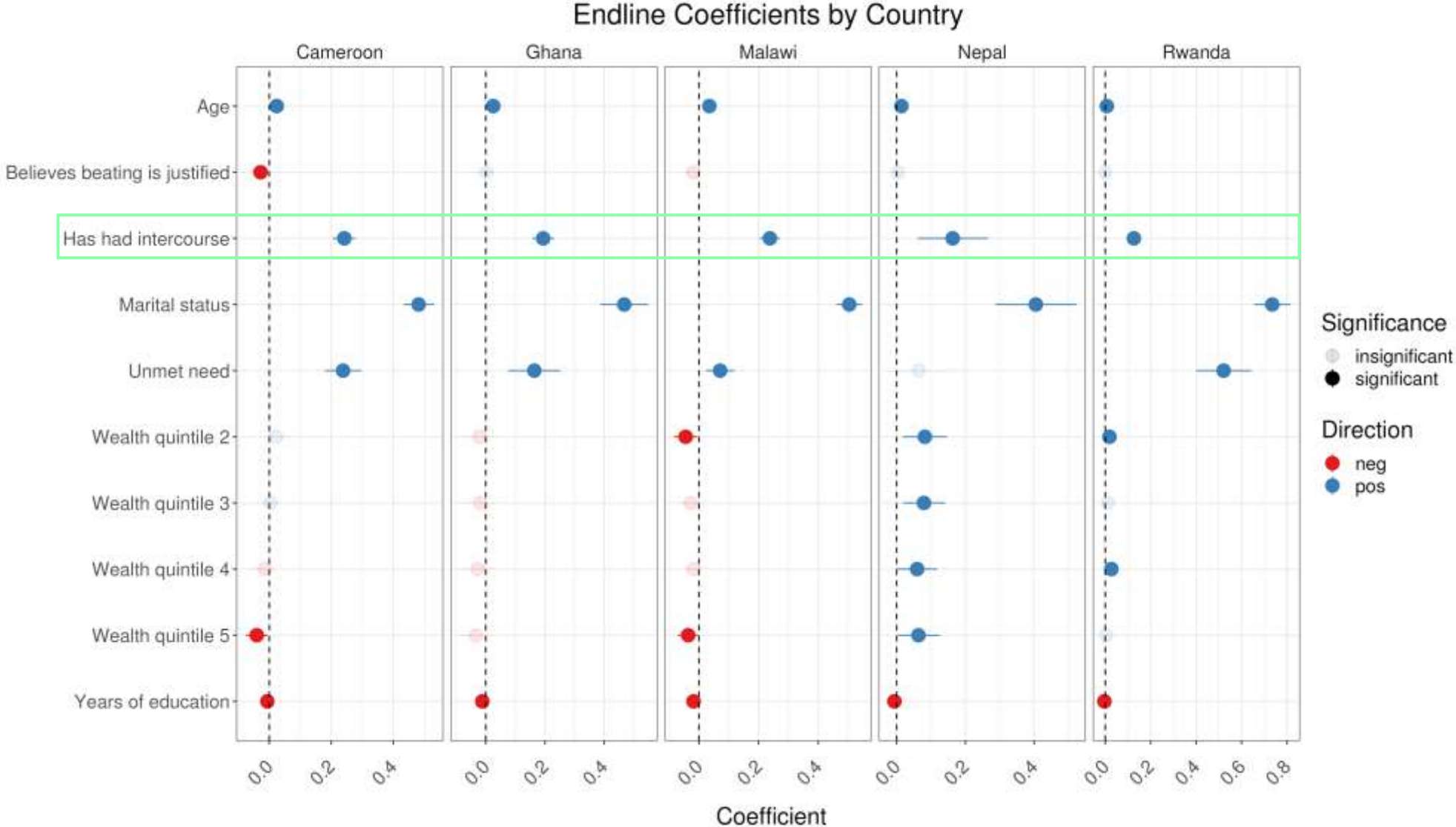
- Decreases in adolescent marriage in all countries, but smaller declines where already low
- Major gains in educational attainment in all countries

Divergence in other measures:

