

Supplemental Information for “Convergence of Child Mortality Across the Wealth Gradient in Less Developed Countries”

APPENDIX 1 CHANGING THE DHS WEALTH QUINTILE INTO WEALTH TERTILE DESIGNATION

An extensive source of information on the wealth index is contained in the document titled “The DHS wealth index: approaches for rural and urban areas.”¹ The document details the considerations and approaches in constructing the native DHS wealth index. In the DHS, information is collected in each survey on the possession of a group of “indicator variables,” such as electricity, radio, television, refrigerator, motorcycle, car, or a telephone. Additional indicator variables characterize the household, including floor material, source of drinking water, and sanitation facilities. A principal components analysis is used to generate a normalized index. The index is then used to generate quintiles based on the distribution of the household population, and this quintile is used in all wealth-related analyses. For the purposes of this analysis, the normalized index created by DHS was used to assign wealth tertiles to individual women based on the distribution of the household population, as done for the DHS quintiles. These tertiles were later used in all analyses.

APPENDIX 2 MODEL SPECIFICATIONS AND SELECTED RESULTS FOR REGRESSION ANALYSES

Between-Survey Annual Change in the Mortality Ratio

The data for this analysis included 58 observations, where each observation

characterized by the country (c) and survey (s), contains information on the under-5 mortality ratio during the 5-year period preceding the survey (R) and the year of the survey (T). Only countries with repeated surveys were included in this analysis, 29 countries with 2 surveys per country (Table 1). The analysis fit the following model: $R_{cs} = \beta_0 + \beta_1 T_{cs} + \delta_c + \varepsilon_{cs}$, where δ_c represents a vector of country fixed effects. This model removes time-invariant country differences and estimates the relationship between time (in years) and the mortality ratio within countries.

Within-Survey Annual Decline in Under-5 Mortality

This analysis used a panel data of annual under-5 mortality (M) in each wealth tertile (W) estimated for every year (T) up to 10 years before each survey year (starting in 1995), a total of 2715 observations in 85 surveys (s). The goal of this analysis was to estimate the annual decline in under-5 mortality in the poorest tertile compared with the least poor tertile by fitting the following model:

$$M_{sWT} = \beta_0 + \beta_1 T_s + \beta_2 W_s^{12} + \beta_3 T_s \times W_s^{12} + \delta_s + \varepsilon_{sWT}$$

In this model, W_s^{12} represents wealth tertile dummy indicators on the poorest and middle tertiles, with the least poor tertile dropped, δ_s is a vector of survey fixed effects, and T_s was converted to a linear time trend from 1 (1995) to 17 (2011). The coefficient on the interaction between the wealth indicators and time (β_3) represents the annual reduction in under-5 mortality for the middle and poorest wealth tertiles compared with the least poor tertile. In addition, β_1 represents the average annual decline in under-5 mortality in the least-poor tertile, and β_2 represent the difference in mortality between the middle and poorest tertiles compared with the least poor tertile in 1995. Survey fixed effects enabled estimation of differential declines within surveys. Robust SEs clustered by survey were calculated to relax the serial correlation in under-5 mortality estimates from using overlapping data in consecutive years. The complete regression results are as follows:

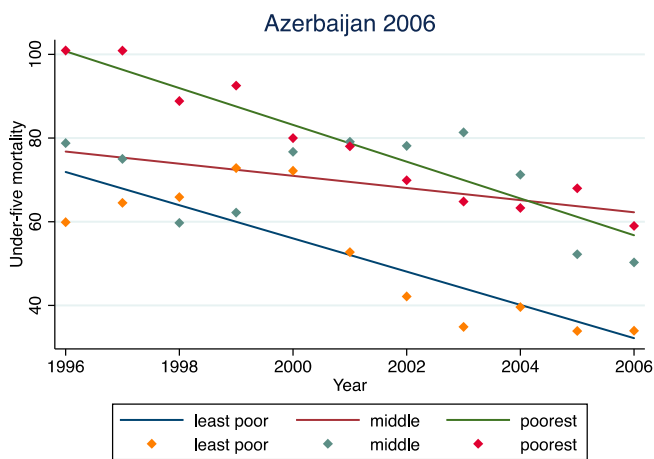
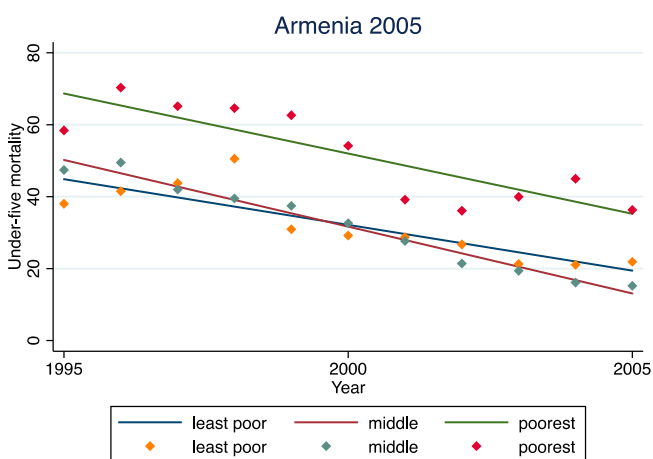
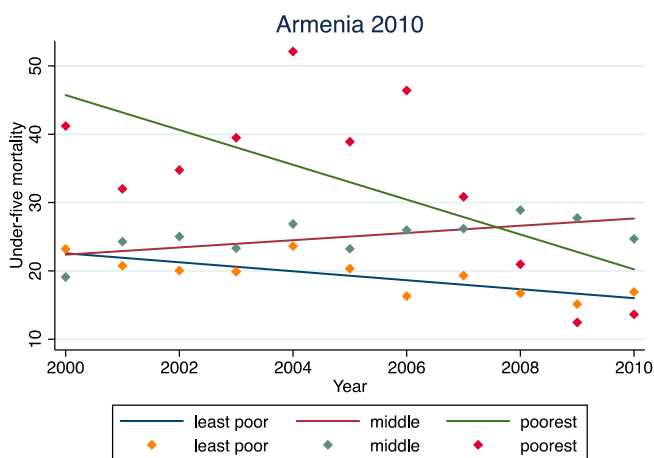
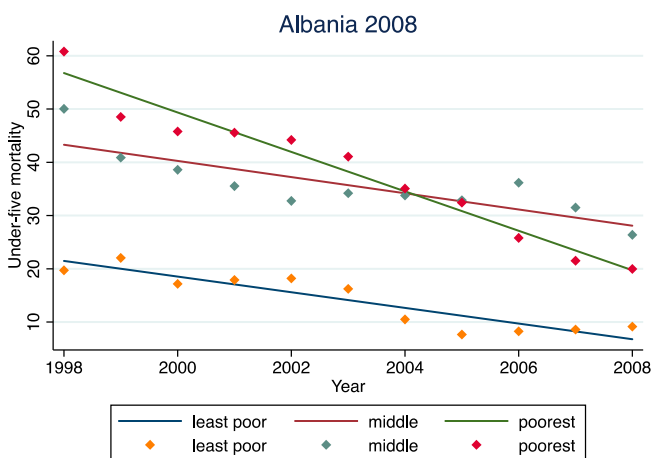
	Coefficient Value (P value)	Interpretation
Year	−4.79 (<.001)	Annual decline in under-5 mortality in the least-poor tertile.
Wealth, middle	57.07 (<.001)	Average baseline difference between the middle and least-poor tertiles
Wealth, poorest	91.27 (<.001)	Average baseline difference between the poorest and least-poor tertiles
Year × wealth, middle	−2.46 (<.001)	Relative annual decline in under-5 mortality in the middle compared with the least-poor tertile
Year × wealth, poorest	−4.04 (<.001)	Relative annual decline in under-5 mortality in the poorest compared with the least-poor tertile
Observations	2715	
R^2	0.89	

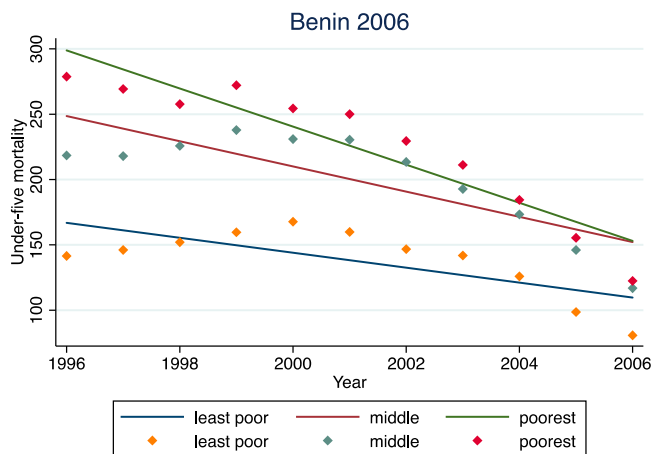
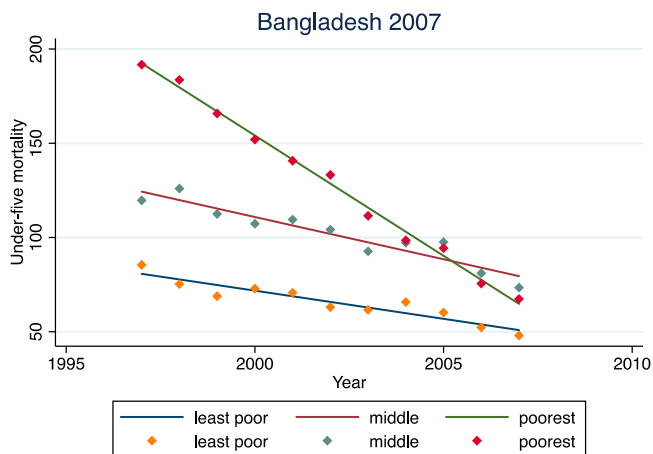
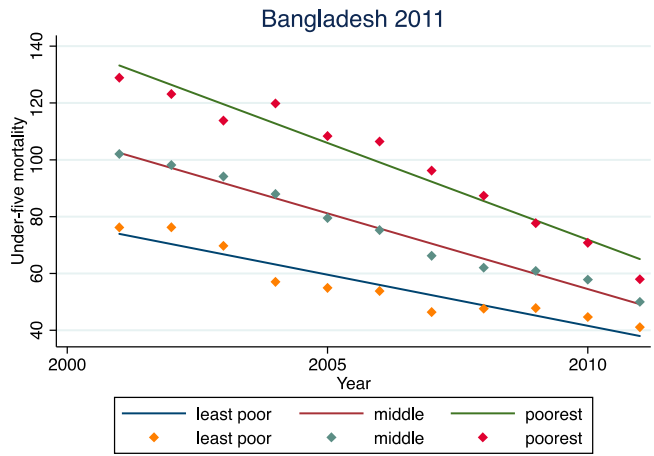
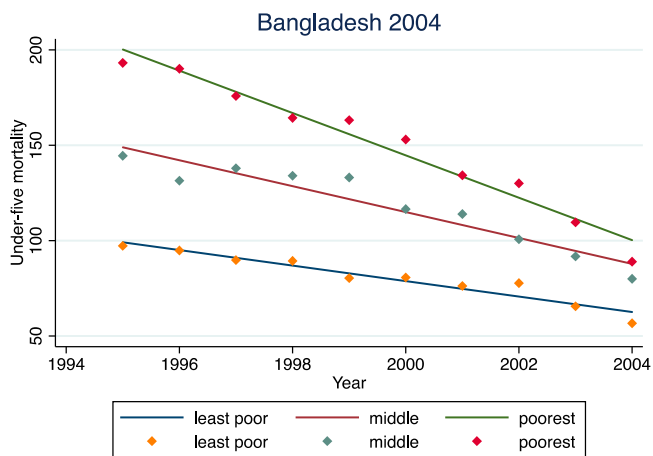
APPENDIX 3 CONVERGENCE OR DIVERGENCE IN INDIVIDUAL DHS SURVEYS

