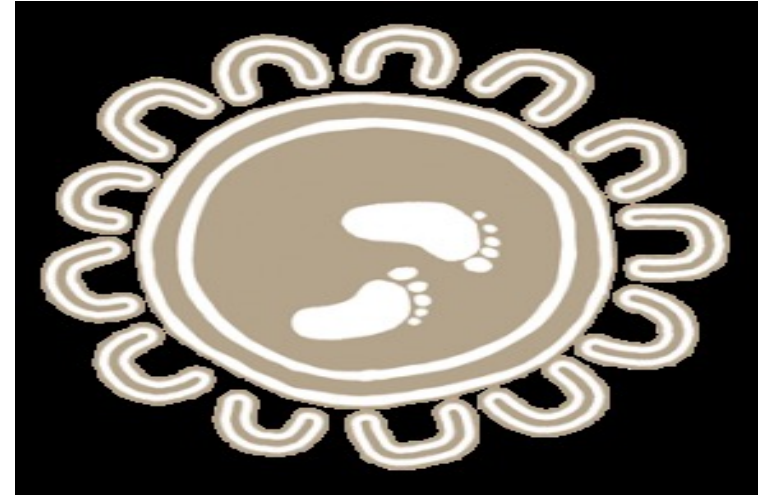




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I respectfully acknowledge the Wurundjeri People of the Kulin Nation, and their Elders past and present, who are the Traditional Owners of lands across Australia, their Elders, Ancestors, cultures and heritage.





Utilization of Maternal Healthcare Services Among Women in 33 Low-and Middle-Income Countries: A Pooled Analysis of 2015-2022 Demographic and Health Survey Data

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Outline

- **Background**
- **Objectives**
- **Methods**
- **Results and findings**
 - **Prevalence of MHS (Mapping)**
 - **Distribution of sociodemographic factors with respect to MHS**
 - **Complex survey adjusted logistic regression model fittings**
- **Conclusion and recommendations**
- **References**

Background



- ❖ Maternal mortality is a significant global public health challenge, especially in low- and middle-income countries (LMICs)
- ❖ Maternal death declined by 34 percent between 2000 and 2020
- ❖ Worldwide, in 2020, nearly one maternal death occurred in every two minutes.
- ❖ Almost 95% of all maternal deaths occurred in LMICs especially in SSA and SA.
- ❖ 75% of maternal deaths are related to direct obstetric causes and occur during or shortly after birth
- ❖ MHS has been demonstrated to lower maternal mortality and morbidity rates
- ❖ The prioritization of maternal healthcare is given to the Sustainable Development Goal (SDG)

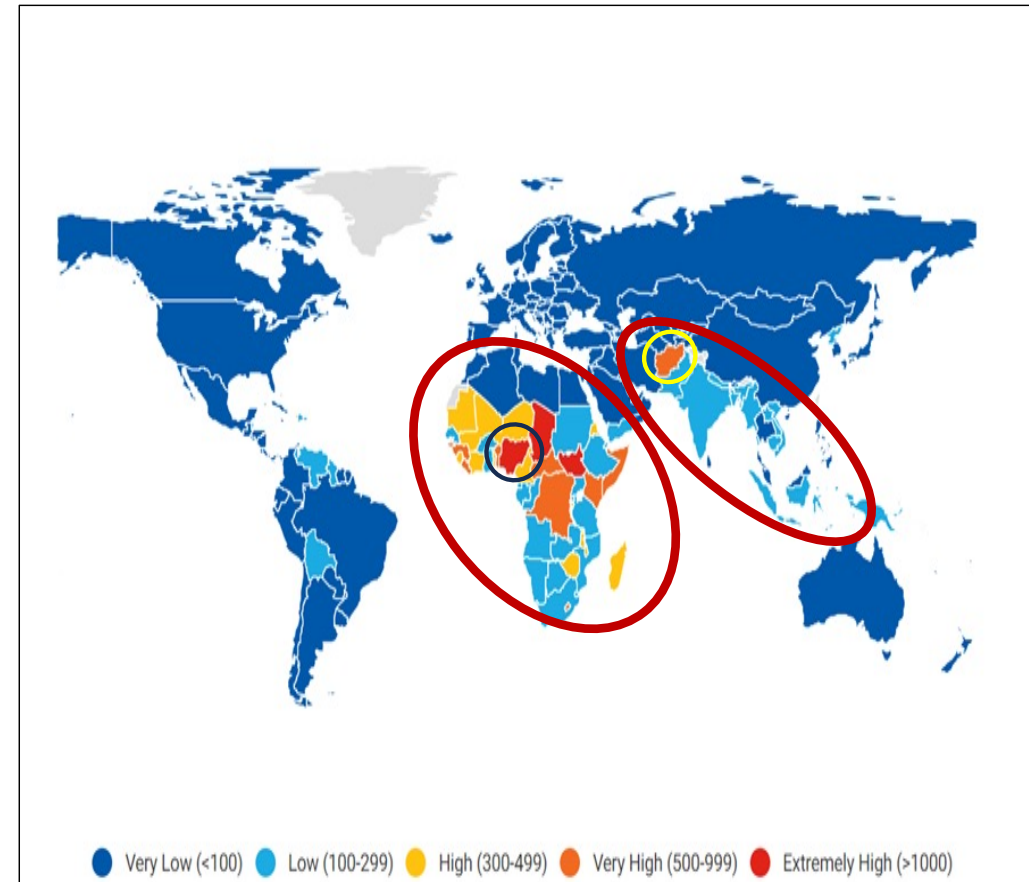
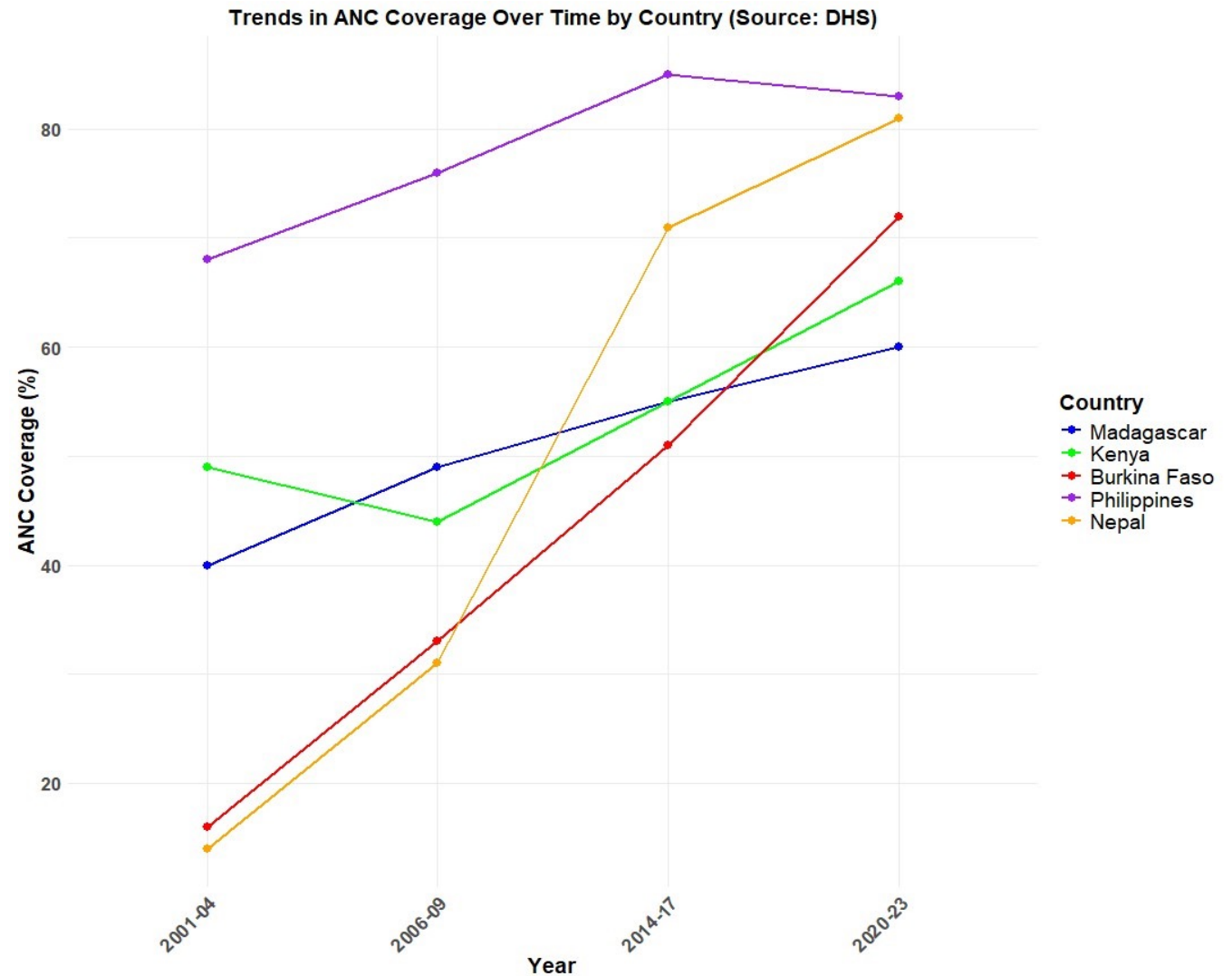


