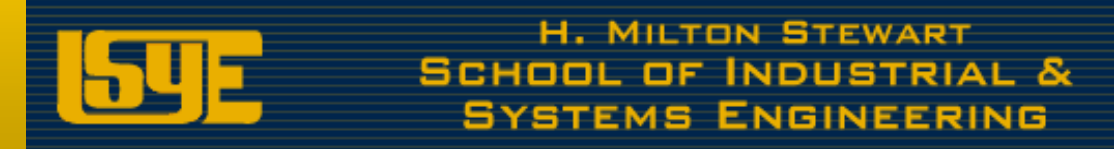


# Evaluating the Impact and Behavior of a Global Health Supply Chain

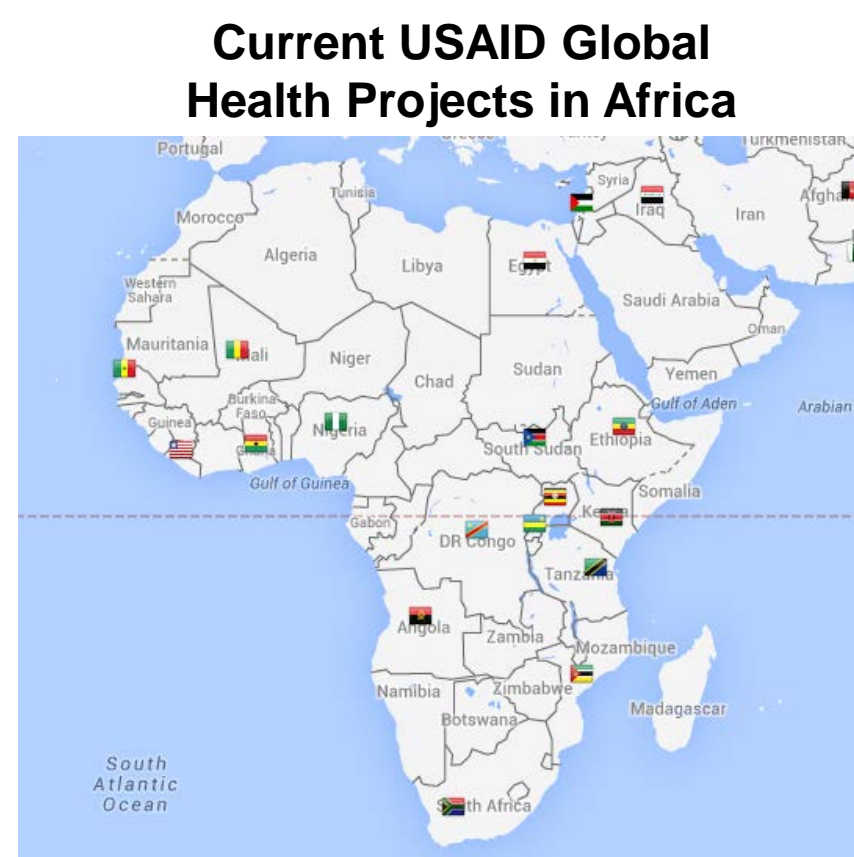


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## BACKGROUND

- The USAID | DELIVER PROJECT (TO7) improves and expands the delivery of antimalarial commodities (long-lasting insecticide-treated bed nets, RDTs, and ACTs) to country programs
  - Strengthens in-country supply systems and their ability to manage antimalarial commodities, and improves global supply and availability of antimalarial commodities
- By successfully managing the supply chain, TO7 contributes to increased malaria commodity security and supporting in-country availability through:
  - Managing national LLIN distribution and hang up campaigns
  - Directly delivering malaria products to intermediary and health-center levels
  - Building capacity for in-country supply chain managers
  - Improving logistics management information systems



## PRELIMINARY RESULTS: SUPPLY CHAIN IMPACT AND BEHAVIOR

### DATA OVERVIEW

#### Overview

- 20 African Countries
- 310 Shipments
- Only countries with more than 5 unique shipment ID's included

