HEALTHY BIRTH, GROWTH & DEVELOPMENT

knowledge integration

December 5, 2017

Fostering innovation:
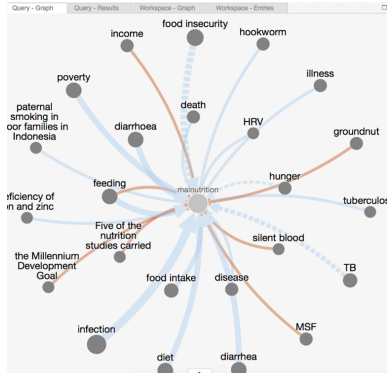# From ideas to implementation

Ted Grasela, HBGDki Communication Lead

Where does innovation come from?

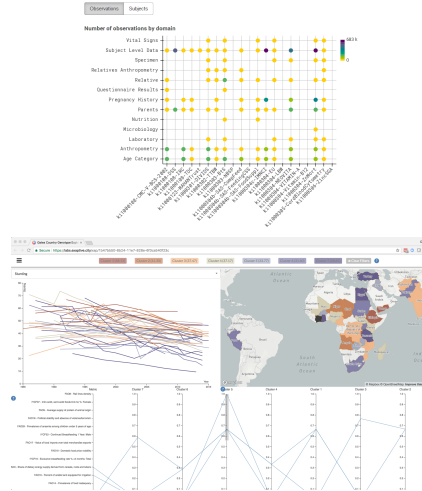# How do we speed it up?
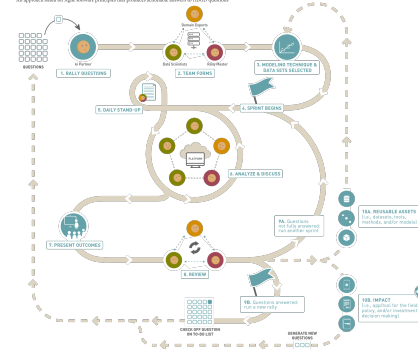
The *ki* Innovation Pathway

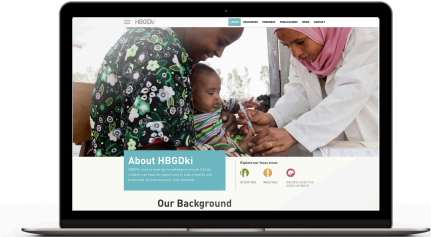| KNOWLEDGE INTEGRATION	PROBLEM DEFINITION	RESEARCH & DEVELOPMENT	KNOWLEDGE TRANSLATION

# Knowledge Integration: The Importance of a Conceptual Scheme

A **conceptual scheme** represents a method of describing complex, multifactorial problems that helps us:

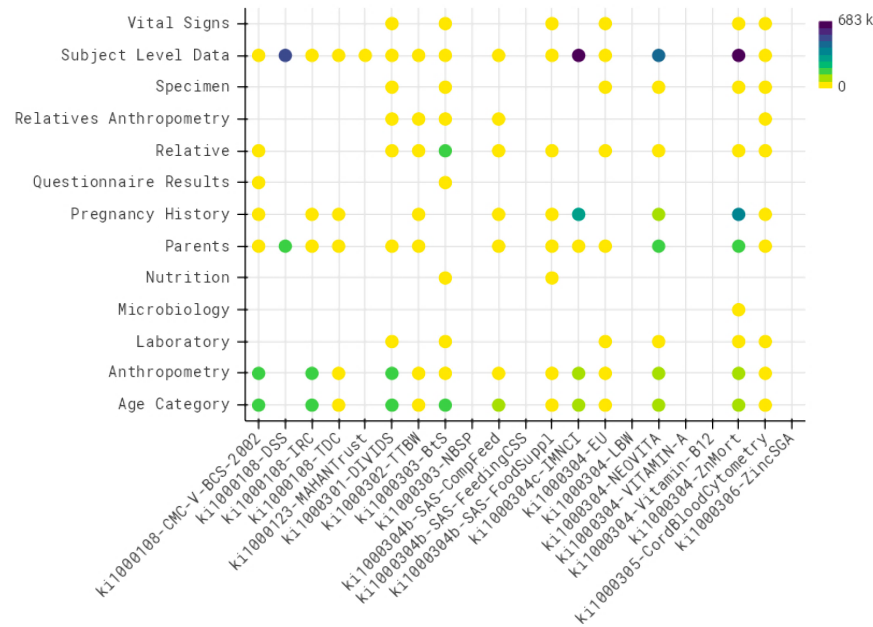- Communicate across disciplines
- Understand root causes
- Diagnosis key bottlenecks
- Identify critical path to a solution
- Identify needed scientific or technical breakthroughs
- Design proof of concept study or analysis