Figure: Global distributions of maternal mortality ratio (MMR), Source: World Health Organization, UNICEF, United Nations Population Fund and The World Bank, *Trends in Maternal Mortality: 2000 to 2020* WHO, Geneva, 2023

Background (Conti....)



- ❖ MHSs are not widely accessible for women in many LMICs
- ❖ The pace of MHS coverage and trend of utilization are different for different LMICs
- ❖ A comprehensive analysis across multiple MHS indicators on LMICs from multiple regions is lacking.



Objectives



- To determine the prevalence of women's access to MHS in the selected LMICs and assess the magnitude of the differences among countries in the utilization of MHS.
- To investigate the associated sociodemographic factors on the utilization of MHS in LMICs.

Methods



- **Data Source and study design**

- Latest standardized cross-sectional Demographic and Health Surveys (DHSs) between 2015 and 2022 from 33 LMICs.

- **Study variables:**

- Outcome variables: ANC, SBA, ID and PNC
- Explanatory variables: Sociodemographic variables such as the age of mothers, education, wealth index of household, respondent's decision-making power etc.

- **Statistical Analysis:**

- Estimate the percentage of MHS utilization and map them to visualize country-wise differences.
- Unweighted distribution between sociodemographic factors and the utilization of MHS was assessed.
- Adjusted logistic regression models were fitted for each outcome variable separately.
- The results were reported based on odds ratio (OR) with 95% confidence intervals (CI).

Results and findings



➤ The average prevalence of ANC was 58.9% (SD=16.5%) for the selected 33 LMICs.

▪ The lowest prevalence of ANC (16.6%) was observed in Afghanistan

▪ Indonesia exhibited the highest prevalence of ANC (88.8%).

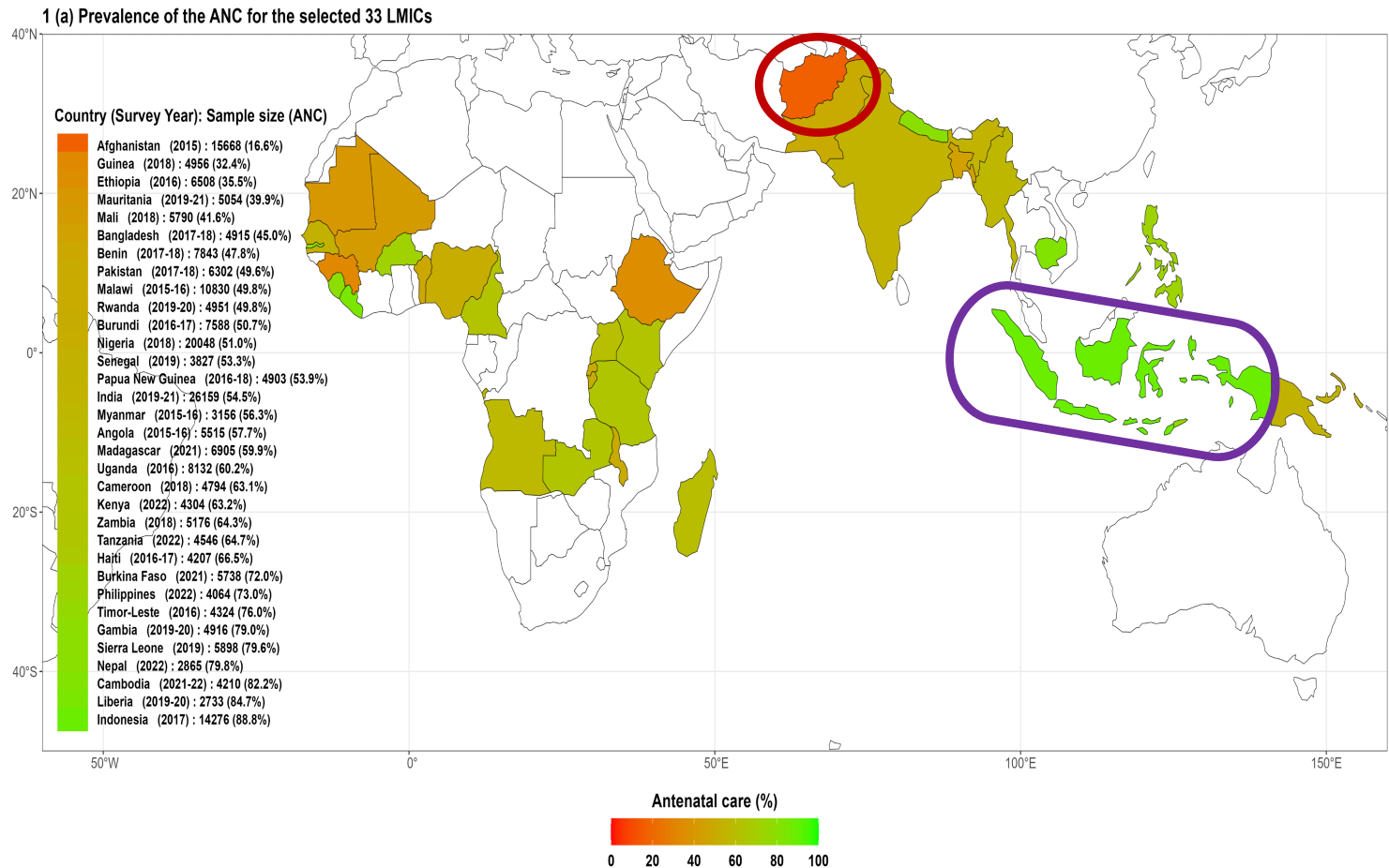


Figure: Prevalence of ANC in the selected 33 LMICs (countries are displayed by the lowest to highest coverage of ANC).

