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Analytics for a Better World

Disruptive Technologies
for Public Assets Governance (DT4PAG)

Geospatial Planning and Budgeting Platform (GPBP)

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June 01, 2022

The Development Challenge

problem/opportunity statement



Three big challenges in public investment and asset management

Inefficient spending on public asset investment and maintenance



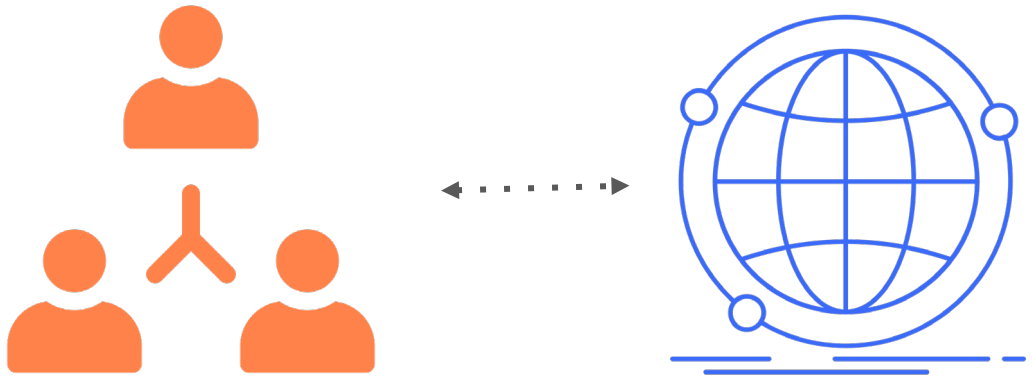
Development processes making public infrastructure assets and services more vulnerable to climate shocks.

Paper-based reports and management with limited digital technology applications resulting in sub-optimal physical infrastructure/services governance

Analyzing & Acting Geospatially

Descriptive: *Gaps relative to end-beneficiaries location?*

Prescriptive: *How could the situation be improved with scarce resources?*



Framing results
(e.g. health access)

Digital data assets

Where are we now and what we would like to achieve?

- One-off analysis based on complicated Spreadsheets
- Aggregate and opaque results
- Single scenarios and little opportunity for experimentation
- Difficult to communicate to decision-makers
- Costly deployment of new analysis/systems
- Paper Based, Fragmented, Tabular not Spatial, Fails to Tap into Global Layers

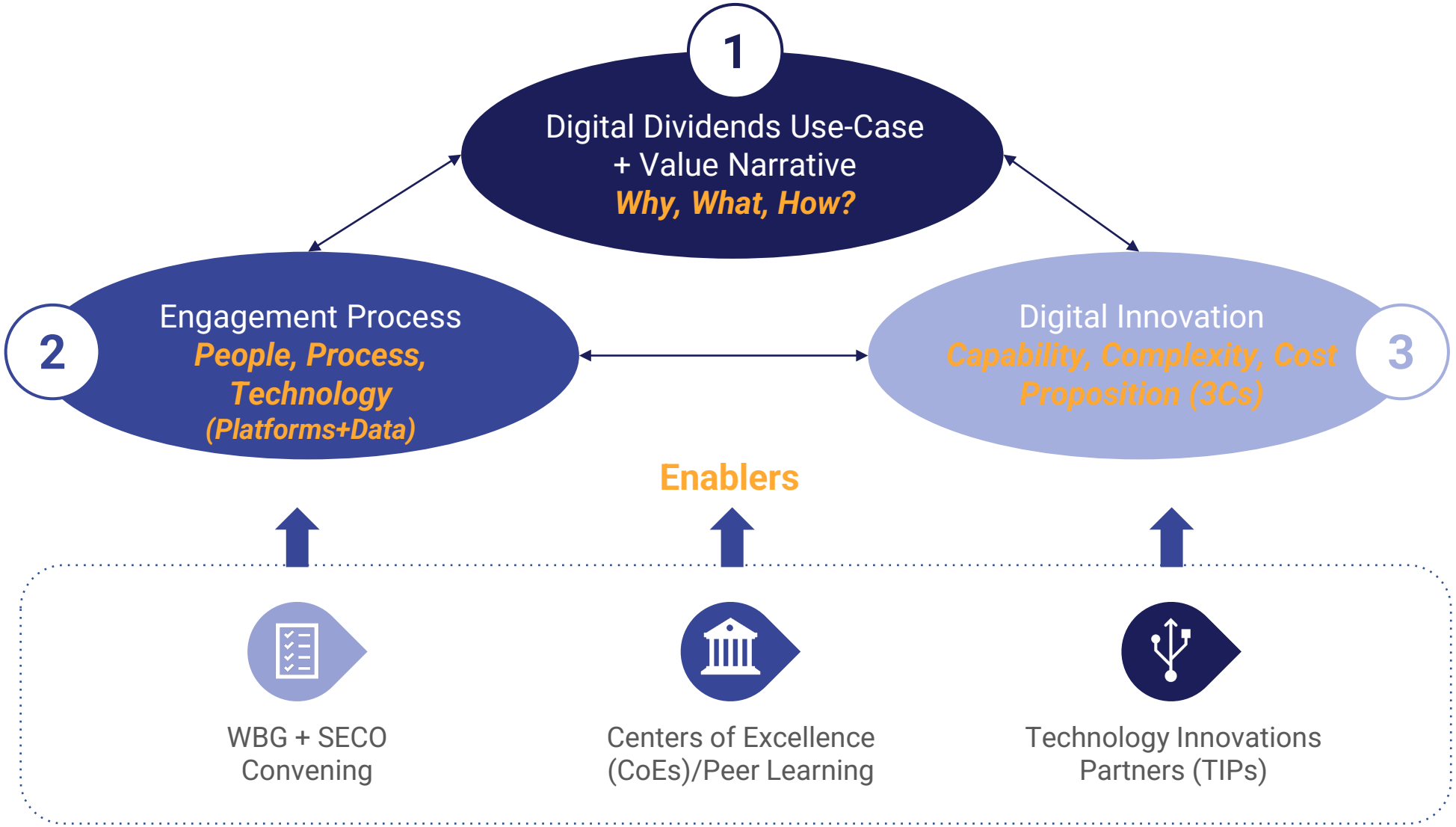
Current State

- Continuously updated maintenance prioritization list
- Intuitive results on a map
- Empowers multiple scenarios and deep analysis
- Easy to communicate to decision-makers
- Integrated in existing systems and modular structure

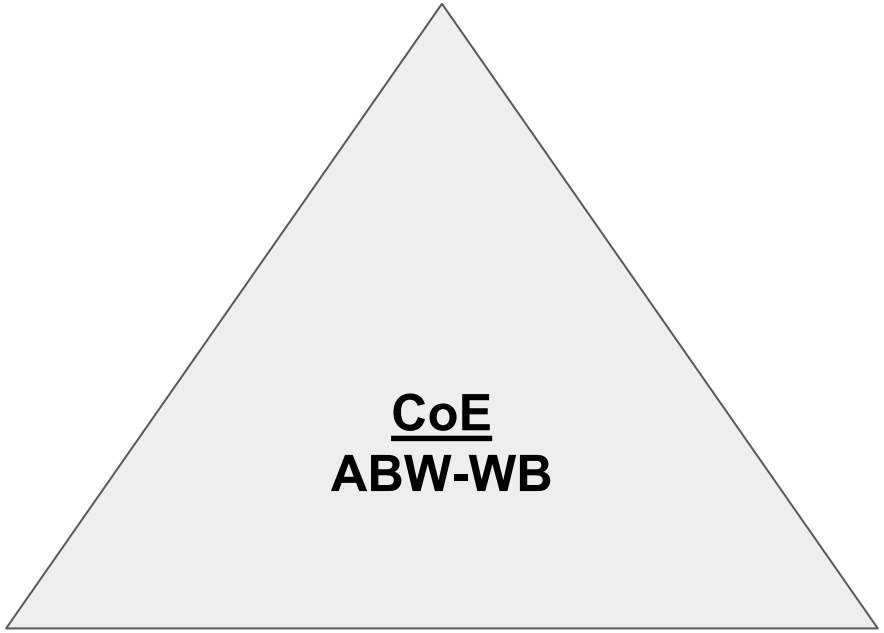
Future States

- **People** in and out of government embrace digital workflows/assets
- **Processes** are underpinned by enabling legal and regulatory framework
- **Technology** innovative offerings are fit for purpose and accessible to public sector

Engagement Framework



Academia/Think Tanks
Research on SDGs and novel analytics
Education to increase awareness and build skills