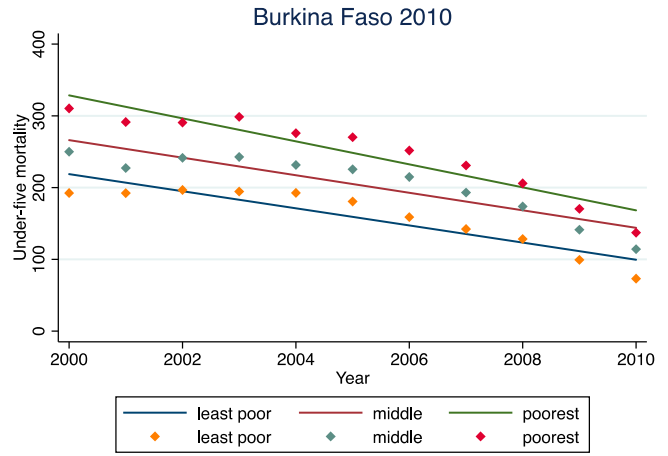
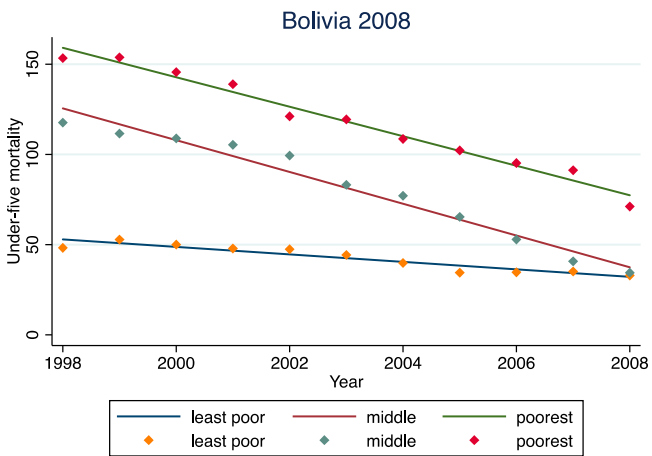
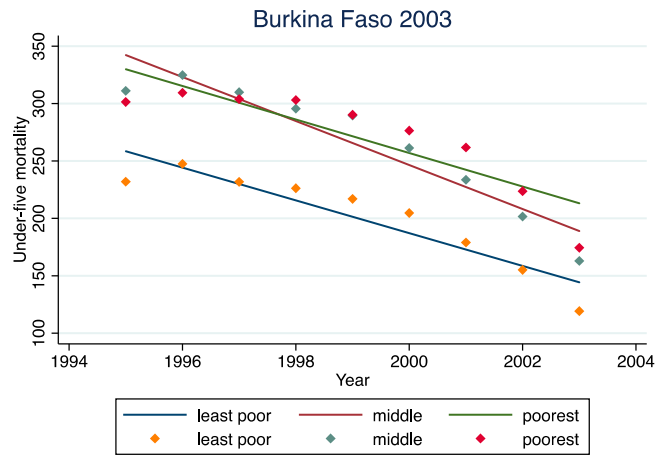
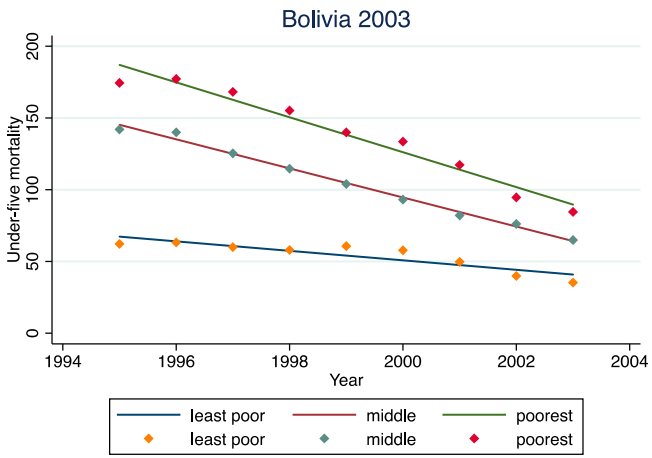
Each DHS survey was used to generate longitudinal records of under-5 mortality in each wealth tertile, starting 10 years before the year of the survey or 1995, whichever was later. The series of graphs

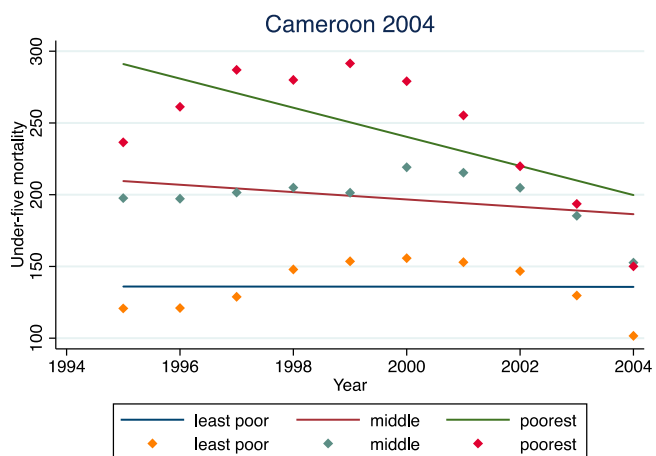
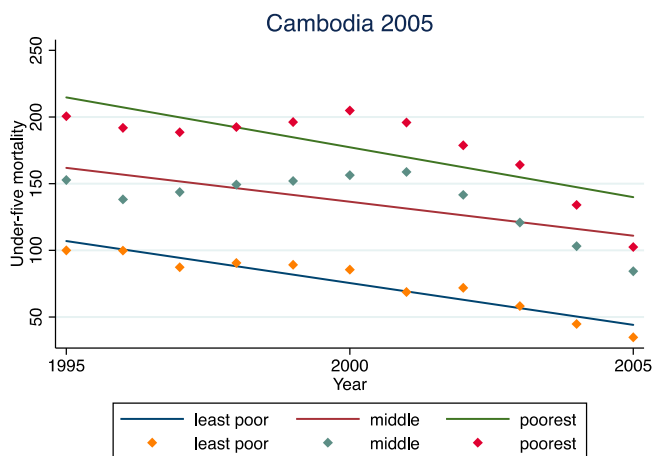
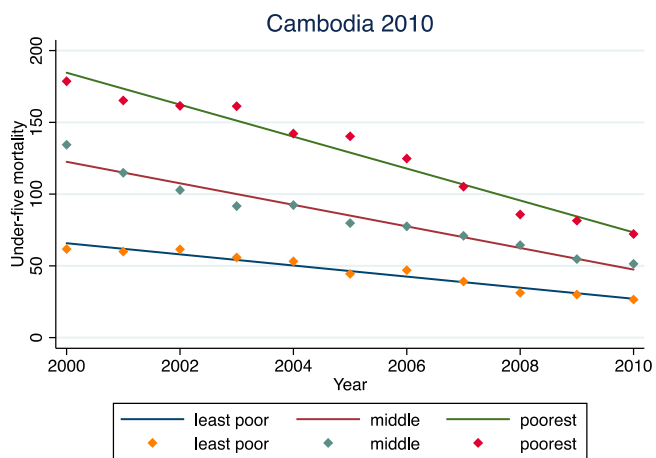
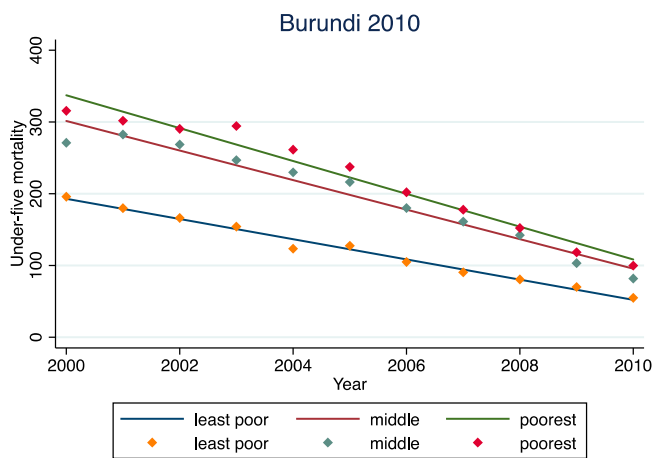
indicate the estimated under-5 mortality in each wealth tertile over time with a linear fit to the series of estimates. Under-5 trajectories show a convergence in most but not all surveys. In several countries with a significant HIV burden, under-5 mortality increased for at least some of the study years. The least poor often wit-

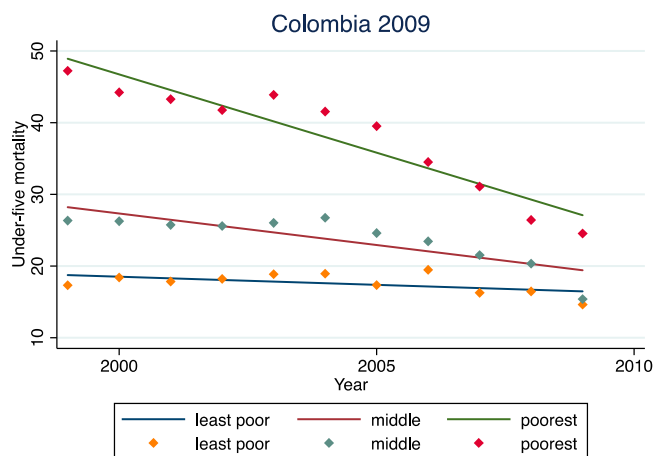
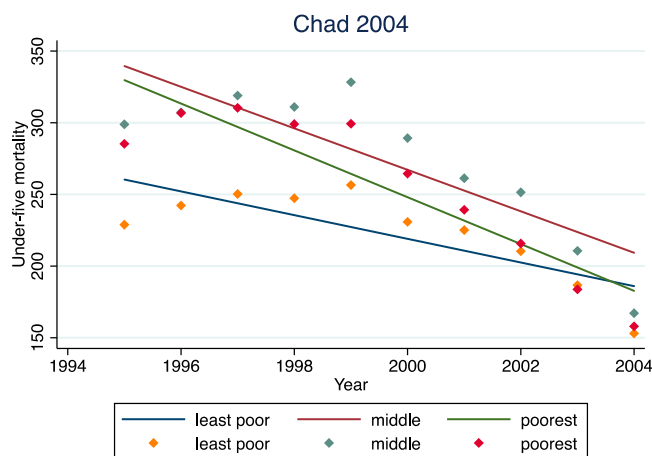
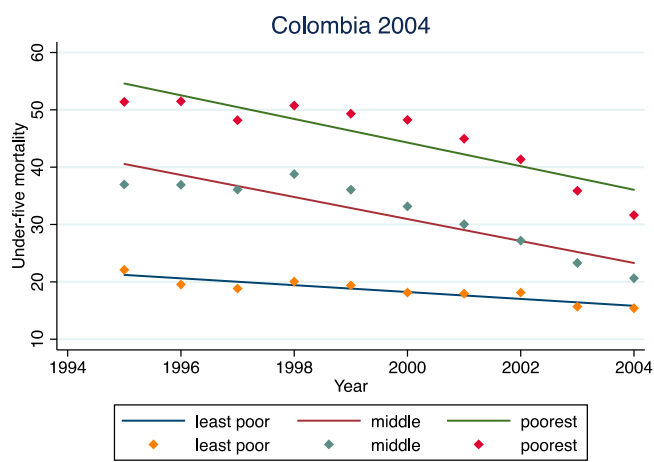
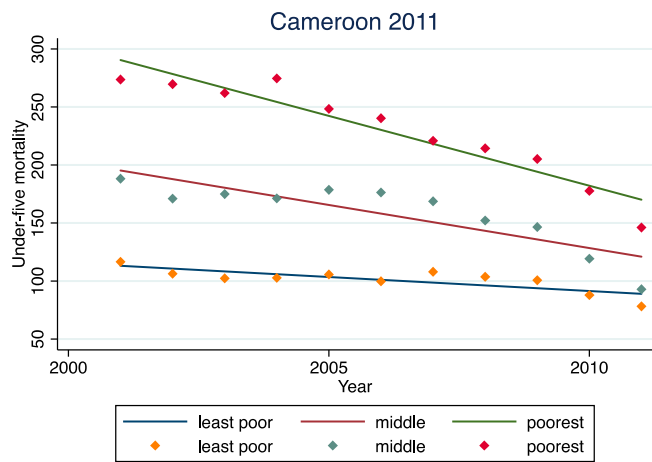
nessed the greatest increases (or smallest decreases) in mortality, because HIV prevalence is concentrated among the least poor in many hyper-endemic countries, such as Swaziland or Zimbabwe. This also resulted in convergence of mortality because of slower progress on under-5 mortality among the least poor.