ki tool   Influence Search

Problem Definition
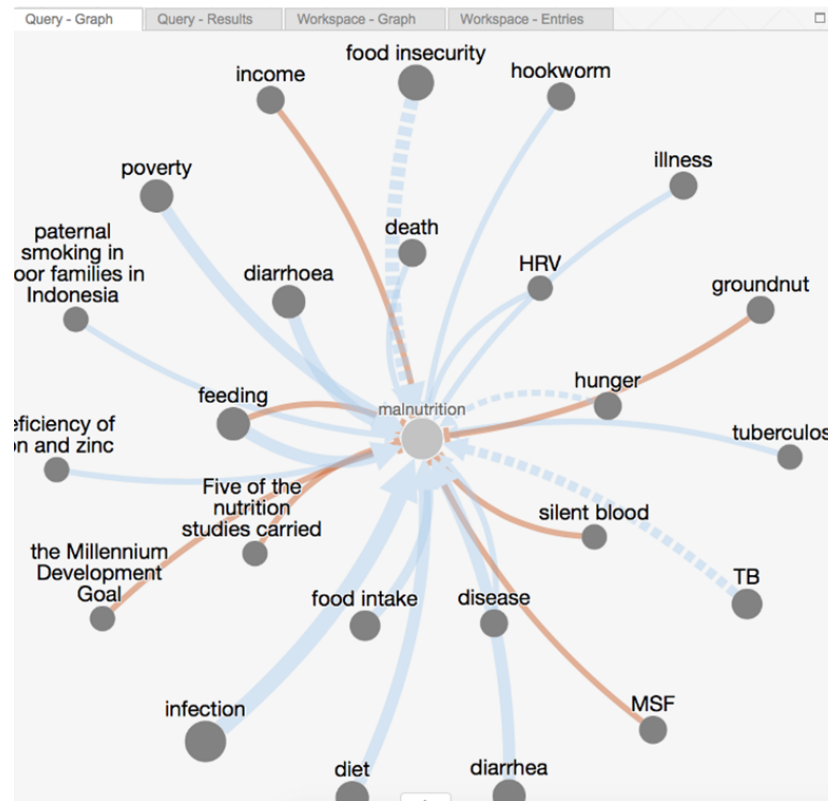
ki tool *Country Segmentation Study Explorer*

Generating a Specific Hypothesis

Formulating an Analysis Plan

Research & Development: Modeling & Simulation

Data Science provides the tools to explore the data and investigate the hypotheses
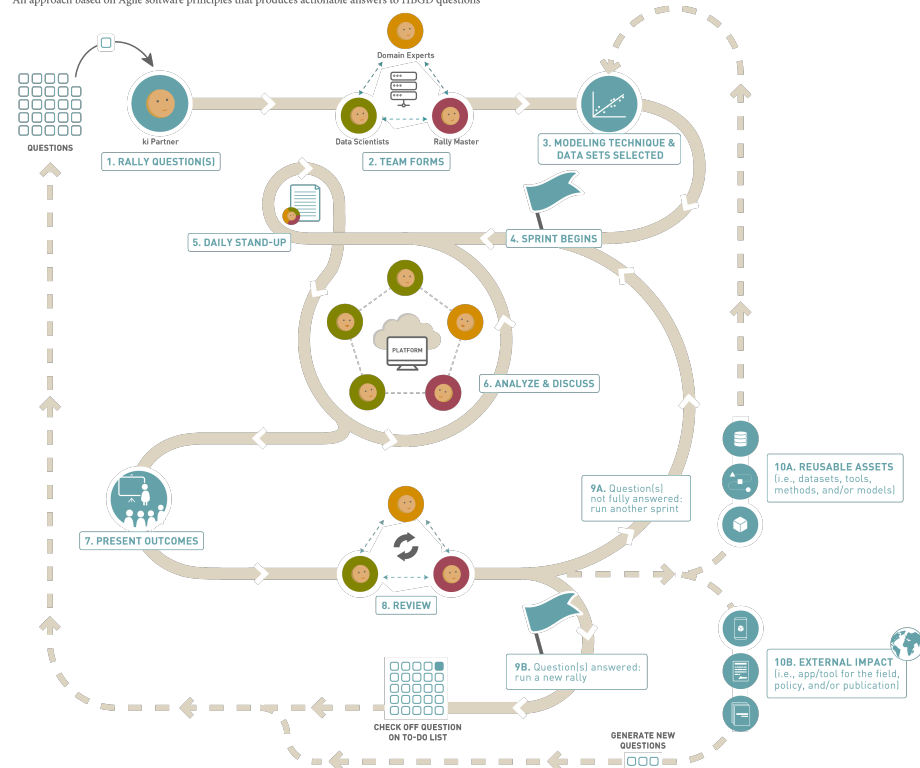
The vital role of data scientists and research scientists is to help with the interpretation and communication of results