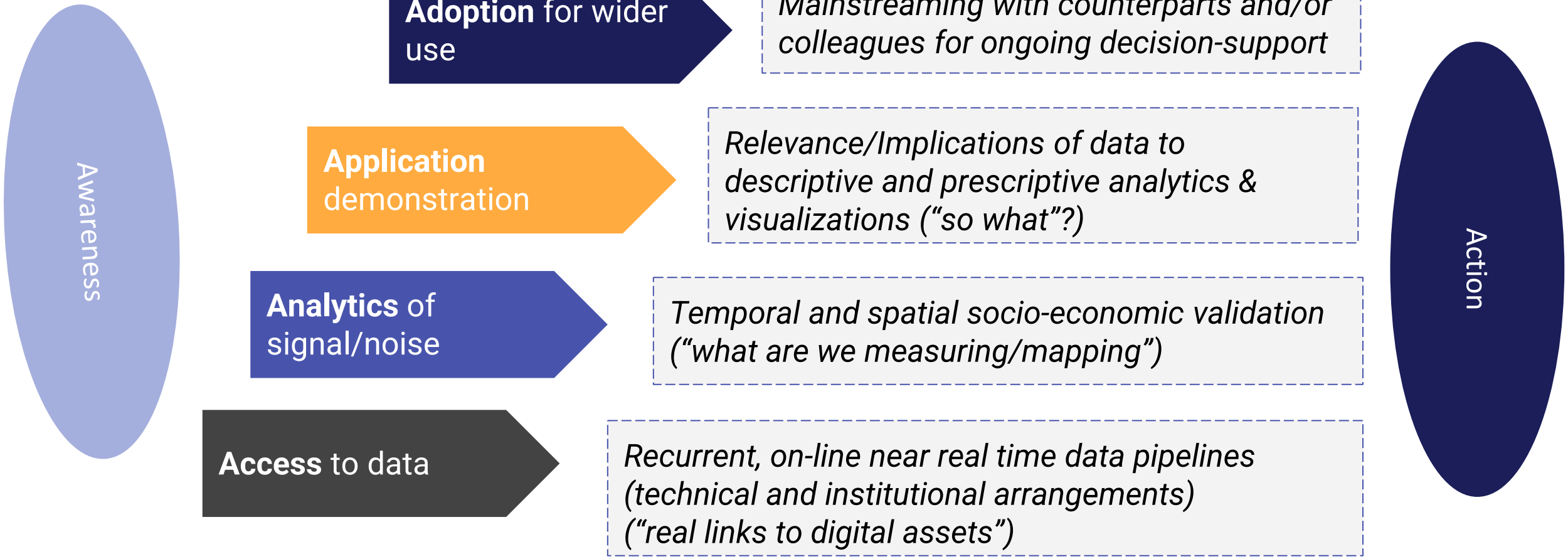


Domain/Sector Specialists
Knowledge for problem scoping/solving
Connect to problem-statements and delivery

Private Sector Business
Geared for implementation & delivery
Training and knowledge sharing
Funding/sponsorship

End-User Value
Awareness, Access, Analysis, Application, Adoption/Actions

Realizing Participatory Analytics



User-Centric Decision Support for Digital Government Transformations

Big Data Observatory and Disruptive Technologies for Public Asset Governance

User Awareness and Actions transformed by realizations of
access, analysis, application, and adoption of cloud-based, data-driven decision support tools

User Interfaces/Experiences (UI-UX): WebApps + cloud-based JPNEs

Big Data Observatory (BDO)

Public Infrastructure Service Access (GPBP PISA Tool)

Climate Change Screening (GPBP CCS Tool)

Road Maintenance & Criticality (GPBP CBA Maintenance Prioritization)

Digital Data Assets

Fit for Purpose Global Data Catalogue/Services

Country Level Data Assets

Country Special Deployments/User-Capabilities: e.g., Vietnam HCMC Flood Exposure Decision Support Platform

Engagement Process
User-Centric Digital Transformation Value



People

Focus on users (who care) and decision makers (who act)

Process

De Jure and De Facto Environment (Policy framework & Practices)

Technology (Platforms + DATA)

Digital workflows for decision-support and accountability

The Delivery Challenge

from what to how…

Replicable + Scalable Participatory Analytics



Accessibility to Primary Healthcare

MAP OF THE DAY: The Closest Starbucks Is Never More Than 170 Miles Away

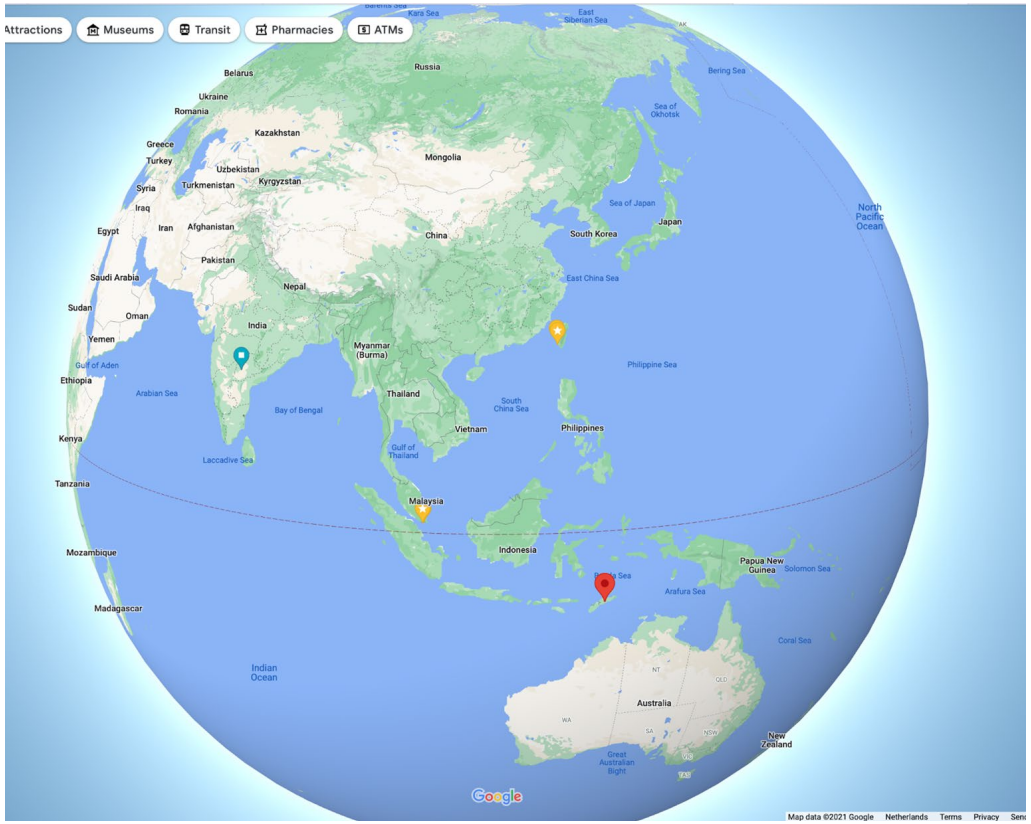
Kim Bhasin Oct 4, 2012, 10:11 PM

Astronomer James R.A. Davenport posted this fantastic map on his blog If We Assume.



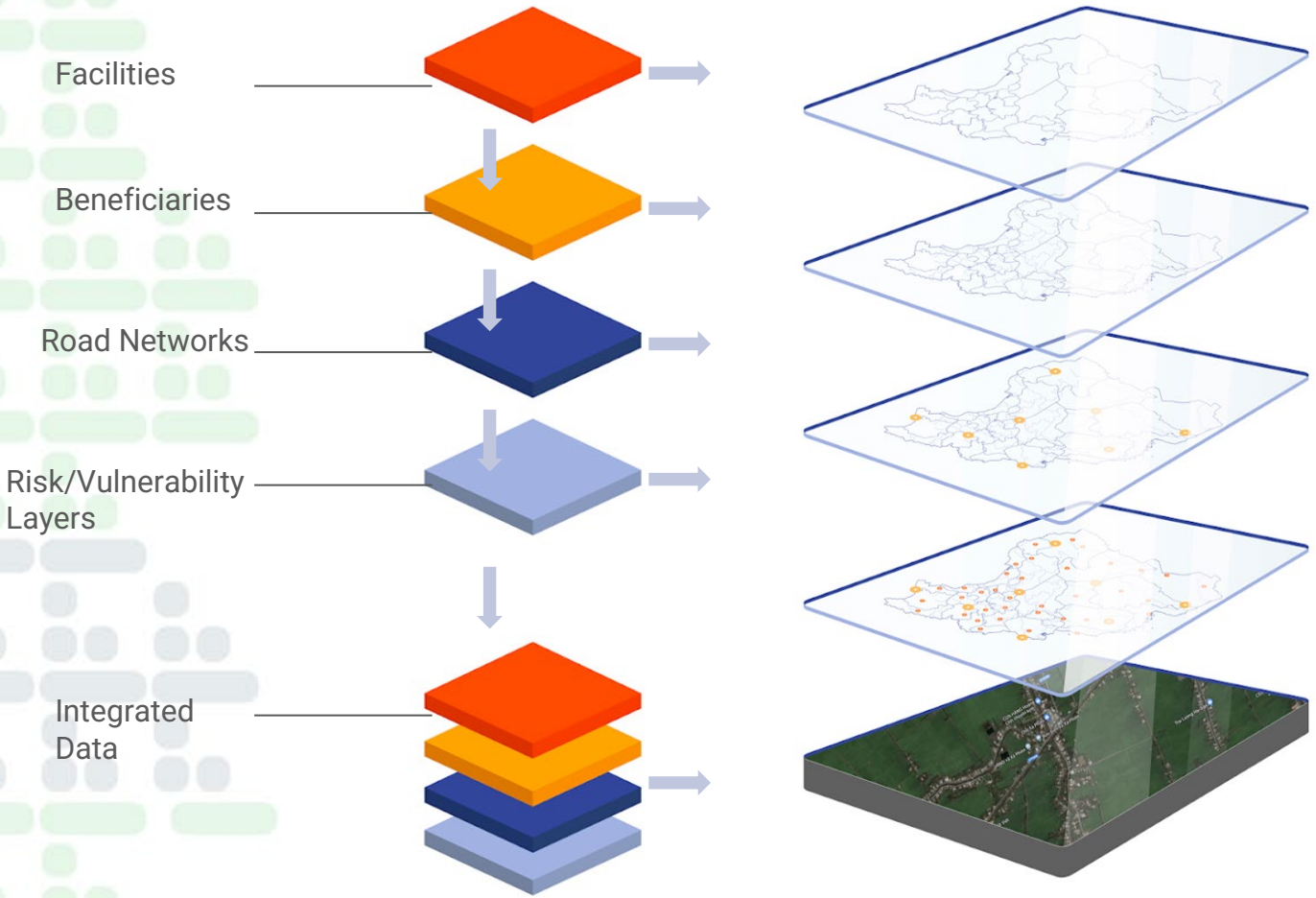
It shows every company-owned Starbucks in the U.S., which means all the franchised Starbucks locations are not shown.