Results and findings



- The average prevalence of SBA was 70.0% (SD=17.8%) for the selected 33 LMICs.
- The lowest prevalence of SBA (32.4%) was observed in Ethiopia
- Cambodia exhibited the highest prevalence of SBA (97.6%)

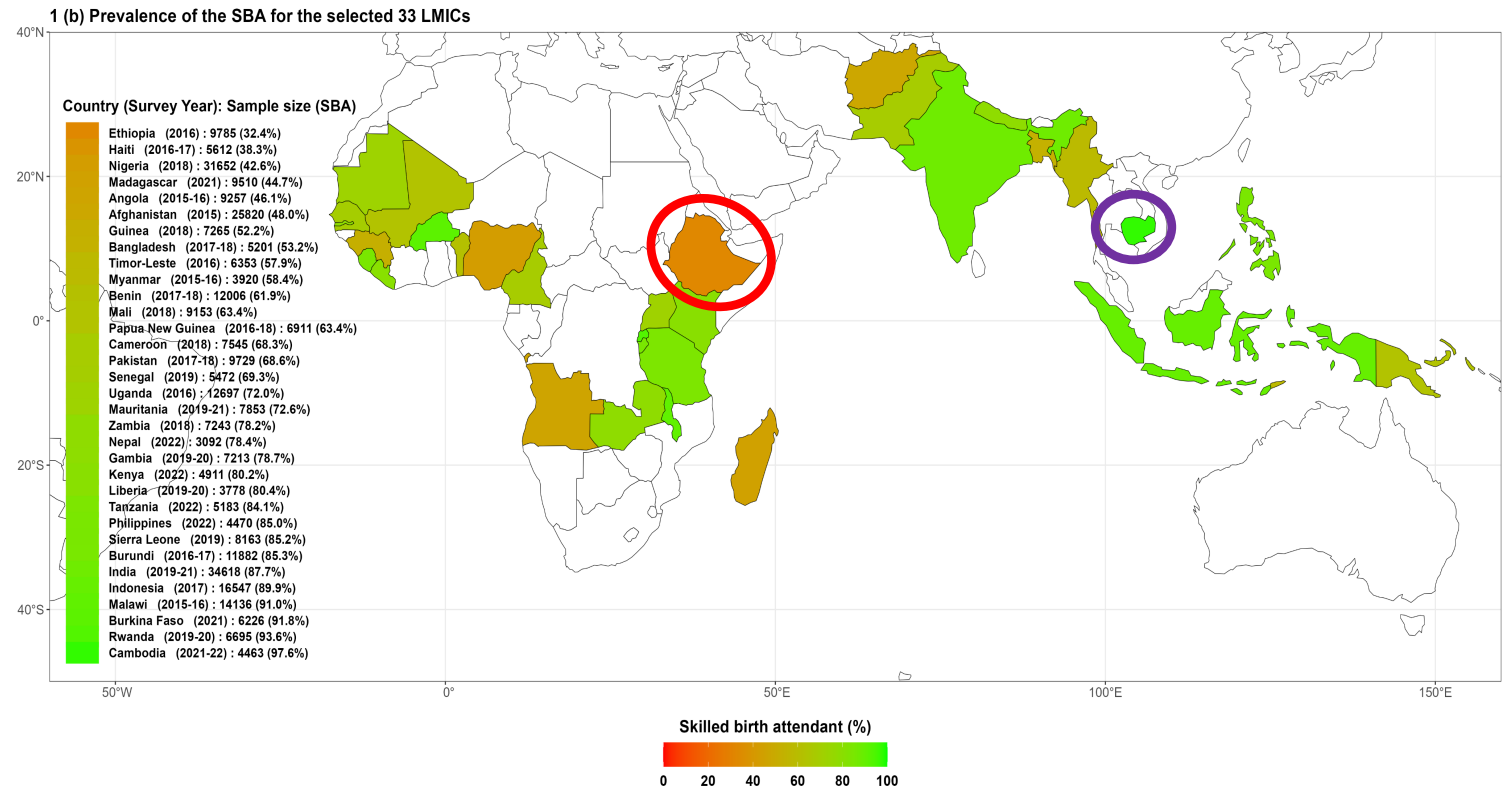


Figure: Prevalence of SBA in the selected 33 LMICs (countries are displayed by the lowest to highest coverage of SBA).

Results and findings



- The average prevalence of ID was 66.9% (SD=19.7%) for the selected 33 LMICs.
- The lowest prevalence of ID (30.1%) was observed in Ethiopia
- Cambodia exhibited the highest prevalence of ID (95.2%)

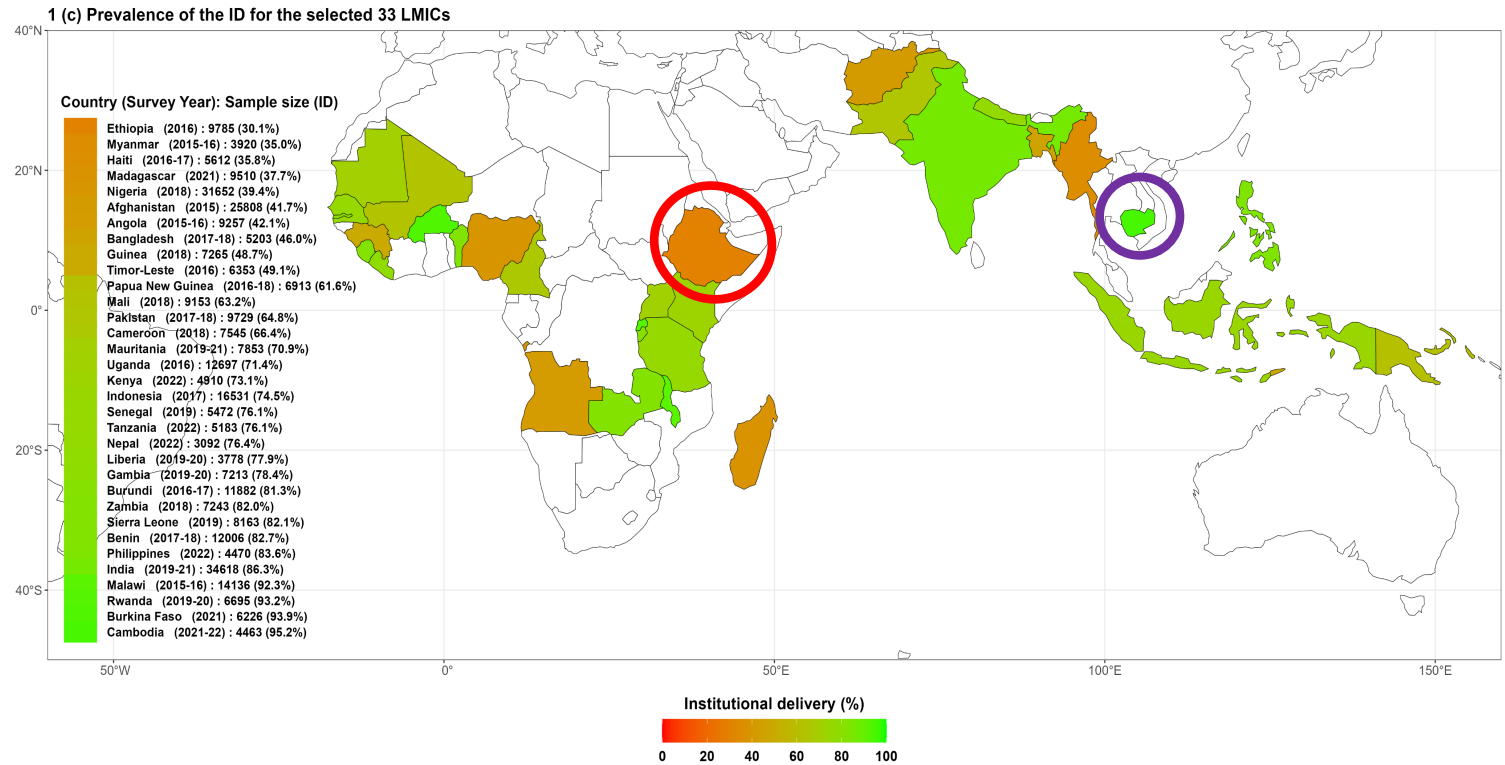


Figure: Prevalence of ID in the selected 33 LMICs (countries are displayed by the lowest to highest coverage of ID).