ki tool   *Rallies*

HBGDki data science rally process

An approach based on Agile software principles that produces actionable answers to HBGD questions
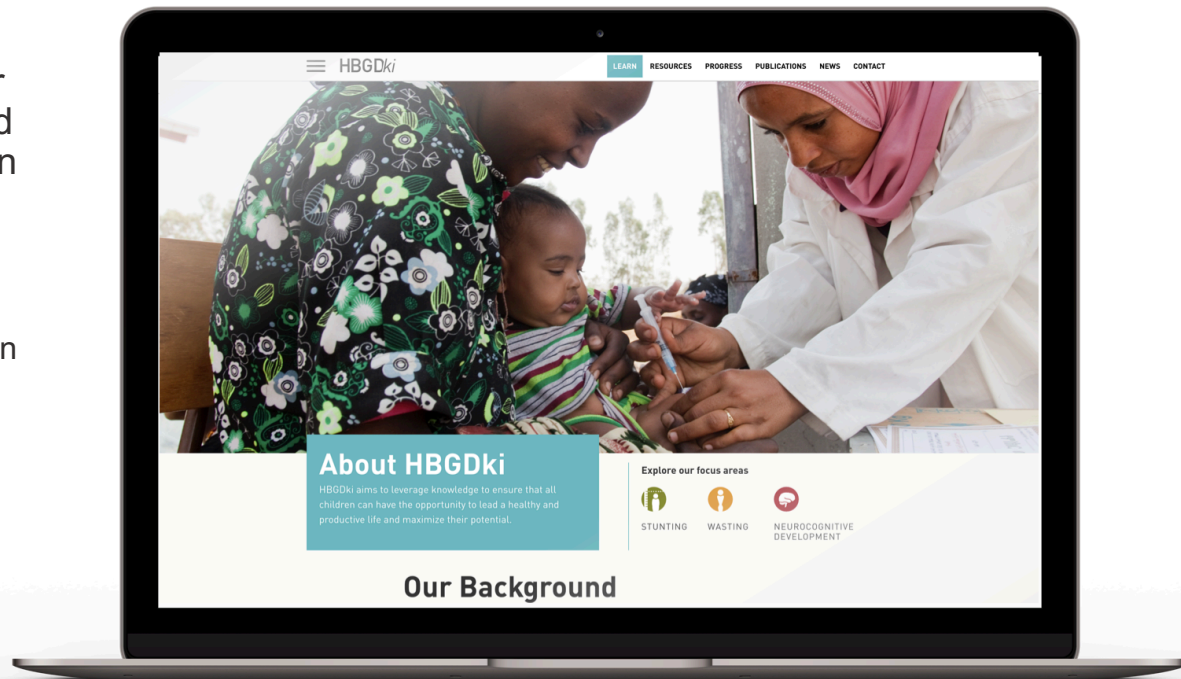
Knowledge Translation: Securing commitment to action

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> " We know of no senior policymaker or senior business leader who ever read regularly any peer-reviewed papers in well-recognized journals like Nature, Science or Lancet."
>
> - Asit Biswas
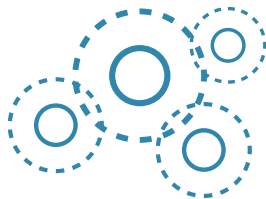> Member of the World Commission on Water for the 21st Century

Systemic change is the goal of social innovation

Interaction of many elements: social movements, business models, laws and regulations, data and infrastructures, and entirely new ways of thinking and doing.