#### Response Variable

- Malaria Mortality

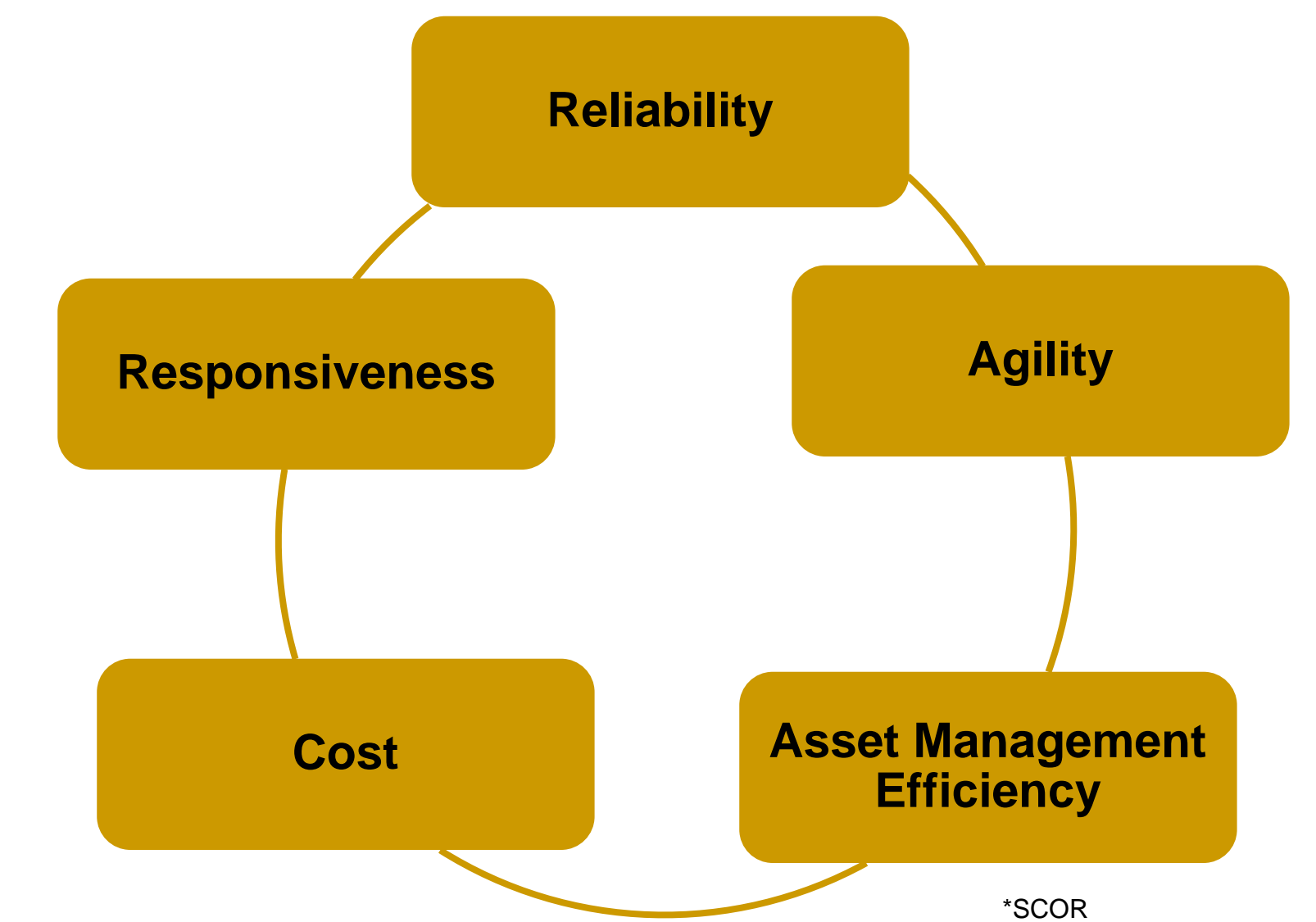
#### Performance Data

- Average Cycle Time

#### Independent Variables

- Geographic**
  - Temperature
  - Precipitation
  - Latitude
  - Country size
  - Malaria Seasons
- Demographic**
  - Population
  - Malaria at risk population
  - GDP per capita
- Donor Support**
  - Total Malaria Funding
  - USAID Funding Contribution
- Logistics Performance**
  - LPI score
  - Available infrastructure
- Health**
  - Physician density
  - Life expectancy
- Supply Chain Performance**

