Open Public Health Policy Making

Collective Intelligence in Health Care Priorities Setting

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Background

☐ Traditional 'closed' approaches to HCPS are costly and biased, failing to meet actual beneficiaries' needs

  ○ Hauck, Goddard & Smith, 2003; Kapiriri et al. 2006, 2008

    ● **Bounded Rationality** (Simon 1955); Policy Science (Jones 2002)

☐ Recent calls for "formalized, workable and transparent approaches" to HCPS, as well as "participatory"

  ○ Baum et al. 2006; McDonald & Ollerenshaw 2011

    ● **Creative Destruction** (Schumpeter 1942); Medicine (Topol 2012)

☐ This study responds with an 'open' approach to HCPS that uses **crowdsourcing** to tap from people's 'collective intelligence'
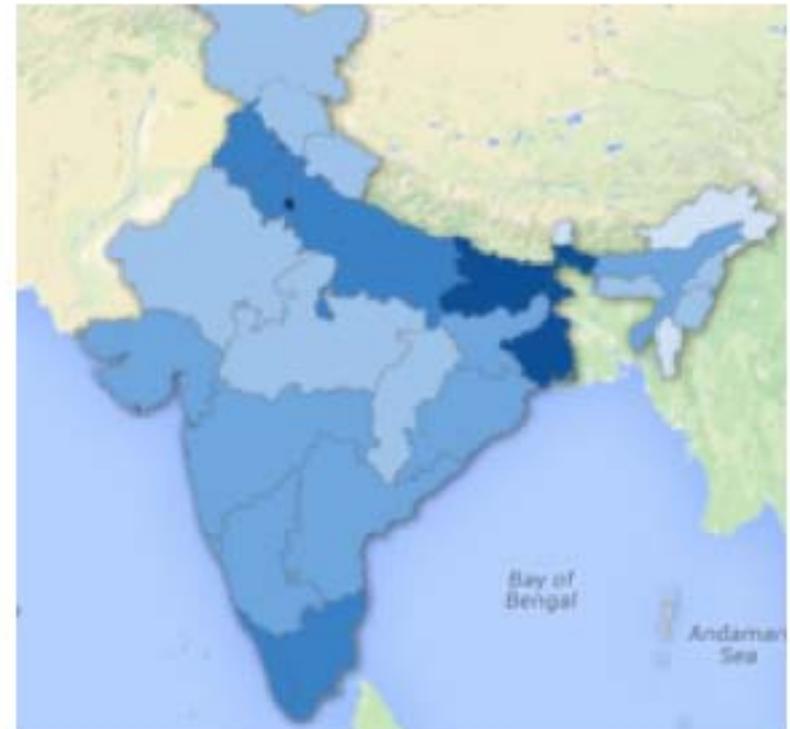
Research Question

☐ Could crowdsourcing provide insight for public health policy making (HCPS) ?
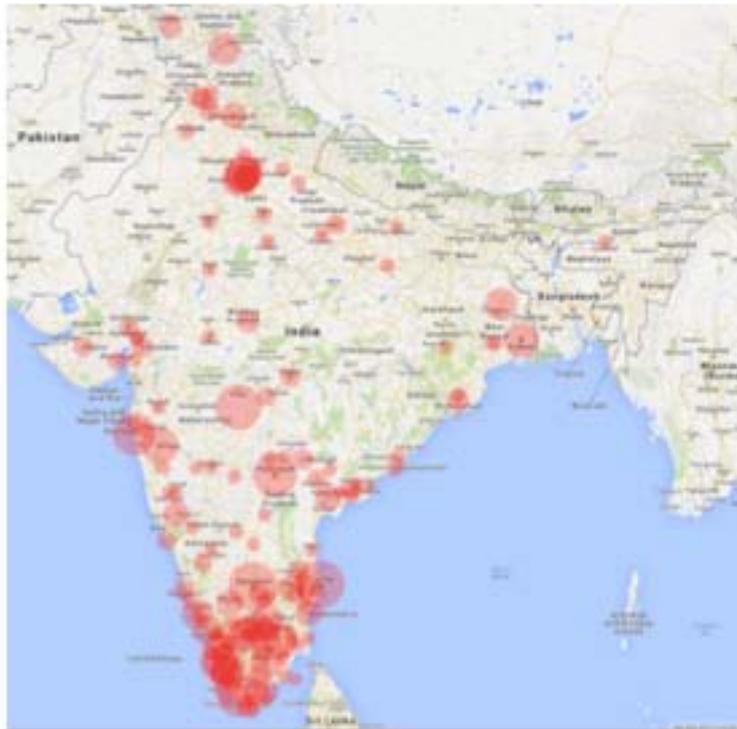
this study