Results and findings

- The average prevalence of PNC was 53.8% (SD=18.1%) for the selected 33 LMICs.
- The lowest prevalence of PNC (18.3%) was observed in Angola
- Indonesia exhibited the highest prevalence of PNC (83.0%)

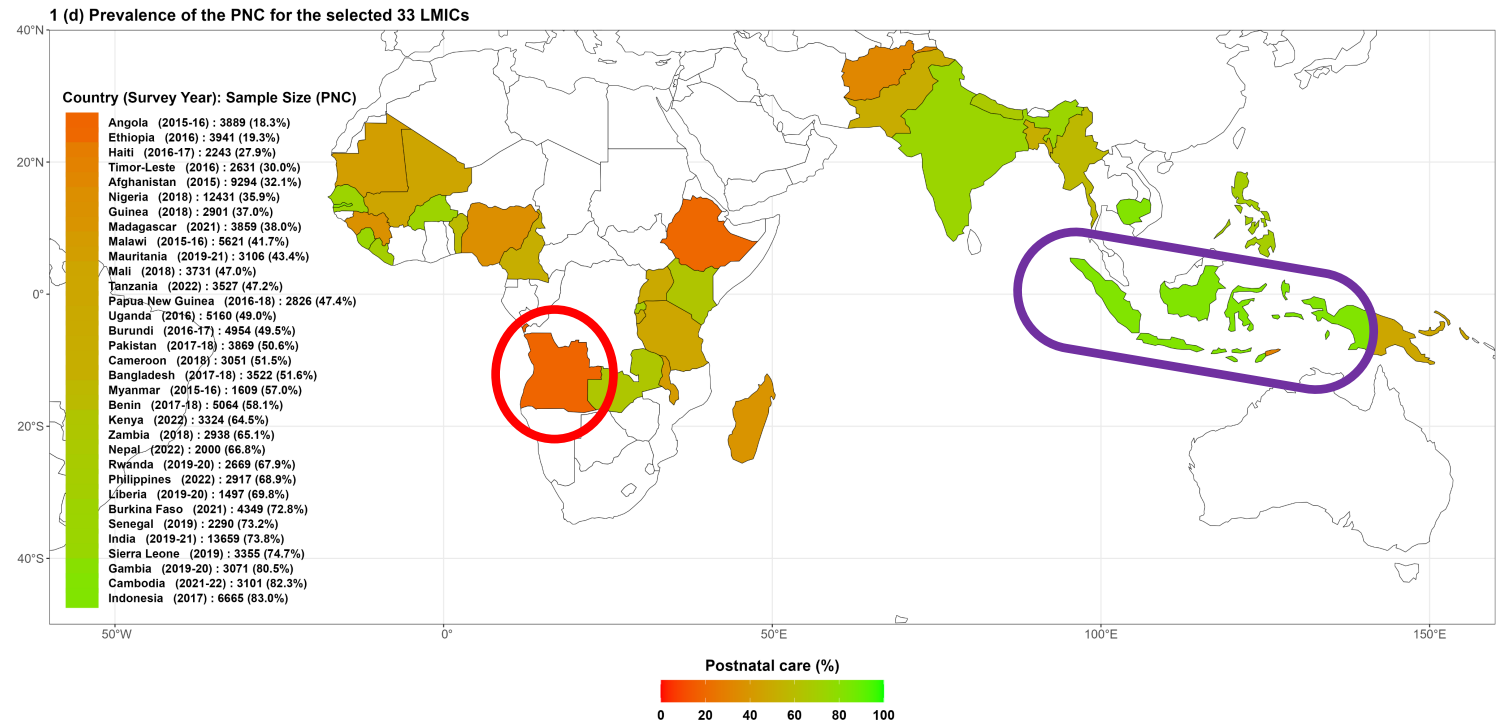


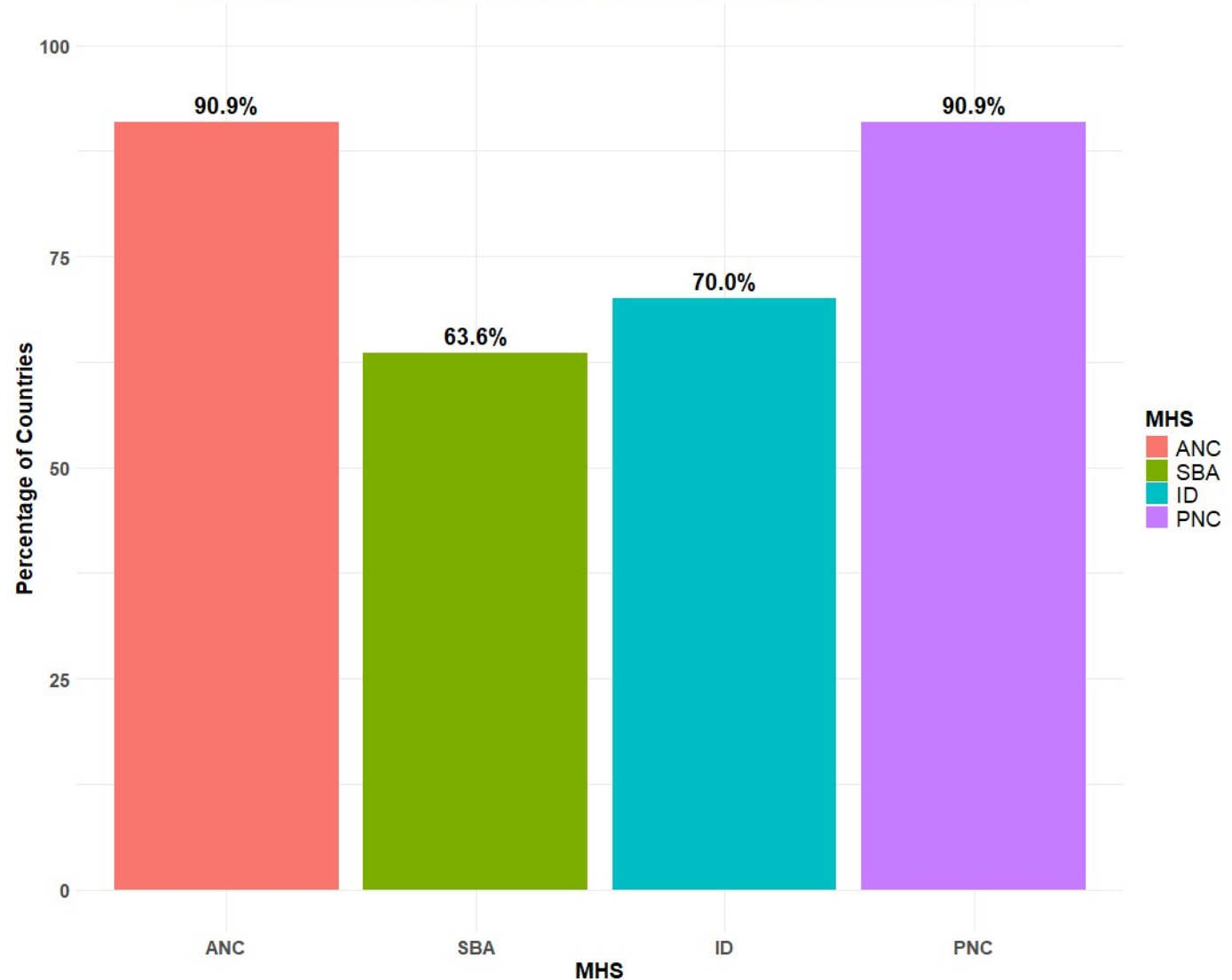
Figure: Prevalence of PNC in the selected 33 LMICs, (countries are displayed by the lowest to highest coverage of PNC)

Results and findings



LMICs Desired MHS coverage standard to meet the SDG target's 80% health service coverage by 2030.