Accessibility to Primary Healthcare



One-quarter of households are more than 2 hours walk from their nearest primary facility.

WHAT is Needed for Results?
Bringing Solutions Together for Whole of Area Results

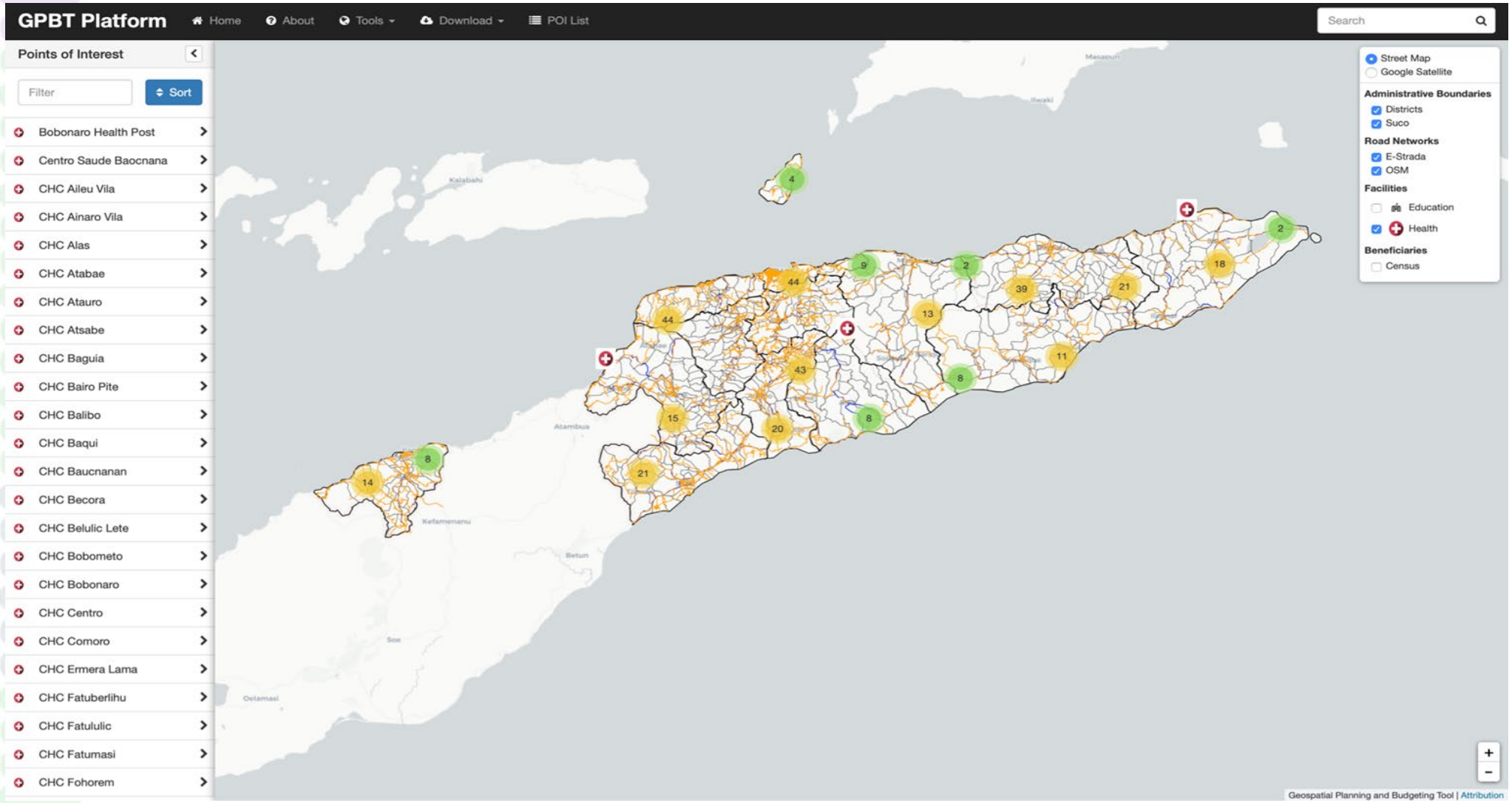


Analysis platforms-tools

Descriptive to Prescriptive Decision Support Use-Cases

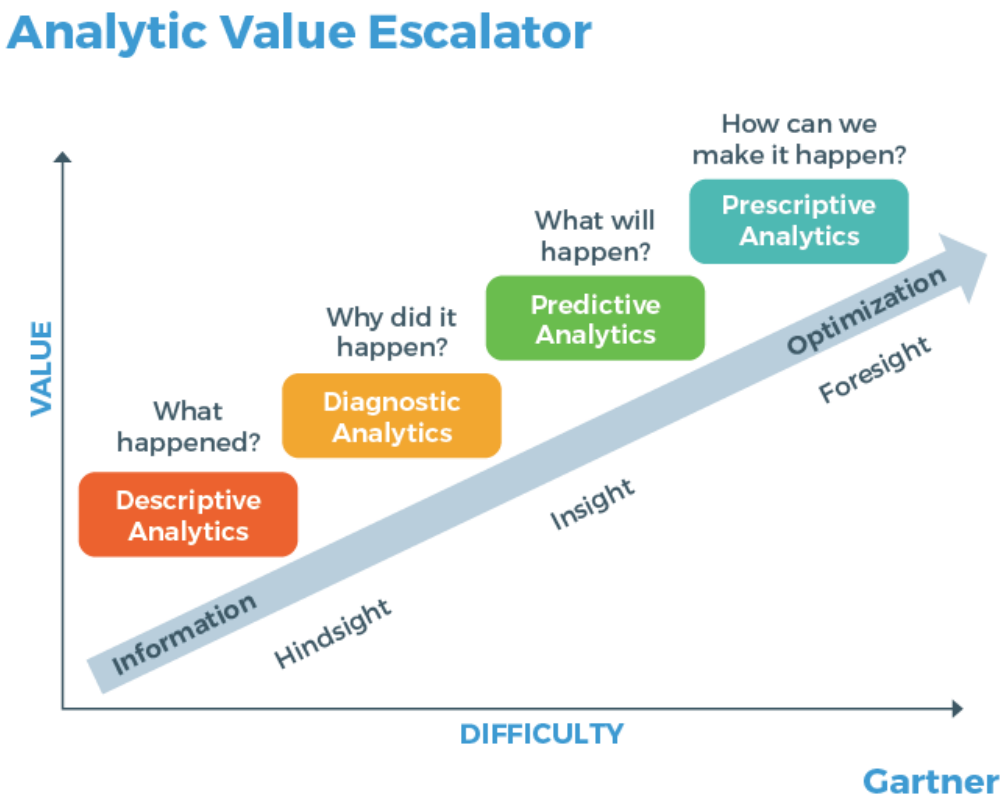
- Access Analytics
- Investment Prioritization
- Risk based supervision
- Natural disasters & recovery analysis