e.g. Census in India (2011)

Research Design

Priority Recommendations

(this study)

Public **Health Policy**

HARVARD Antares

Bloom, Chu and Smullin, 2012

solve

solve

Crowdsourced data

Crowd AMT

Antares Matrix

Open data

"Star"

Platform **Socially Enabled**

Platform **Institutionally Enabled**

Interactive metrics

Traditional metrics
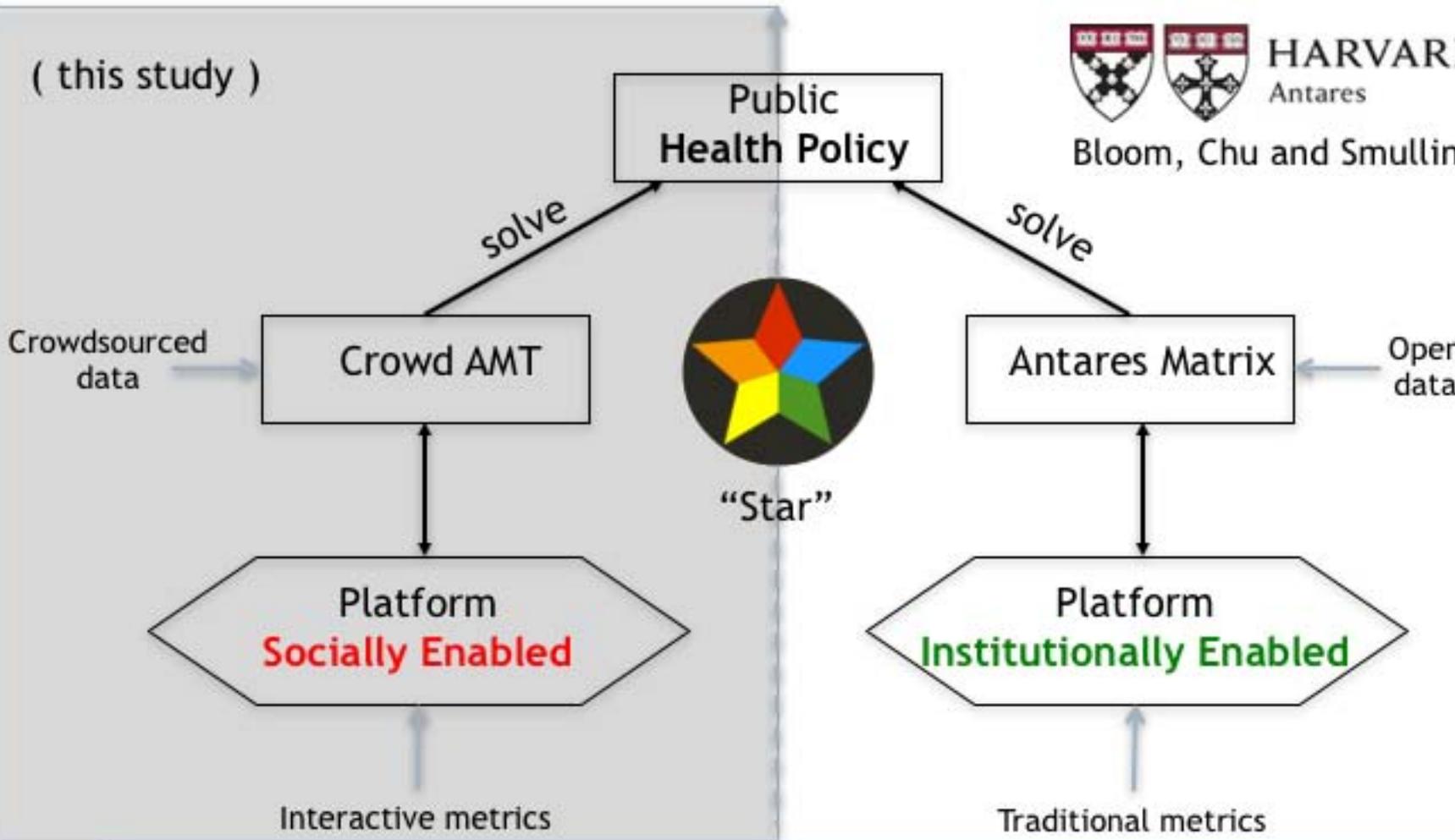
Q. What do you think should be the priority for your government on treating diseases?