Frameworks or architectures made up of many smaller innovations that can bypass the barriers and hostility of an old order.

Must be economically viable; supported by new technologies, supply chains, institutional forms, skills, and regulatory and fiscal frameworks.
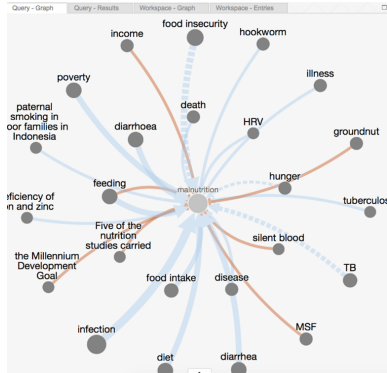
Source: Murray, R, Caulier-Grice, J, Mulgan, G. *The Open Book of Social Innovation*. The Young Foundation: NESTA; 2010.

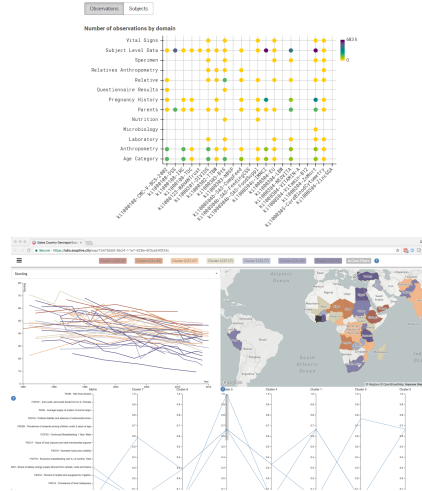# Virtuous cycle of social innovation
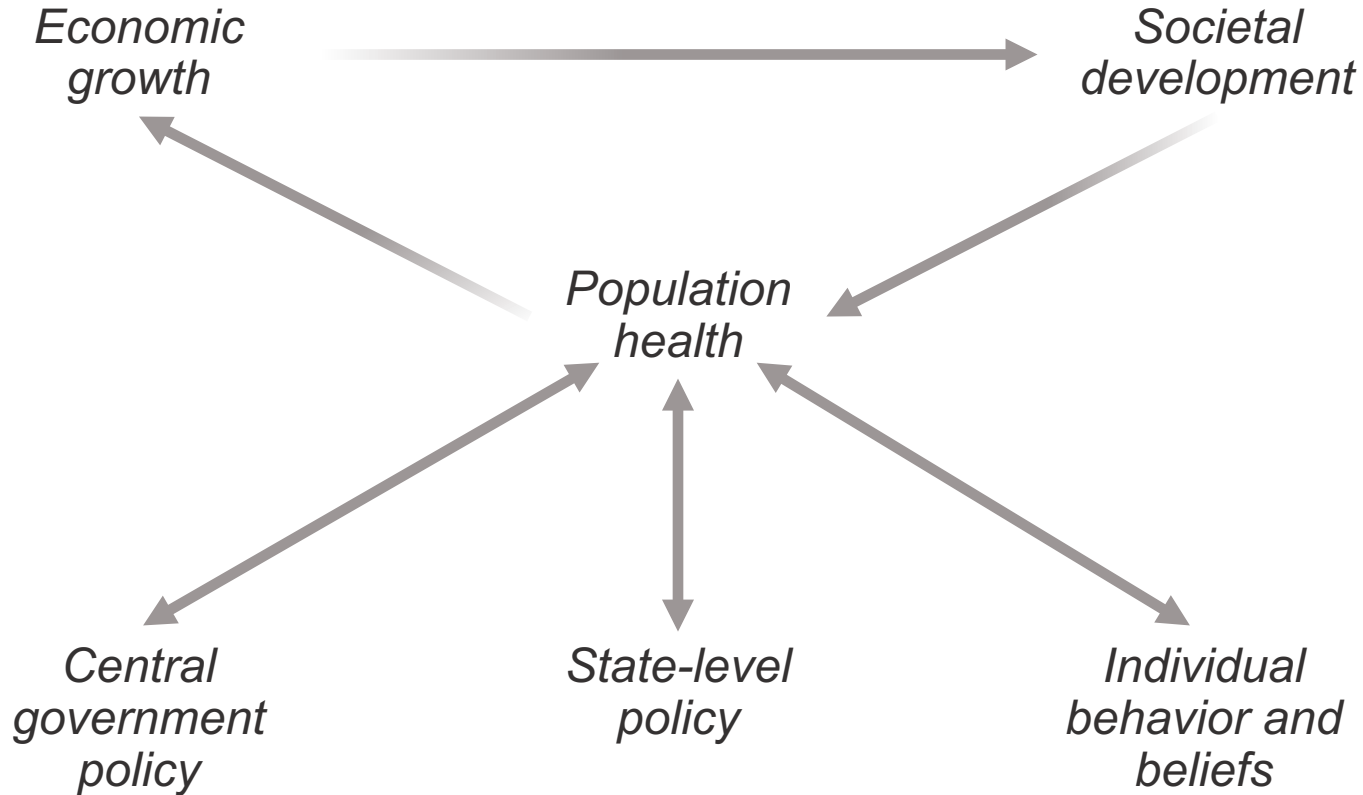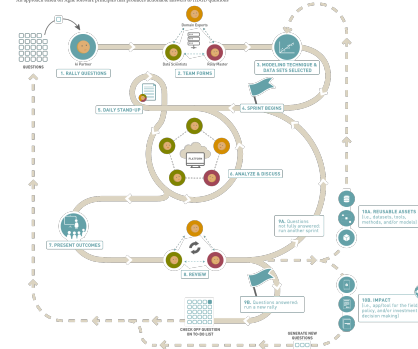
The *ki* Innovation Pathway
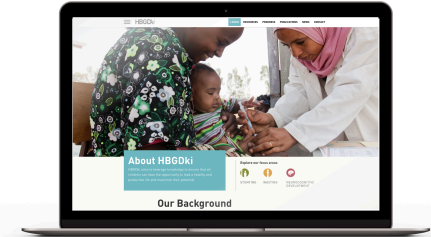
KNOWLEDGE INTEGRATION	PROBLEM DEFINITION	RESEARCH & DEVELOPMENT	KNOWLEDGE TRANSLATION