WHAT is Needed for Results?
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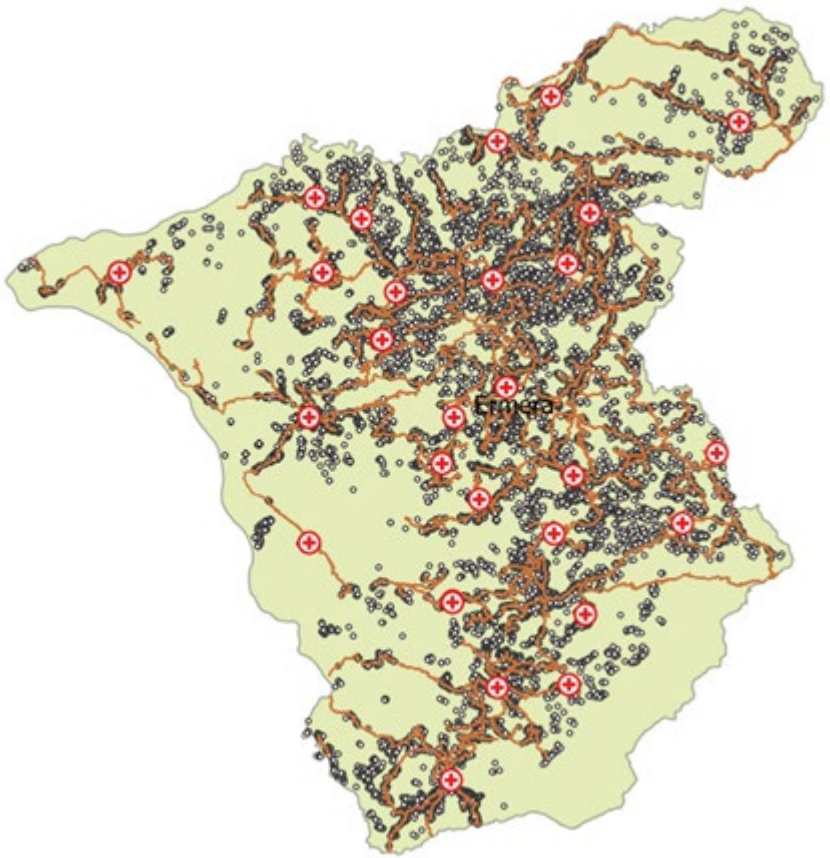


Analytics for a Better World

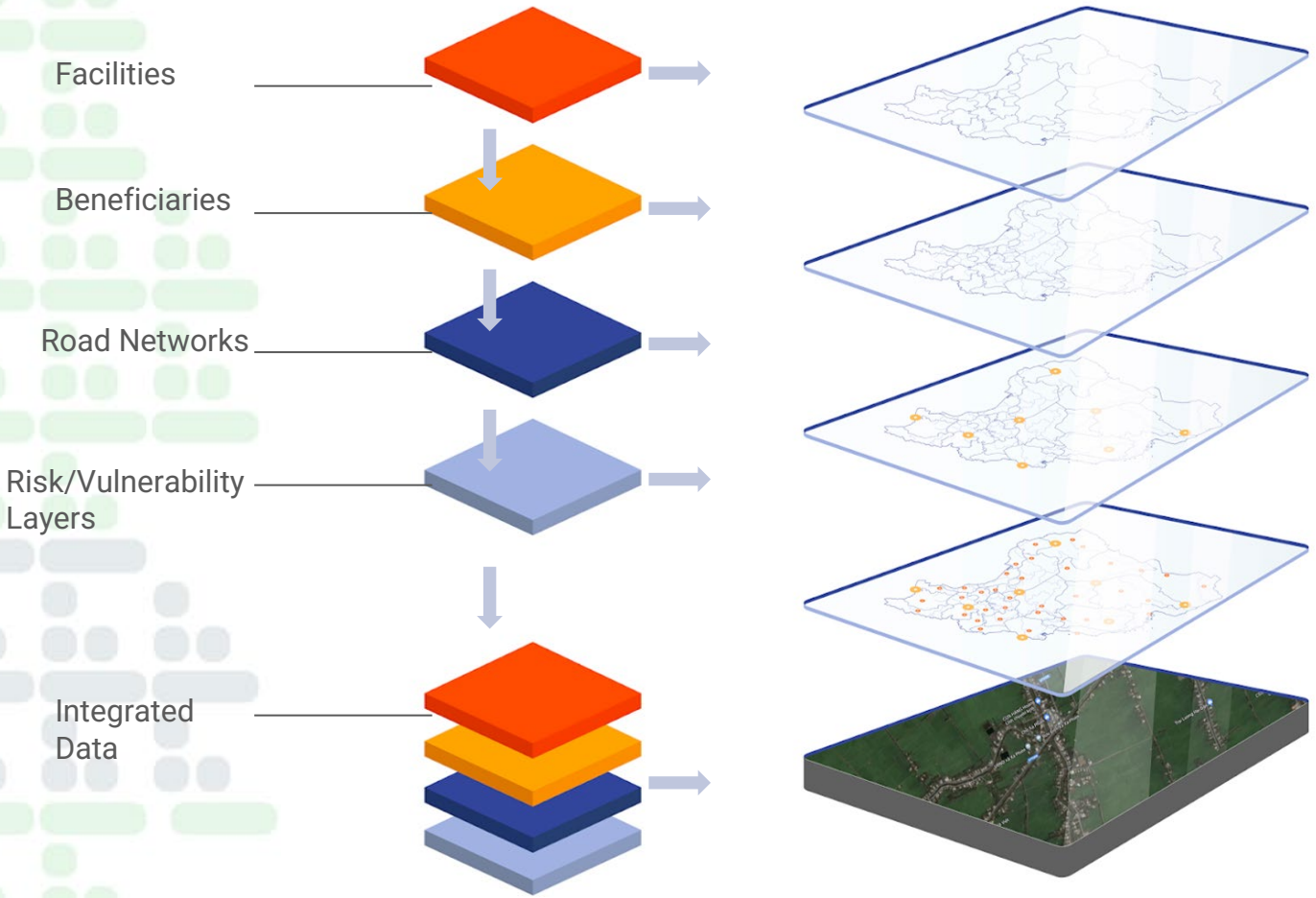
How can we implement it?



ERMERA ACCESSIBILITY TO PRIMARY HEALTHCARE CENTRES



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Bringing Solutions Together for Whole of Area Results

