The Biophysical Determinants of Global Poverty

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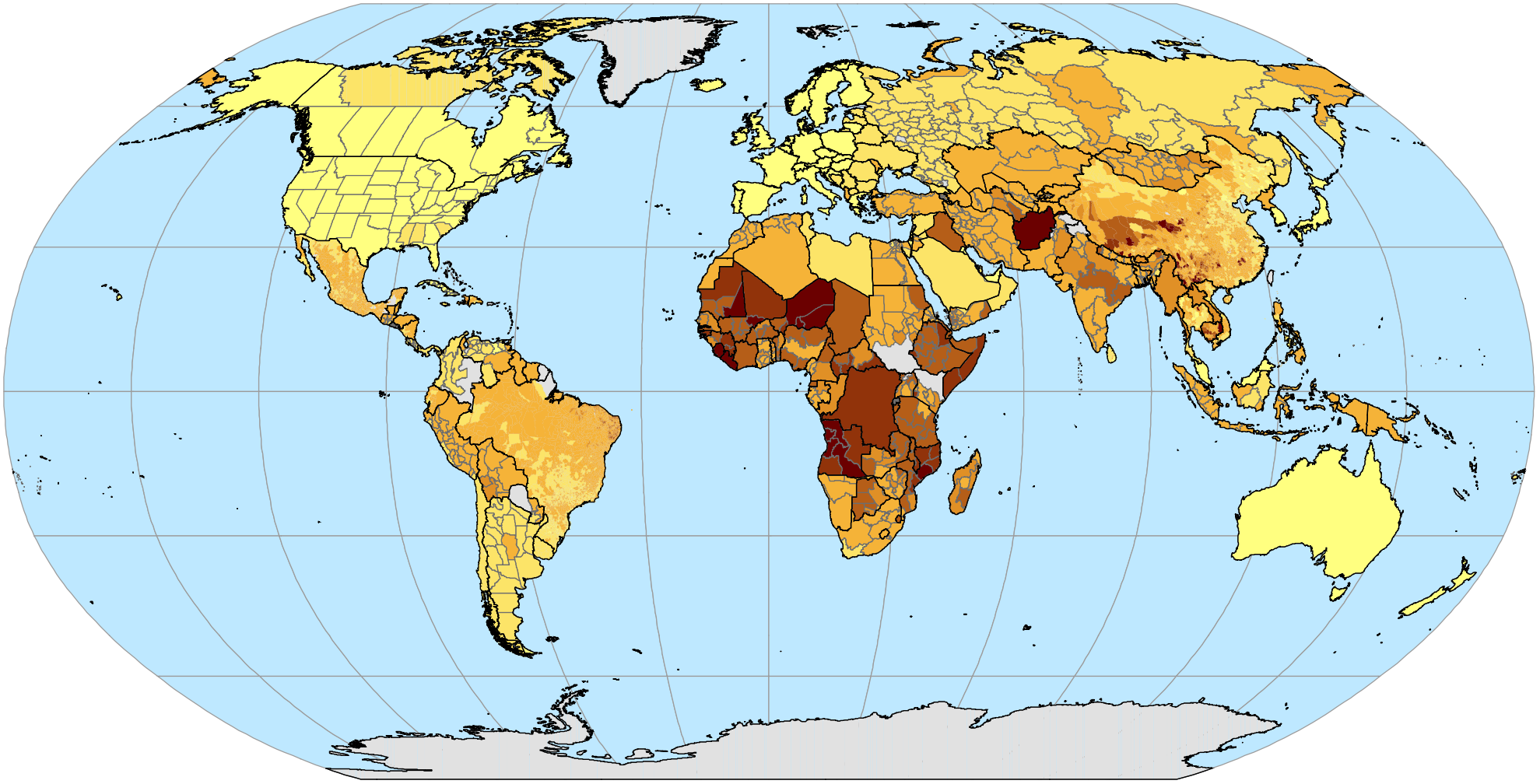
Though much is known about socioeconomic correlates of poverty, much less is known about poverty's biophysical determinants. Discrete evidence indicates that poverty is highly connected to poor-quality soils, drought-prone climates, high-altitude residence, and lack of access to markets, urban areas, and ports or coastal areas. Nevertheless, efforts to make universal statements about biophysical and geographic determinants of poverty has been limited largely to case-studies or explanations of unexplained residual effects. This study aims to fill that gap by examining the biophysical determinants of one aspect of poverty—infant mortality—via large-scale data integration to render biophysical parameters in units compatible with those from which the infant mortality data were collected. A multi-level, spatial regression model that accommodates inherently complex sampling frames is the basic method of analysis.

Subnational data on infant mortality—from Demographic and Health Surveys, Multiple Indicator Cluster Surveys, and Vital Registrations Systems—in over 10,000 regions of Africa, Asia, and Central and South America form the basis of this analysis (see Figure 1). Data on underlying biophysical constraints and resources (e.g., soil quality, climatic factors and irrigation, slope and elevation) and measures of remoteness (e.g., access to roads, urban areas, ports) are integrated for the purpose of being evaluated for their deterministic effects.

Both traditional and spatial regression techniques are undertaken, and their results compared. Recommendations will be made on the need for inclusion of particular biophysical and geographic factors in sociodemographic analysis, as well as on the appropriateness of analytic methods of global-scale data that attempts to integrate environmental and geospatial data with traditional demographic data.

Figure 1. Infant Mortality Rates



Robinson Projection

Infant mortality rate, 2000
(per 1000 live births)

- less than 9.1
- 9.1 - 25
- 25.1 - 50
- 50.1 - 75
- 75.1 - 100
- 100.1 - 125
- 125.1 - 150
- more thn 150
- no data
- national borders

Subnational mortality rates are adjusted to 2000 using national trend data. Original data for 96% of countries are from 1995 or later. All data are from 1990 or later.

Subnational boundaries have been removed from selected countries for clarity.

Data Coverage	Count-ries	Data units	Avg. units/ country	% of world Population
National data only	116	116	1.0	18.9
Subnational data	77	10155	131.9	80.8
Subnational data (excl. Brazil, China and Mexico)	74	1112	15.0	55.6
All data	193	10271	53.2	99.8

Sources: UNICEF, Demographic and Health Surveys (DHS), National Human Development Reports (nHDR), National Statistical Offices (NSO) and Ministries of Health (MoH).

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