## SUPPLY CHAIN PERFORMANCE



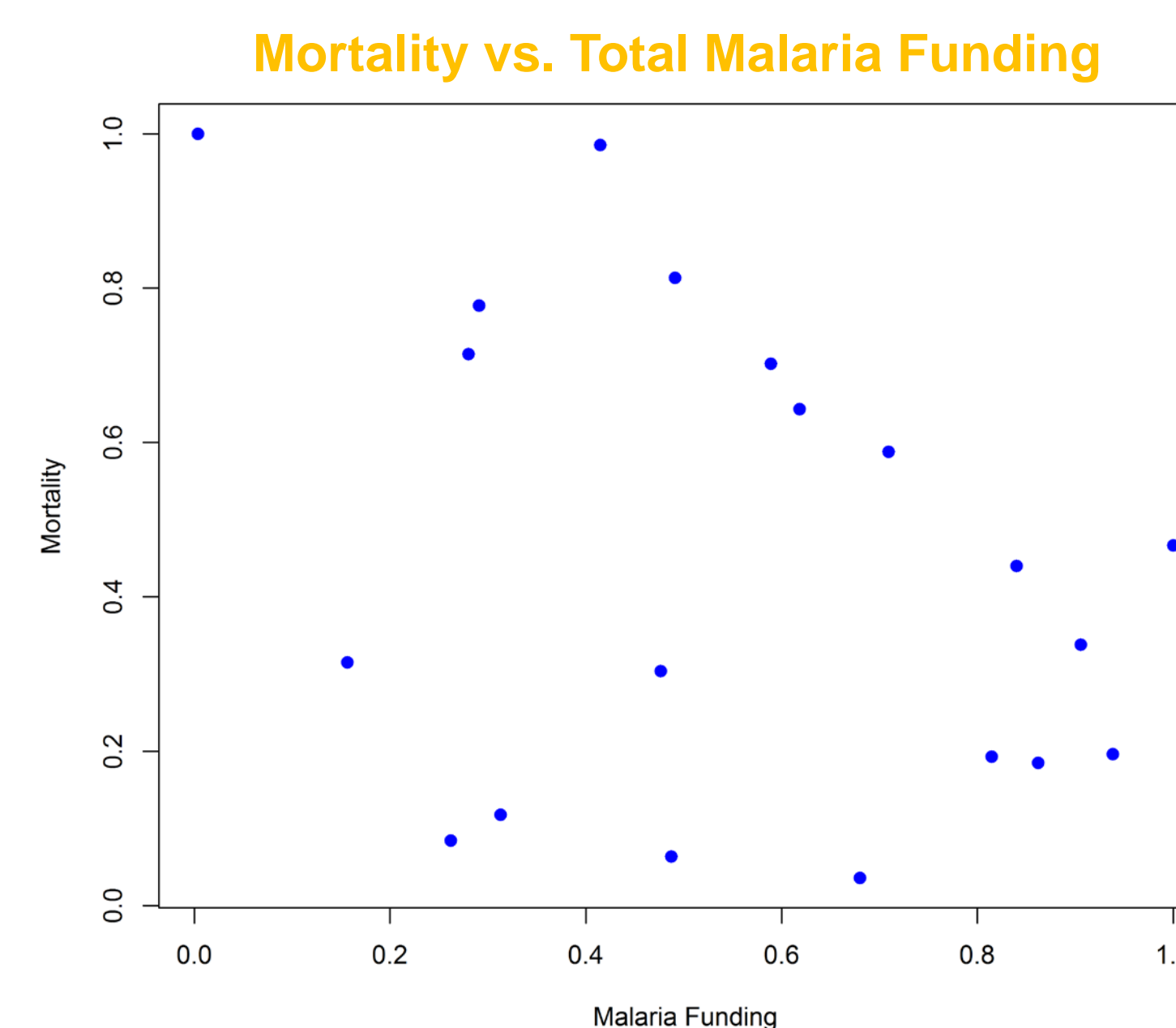
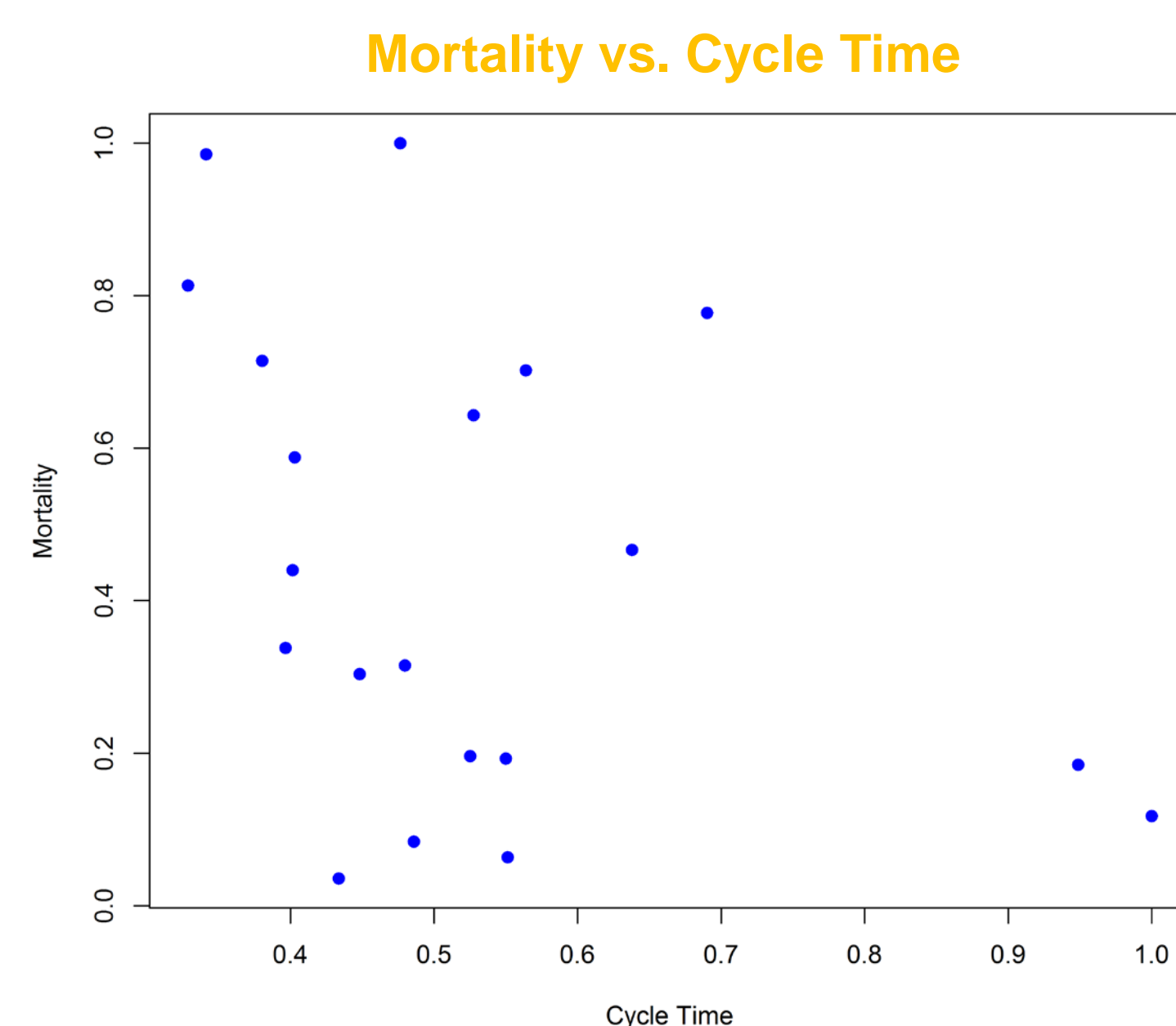
- Reliability and responsiveness have greatest impact on a country
  - Reliability – Are we on time?
  - Responsiveness – How long did it take?
    - Cycle Time**
- Cycle time: average time from the RO date (order date) to the date the commodity arrives in country