Percentage of the selected LMICs for which MHS coverage less than 80 percent



Results and findings



Distribution (unweighted) of sociodemographic characteristics of women across MHS:

- Pooled samples comprised 231,101 women for ANC, 324,361 for SBA, 324,336 for ID, and 139,064 for PNC.
- Of the women who utilize MHS (including ANC, SBA, ID, and PNC), an average of 64.9% (SD = 3.3%) were aged over 25 years.
- On average 81.1% (SD = 3.6%) of women who did not utilize MHS resided in rural areas.

Results and findings

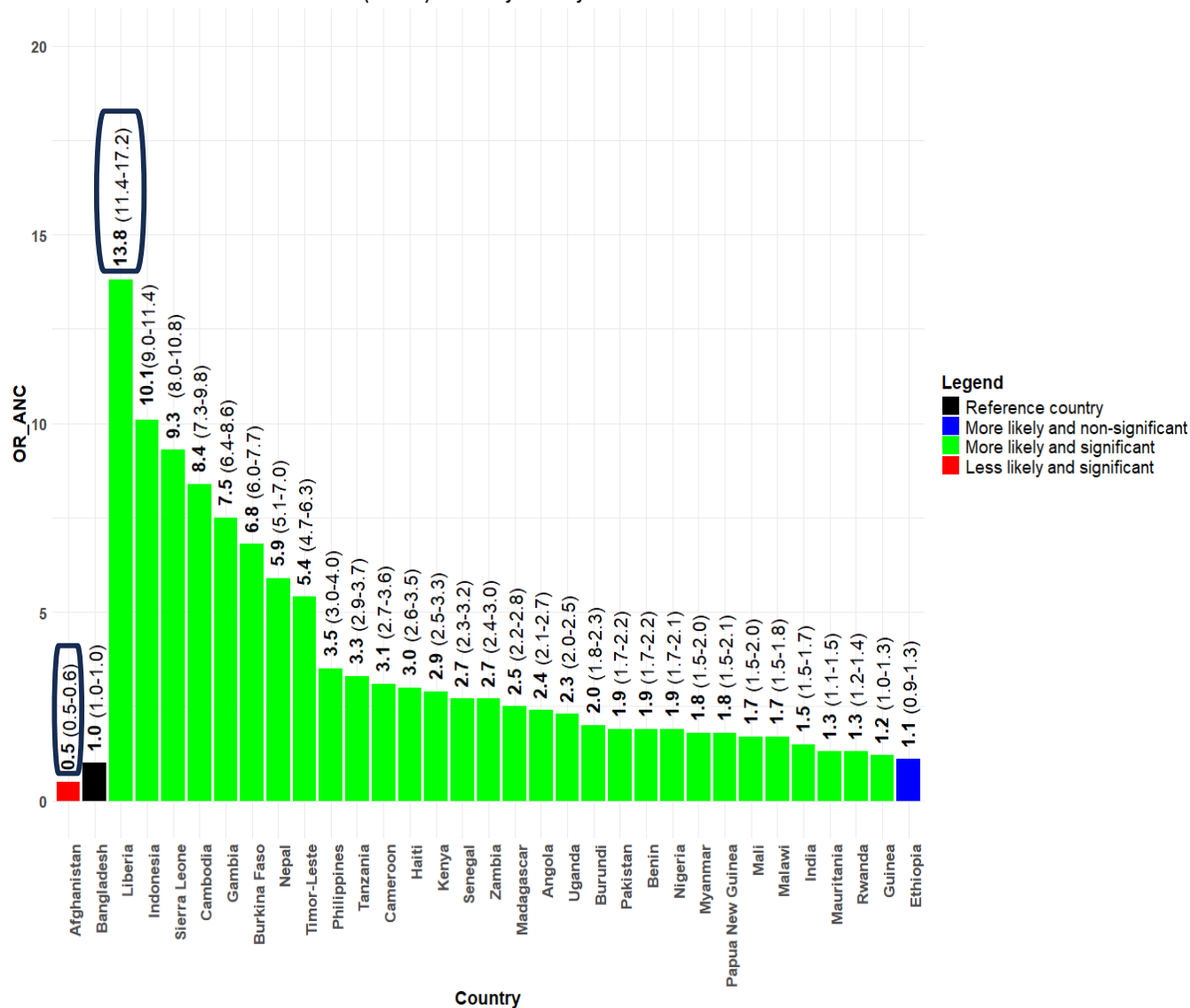


Adjusted logistic regression model fittings

Considering Bangladesh as a reference country,

- Women of 30 LMICs, apart from Afghanistan and Ethiopia, were more likely to receive at least four ANC visits by medically trained providers compared to Bangladesh.
- For instance, the women of Liberia were about 14.0 times more likely to utilize ANC (AOR=13.8; 95% CI: 11.4, 17.2) than Bangladesh.
- Conversely, compared to Bangladesh, women in Afghanistan were 50.0% less likely to utilize ANC (AOR= 0.5; 95% CI: 0.5, 0.6).

