Using geospatial data in evaluation: Opportunities and challenges

Jos Vaessen, PhD
World Bank IEG

@undp_evaluation #NECdev
Geospatial data in evaluation: IEG applications

• What are some of the questions we look at with geospatial data:
  • Targeting
  • Impact
  • Implementation fidelity

• Different levels of abstraction

• Opportunities and challenges
Mexico Country Program Evaluation

Share of B40, World Bank project funding (23 projects) and public expenditure per state

Share of national B40 population
- 0.00 - 0.01
- 0.01 - 0.02
- 0.02 - 0.02
- 0.02 - 0.05
- 0.05 - 0.13

Share of World Bank funding
- 0.0101 - 0.0132
- 0.0132 - 0.0145
- 0.0145 - 0.0185
- 0.0185 - 0.0228
- 0.0228 - 0.2675

Share of public expenditure
- 0.0071 - 0.0143
- 0.0143 - 0.0202
- 0.0202 - 0.0291
- 0.0291 - 0.0372
- 0.0372 - 0.1267

Source: The authors’ calculations based on data from the World Bank’s Global Reach team, AidData and the Bank’s BOOST initiative
Systems analysis: Flood resilience in Accra

Institutional Capacity:
- Financial capacity
- Staff
- Equipment
- Regulation reform
- Guidance

World Bank Support

Institutional Behavior + Change in the Built Environment = Urban Flood Resilience

- Geographical location of current World Bank projects
- World Bank's contribution to change of institutional behavior
- World Bank projects' spatial effect inside and outside the flood hazard zone

World Bank input [I], Leverage points [L], Systems intervention [S], Context [C]
Positive relationship → Negative relationship ←

Financial and technical assistance [I]

Training and capacity building for land administration [S]

Institutional reform [S]

Knowledge base and information system [S]

LUPMIS and GELUS [C]

Street naming and house numbering [C]

Ownership and tenure [C]

Institutional coordination [L]

Customary landowners [C]

Integrated approach [C]

Inadequate staff and logistics [C]

Institutional crowdedness [C]

Mitigation of flooding [C]
Awareness, attitudes and behaviors of institutions, their capacities, and their (combined) interventions

Awareness, attitudes and behaviors of businesses, communities, citizens

Land uses and (changes) in the built environment

WBG support (convening power / advisory / TA / funding) for:
- Institutional reform and collaboration
- Systems
- Processes
- Human resources
- Equipment
- Infrastructure
- …
How to unpack this causality?

1. Single intervention perspectives (yes, but…)

2. Systems perspectives

<table>
<thead>
<tr>
<th>Scope/delimitation (dimensions)</th>
<th>Feasible?</th>
<th>Big data?</th>
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<tr>
<td>WBG-institutions-citizens-land use-built environment</td>
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<tr>
<td>Flood risk-land use-built environment</td>
<td>Possibly</td>
<td>longitudinal geospatial data layering</td>
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<tr>
<td>WBG-institutions</td>
<td>Possibly</td>
<td>text analytics around contribution claims</td>
</tr>
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</table>
Flood risk  

Land use  

Built environment
Geospatial impact assessment: Road construction in Maputo

Black line – Road Supported by the Bank
Dotted line – Road not improved
Red Circle – 2km buffer from the roads
Irrigation project in Dominican Republic
Some conclusions and challenges

- Evolution in geo-referencing (public) WBG support

- Evolution in ground-truthed geospatial data on development objectives

- Increasing opportunities for low(er) cost impact evaluations using geospatial data

- Causal contribution remains challenging