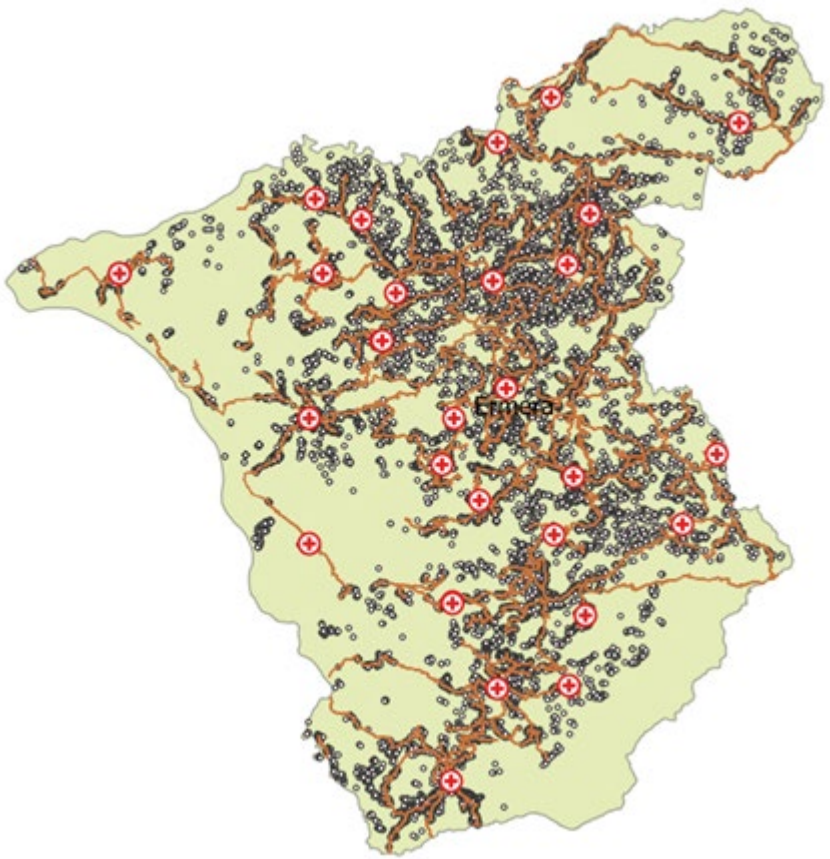


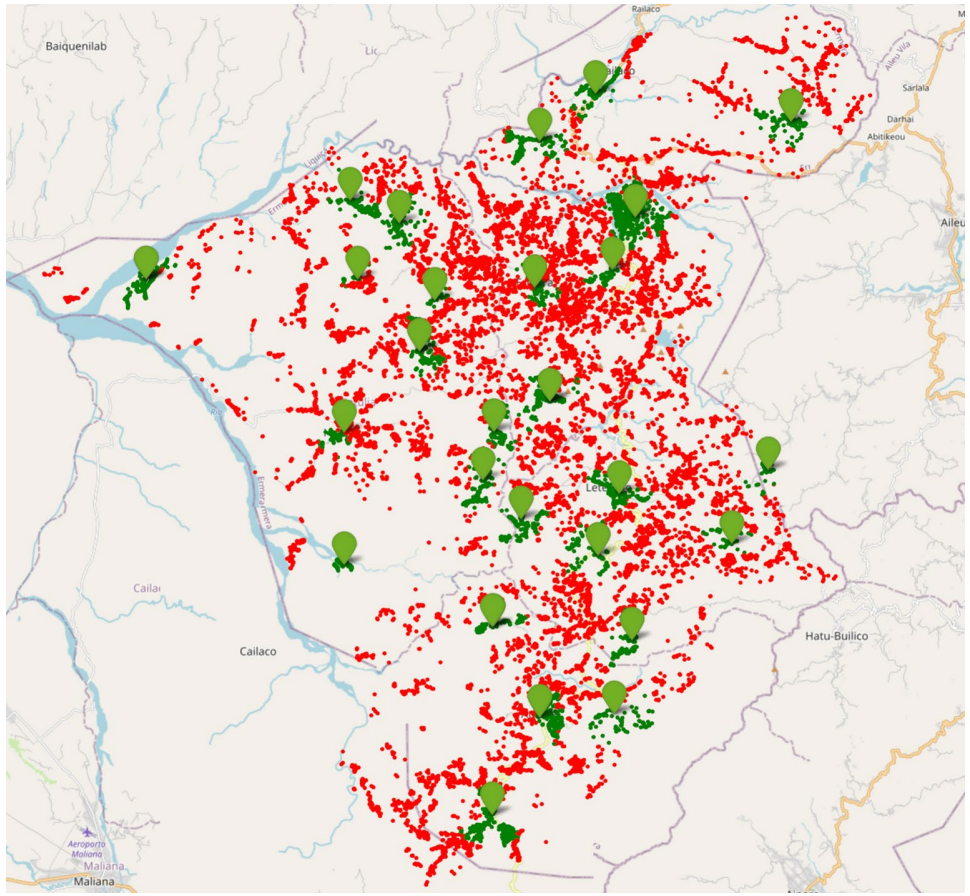
Analysis platforms-tools

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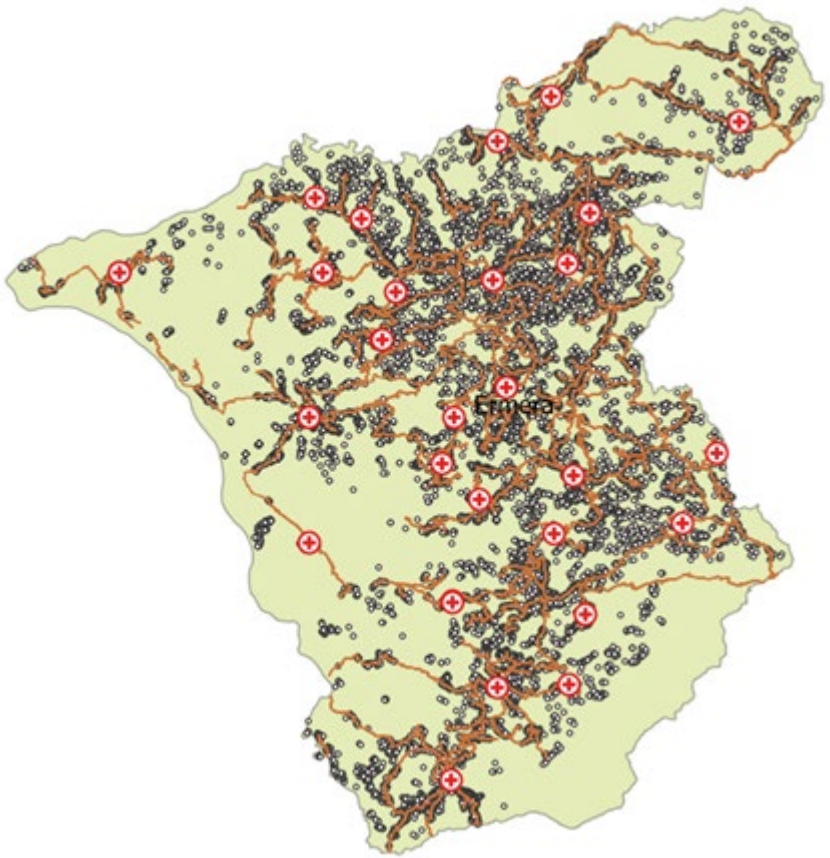
ERMERA ACCESSIBILITY TO PRIMARY HEALTHCARE CENTRES

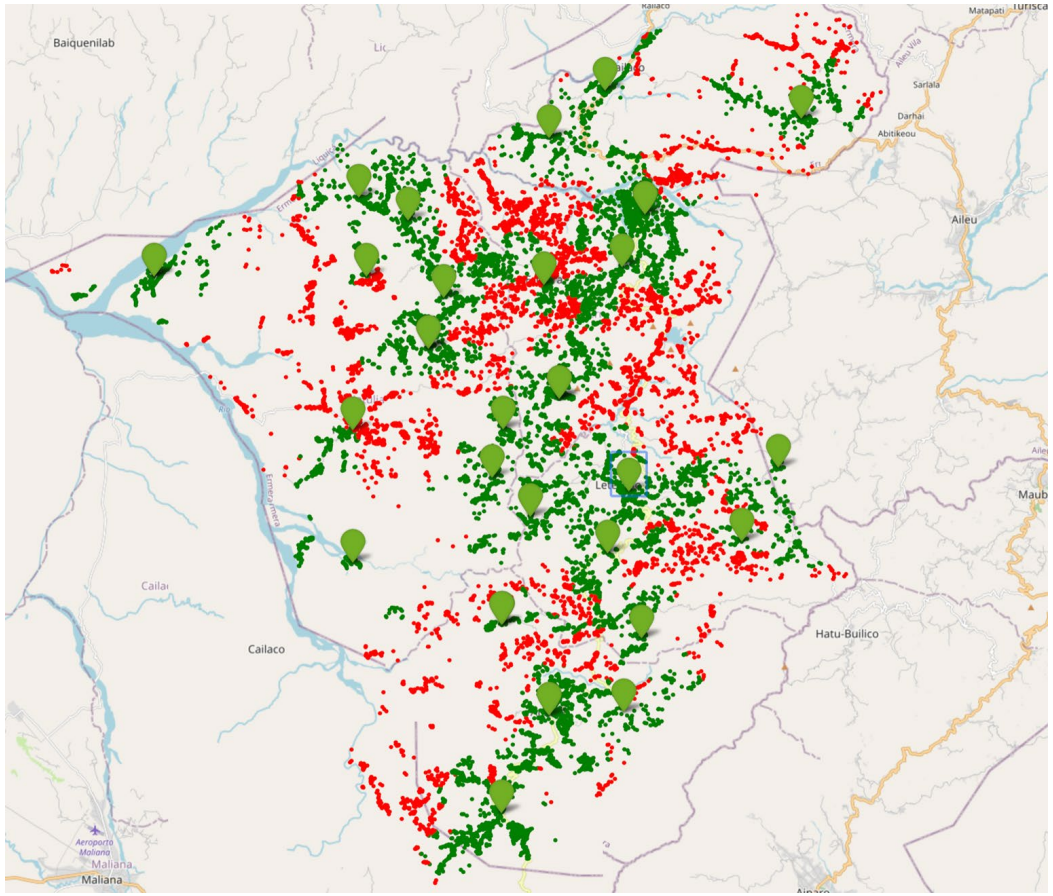




Households within 2 km distance from a health facility (27%)