### MODEL RESULTS

Variable	Coefficient	Standard error	p	
Intercept	-0.03	0.466	0.9482	
Cycle Time	-1.35	0.200	<0.0001	***
Average Temperature	2.62	0.555	0.0005	***
Annual Precipitation	-0.74	0.165	0.0007	***
Latitude	-0.52	0.094	0.0001	***
Total Country Reported Funding	-1.29	0.154	<0.0001	***
Percentage of funding contributed by USAID	-0.49	0.129	0.0024	**
Percent of Antimalarial Coverage	0.58	0.105	0.0001	***

Adjusted R<sup>2</sup>: 0.85

### Behavior and Impact



## RESEARCH OBJECTIVES

Relevant questions that we address are:

- What impact does the USAID Malaria supply chain have on Malaria health?
- What are the most significant levers in the supply chain that can potentially increase impact?
- What behavioral characteristics are observed in the USAID Malaria supply chain?

## OUR APPROACH

- Public shipping data released by USAID was analyzed to determine the observed cycle time to each country receiving Malaria commodities
- Factors influencing Malaria mortality in each country were determined and included as controlling variables
- After controlling for known factors affecting Malaria mortality, the impact and behavior of supply chain variables were determined

## Conclusions

- Supply Chain Impact:**
  - Malaria Mortality is decreased by:
    - Total funding levels for Malaria
    - Percent of USAID contributed funding
- Supply Chain Behavior**
  - USAID delivers commodity fastest where there is the greatest need (highest mortality)
- Overall:** The USAID / Global Health supply chains do positively impact Malaria health

## ACKNOWLEDGEMENTS

### References

- "Global Health Supply Chain - Commodity Procurement - GREEN BOX - SINGLE AWARD IDIQ." *Federal Business Opportunities*. Agency for International Development. Solicitation Number: SOL-OAA-12-000128 Section J.9
- "World Malaria Report 2014." *Malaria*. WHO, n.d. Web. 17 Sept. 2015. <[http://www.who.int/malaria/publications/world\\_malaria\\_report\\_2014/en/](http://www.who.int/malaria/publications/world_malaria_report_2014/en/)>.

### Special Thanks

- USAID Global Health Bureau for providing an internship and assistance finding and understanding the data
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