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

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**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

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**DATA OVERVIEW**

**MODEL RESULTS**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.03</td>
<td>0.466</td>
<td>0.9482</td>
</tr>
<tr>
<td>Cycle Time</td>
<td>-1.35</td>
<td>0.200</td>
<td>&lt;0.0001 ***</td>
</tr>
<tr>
<td>Average Temperature</td>
<td>2.62</td>
<td>0.555</td>
<td>0.0005  ***</td>
</tr>
<tr>
<td>Annual Precipitation</td>
<td>-0.74</td>
<td>0.165</td>
<td>0.0007  ***</td>
</tr>
<tr>
<td>Latitude</td>
<td>-0.62</td>
<td>0.094</td>
<td>0.0001  ***</td>
</tr>
<tr>
<td>Total Country Reported Funding</td>
<td>-1.29</td>
<td>0.154</td>
<td>&lt;0.0001 ***</td>
</tr>
<tr>
<td>Percentage of funding contributed by USAID</td>
<td>-0.49</td>
<td>0.129</td>
<td>0.0024  **</td>
</tr>
<tr>
<td>Percent of Antimalarial Coverage</td>
<td>0.58</td>
<td>0.105</td>
<td>0.0001  ***</td>
</tr>
</tbody>
</table>

Adjusted $R^2$: 0.85

**Model Variables**

- 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

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**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

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**REFERENCES**

- "Global Health Supply Chain - Commodity Procurement - GREEN BOX - SINGLE AWARD IDIQ." Federal Business Opportunities. Agency for International Development. Solicitation Number: SOL-0A-12-500128 Section J.9