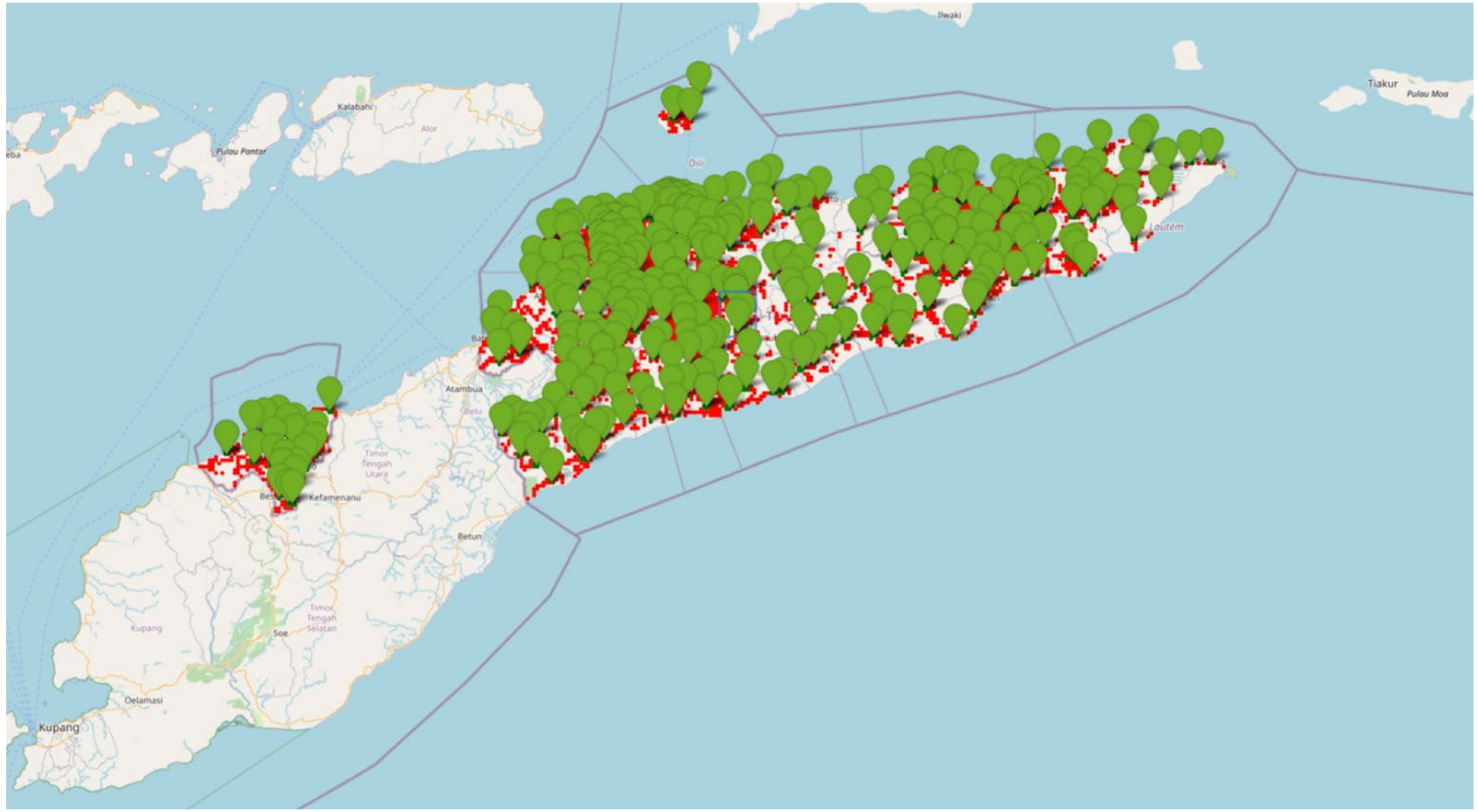
ERMERA ACCESSIBILITY TO PRIMARY HEALTHCARE CENTRES



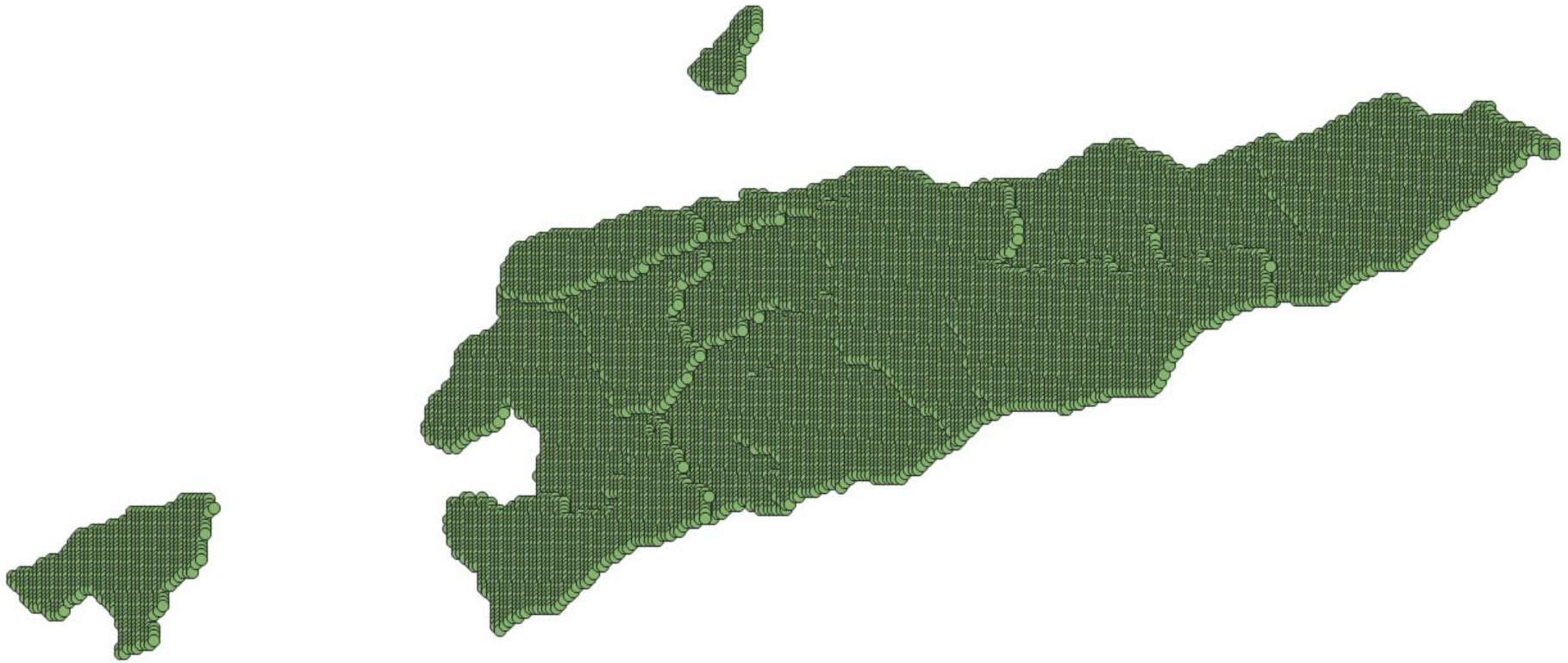


Households within 5 km distance from a health facility (63%)