A. I think Government should prioritize the treatment as follows:

[100 points to distribute]

D1 Scale

1. Infectious diseases that are widespread, like an epidemic.
2. Diseases that are a main source of death.

D5 Spillovers

1. Diseases that reduce the patient's productivity or ability to work.
2. Diseases that negatively affect the patient's social relationships with his/her community.

D2 Household Finances

1. Diseases that cause a significant reduction in aggregate household income.
2. Diseases that represent an expense for the household over an extended period of time (years).

D4 Cost-Effectiveness

1. Diseases for which there are readily available treatments, but not currently given to the population.
2. Diseases for which the hospital network offers an effective mechanism to deploy treatment.

D3 Social Equity

1. Diseases that affect mainly children.
2. Diseases that affect mainly poor people.

8 random combinations, demographics, geo-location

Method and Data

Survey Data		
Quantitative		**Qualitative**
HCPS Measurement	**Demographics**	**Comments**
Star (S) = 5 health care dimensions (D)	Gender: 39% F 61% M	Indian citizens
2 different questions for each D	Age: 30 years	health professionals
8 alternate measurements of S	Education: 87% college	
3,224 assessments for analysis	Employment: 80% employed	

Regression Variables

Dependent	Control	Independent
Health Care Priorities	age, gender, education,	**Location**
D1, D2, D3, D4, D5	employment, income,	urban, suburban, rural
8-item	household size, children count	

Results

Star (actual scale)
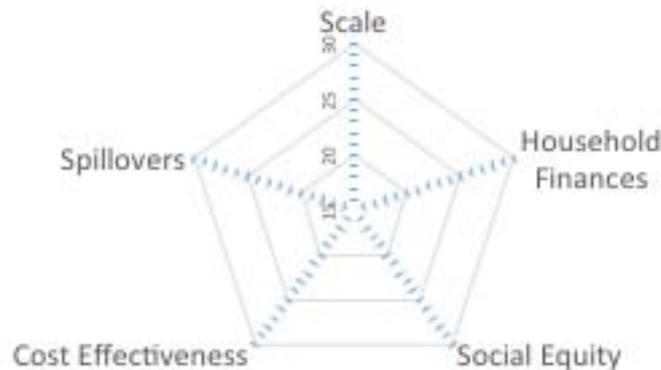
All data (actual values)
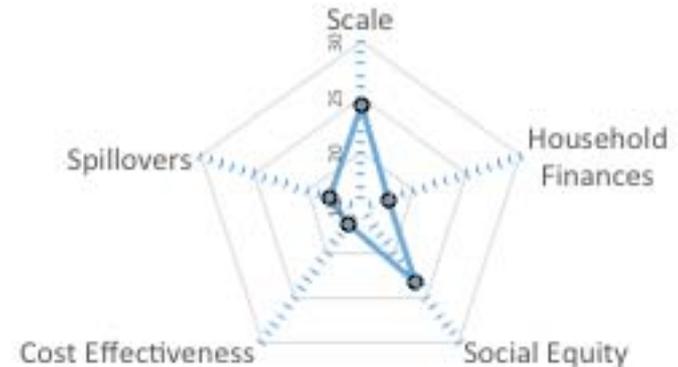
Dimension Variable		Reliability	N	mean	std. dev.	min	max
D1 Scale of Disease	8 combinations	alpha = 0.84	427	24.38	7.64	8.00	52.50
D2 Household Finances	8 combinations	alpha = 0.73	427	17.50	4.85	1.88	33.80
D3 Social Equity	8 combinations	alpha = 0.81	427	23.59	6.59	6.25	62.50
D4 Cost Effectiveness	8 combinations	alpha = 0.74	427	16.73	4.93	0.00	32.50
D5 Spillover Effects	8 combinations	alpha = 0.73	427	17.81	5.00	0.00	37.88