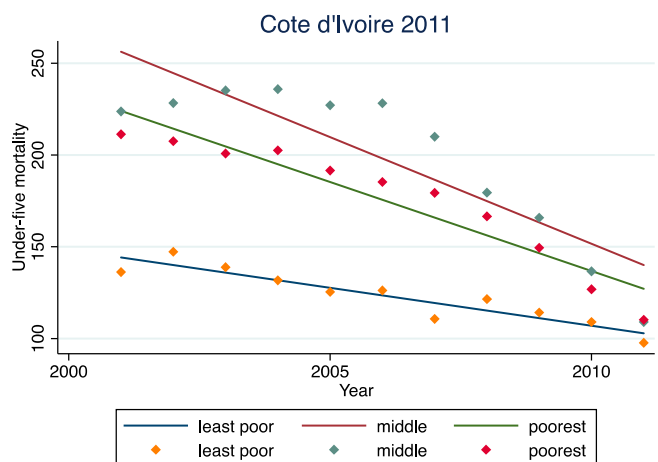
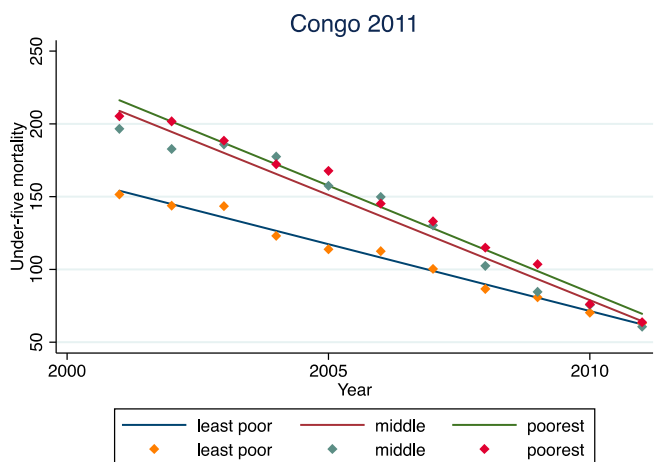
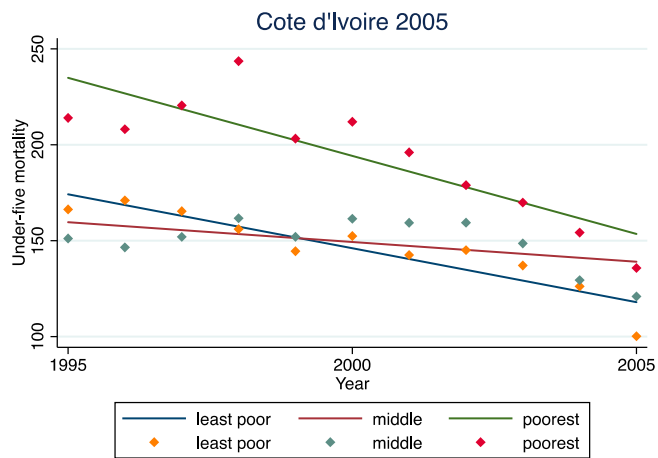
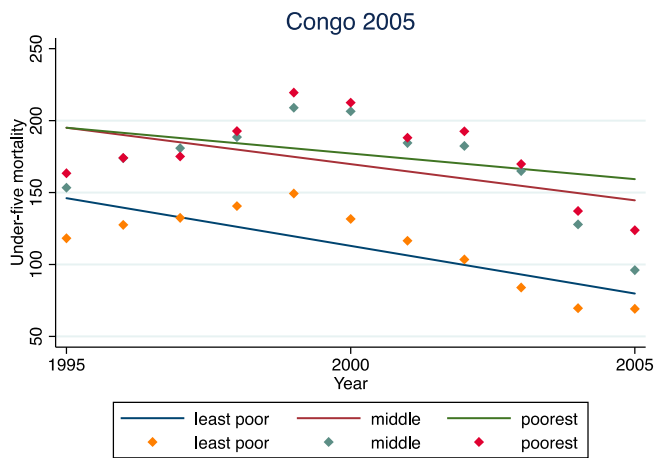


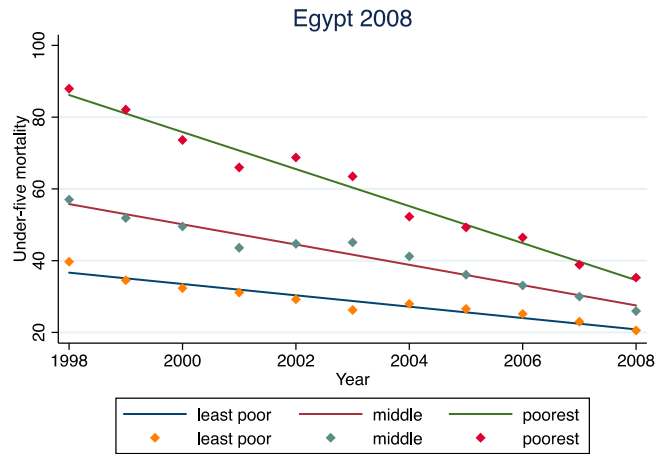
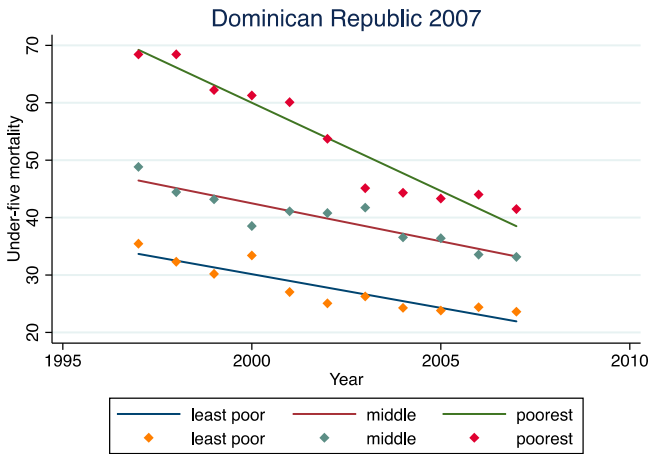
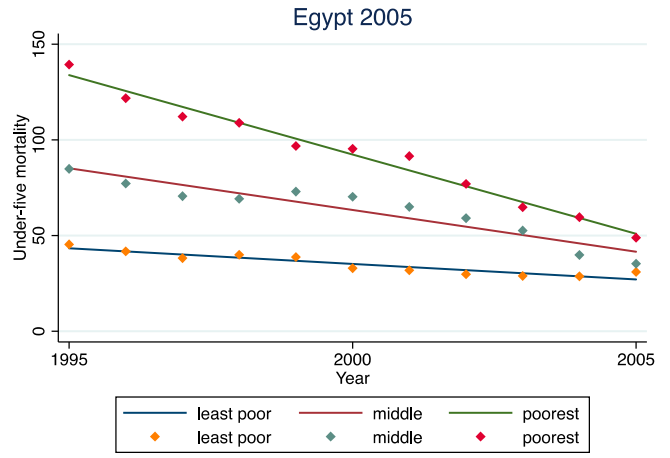
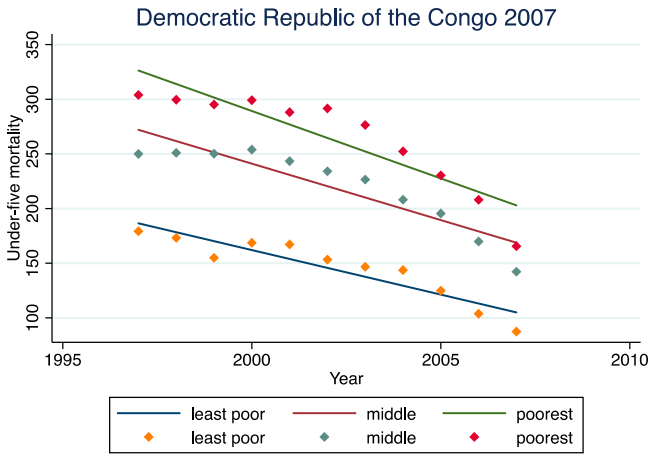


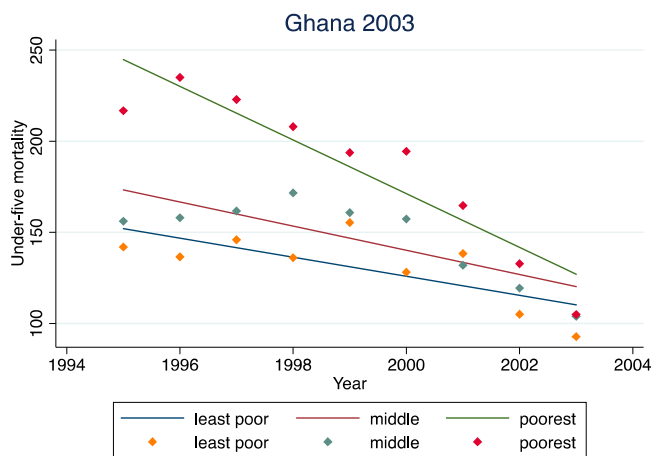
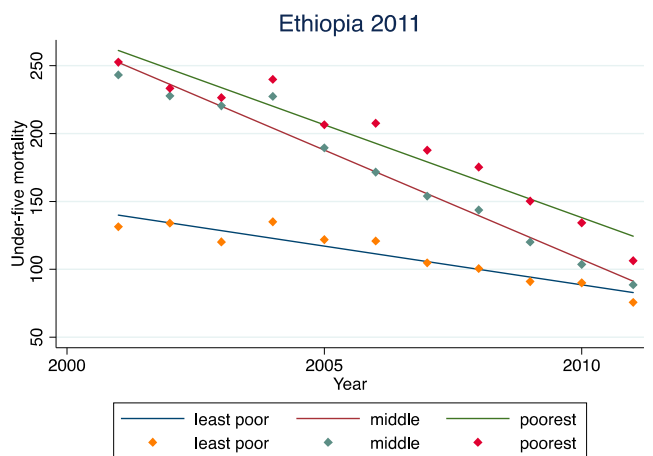
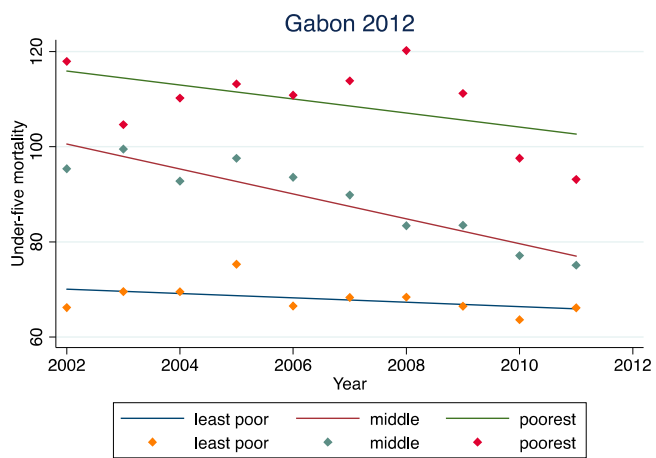
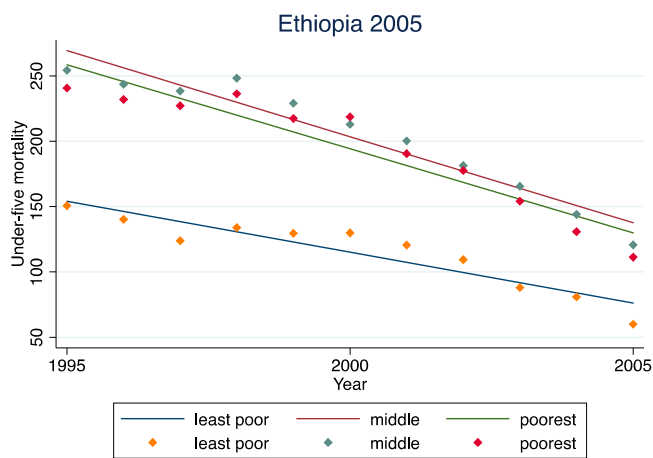