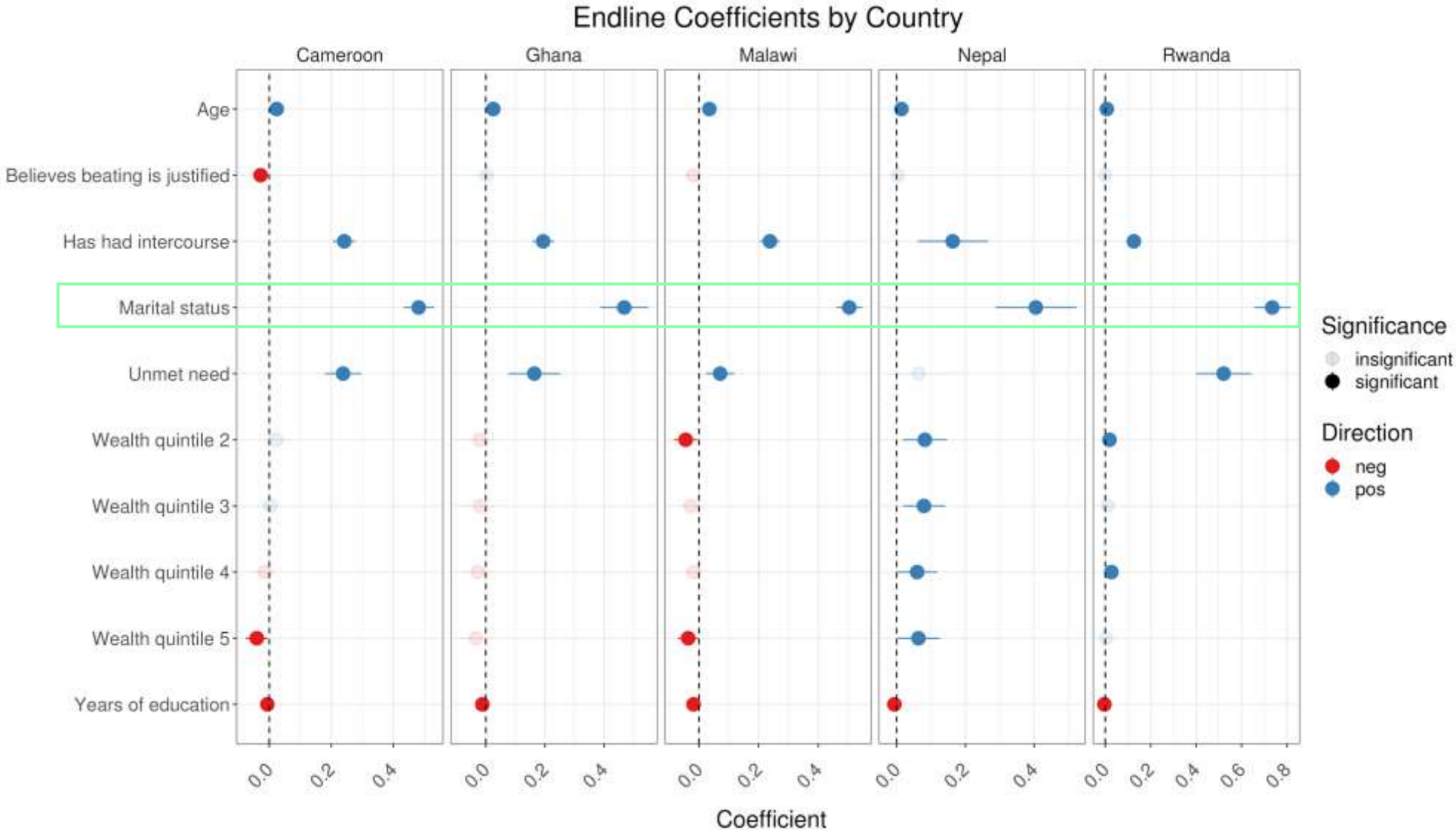
- Fewer adolescents having intercourse in Cameroon, Malawi and Nepal
- Sexual activity does not universally track marriage rates