Odds Ratio (95% CI) Values by Country for ANC Model



Legend

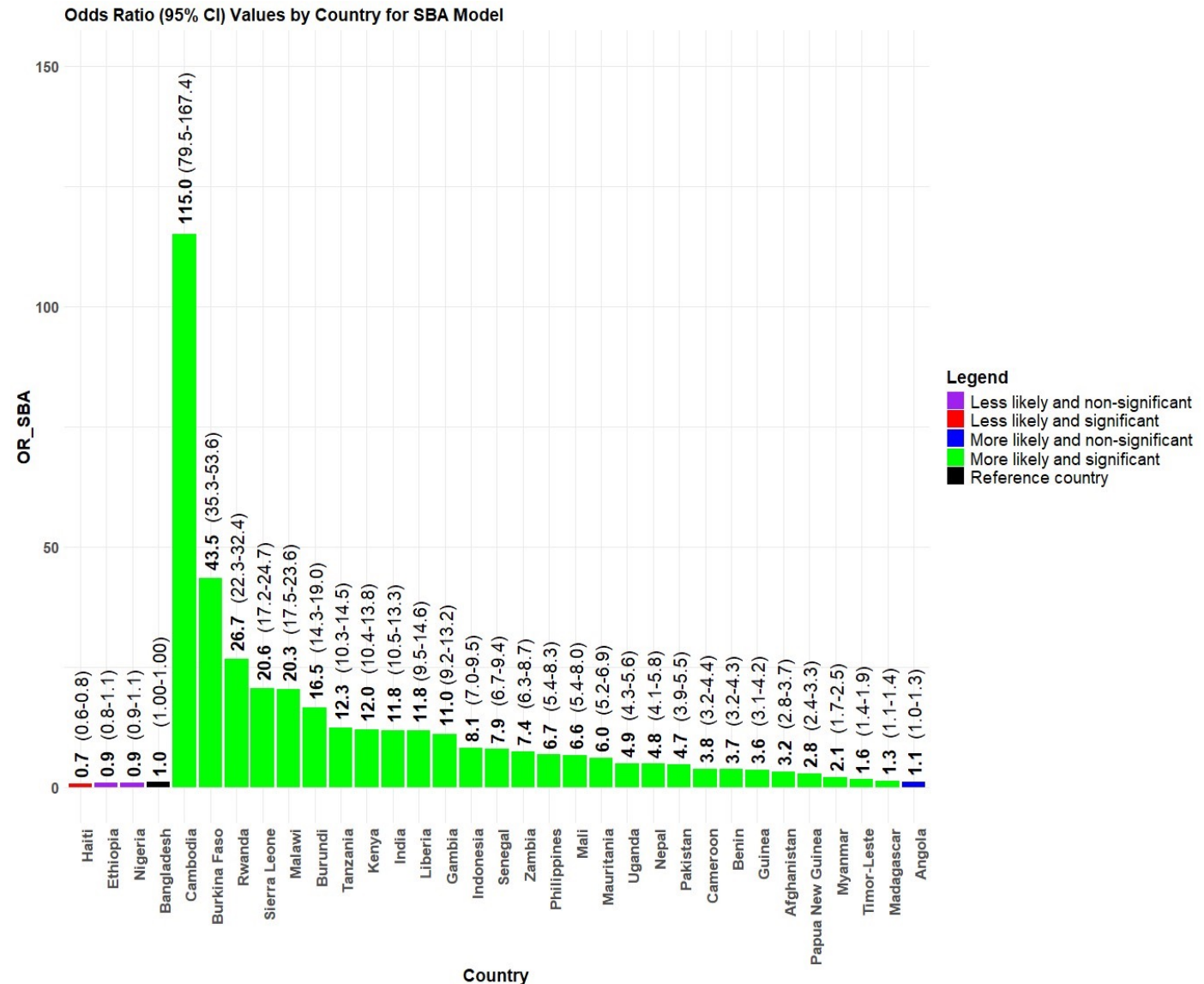
- Reference country
- More likely and non-significant
- More likely and significant
- Less likely and significant

Results and findings



Adjusted logistic regression model fittings

- Women in 29 LMICs, apart from Ethiopia, Haiti, and Nigeria, were more likely to utilize SBA compared to women in Bangladesh.
- For instance, the women of India were 11.8 (AOR=11.83; 95% CI;10.5, 13.3) times more likely to utilize SBA than in Bangladesh.
- Conversely, women in Haiti were 30.0% (AOR=0.7; 95% CI; 0.6, 0.8) less likely to utilize SBA than in Bangladesh.

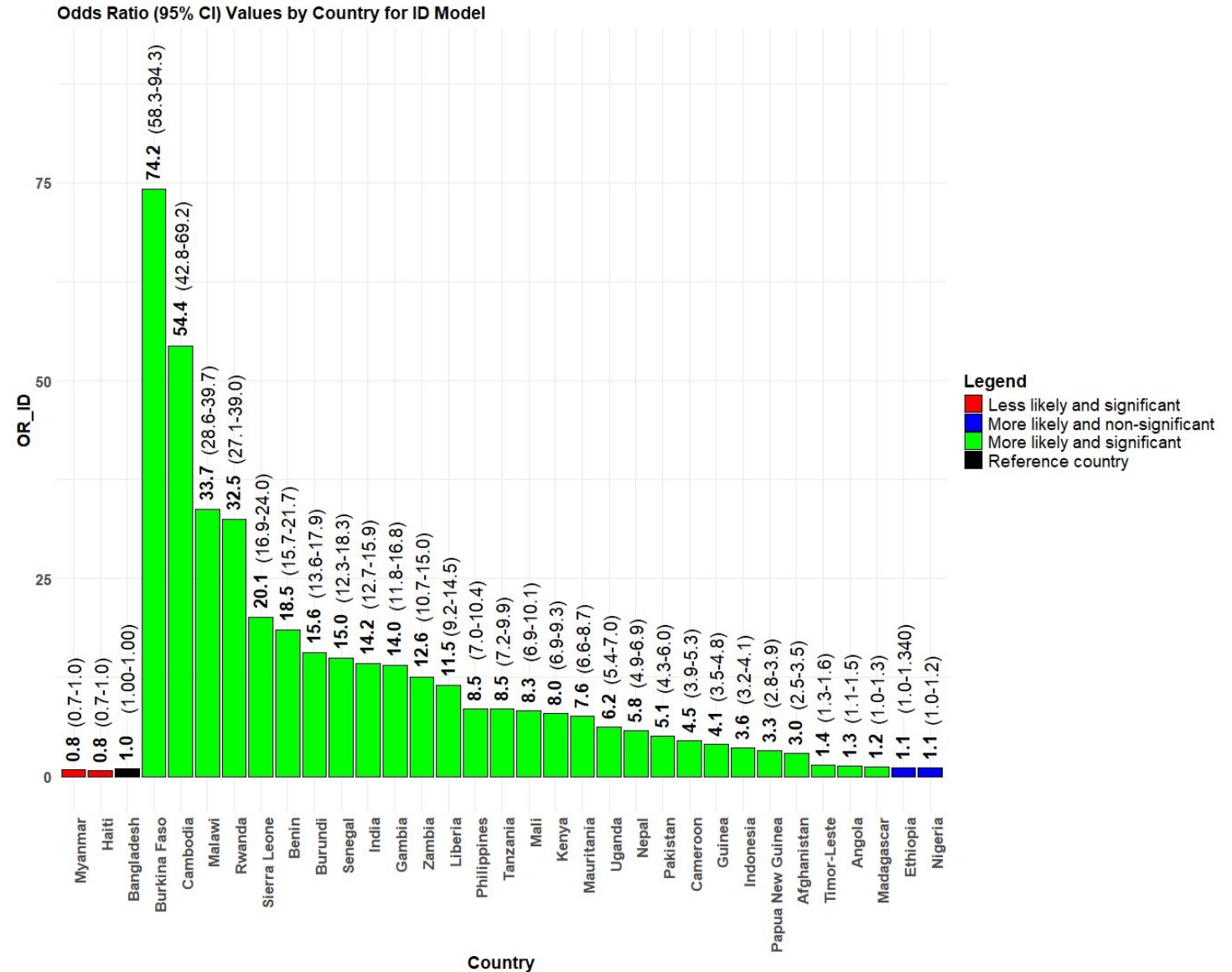


Results and findings



Adjusted logistic regression model fittings

- Women of 30 LMICs apart from Haiti and Myanmar were more likely to utilize ID during childbirth compared to Bangladesh.
- For example, the Philippines exhibited 8.5 times higher odds (AOR=8.5; 95% CI; 7.0, 10.4) of utilizing ID compared to Bangladesh.
- Conversely, women in Haiti were 20.0% (AOR=0.8; 95% CI; 0.7, 1.0) less likely to utilize ID compared to women in Bangladesh.