TIMOR LESTE ACCESSIBILITY TO PRIMARY HEALTHCARE CENTRES

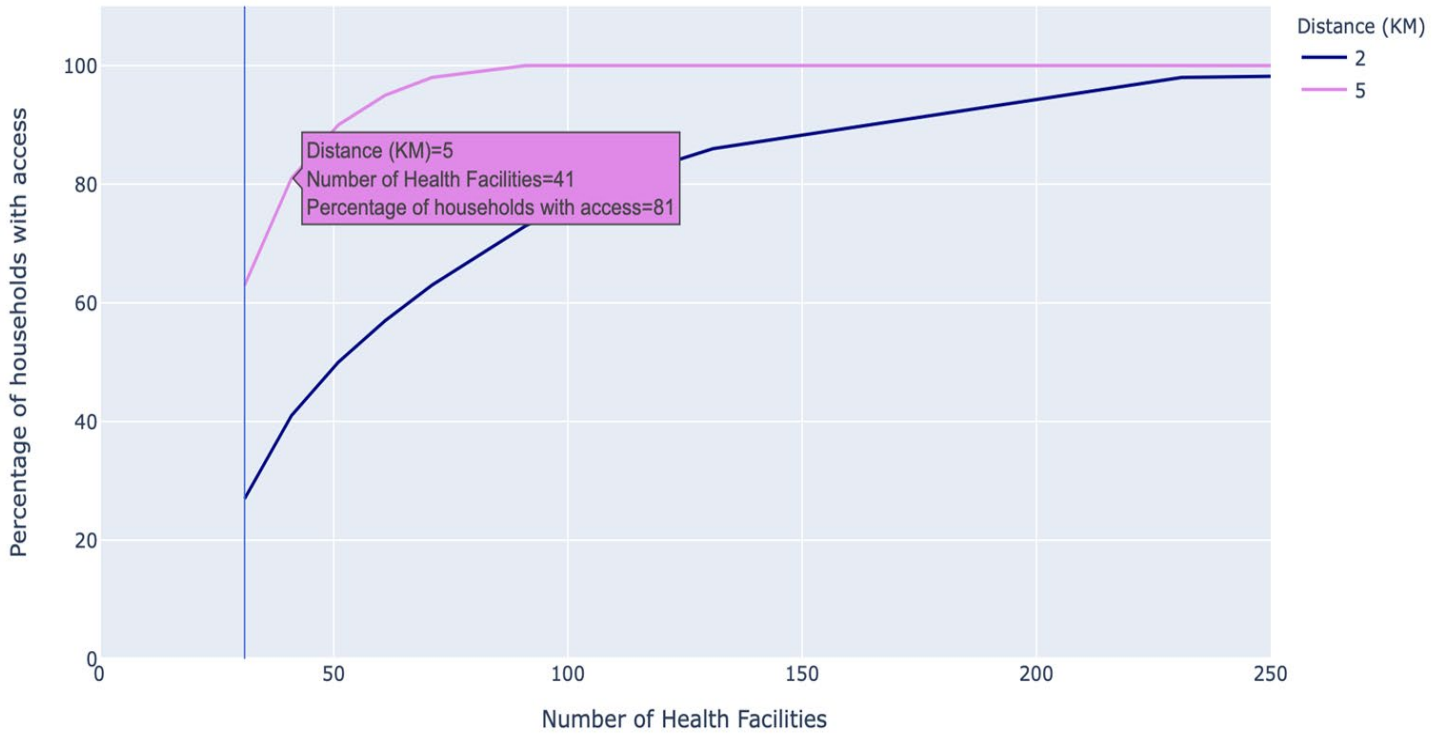


TIMOR LESTE ACCESSIBILITY TO PRIMARY HEALTHCARE CENTRES



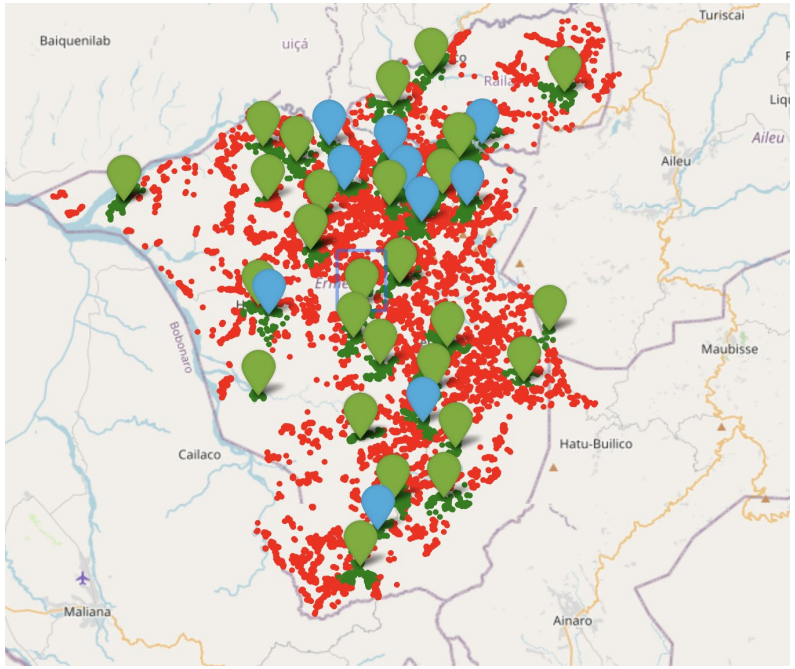
ERMERA ACCESSIBILITY TO PRIMARY HEALTHCARE CENTRES

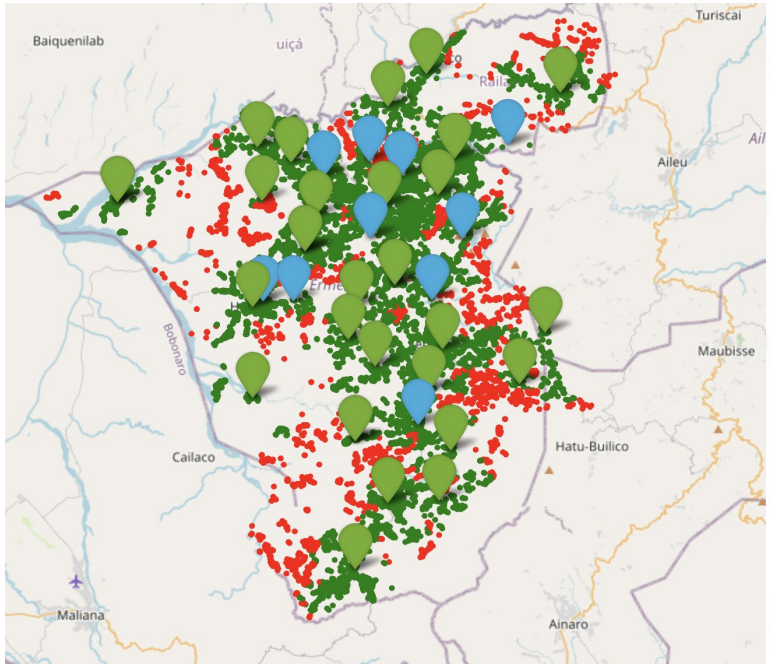
- 31 facilities
- 2 km distance - 27%
- 5 km distance - 63%
- Adding 10 facilities
  - 2 km - 40%
  - 5 km - 81%



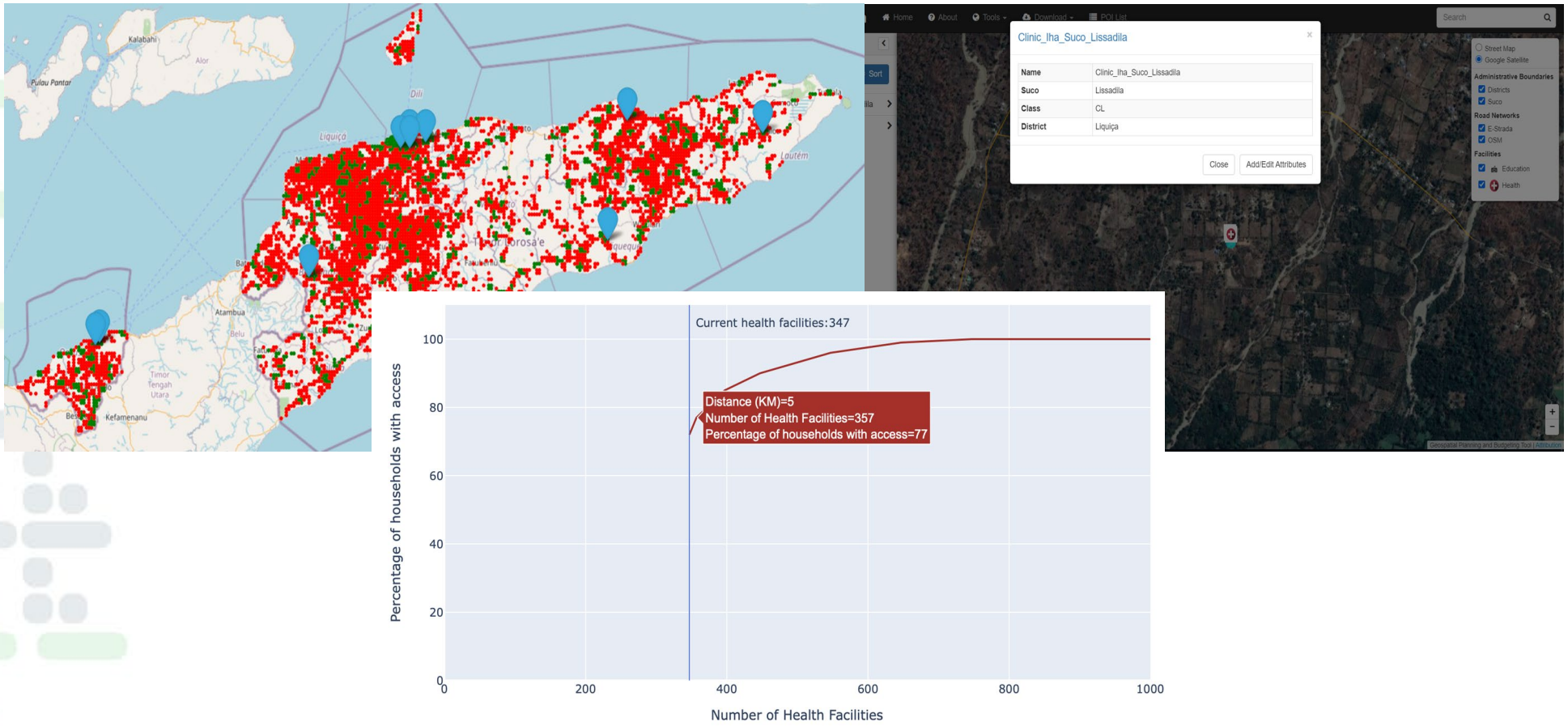
ERMERA ACCESSIBILITY TO PRIMARY HEALTHCARE CENTRES - PRESCRIPTIVE

- 31 facilities
- 2 km distance - 27%
- 5 km distance - 63%
- Adding 10 facilities
  - 2 km - 40%
  - 5 km - 81%





