



# Measuring Health System Strengthening: Deviance Analysis Using Mixed-Method Case Studies

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## BACKGROUND & RATIONALE

Global health programs increasingly emphasize health system strengthening.

**Our research objective** is to identify which combination of inputs and functions best explains high or low health system performance using a deviance analysis approach based on country case studies and quantitative health system data collected using a Health System Effort Index (HSEI).

Although the 2005 Maternal and Neonatal Program Effort Index (MNPI) data were originally collected to measure maternal and neonatal health program effort, they are used here as an example to demonstrate the mixed-method approach for one intermediate health outcome (skilled birth attendance). Authors would like to acknowledge the Futures Group for providing the MNPI data and additional support.

## DATA & METHODOLOGY

- Data: MNPI 2005 data from 29 countries classified as high- or low-performing based on coverage and progress data on skilled birth attendance (SBA), a measure of health system (HS) performance relating to maternal health, from 83 low-income countries
- Analysis of the relationship between HS inputs and functions identified in the MNPI questionnaire and SBA performance
- MNPI questions in combination with relevant national financial and health workforce data classified into clusters representing seven HS building blocks (World Health Organization plus demand generation)
- Deviance analysis approach to contrast relationship between HS inputs and SBA in seven high-and seven low-performing countries and three countries of varying levels of HS performance: Ghana (high performing) and Ethiopia and Nepal (low performing) using two methods:
  - Quantitative relationship between HS functions/inputs using the MNPI and SBA
  - Country case study to identify specific drivers of performance in each country

## Drivers of Skilled Birth Attendance

### DRIVERS ACROSS BUILDING BLOCKS

- Largest differences between high-and low-performing clusters in **finance, quality, and rural access**.
- Health center **service readiness** overall a lesser driver of SBA performance in these countries than access or quality
- High score but small difference between high-and low-performing clusters on **policy** may indicate that while policies are important, having them alone will not improve outputs.
- Demand generation** items limited to media and one item on free provision of services; provision of educational materials by Ministry of Health (MOH) more significant driver than media promotion of safe pregnancy and delivery.

### DRIVERS WITHIN BUILDING BLOCKS

- Individual items within building blocks (averages across highest- and lowest-performing countries) that drive performance:
  - Quality:** Monitoring labor, prophylactic treatment of infants' eyes
  - Rural access:** Adequate access to a skilled provider, access to management of obstructed labor, treatment for postpartum hemorrhage
  - Service Readiness:** Use of partogram at health center level, availability of Cesarean section at district hospitals

- Finance:** Total health expenditure (THE) per capita, an important driver of SBA performance
- Health workforce:** Density of physicians/nurses/midwives, new hire and refresher physician trainings
- Policy:** Public statements from high-level officials and vigorous implementation of safe pregnancy/delivery policies
- Information:** Using data for decision making emerges as more significant than having information systems in place
- Demand generation:** MOH provision of education materials to facilities

Country/Peer Group	SBA Coverage	SBA Progress <sup>1</sup>	Normalized SBA Performance <sup>2</sup>
<b>Low Performing</b>	<b>22.1</b>	<b>-0.61%</b>	<b>-27.08</b>
Ethiopia	5.7	-0.02%	-47.04
Chad	14.4	0.10%	-38.01
Bangladesh	18	-0.72%	-31.12
Nepal	18.7	-0.81%	-30.03
Haiti	26.1	-0.63%	-22.64
Niger	32.9	-1.51%	-12.06
Nigeria	38.9	-0.65%	-8.64
<b>High Performing</b>	<b>70.3</b>	<b>-2.45%</b>	<b>32.03</b>
Ghana	57.1	-1.58%	14.52
Cameroon	63	0.17%	14.63
Cote d'Ivoire	56.8	-1.74%	14.78
Nicaragua	73.7	-2.50%	35.94
Benin	74	-3.53%	39.98
Zimbabwe	79.7	-2.84%	43.68
Vietnam	87.7	-5.14%	60.71

1. Progress measured as the annual change in the percentage of the target population not covered.  
2. Coverage normalized to median for all low-income countries; progress (as defined above) normalized to zero. Normalized coverage and progress scores combined to form Normalized SBA Performance score.

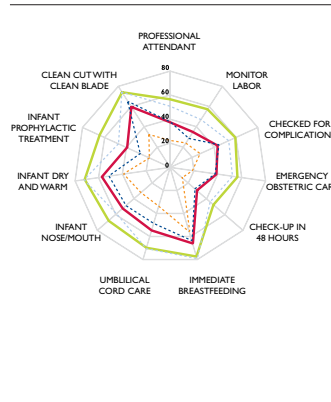
### Comparing low- with high-performing countries

- Countries largely consistent with group averages with some exceptions
- Service quality measured by 11 specific actions of delivery and neonatal care, an important driver of SBA performance
- Receiving four antenatal care (ANC) visits predicts SBA use
- Community-based services limit access when not scaled up

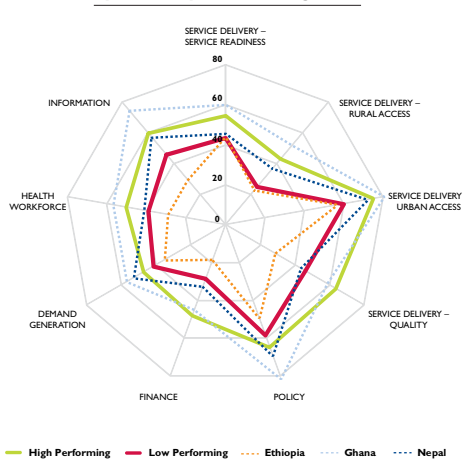
### Ethiopia (low), Nepal (low-middle), Ghana (high)

- THE per capita: Ethiopia \$20, Nepal \$26, Ghana \$93
- ANC (four visits): Ethiopia 12%, Nepal 29%, Ghana 78%
- Investment in community-based health service is important
- Fee exemption policies reduce financial barriers to access

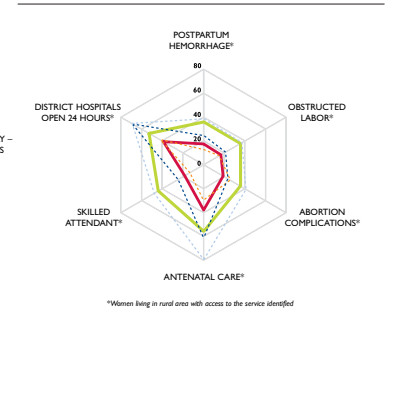
### Within Service Delivery –Quality Block



### By Health System Building Block



### Within Service Delivery – Rural Access Block



## CONCLUSIONS & NEXT STEPS

A mixed method approach can be effectively used to analyze data on health systems performance in one technical area (maternal health) and examine differences across countries.

**Next Steps:** Deviance analysis in nine countries examining all aspects of health progress in low-income countries

- Complete development of a HSEI instrument to collect quantitative data in select countries.

HSEI will be a comprehensive measure that quantifies the drivers of HS performance across WHO HS building blocks and seven health outcomes.

Index comprises ratings of drivers of HS performance by key informants, including HS experts identified by in-country consultants; data collection methods follow those used previously for the Family Planning Effort Index and the MNPI.

Collection of qualitative data in countries of interest to supplement the HSEI data.

Identify key drivers of health systems performance in each country of interest across building blocks.