Use of Group-Based Trajectory Modeling to Understand Trends in Modern Contraceptive Prevalence in Low- and Lower Middle-Income Countries

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Abstract: Global estimates of modern contraceptive prevalence (MCP) have been increasing over time. However, heterogeneity surfaces across countries in the rate of change of MCP over time. Group-based trajectory modeling is a statistical model that identifies distinct subgroups in trajectories of an outcome over time, as well as predictors of variability both between and within groups.

We assessed trajectories of MCP for 76 low- and lower-middle income countries from 1990–2020. To select a final model, we compared indicators of statistical fit between models with a varying number of groups and differing polynomial types to describe group trajectories. Five types of predictor variables (national family planning policy, Unites States government support for family planning, access to family planning services, desired fertility and women's empowerment) were operationalized as both time-stable (averaged) and time-varying and included in separate models as predictors of between- and within-group variability in contraceptive prevalence. A two-group model with quadratic polynomials to describe group trajectories best fit the data and was selected as a final model. In models assessing time-stable predictors of trajectory membership, countries that on average had a higher demand for family planning satisfied across 1990–2020 were more likely to belong to the higher MCP group than the lower MCP group. In models assessing time-varying effects of predictors, findings suggest that in the lower MCP group when scores on all predictor variables were higher, MCP was also higher. In the higher MCP group, this finding also held, but only for a subset of predictors (the percent of population residing in urban areas, demand for family planning satisfied by any method, secondary school enrollment among females, and GDI).

This analysis shows there are two distinct groups of higher and lower modern contraceptive prevalence trajectories among low- and lower-middle income countries and suggests different programmatic focuses for each group.

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