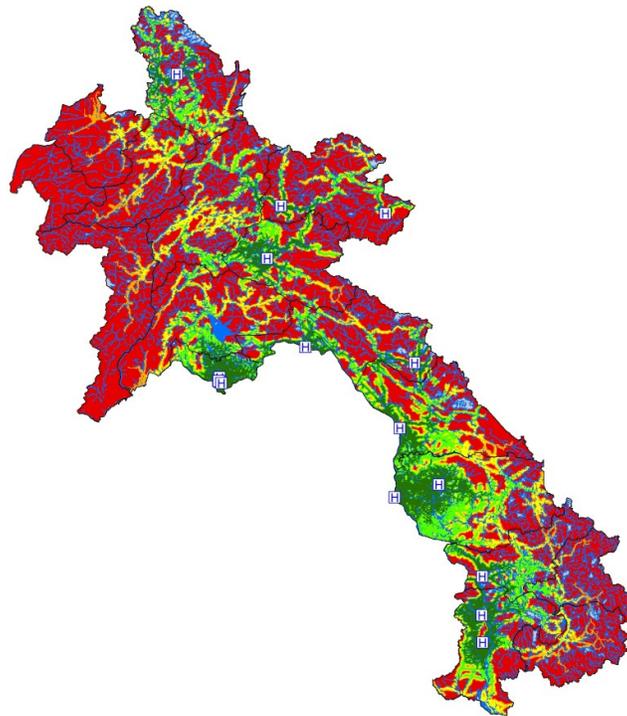


Investing the Marginal Dollar for Maternal and Newborn Health: Geographic Accessibility Analysis for Emergency Obstetric Care services in Lao People's Democratic Republic



Steeve Ebener, PhD¹ and Karin Stenberg, MSc²

¹ *Consultant, Gaia GeoSystems, The Philippines*

² *Technical Officer, Department of Health Systems Governance and Financing, World Health Organization, Geneva, Switzerland*

© World Health Organization 2016

All rights reserved. Publications of the World Health Organization are available on the WHO website (<http://www.who.int>) or can be purchased from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; email: bookorders@who.int).

Requests for permission to reproduce or translate WHO publications –whether for sale or for non-commercial distribution– should be addressed to WHO Press through the WHO website (http://www.who.int/about/licensing/copyright_form/index.html).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

The named authors alone are responsible for the views expressed in this publication.

WHO/HIS/HGF/GIS/2016.4

Table of Contents

| | |
|---|----|
| Executive summary..... | i |
| 1. Introduction..... | 1 |
| 2. Reference indicators and targets | 2 |
| 3. Assumptions and EmOC referral system..... | 3 |
| 4. Tool used for the different analysis: AccessMod 4.0 | 6 |
| 5. Analytical approach | 7 |
| 5.1 Accessibility coverage analyzes..... | 7 |
| 5.2 Geographic coverage analyzes | 8 |
| 5.3 Service utilization analyzes..... | 11 |
| 5.4 Scaling up analyzes | 13 |
| 6. Data and national norms used in the different analysis | 15 |
| 6.1 Statistical data | 17 |
| 6.1.1 National level figures | 17 |
| 6.1.2 Sub national level figures..... | 18 |
| 6.1.3 Cluster level figures | 20 |
| 6.1.4 Health facility level figures..... | 20 |
| 6.2 Geospatial data | 22 |
| 6.2.1 Administrative boundaries | 23 |
| 6.2.2 Geographic location of the EmOC facilities | 24 |
| 6.2.3 Land cover including the extend of urban areas | 25 |
| 6.2.4 Transportation network | 26 |
| 6.2.5 Hydrographic network | 28 |
| 6.2.6 Digital Elevation Model..... | 31 |
| 6.2.7 Spatial distribution of the number of births | 31 |
| 6.3 National norms | 33 |
| 7. Results | 35 |
| 7.1 Accessibility coverage analyzes..... | 35 |

| | |
|---|----|
| 7.2 Geographic coverage analyzes | 40 |
| 7.3 Service utilization analyzes | 47 |
| 7.4 Scaling up analyzes | 51 |
| 8. Conclusions and recommendations..... | 63 |
| References..... | 69 |
| Annex 1 – Indicators and minimum acceptable levels from the 1997 UNICEF, WHO, UNFPA Guidelines for monitoring the availability and use of obstetric services..... | 72 |
| Annex 2 – Indicators and minimum acceptable levels from the 2009 WHO, UNFPA, UNICEF and Mailman School of Public Health handbook for monitoring emergency obstetric care | 73 |
| Annex 3 – Illustration of the current EmOC referral system in the Lao People's Democratic Republic | 74 |
| Annex 4 –Province level demographic data used in the context of the project..... | 75 |
| Annex 5 – list of EmOC facilities identified during the National Emergency Obstetric and Newborn Care Needs Assessment conducted between 2010 and 2011 | 76 |
| Annex 6 – Simplified classification for the global land cover distribution grid | 77 |
| Annex 7 – Process followed in order to create the final land cover distribution grid | 78 |
| Annex 8 – Protocol used to spatially distribute the number of birth in each country..... | 79 |
| Annex 9 – Province level number and percentage of births where the household is located within 2 hours of travel time to a BEmOC (including CEmOC) facility for both scenarios..... | 81 |
| Annex 10 – Travel time between each BEmOC (including CEmOC) and the nearest CEmOC..... | 82 |
| Annex 11 – Province level travel time statistics | 83 |
| Annex 12 – Comparison between the estimated maximum coverage capacity obtained from Table 10 with the 2012 number of institutional deliveries for the BEmOC, including CEmOC, facilities where this information was available | 84 |