DIGITAL DECISION SUPPORT FOR BETTER PLANNING AND BUDGETING



Analytics for a Better World

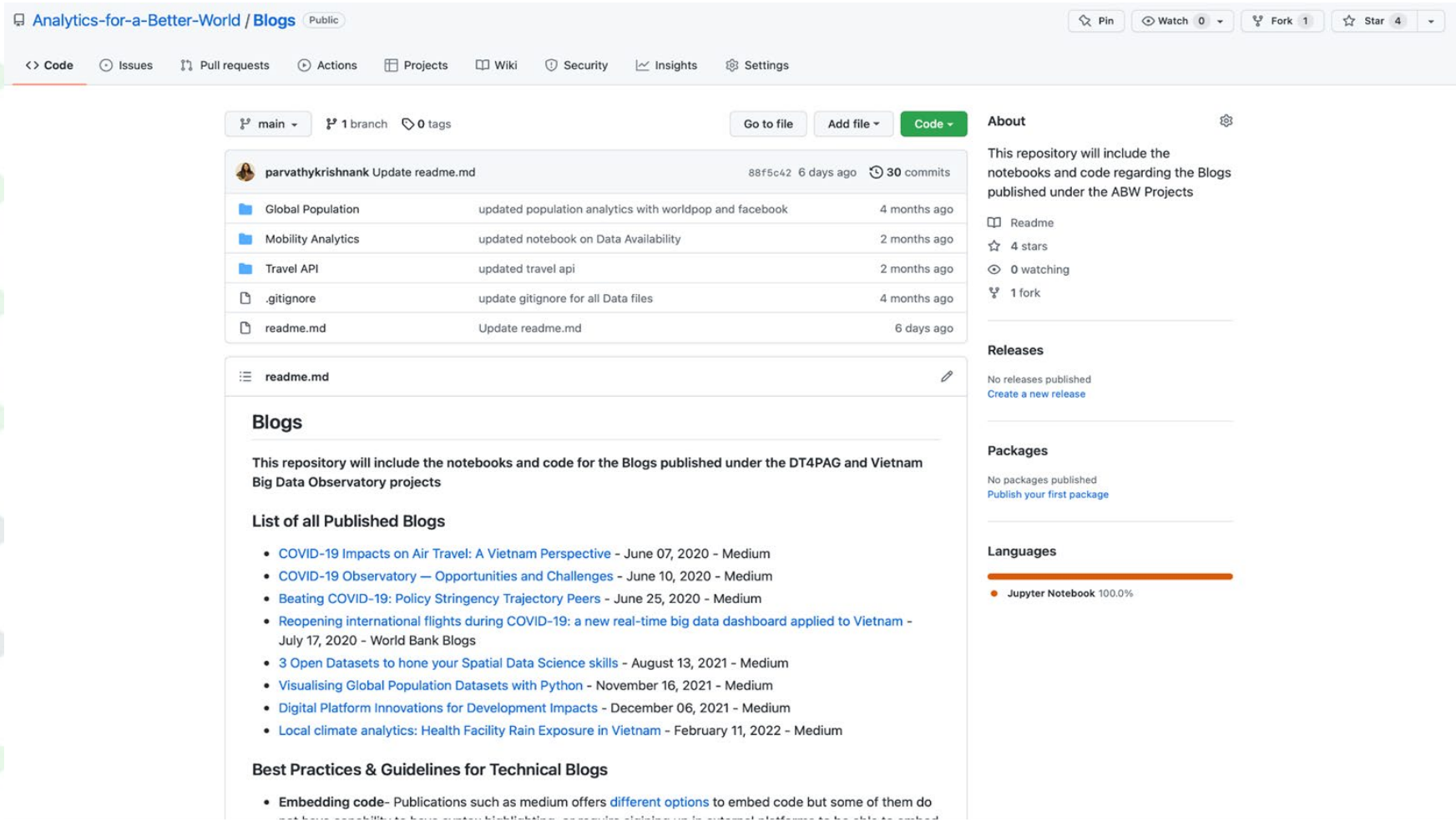

GPBP
HOME
GLOBAL VIEW
VIETNAM
TIMOR LESTE
GEOSPATIAL PLANNING &
BUDGETING PLATFORM
THIS INTERACTIVE SITE ALLOW USERS TO EXAMINE KEY SPATIAL LAYERS RELATED TO FACILITY LOCATION, ROAD NETWORK CONSOLIDATIONS, POPULATION DISTRIBUTION, ADMINISTRATIVE BOUNDARIES, RISK LAYERS (E.G., FLOODING), AND SATELLITE IMAGERY.
READ MORE

BEYOND DIGITAL PLATFORM





BEYOND DIGITAL PLATFORM



BEYOND DIGITAL PLATFORM

Published in Towards Data Science

Parvathy Krishnan
Nov 16, 2021 · 8 min read ★ · Listen

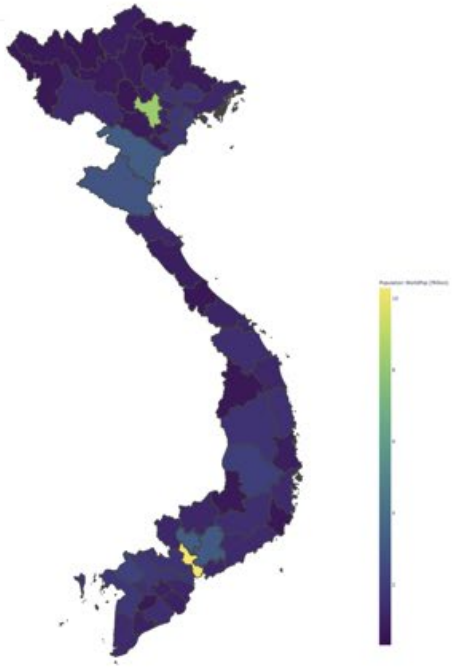
PYTHON HANDS-ON TUTORIAL

Visualising Global Population Datasets with Python

Summary statistics of geospatial raster and vector datasets bounded by polygon shapefiles

This work has been done entirely using publicly available data, and was co-authored with Kai Kaiser. All errors and omissions are those of the author(s).





WorldPop Population in millions for the municipalities in Vietnam (Source-Authors)

Parvathy Krishnan
Aug 13, 2021 · 5 min read ★ · Listen

SPATIAL DATA SCIENCE

3 Open Datasets to hone your Spatial Data Science skills

with examples of real-world applications



Photo by NASA on Unsplash

Data-driven and Data-informed decision-making is now an integral part of private and public sector organizations. Unlocking the power of **spatial data** using specialized tools and techniques adds an additional level of insight and can create a significant impact on this decision-making process across

Published in Towards Data Science

Kai Kaiser
Feb 11 · 13 min read · Listen

Local climate analytics: Health Facility Rain Exposure in Vietnam

Processing geospatial satellite imagery data on a cloud-based Jupyter Notebook Python Environment to measure rain exposure of key public infrastructure facilities

This work has been done entirely using publicly available data, and was co-authored with Anh Tuấn Phan, Parvathy Krishnan, and Hieu Danh Luu. All errors and omissions are those of the author(s).

"Water, water everywhere and not a drop to drink"

Samuel Taylor Coleridge's poem, The Rime of the Ancient Mariner



Peer Reviewed and On-Cloud deployments

Spatial Exploration

Footprint Intersect Analysis

- Dashboard / Visualization

Temporal Analysis

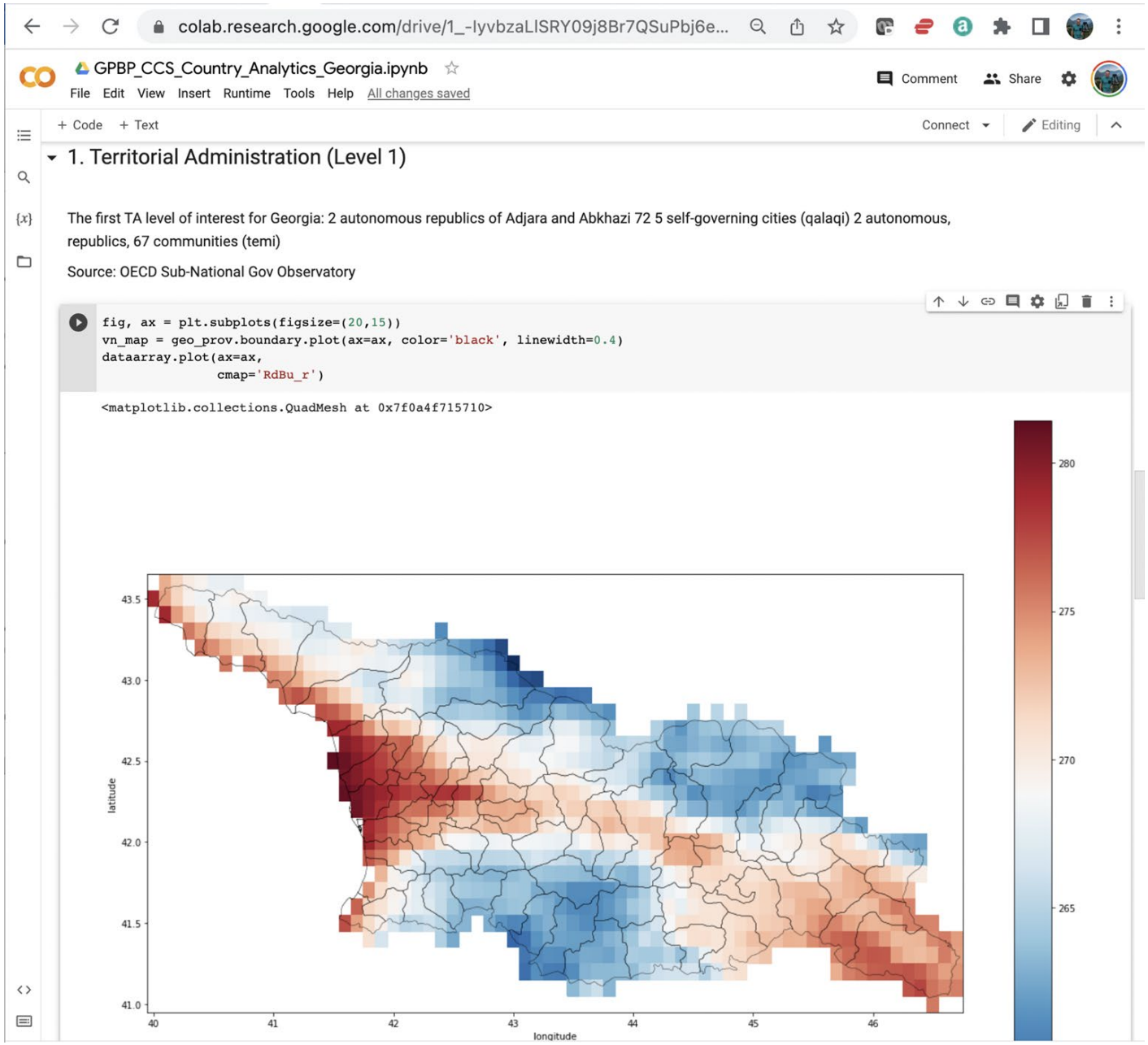


Exposure/Hazard



Intensity/Frequency/Duration

Periods (Historic/Future Modeled)



Thank You