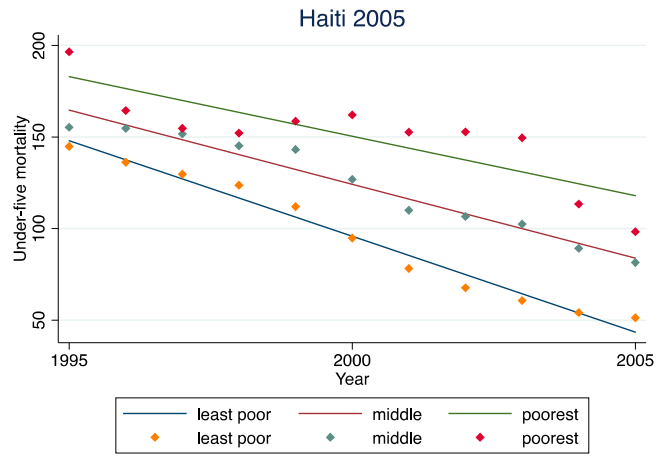
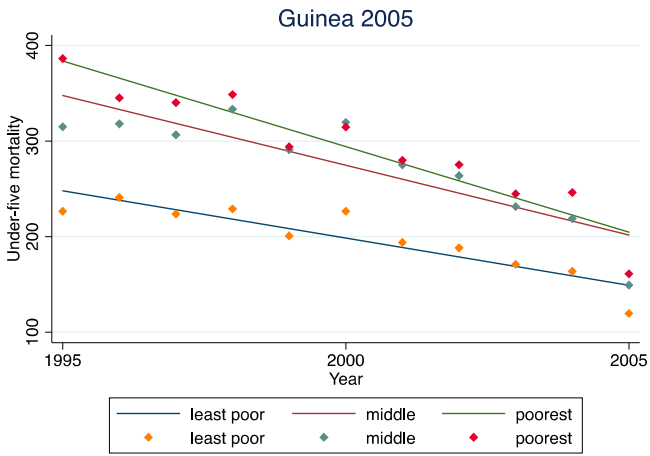
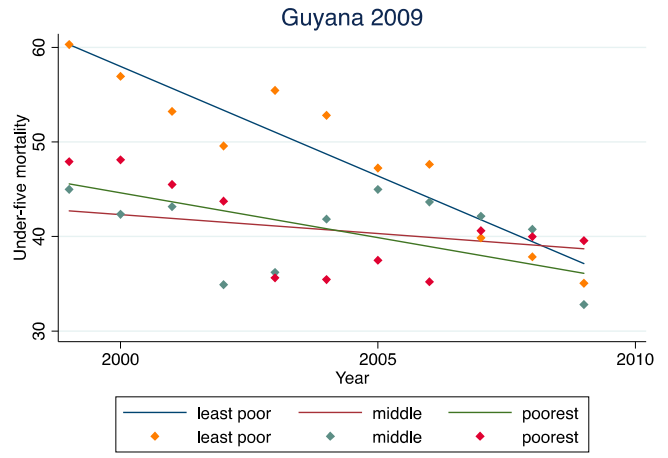
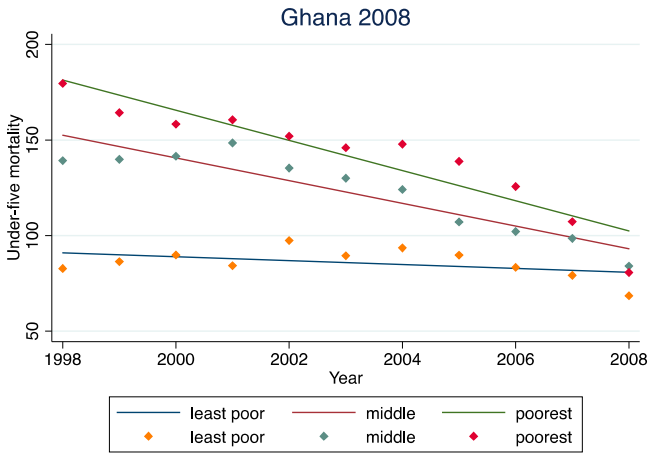


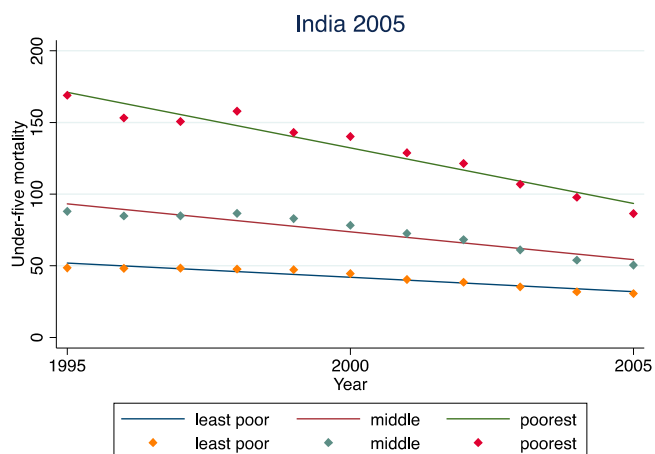
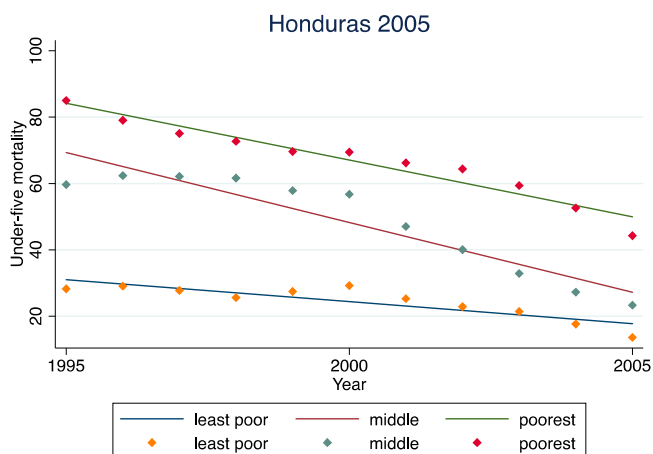
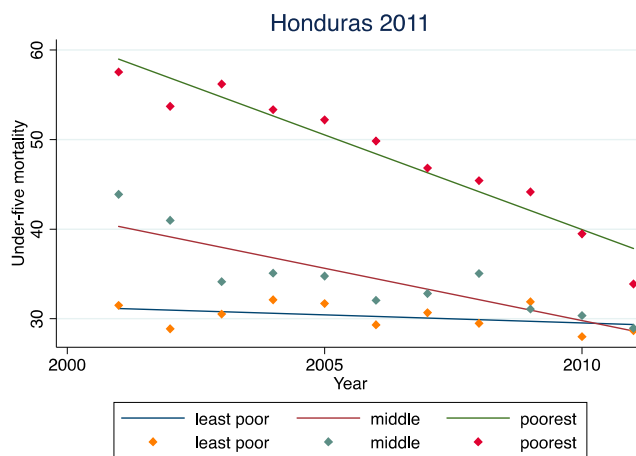
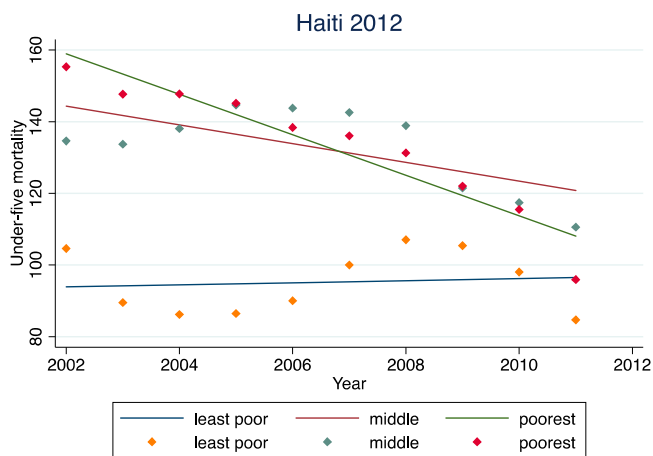