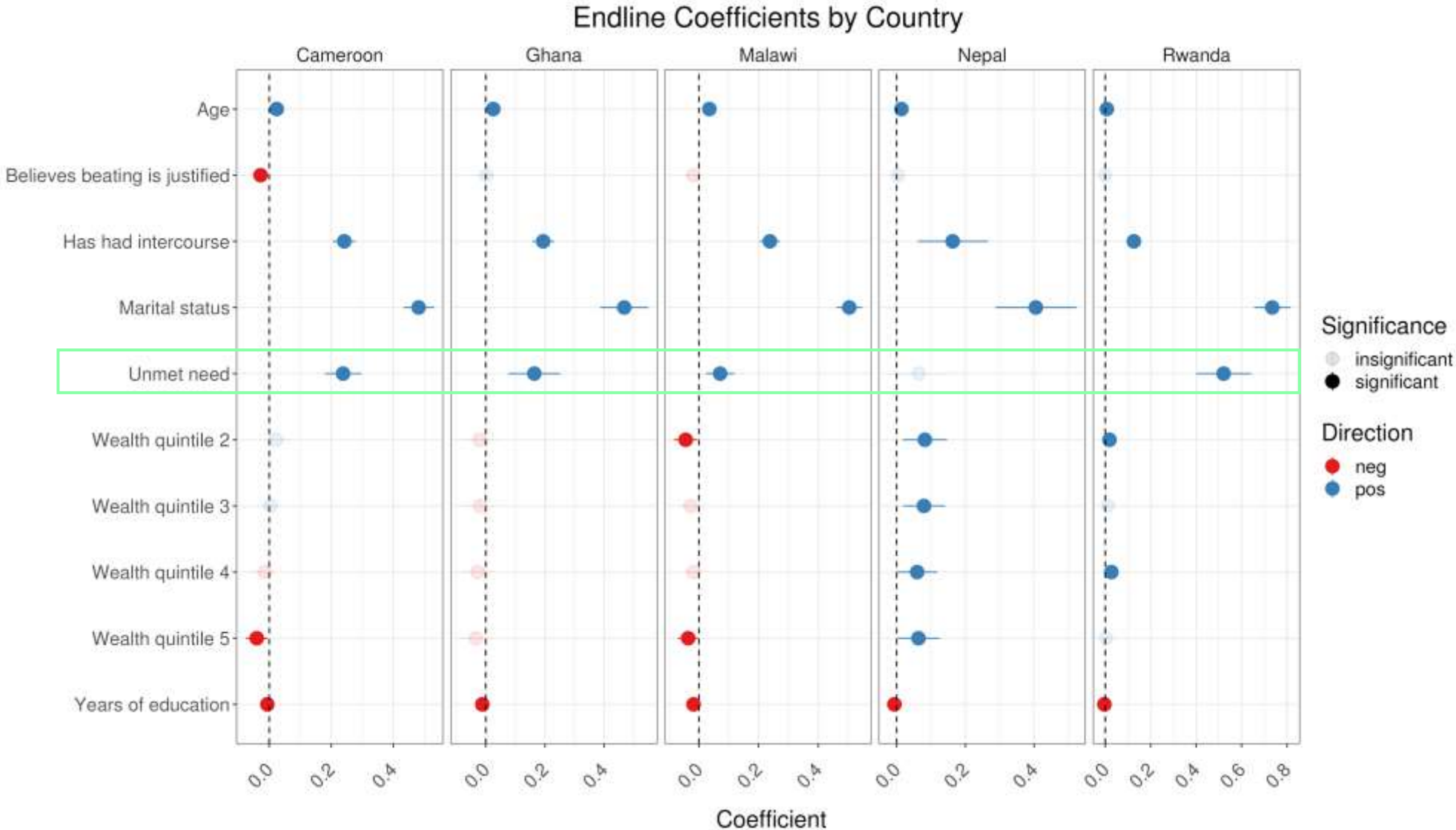
Endline coefficients with unmet need



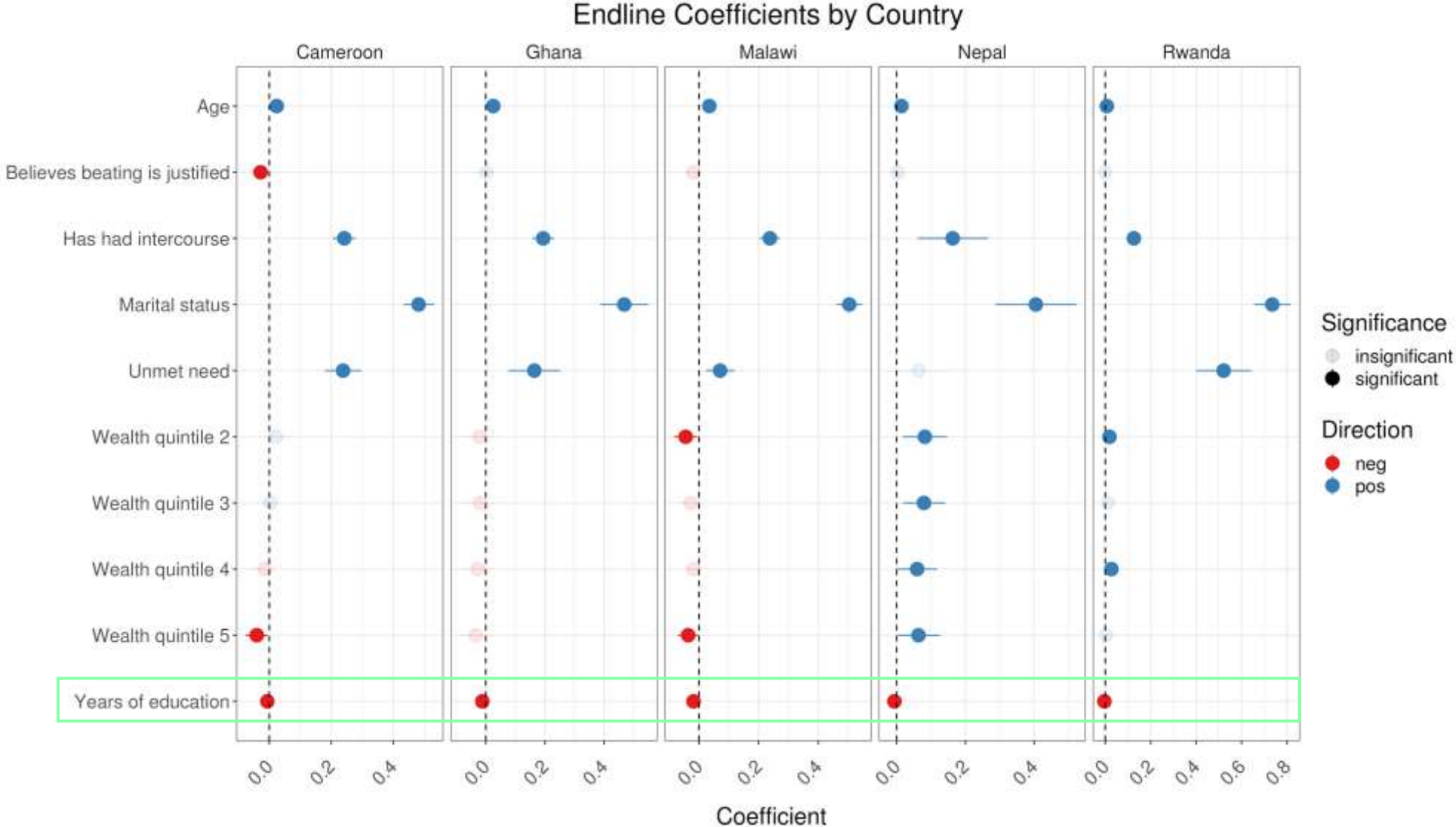
Endline coefficients with unmet need



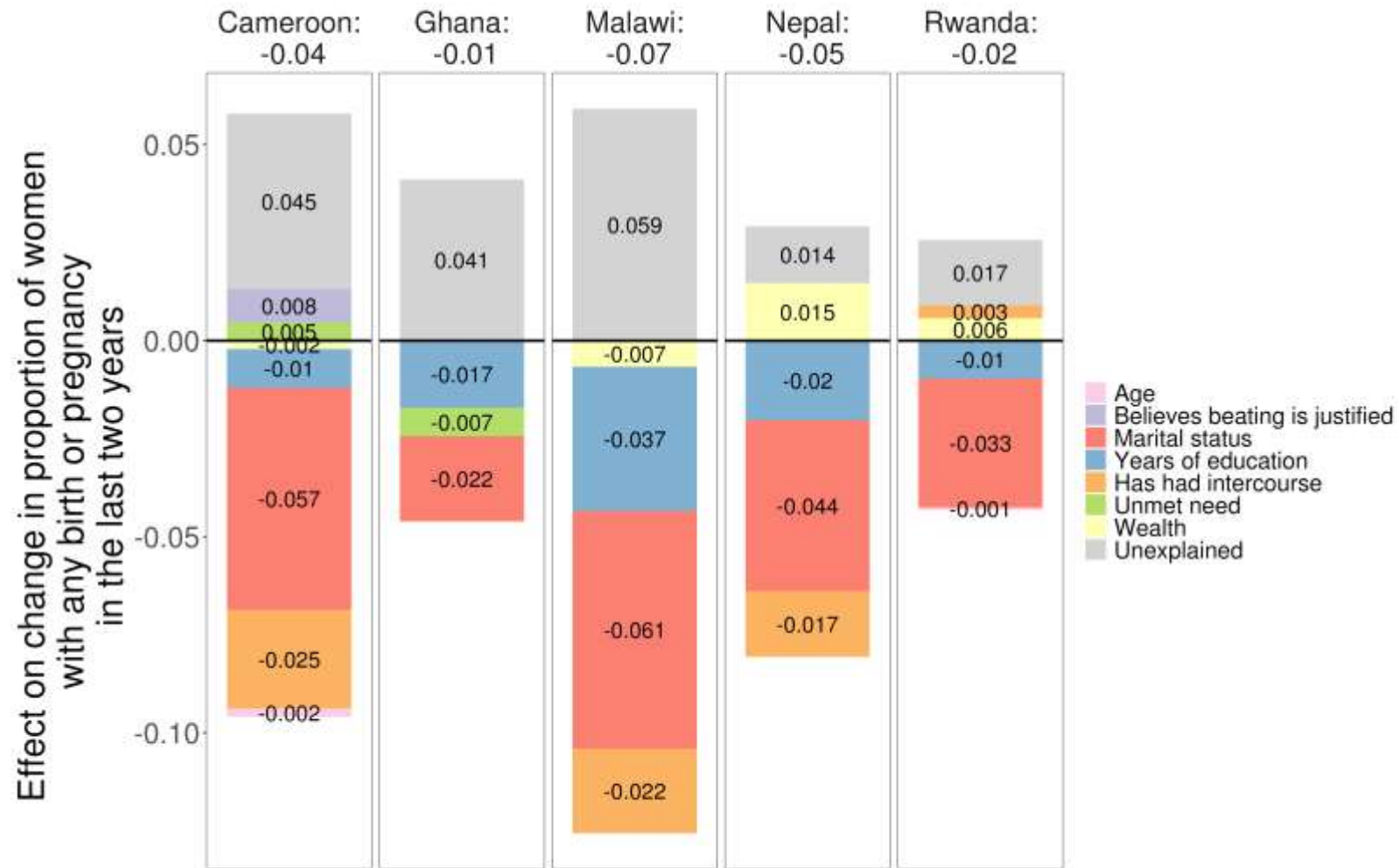
Endline coefficients with unmet need



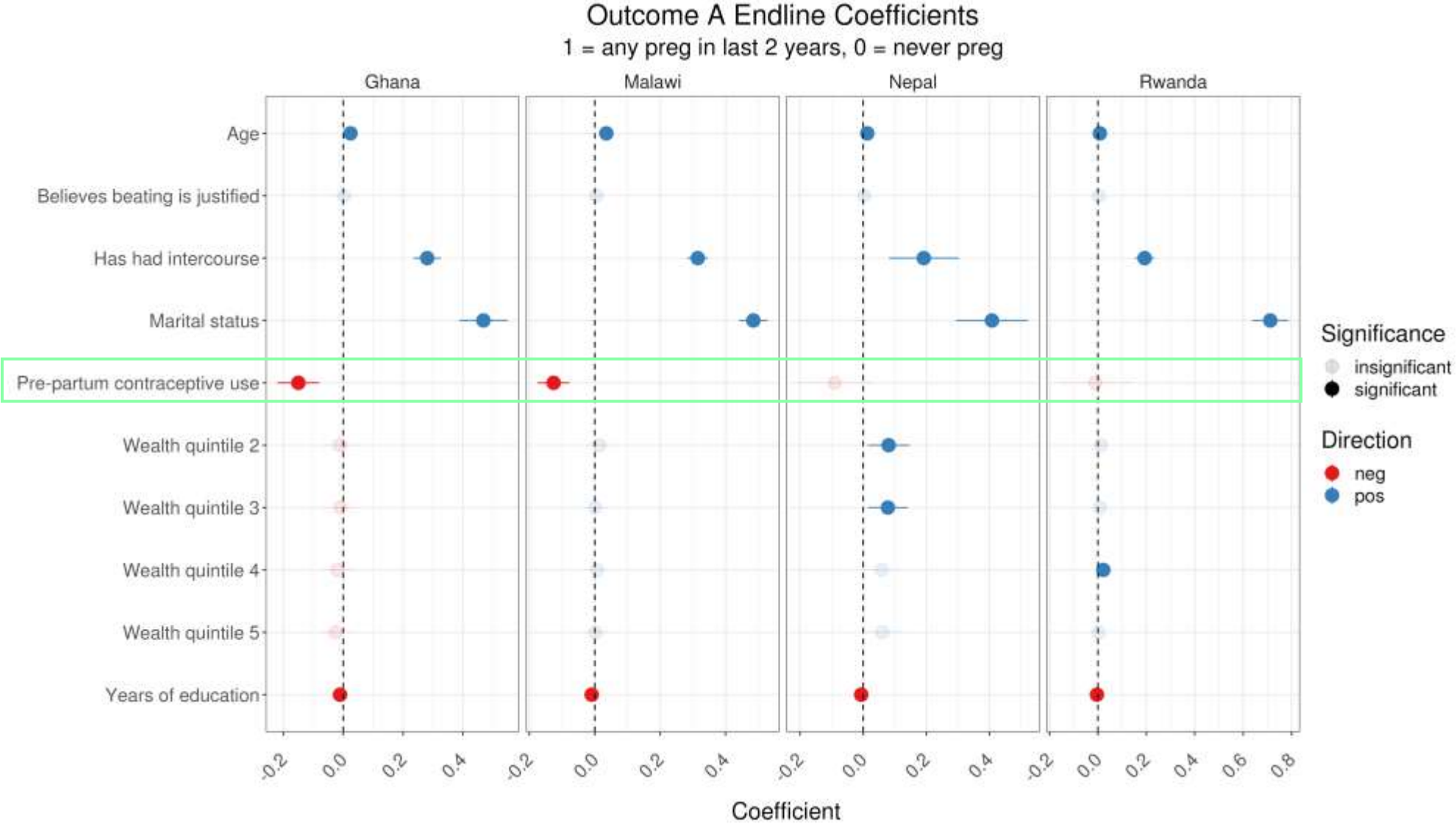
Endline coefficients with unmet need



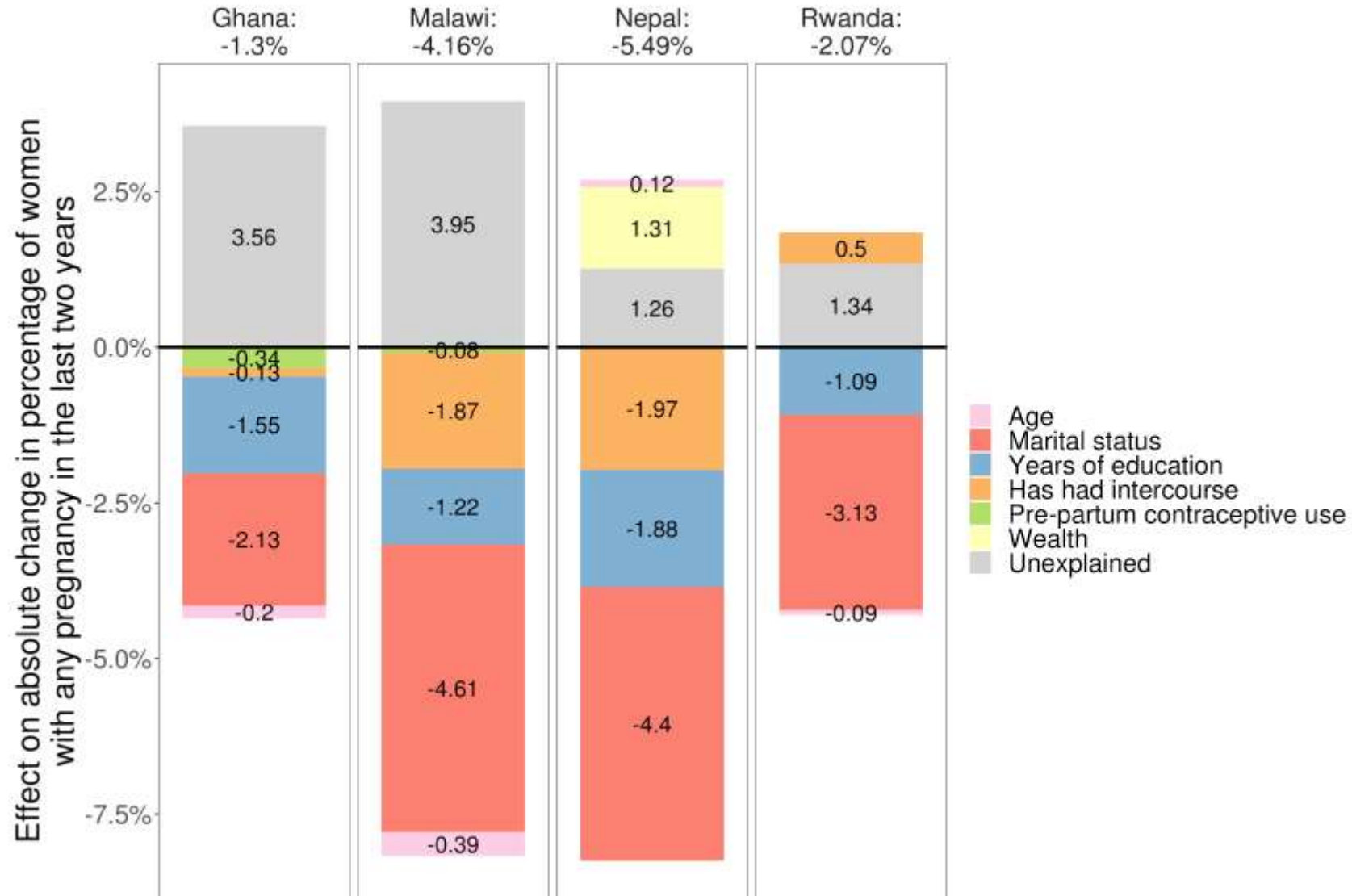
Oaxaca-Blinder results with unmet need



Endline coefficients with pre-partum contraception



Oaxaca-Blinder results with pre-partum contraception