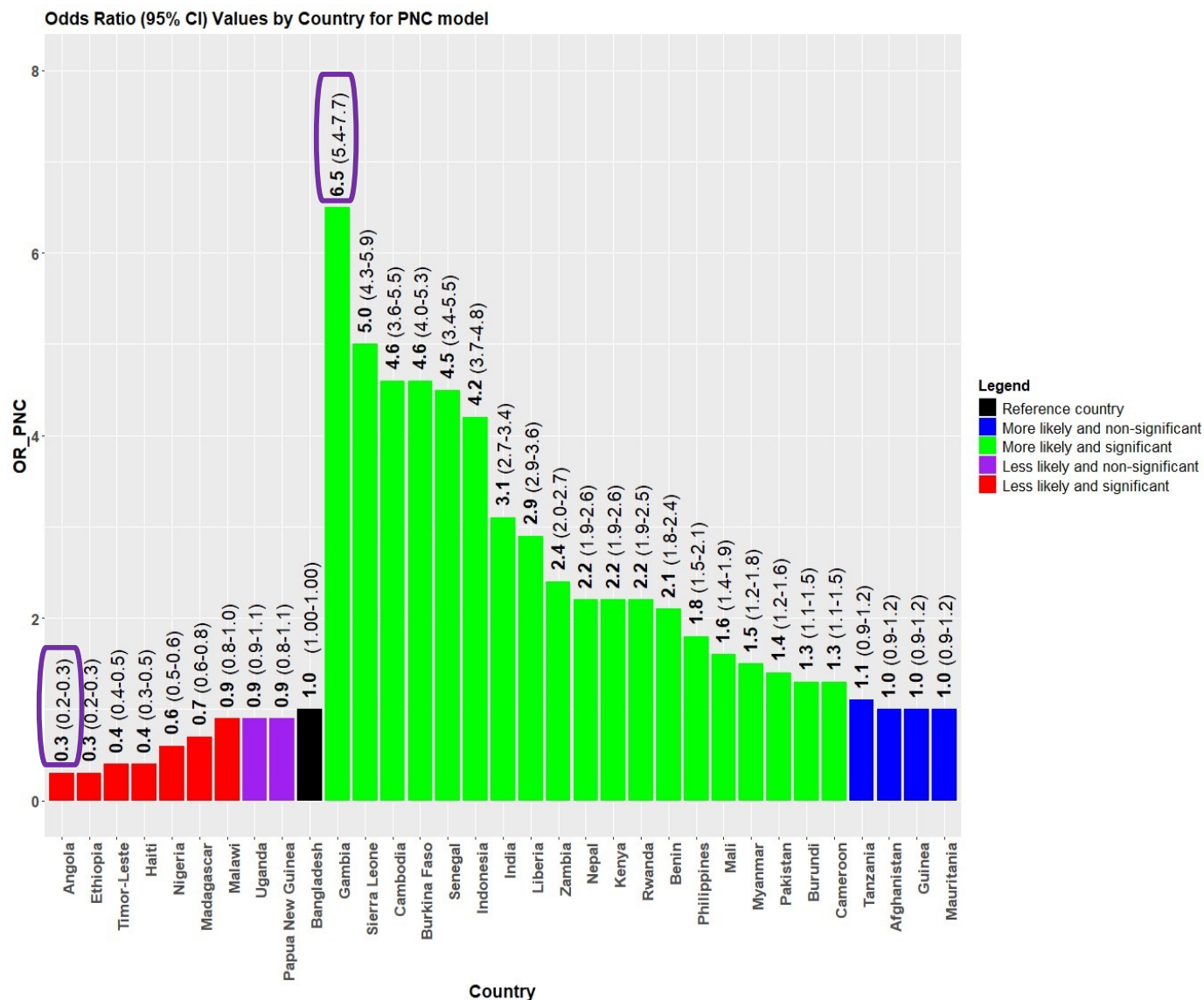


Results and findings



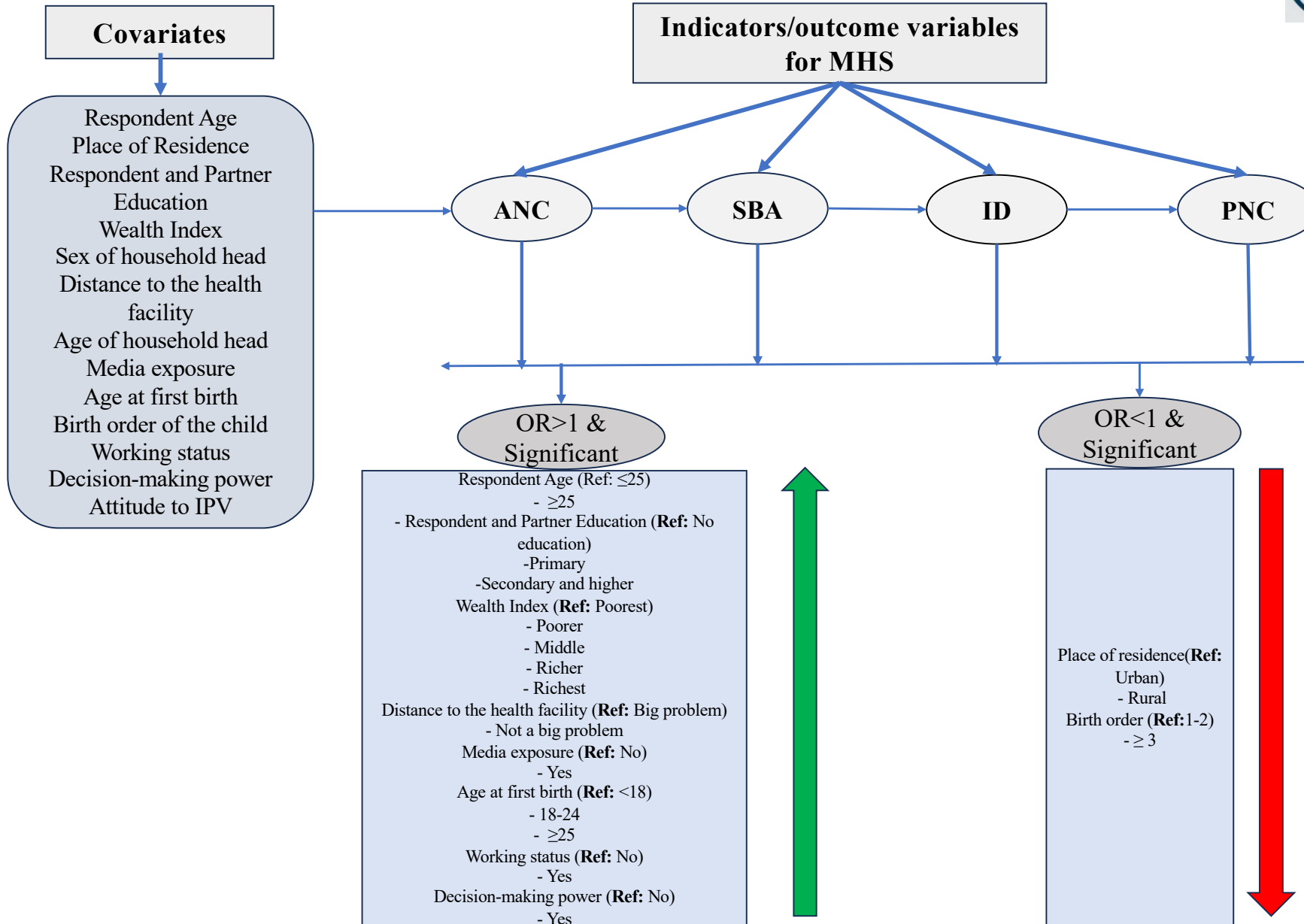
Adjusted logistic regression model fittings

- The odds of utilising PNC within two days after delivery were lower in 9 LMICs out of 32 LMICs compared to Bangladesh, others exhibited higher odds compared to Bangladesh.
- For instance, the women in Gambia were 6.5 (AOR=6.5; 95% CI; 5.4, 7.7) times more likely to utilize PNC than in Bangladesh.
- Whereas women in Angola were 70.0% (AOR=0.3; 95% CI; 0.2, 0.3) less likely to utilize PNC than in Bangladesh.