If we can *predict it*… maybe we can *shape it*!

Q&A

Supplemental

The *ki* Innovation Pathway

KNOWLEDGE INTEGRATION		PROBLEM DEFINITION		RESEARCH & DEVELOPMENT		KNOWLEDGE TRANSLATION
Subject matter expertise, literature, knowledge graphs		Creative alternatives, questions & hypotheses		Team assignments		Values & trade-offs
Influence Search	*Iterate, Integrate, Verify*	Scientific & management requirements	*Iterate, Integrate, Verify*	Knowledge gap identification	*Iterate, Integrate, Verify*	STEEP decision models
				Experiments & data acquisition		Explore, model, simulate, communicate
Framing & Scoping		Feasibility assessment		Explore, model, simulate, communicate		Sound reasoning
Conceptual Scheme		*Analysis plans*		*Relevant & reliable analytical results*		*Commitment to action*

Abbreviations: STEEP, Societal, Technological, Environmental, Economic, and Political.

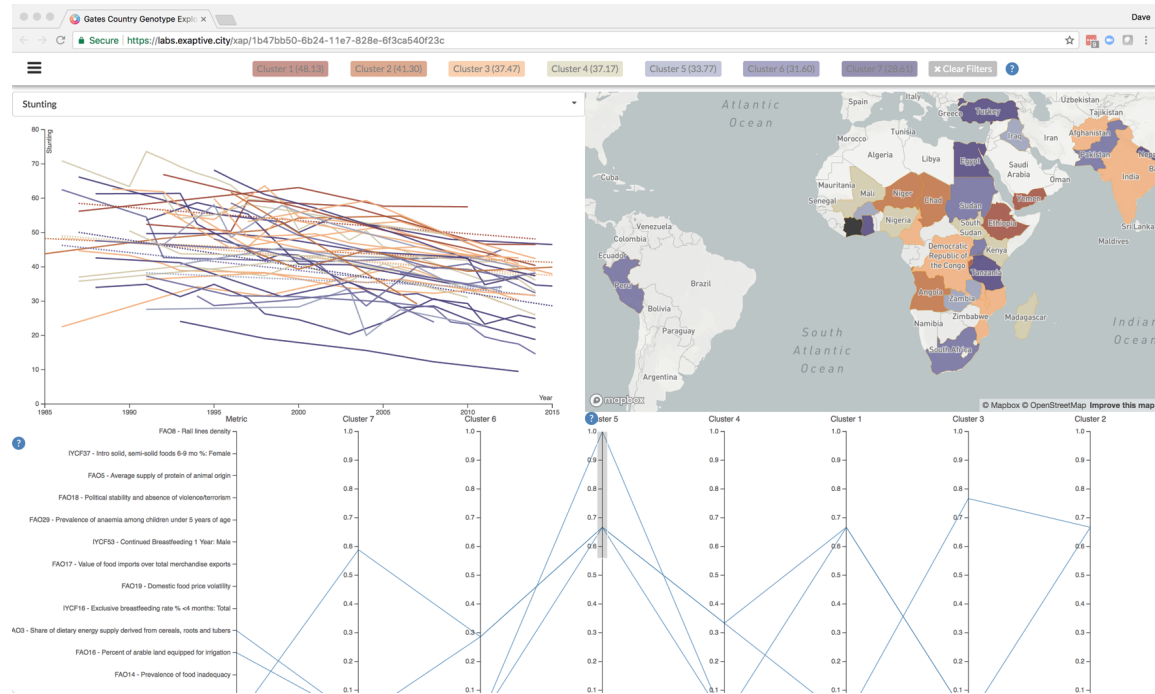# Problem Definition: Generating a specific hypothesis

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Country Segmentation

Problem definition involves translating the questions and inspirations obtained from the conceptual scheme to hypotheses.