| | |
|--|----|
| Annex 13 – Health facility level results of the geographic coverage analysis for BEmOC (including CEmOC) facilities | 85 |
| Annex 14 – Births referred to CEmOC for complication and corresponding number of EmOC surgical teams in CEmOC facilities..... | 86 |
| Annex 15 – 83 facilities considered in the first scale-up scenario..... | 87 |
| Annex 16 – Health facility level results for the first scale-up scenario | 89 |
| Annex 17 – Travel time between each BEmOC and the nearest CEmOC facility in the context of the second scale-up scenario..... | 91 |
| Annex 18 – Births referred to CEmOC for complication and corresponding number of EmOC surgical teams in CEmOC facilities for the second scale-up scenario | 92 |
| Annex 19 – Health facility level results for the third scale-up scenario (first variant)..... | 93 |
| Annex 20 – Births referred to CEmOC for complication and corresponding number of EmOC surgical teams in CEmOC facilities for the third scale-up scenario (first variant) | 94 |
| Annex 21 – Health facility level results for the third scale-up scenario (second variant) | 95 |
| Annex 22 – Births referred to CEmOC for complication and corresponding number of EmOC surgical teams in CEmOC facilities for the third scale-up scenario (second variant)..... | 96 |
| Annex 23 – Summary of scale-up scenarios presented above (with MWH: Maternity Waiting Home; SBA: Skilled birth Attendant)..... | 97 |

Acknowledgements

The authors wish to express our gratitude to staff at the Ministry of Health of the Lao People's Democratic Republic for their time, inputs and the health statistics they have provided to inform the analysis presented in this report.

We also would like to take this opportunity to thank Ms Eunyoung Ko and Ms Boram Koh from the WHO Country Office of the Lao People's Democratic Republic for their valuable insights and support throughout the undertaking of the study.

Our gratitude also goes to Ms Noune Phommixai (National Geographic Department, NGD), Ms Siriphone Sakulku (UNFPA) and Dr Michael Epprecht (University of Bern) for the data and inputs they provided.

We acknowledge the financial support provided to this project by the Government of Norway.

For comments, please contact Karin Stenberg (stenbergk@who.int) or Steeve Ebener (steeve.ebener@gaia-geosystems.org).

Executive summary

Objective

Progress on MDG5a to reduce maternal mortality is lagging behind in many countries and a key constraint is access to skilled care at birth including emergency obstetric care (EmOC) services. In order to expand coverage, good-quality essential services must be integrated into strong health systems.

The World Health Report 2005 proposed a “close to client” approach with back up services at referral level. While the first level should be able to provide most of the Basic Emergency Obstetric Care (BEmOC) signal functions, there is also a universal need for access to comprehensive Emergency Obstetric Care (CEmOC) referral services, in case the need arises.

In recognition of the key impact that EmOC services can have on maternal mortality and safe birth outcomes, the World Health Organization (WHO) is supporting the use of Geographic Information Systems (GIS) to analyse physical accessibility to facilities providing EmOC in four selected countries, namely (by alphabetical order): Burkina Faso, Cambodia, Lao People’s Democratic Republic and Malawi.¹

Essentially, from a normative perspective every woman should be able to easily access a health facility that provides BEmOC. This is not currently the case in most low-income countries. Strategic decisions need to be made by policy makers and health planners with regards to what investments are feasible given limited resources and competing priorities.

The broader project aims to inform policy discussions on how to optimize or target the spending of the marginal dollar for maternal health at country level; in particular to examine the infrastructure requirements for scaling up coverage of institutional delivery with skilled attendance. The research undertaken as part of this project and presented here aims to investigate the current accessibility to EmOC and potential implications for future global and national level policy recommendations and norms.

Methodology

The analysis first assesses accessibility coverage². It then combines the results with data on the availability of human resources in the facilities providing the concerned health services, in order to obtain a measure combining both the population needs and service availability. This measure is referred to as geographic coverage.

¹ This work has received financial support from the Norwegian Government as part of a work plan to operationalize the UN Secretary General’s Global Strategy for women and children’s health.

² Refers to ensuring that health services are located within reasonable reach of the people who should benefit from it (Tanahashi, 1978)

In the case of the Lao People's Democratic Republic, working in close collaboration with the Ministry of Health through the WHO Country Office, a freely available GIS extension developed by WHO to measure physical accessibility to health care, called AccessMod (See Chapter 4), has been used in combination with statistical data from existing sources (including household surveys, Health Information System, etc..) to perform the following analyses for the country (See Chapter 5 for more details):

1. Accessibility coverage:
 - a. The percentage of all births where the household is located within 2 hours of travel time to a BEmOC facility;
 - b. The travel time between each BEmOC facility and the nearest CEmOC facility.
2. Geographic coverage:
 - a. The percentage of all births where the household is located within 2 hours of travel time to a BEmOC facility with enough capacity to cover all births under the assumption of normal delivery (i.e., with sufficient availability of skilled birth attendants);
 - b. The percentage of births with complications requiring blood transfusion/Caesarean-section (C-section) that will reach a CEmOC facility within 2 hours of travel time from BEmOC facilities, and where the CEmOC facility has enough capacity to manage complications (through the availability of EmOC surgical teams).
3. Service utilization: Comparison between the results from the accessibility/geographic coverage analysis with data on actual service utilization (BEmOC coverage compared with the percentage of births delivered in a health facility; sub national level estimated percentage and health facility level number of births referred to CEmOC facilities for complication compared with the corresponding percentage and number of caesarean-sections observed during a recent year).
4. Scaling up: Scenarios developed to reach universal accessibility and geographic coverage through various mechanisms of expanding the EmOC facility network.

The results coming out of these analyzes (Chapter 7) are presented under the form of tables, graphs and maps to be included into the analysis of maternal and new born health

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_27171