Results and findings

Predictors of MHS



Conclusion and recommendation



- Given the limited time remaining until the 2030 SDG deadline, many LMICs are grappling to meet the desired standards of MHS coverage.
- To address this urgency, targeted interventions should focus on women in the lowest wealth quintile, uneducated or less educated, and women living in rural areas.
- Moreover, emphasis should be given to women's employment and autonomy in household decision-making.
- Given the heterogeneity in MHS uptakes, nations with lower maternal healthcare utilization can adopt the effective interventions proven successful in countries with higher maternal healthcare utilization to expedite progress toward achieving relevant SDG targets by 2030.

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Appendix A: Goodness of models fitting

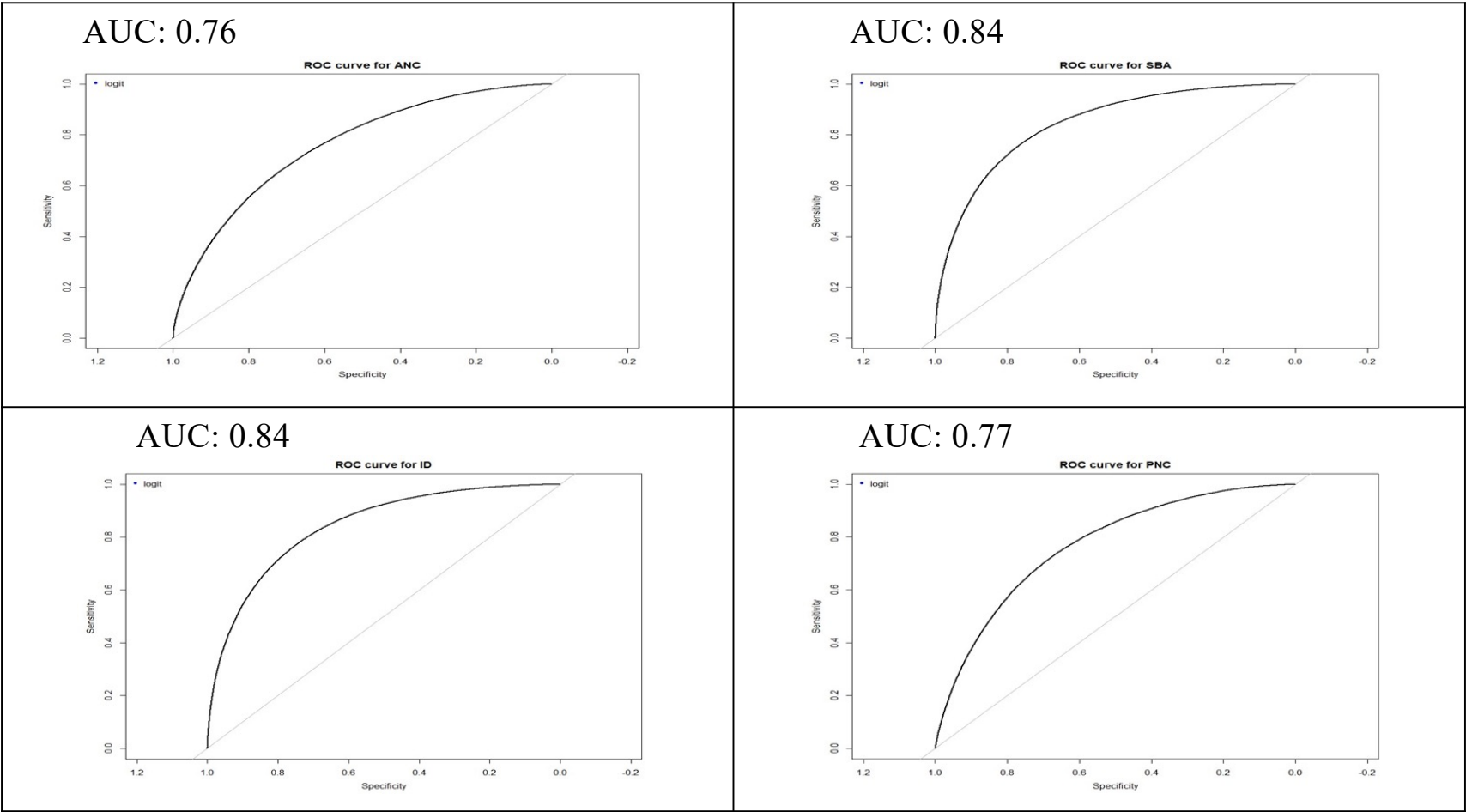


Figure: ROC curves for the models of MHS (ANC, SBA, ID and PNC)

Appendix B: Multicollinearity check



Terms (Covariates)	Model: ANC	Model: SBA	Model: ID	Model: PNC
	VIF (95% CI)	VIF (95% CI)	VIF (95% CI)	VIF (95% CI)
Respondent Age	1.91 (1.90, 1.92)	1.85 (1.84, 1.86)	1.73 (1.72, 1.73)	1.97 (1.96, 1.99)
Place of residence	1.78 (1.77, 1.79)	1.49 (1.49, 1.50)	1.58 (1.57, 1.59)	1.57 (1.56, 1.58)
Respondent education level	2.41 (2.39, 2.42)	1.76 (1.75, 1.76)	1.85 (1.84, 1.86)	2.34 (2.32, 2.35)
Wealth index	2.09 (2.08, 2.10)	1.79 (1.78, 1.80)	1.80 (1.79, 1.81)	1.94 (1.93, 1.96)
Sex of Household head	1.07 (1.06, 1.07)	1.06 (1.06, 1.07)	1.07 (1.06, 1.07)	1.07 (1.06, 1.07)
Distance to the health facility	1.18 (1.17, 1.18)	1.08 (1.08, 1.09)	1.09 (1.09, 1.10)	1.12 (1.11, 1.13)
Age of household head	1.41 (1.40, 1.42)	1.39 (1.39, 1.40)	1.42 (1.41, 1.43)	1.39 (1.38, 1.40)
Media exposure	1.23 (1.23, 1.24)	1.23 (1.23, 1.24)	1.27 (1.26, 1.27)	1.36 (1.35, 1.37)
Respondent's age at first birth	1.36 (1.35, 1.36)	1.36 (1.35, 1.36)	1.35 (1.34, 1.35)	1.46 (1.45, 1.47)
Birth order of the child	1.93 (1.92, 1.94)	1.76 (1.75, 1.77)	1.67 (1.66, 1.68)	1.83 (1.81, 1.84)
Husband/partner education level	1.98 (1.97, 1.99)	1.80 (1.79, 1.81)	1.93 (1.92, 1.94)	2.26 (2.25, 2.28)
Respondent working status	1.25 (1.24, 1.26)	1.30 (1.30, 1.31)	1.36 (1.35, 1.37)	1.31 (1.30, 1.32)
Respondent decision-making power	1.19 (1.18, 1.19)	1.18 (1.17, 1.18)	1.15 (1.14, 1.15)	1.22 (1.21, 1.23)
Attitude towards IPV	1.18 (1.17, 1.19)	1.15 (1.15, 1.15)	1.14 (1.14, 1.15)	1.21 (1.20, 1.22)
Country	6.48 (6.43, 6.53)	5.63 (5.59, 5.66)	6.17 (6.14, 6.21)	7.46 (7.39, 7.53)

Table: Multicollinearity check for covariates from all models of MHS (ANS, SBA, ID and PNC)