We need to assess data gaps and the feasibility of addressing the problem with the data and knowledge that we have…..

….and formulate an analysis plan:
- Rationale
- Methods
- Risk factors
- Endpoints

HBGDki India

Problem Definition: Formulate analysis plan

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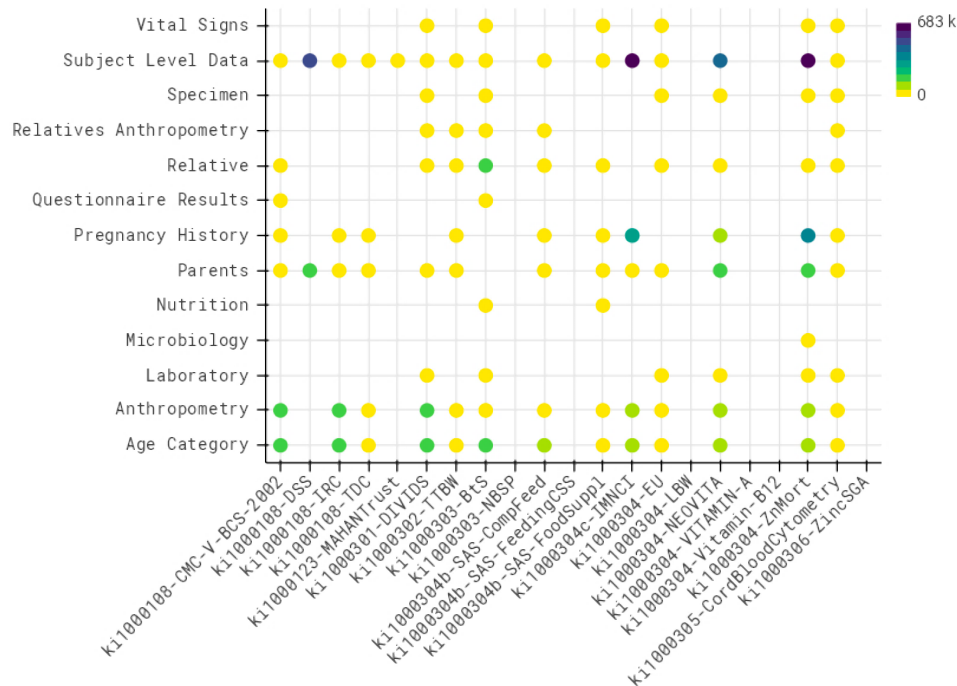- Rationale
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Study Explorer

Types of innovation

	Medical Innovation	Social Innovation
Example	▪ New Medicine	▪ New Policy or Service
Framing the problem	▪ Target Product Profile	▪ Target Policy Profile
Research & Development	▪ Preclinical and clinical studies	▪ STEEP assessment
Decision-makers	▪ Regulatory agencies	▪ Government agencies ▪ Policy makers, public opinion
Application of data science	▪ Modeling & clinical trial simulation ▪ Interpretation of results	▪ Cost-effectiveness ▪ Decision analysis ▪ Modeling and Simulation
Measures of success	▪ Safety and efficacy in patients	▪ Anticipating unintended consequences ▪ Scaling promising ideas

Abbreviation: STEEP, Societal, Technological, Environmental, Economic, and Political.