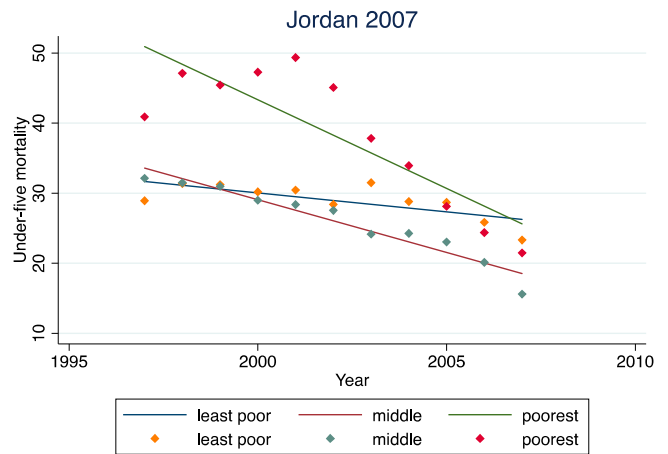
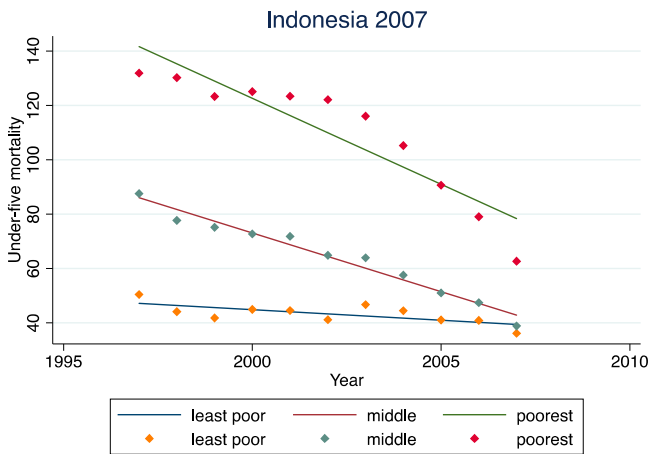
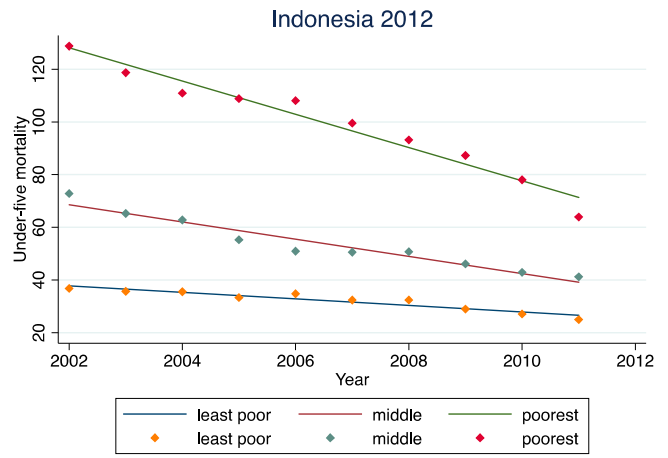
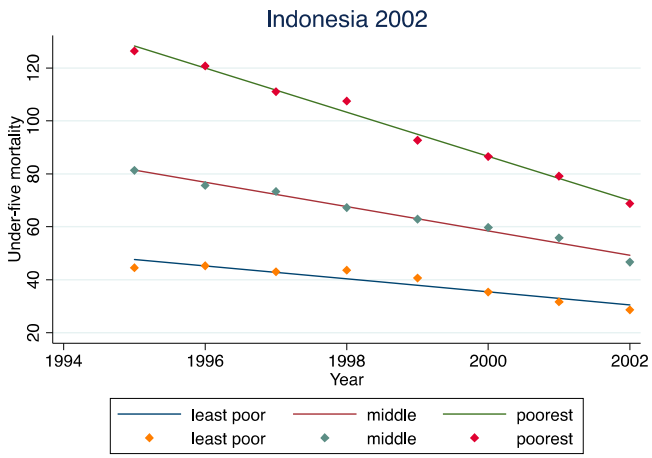


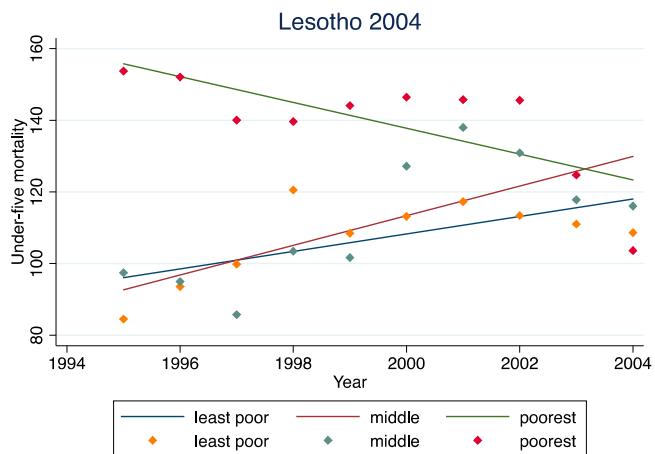
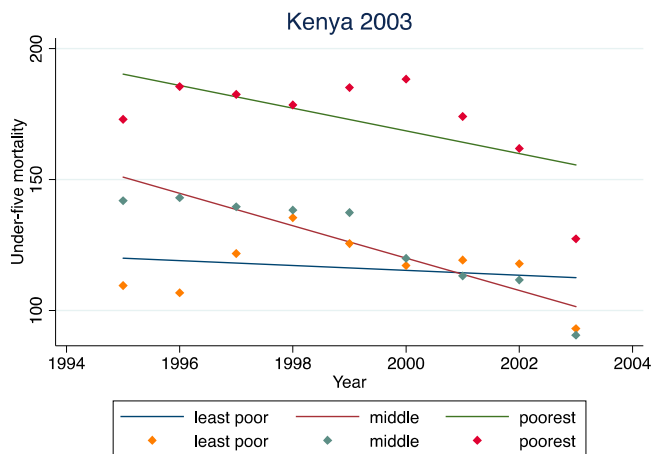
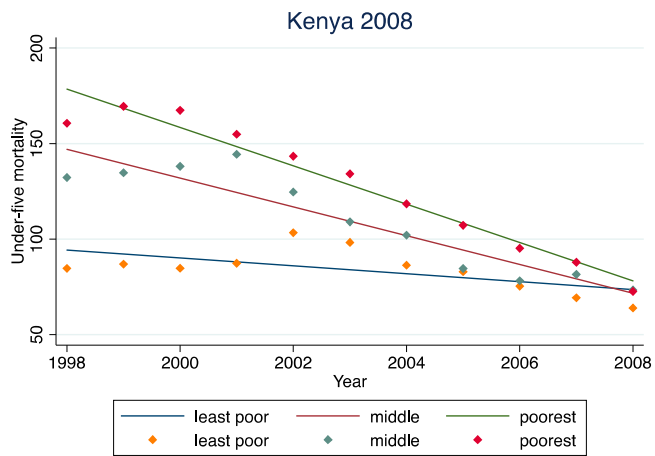
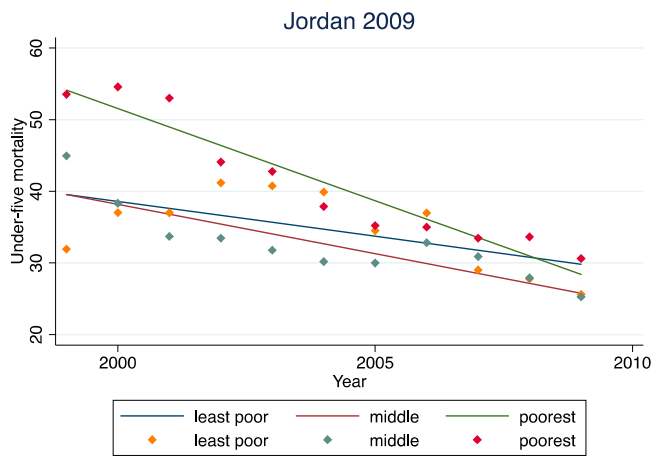


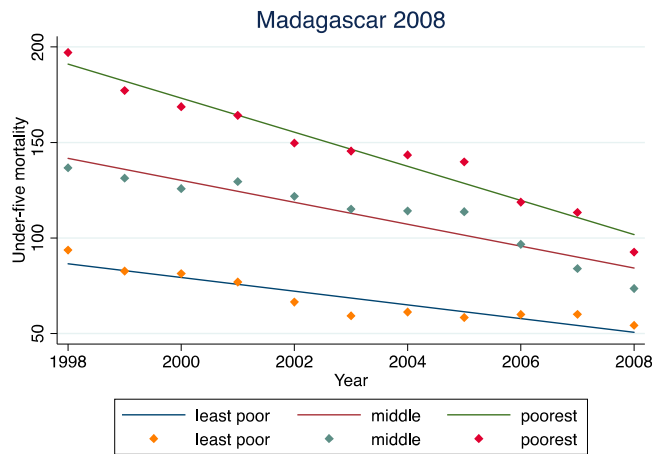
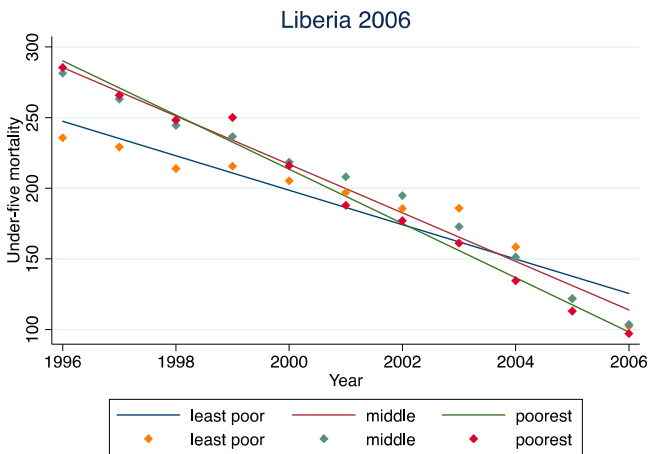
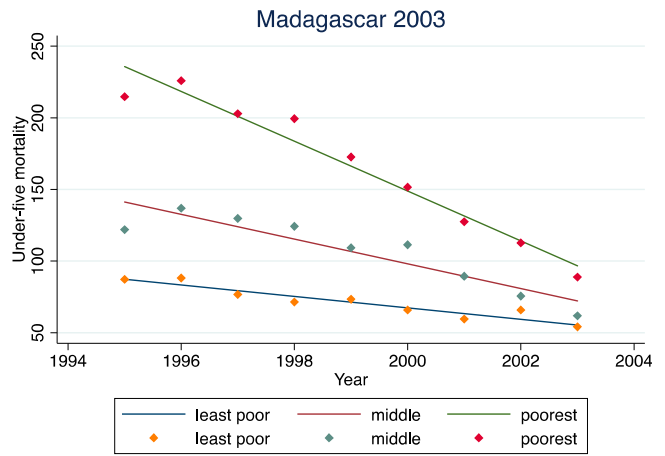
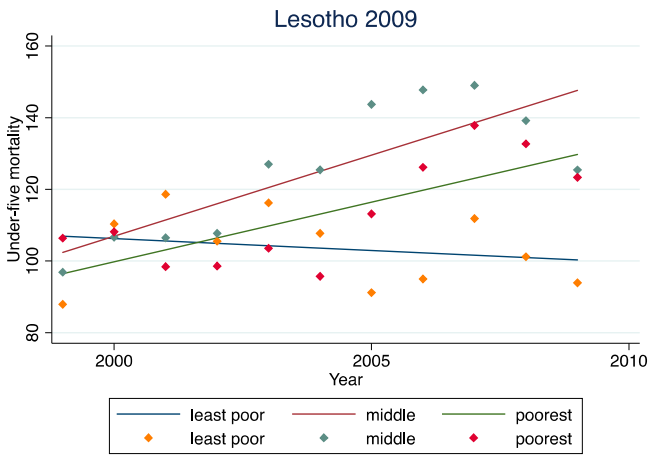