High Income
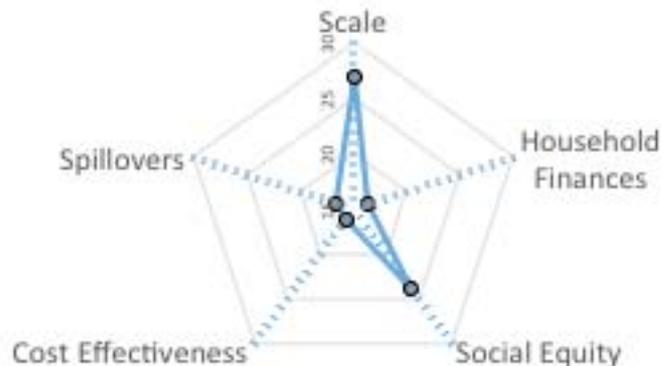
Rural
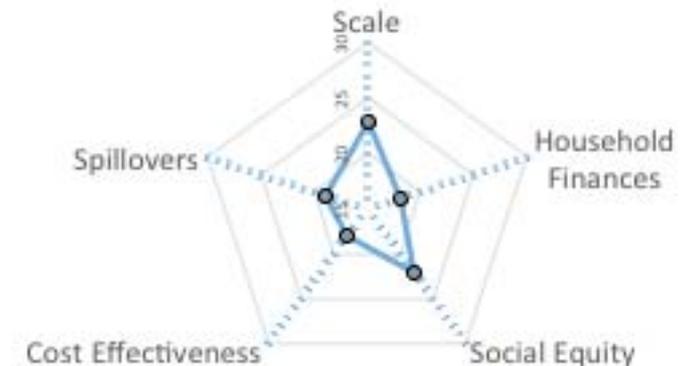
Results

|	D1	D2	D3	D4	D5
	Scale of Disease	Household Finances	Social Equity	Cost-effectiveness	Spillover effects
age	0.034	-0.022	**0.063***	-0.040	-0.035
	(0.048)	(0.031)	(0.036)	(0.034)	(0.033)
female	**1.480***	**-1.053****	0.723	-0.108	**-1.042****
	(0.852)	(0.518)	(0.732)	(0.555)	(0.518)
education	0.297	-0.315	-0.141	-0.026	0.184
	(0.364)	(0.272)	(0.364)	(0.299)	(0.250)
income	**0.607*****	**-0.233****	0.079	**-0.217****	**-0.236****
	(0.158)	(0.100)	(0.150)	(0.108)	(0.096)
employment dummies	Yes	Yes	Yes	Yes	Yes
household size	0.209	0.062	0.138	-0.277	-0.132
	(0.276)	(0.153)	(0.194)	(0.179)	(0.200)
children count	**-0.853****	**0.514****	**-0.609***	**0.482****	**0.465***
	(0.358)	(0.253)	(0.313)	(0.239)	(0.260)
location dummies					
sub-urban	**-1.515***	-0.030	0.651	0.218	0.676
	(0.835)	(0.516)	(0.724)	(0.588)	(0.580)
rural	**-1.798***	0.429	-1.228	**1.297****	**1.300***
	(0.937)	(0.616)	(0.964)	(0.652)	(0.722)
_cons	21.531***	19.712***	22.223***	18.304***	18.230***
	(2.823)	(1.812)	(2.213)	(2.009)	(1.863)
N	403	403	403	403	403