Knowledge Translation: Population health in India

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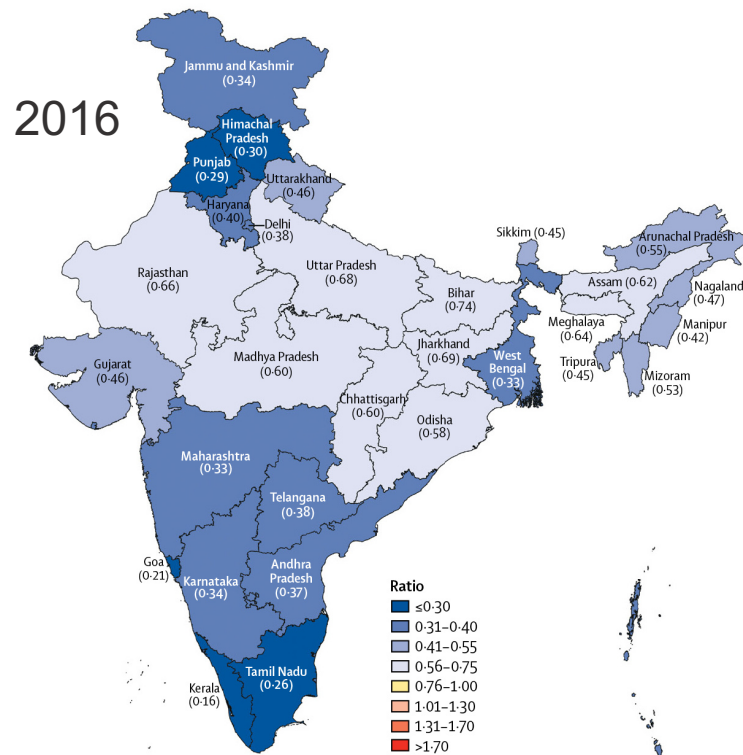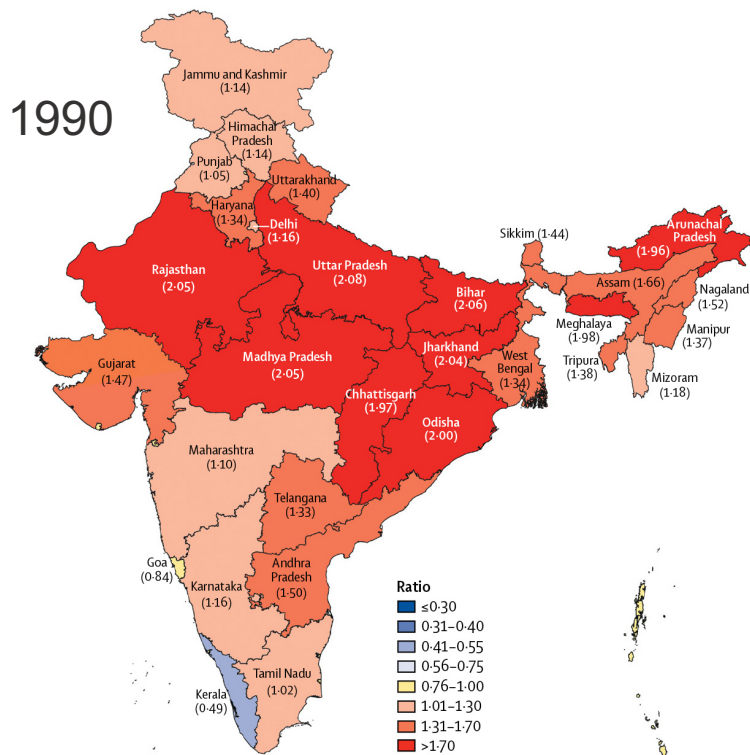
Source: www.thelancet.com   Published online November 14, 2017   http://dx.doi.org/10.1016/S0140-6736(17)32804-0