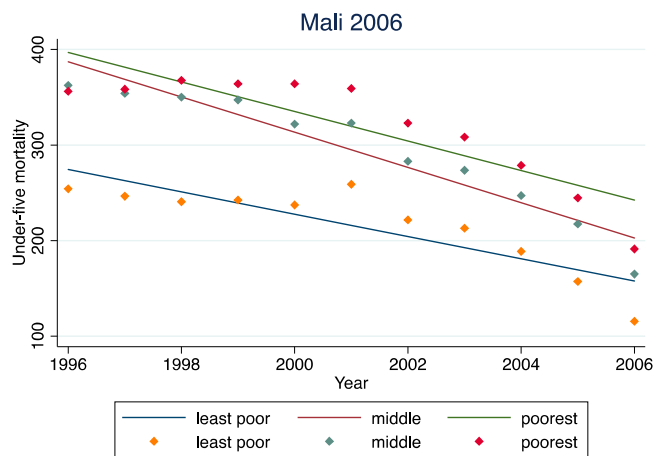
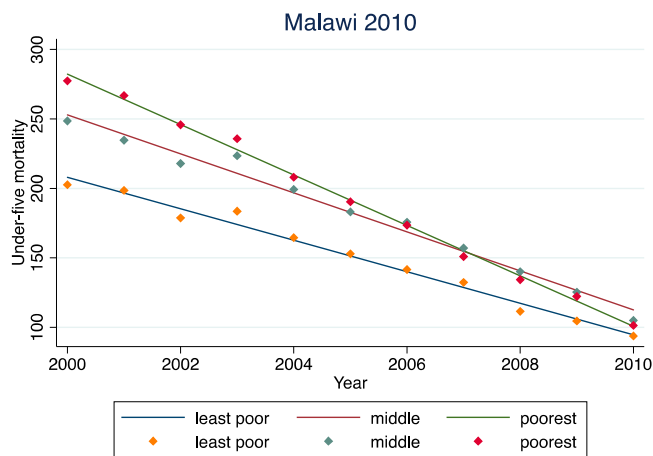
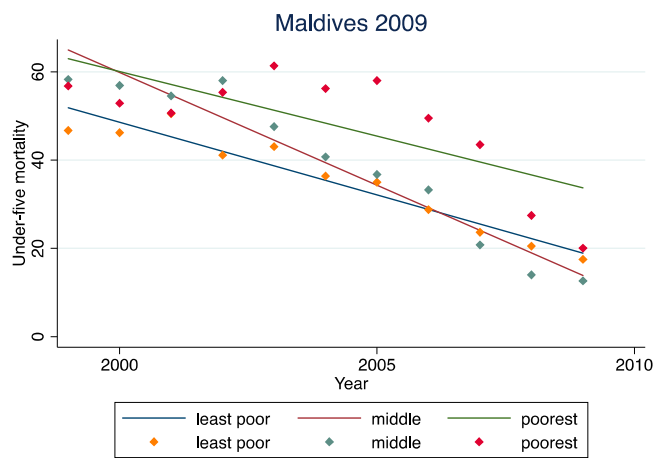
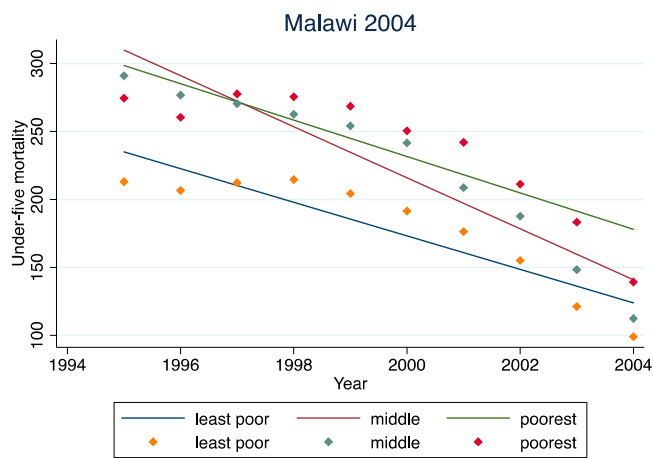


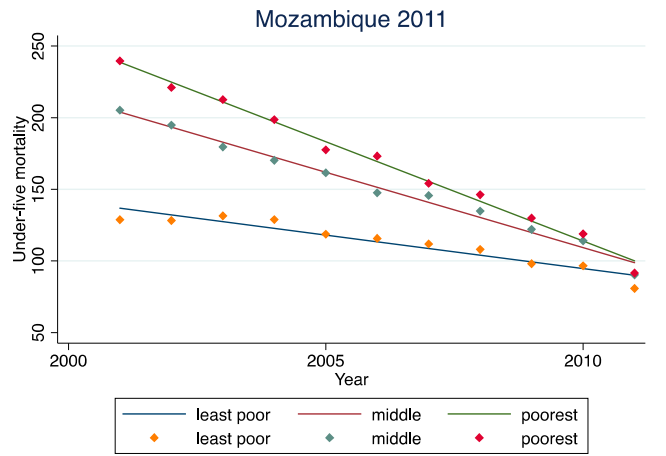
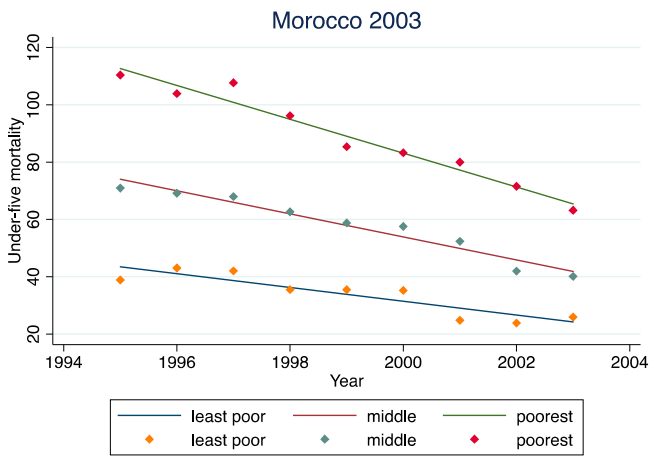
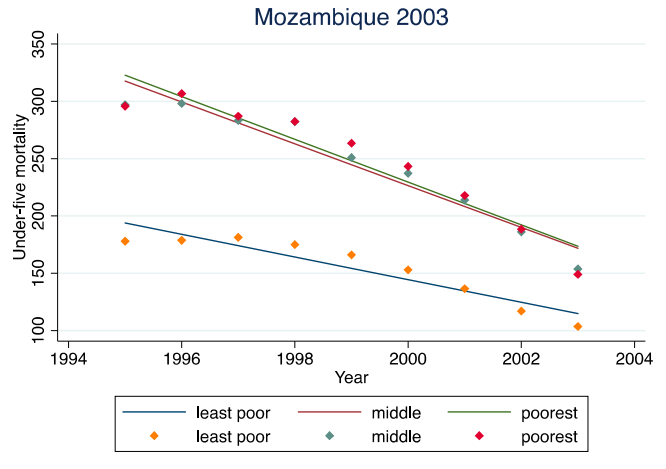
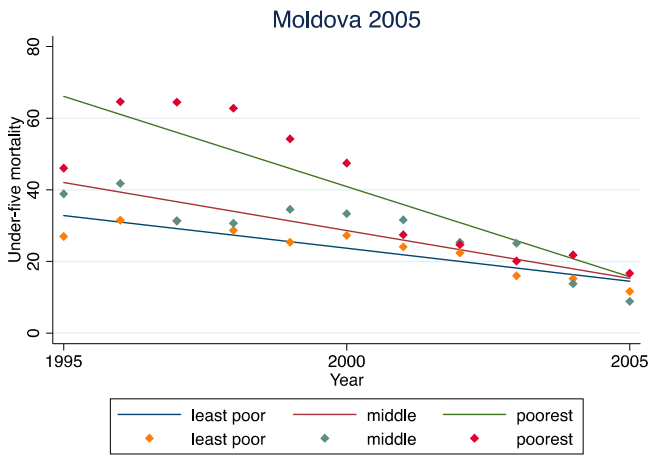


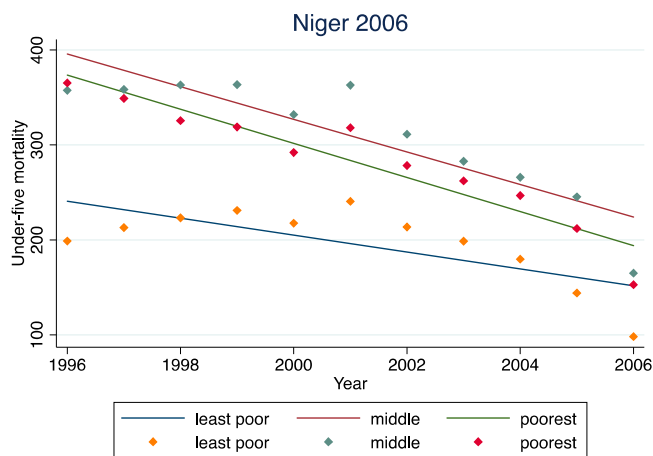
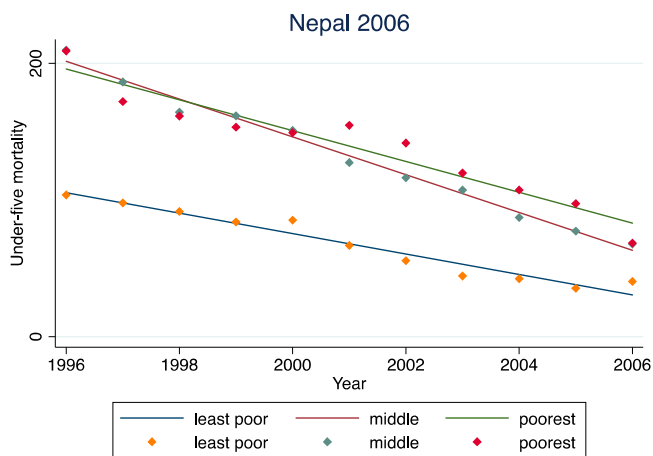
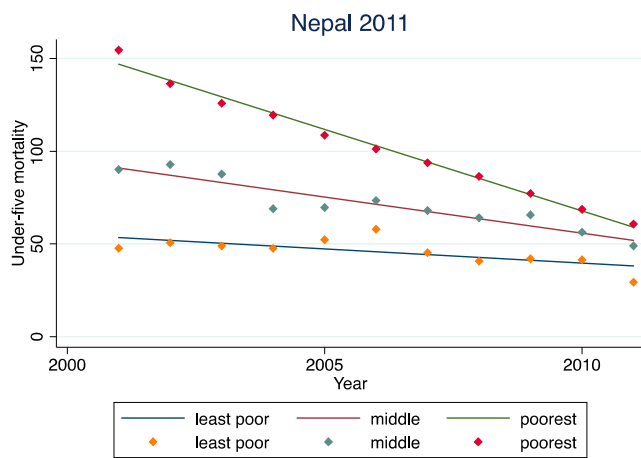
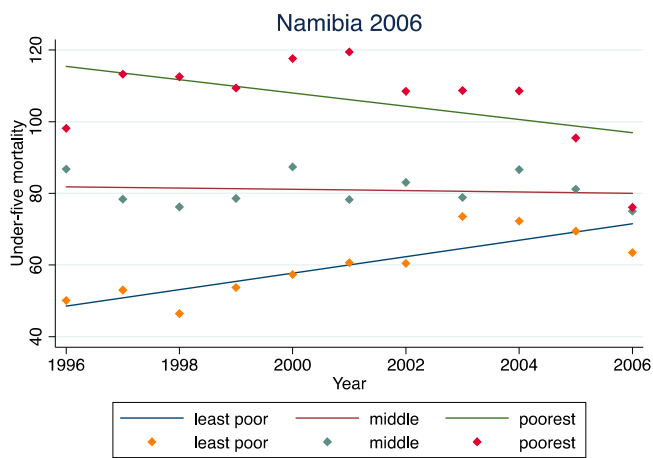