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Results

"As am an Indian and a medical professional I am very happy with this survey thank you very much"

"Great work. If this helps in standardizing the policies and forecasting requirements I would be glad."

"I am concerned about the healthcare scenario as it is unfolding in my region. I would be glad to contribute with my inputs if it can help my family and my community."
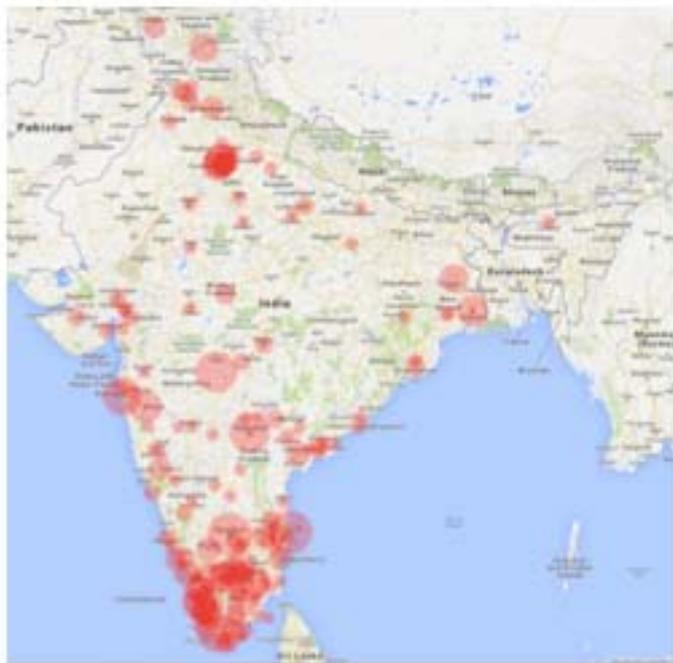
Notes. The red bubbles identify the geo-location of respondents.

A larger bubble indicates more respondents from that region.

A total of 27 states (out of 28 states) in India were covered by the study.

95% would like to contribute regularly

Conclusions

- ☐ The CI (S) approach proved fast, simple and effective
  - ■ The study sampled citizens from all Indian states but one

- ☐ The HCPS (Dn) measurements proved statistically robust
  - ■ Offering consistent results through regression analysis

- ☐ The CI-HCPS unveiled systematic differences in how a population prioritizes competing public health policies
  - ■ Children count, income level, geo location, gender

- ☐ Open Public Health Policy Making is not only possible, but also highly desirable
  - ■ 95% would be glad to contribute on a regular basis

About the author

☐ Dr. Andrei Villarroel is professor of innovation management and executive consultant in the high-tech sector. He is appointed professor at the Entrepreneurship Institute, School of Management Fribourg, Switzerland. He has been on the faculty of The Lisbon MBA, Católica-Lisbon School of Business & Economics, and international faculty fellow at MIT Sloan School of Management.

☐ He is co-author of the books "Leading Open Innovation" (MIT Press, 2013), "Business Model Innovation" (Oxford University Press, 2015). His research was recognized with three Best Papers at international conferences, including an award at the Academy of Management Conference 2016 for the contribution entitled "Towards Business School 2.0".

☐ Dr. Villarroel served as keynote speaker for international organizations including EFMD, JEWC, CEEMAN.