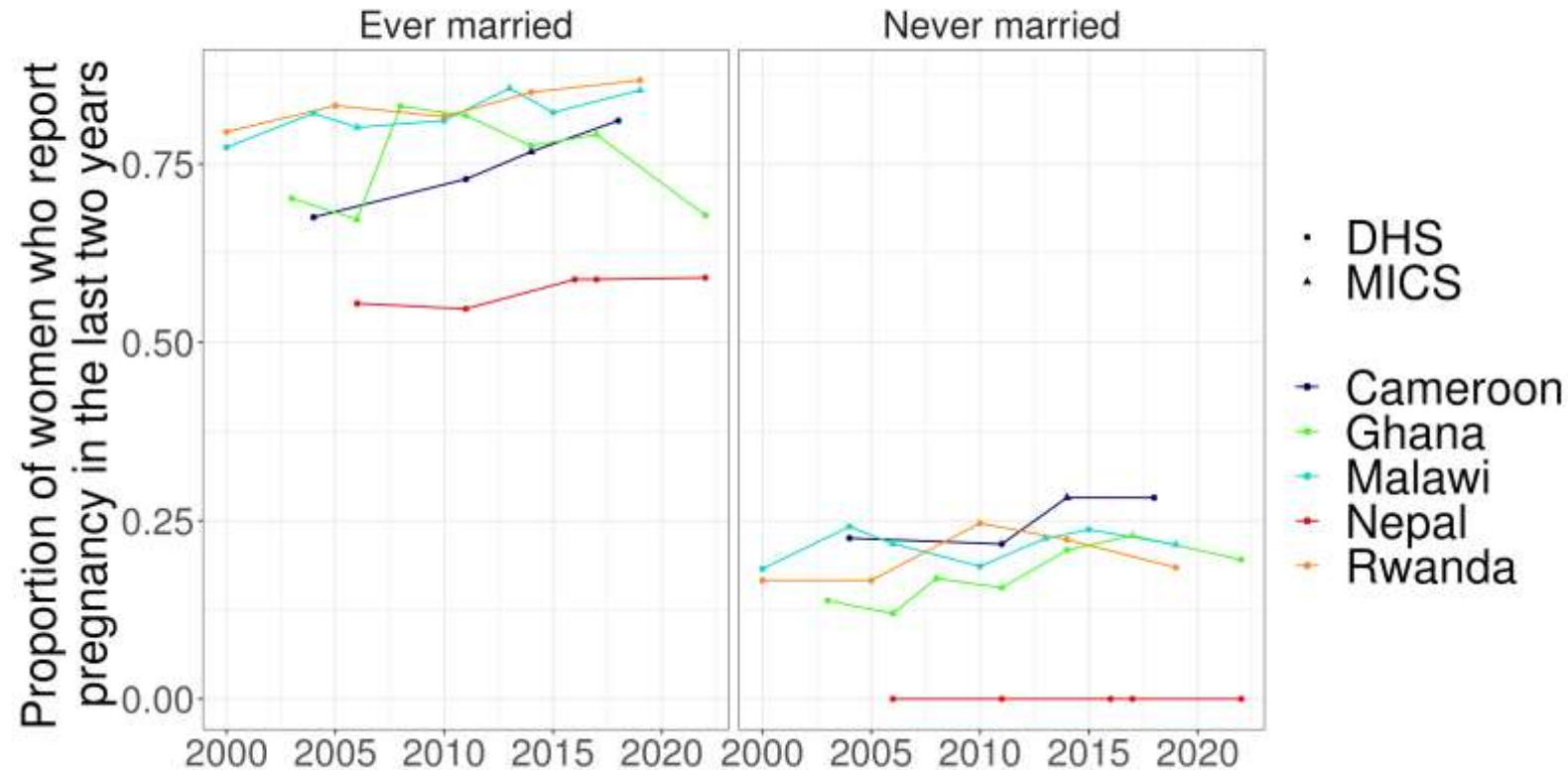


Sensitivity analyses

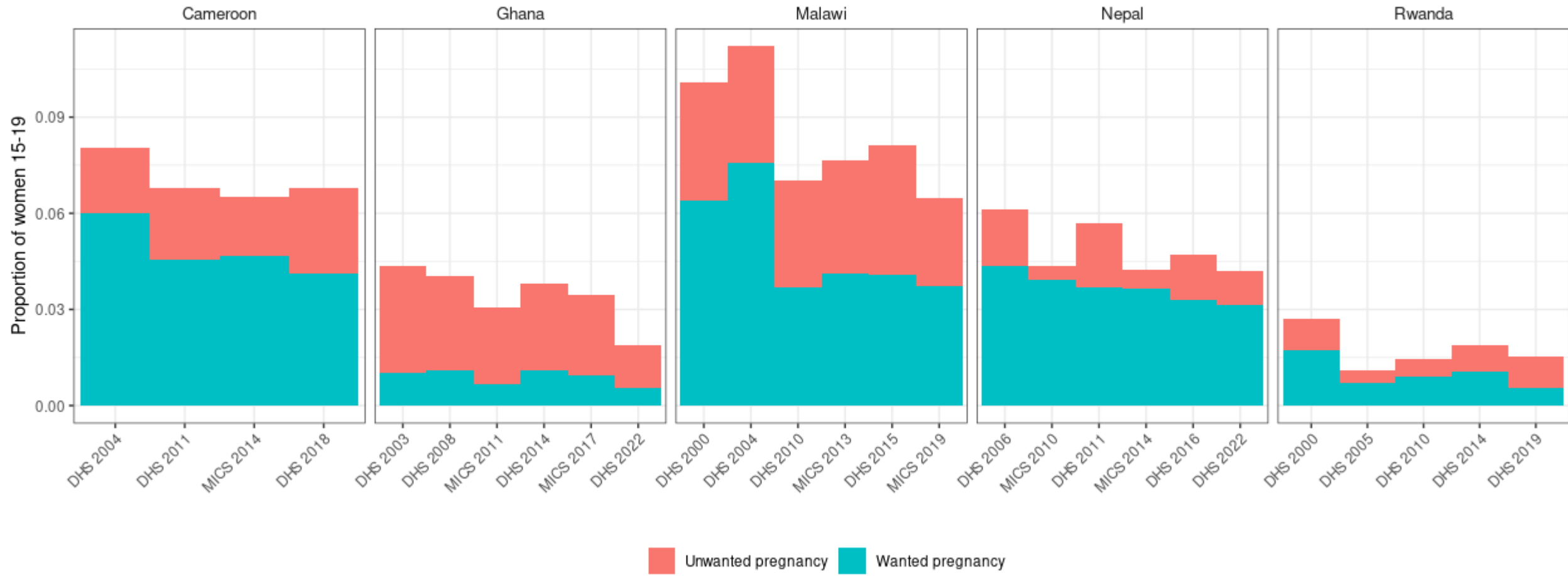
- Main analysis: marital status largest factor in all countries
- Secondary analysis of sexually active adolescents only: marital status largest factor in 4 of 5 countries
 - Results differ in Nepal, where little sexual activity reported outside of marriage
- Marital status also dominates when using pooled and logistic regression coefficients and expanding to the 15-24 age group
- Cox proportional hazards model:
 - Sexual activity, rather than marital status, largest factor
 - Secondary outcome emphasizes marital status
 - Emphasizes the importance of long-acting over short-acting contraceptives in preventing pregnancy

Increases in pregnancy rate among partnered adolescents in most countries – shifts in marital status play an important role

Change in pregnancy in the last two years among those sexually active, by marital status



Wanted-ness of current pregnancy



Limitations

- Reverse causality remains an issue because all interviews took place after events occurred
- More broadly: this analysis is not causal and omitted variable bias is an important issue
 - Analyzing cohorts with repeated cross-sectional data could provide additional insights on fertility preferences and life events shaping adolescence at the individual level
- Having matched comparator countries that did not achieve reductions in adolescent pregnancy could also provide important insights about differences at the national level

How select? Major expansion in investment as well

Reductions in pregnancy linked to key policies

- **Marriage:** Legal age of marriage was raised during this period in 4 of 5 countries (Cameroon [2016], Malawi [2015], Nepal [2017], and Rwanda[2016])
 - A policy shown to substantially reduce adolescent pregnancy when well enforced¹
- **Education:** Cameroon made primary education free and compulsory in 2000 and received extensive development assistance for education
 - Programs in other countries focused on preventing drop out among vulnerable girls^{2,3,4,5}
- **Contraception / Health care:** Investments in family planning service delivery
 - Increase in uptake of long-acting modern contraception⁶
 - Distribution of contraceptives through community health workers⁷
 - Awareness of family planning programs through mass media⁸
- ASHER program continues to investigate youth friendly services, comprehensive sex education and other interventions relevant to reductions in adolescent pregnancy in exemplar countries

Thank you

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