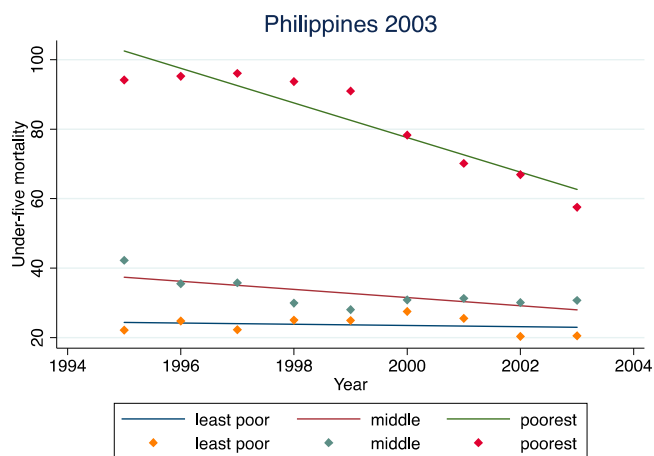
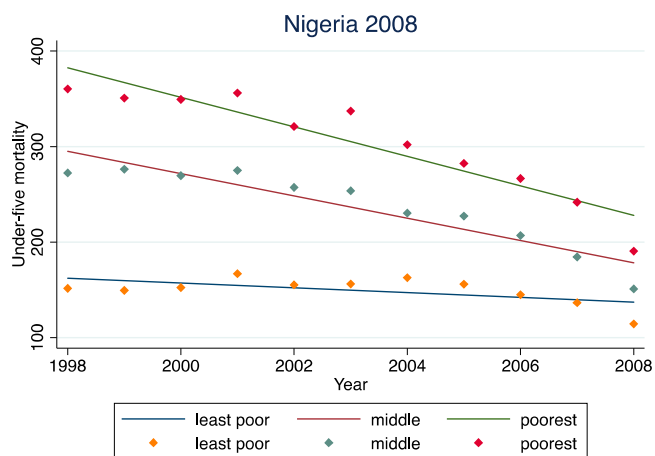
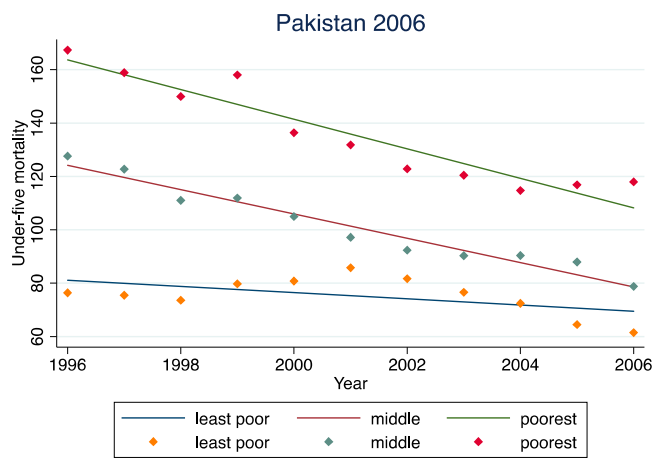
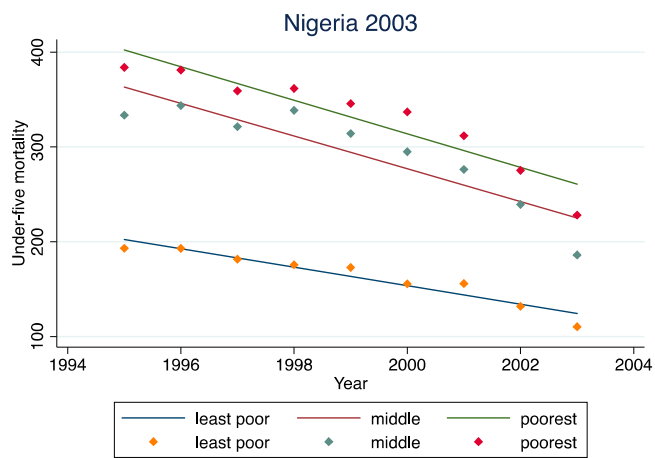


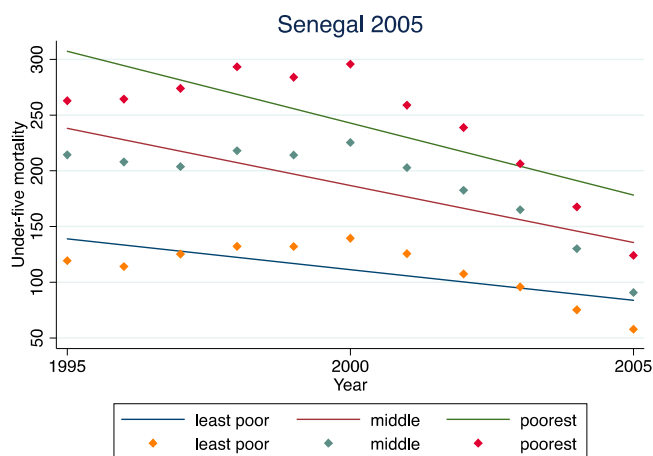
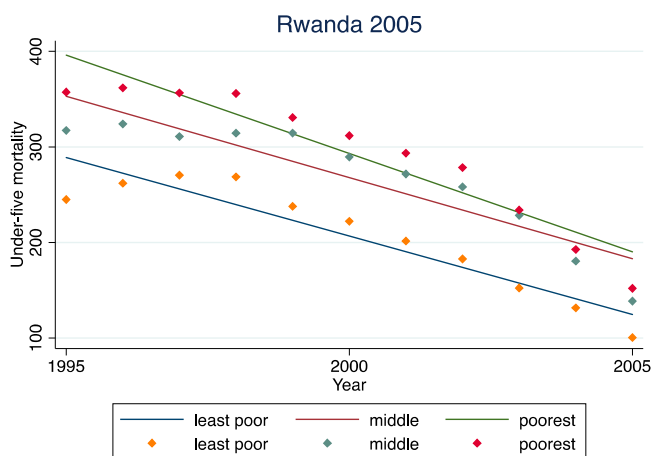
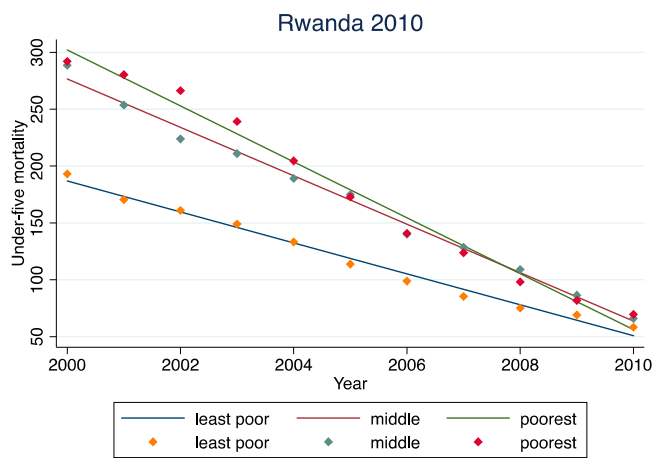
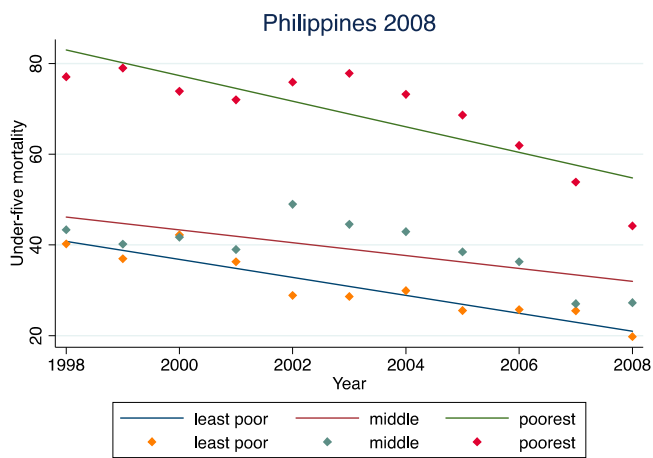


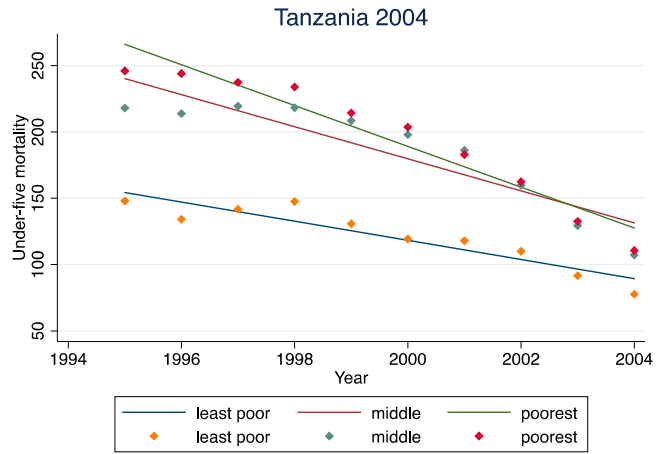
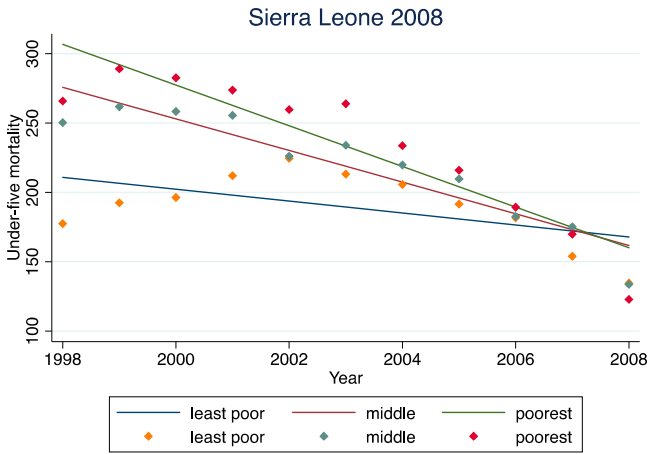
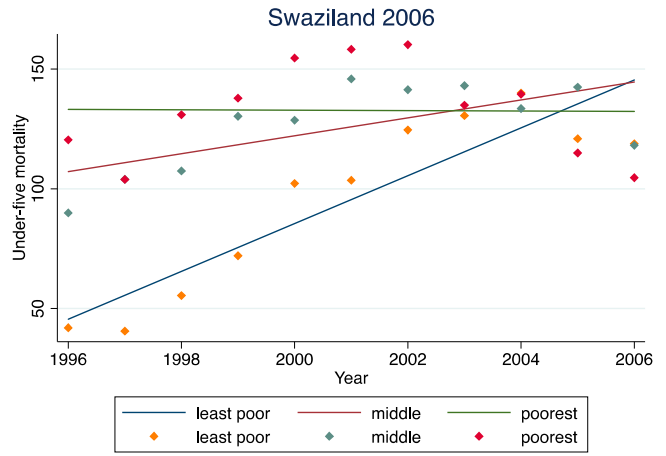
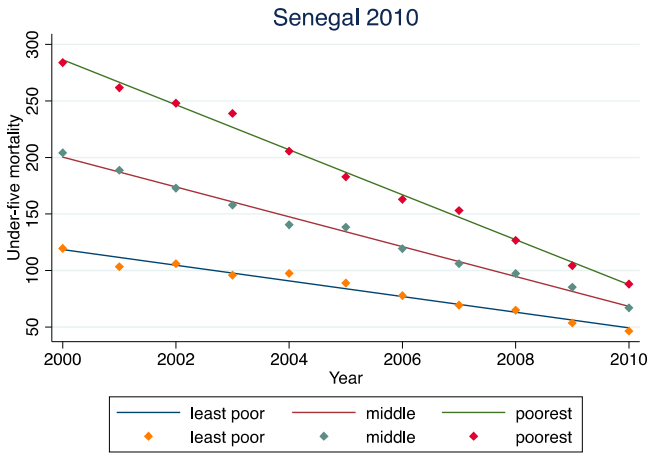




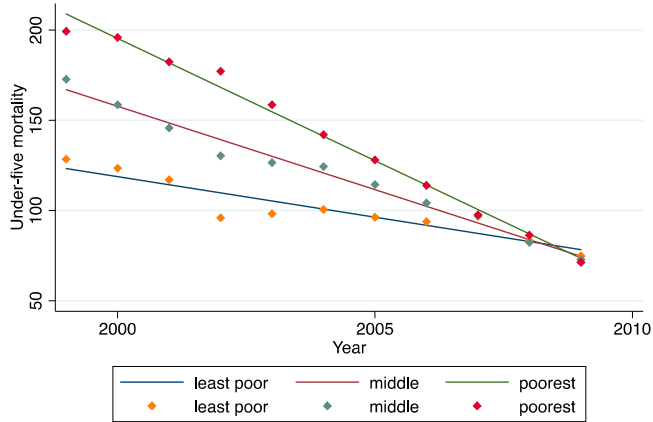




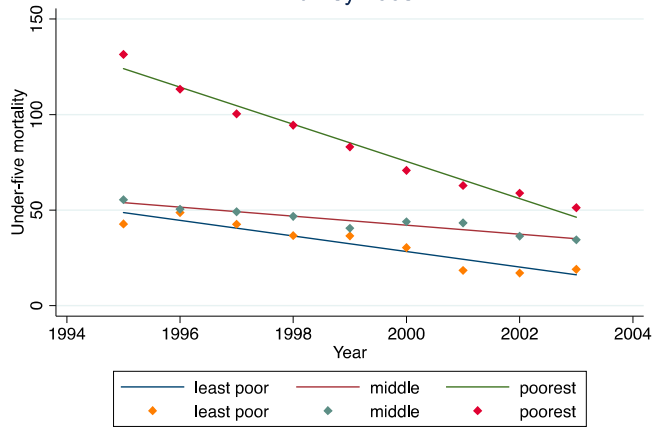




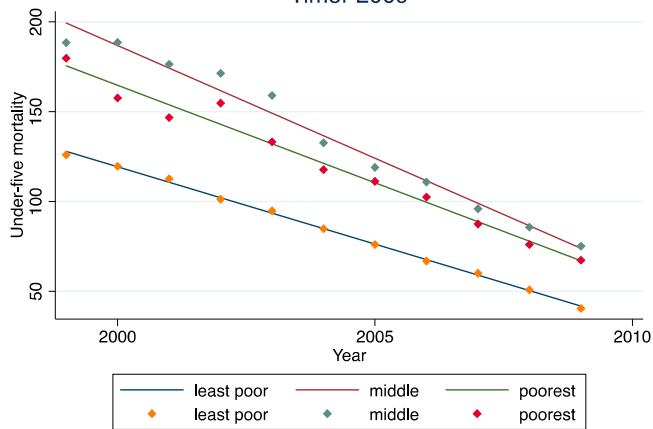
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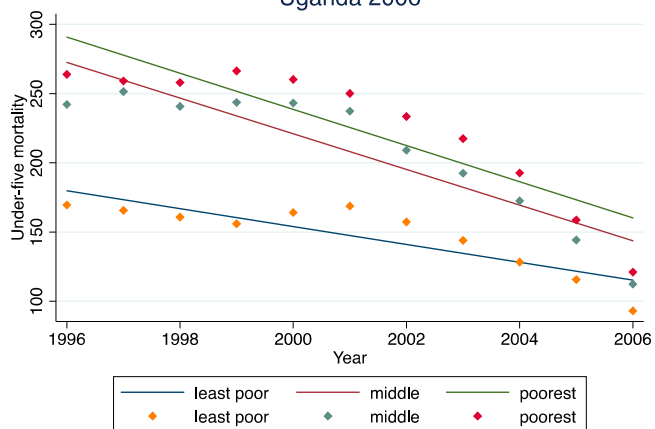
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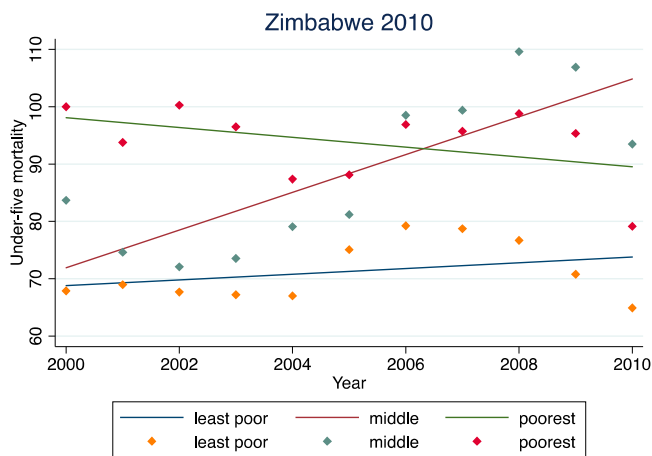
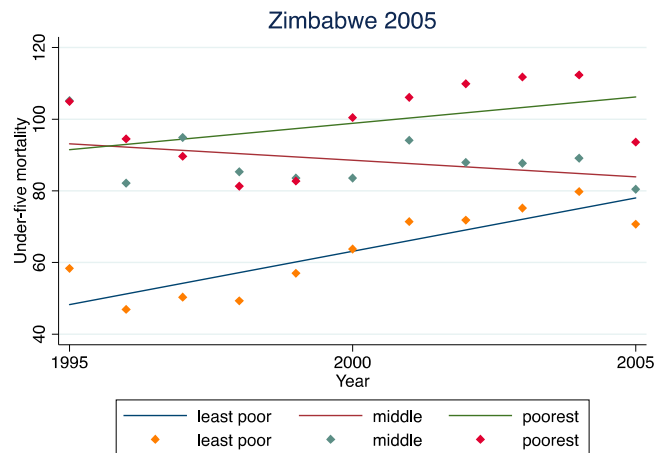
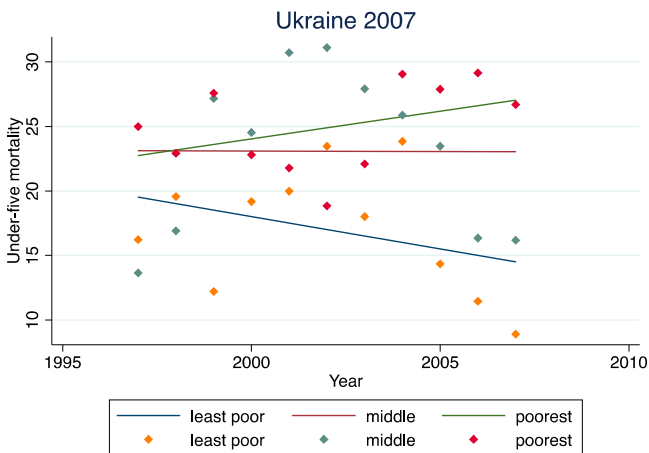
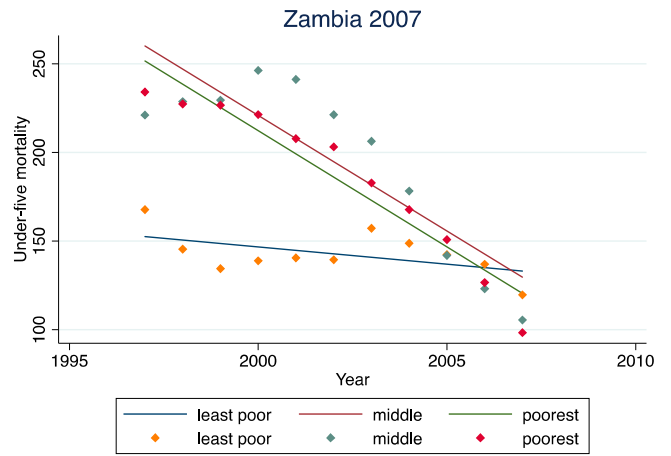
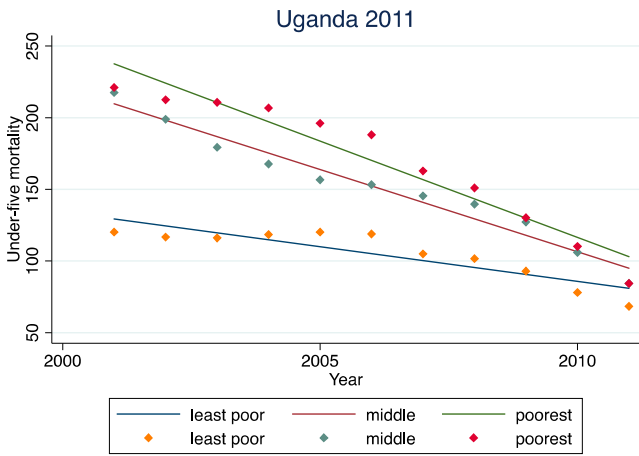


Timor 2009



Uganda 2006



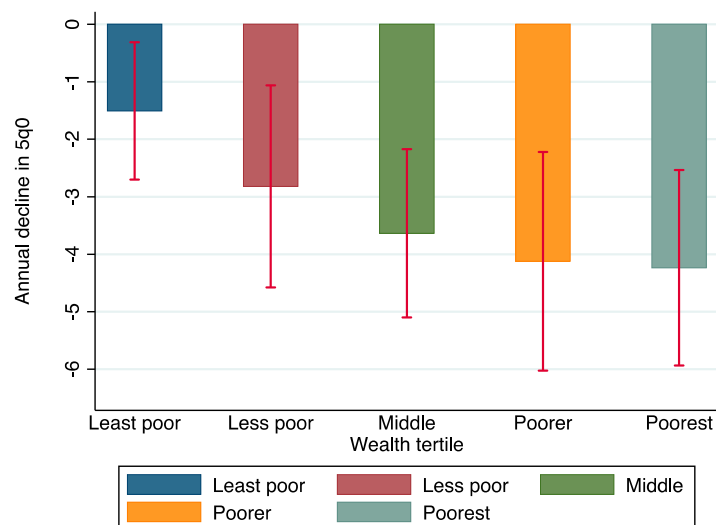


APPENDIX 4 CHANGING UNDER-5 MORTALITY BY WEALTH QUINTILES

The main analysis uses wealth tertiles to maximize sample size within each tertile

and to reduce the measurement error in wealth over time. However, the figure suggests that the choice of tertiles was not critical for the main finding, showing that

using the DHS-created wealth quintiles supports the finding that under-5 mortality declined the fastest among the poorest in the 29-country set with repeat surveys.

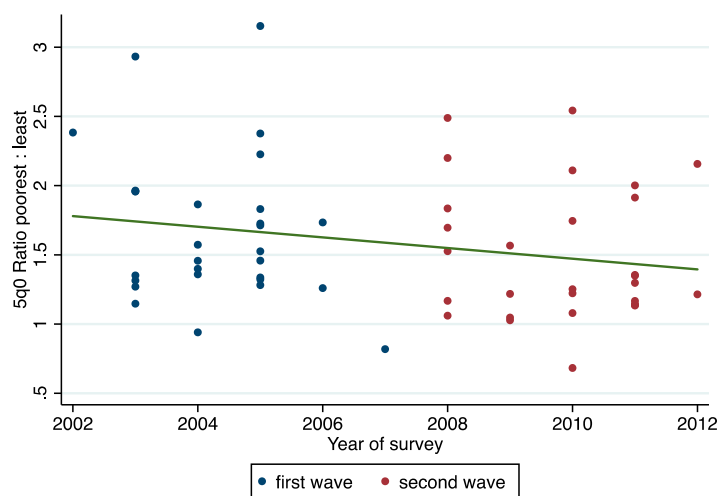


APPENDIX 5 DECLINING RATIO OF UNDER-5 MORTALITY RATES

The declining ratio of under-5 mortality (5q0) between the poorest and least

poor in 29 countries with repeat survey waves. The mortality rate ratio is an alternative measure of convergence; its decline between the first and second wave provides another perspec-

tive on the narrowing of mortality differences by wealth. The overall linear fit is shown, and within-country trends are examined in the main article.



REFERENCES

1. Rutstein SO. *The DHS Wealth Index: Approaches for Rural and Urban Areas*. Washington, DC: Macro International Inc; 2008