Translation of Modeled Evidence for Decision-Making Research

Nigeria Research Findings
Health Policy Research Group

July 2022

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RESULTS FOR DEVELOPMENT

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Executive Summary

Objectives

Understand how to structure modeling-to-policy and program efforts to be effective at bridging the gap between modeled evidence and policy/program decision-making by:

1. **Identify factors & approaches** that facilitate/constrain exchanges between decision-makers and modelers
2. **Assess current practices and partnerships** in contexts/forums where translation of modeled evidence into decision making is already occurring
3. **Offer recommendations** to inform changes on funding approaches, organizational structures & country/global policies to enable success in translating modeled evidence into decision making

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Methodology

38 **Survey Participants**

24 **Key Informant Interviews (KIIs)**

Participants:

- **Modeling organizations**: in-country organizations/researchers that produce modeled evidence
- **Boundary/brokering organizations/knowledge brokers:** help to translate evidence, distill findings, foster dialogue, and get the modeled evidence into policy and practice
- **Decision-makers:** users/potential users of modeled evidence and those who participate in making decisions for national and sub-national health policies & practice

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Key Finding: Need for Modeling Capacity Development

- There is a nascent but growing interest in modeled evidence in Nigeria
- This has been driven by global movements to increase the use of evidence for decision-making such as the COVID-19 pandemic

- **Modeling capacity development** was the most common need identified by participants for improving model development and use in Nigeria
- Capacity needs cut across:
  - Modeler capacity to build models
  - Boundary organization capacity to communicate modeled evidence to policy-makers
  - Decision-maker capacity to understand modeled evidence

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Key Finding: Proliferation of Exchange Mechanisms

- There is a proliferation of **innovative and well-resourced knowledge and evidence exchange mechanisms** in Nigeria that can be leveraged for the translation of modeled evidence for decision-making, including:
  - Academic/scientific alliances, such as the Nigerian Academy of Science
  - Research consortia, such as Nigeria COVID-19 Research Coalition
  - Technical working groups and advisory committees, such as National Health Research Committee
  - Civil society coalitions, such as Health Sector Reform Coalition
  - Alliance of development partners, such as Development Partners' Group for Health
- Some are already beginning to engage in the translation of modeled evidence for decision-making

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Key Finding: Need for Communication & Data

- There is a strong need to develop lines of **communication, collaboration, and trust** between modelers and policy-makers in order to build policy-makers' understanding of and confidence in modeled evidence

- Improving the availability of **high quality, local data** to develop and build confidence in models will be key to their successful uptake in Nigeria

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Key Facilitators

	As Reported by Decision-Maker	As Reported by Modeler	As Reported by Boundary Org
Individual & Interpersonal Factors	• **Capacity to understand/use** modeled evidence • **Clear & logical presentation** of modeled evidence • **Previous experience** of using modeled evidence • Perception of **credibility** of evidence	• **Capacity to produce policy-relevant models** using multiple situational variables • **Clear communication** & logical presentation of models • Ability to **work across different disciplinary boundaries**	• **Appreciation** of modeled evidence by decision-makers (DMs) • **Clear presentation** and using appropriate comm. channels • **Credibility** of boundary orgs • Social networks & informal relationships with policy-makers
Organizational & Inter-Organizational Factors	• Intra- and inter-agency **knowledge sharing** • Strategic **stakeholder engagement** • Availability of **champions of evidence-based decision making** (EBDM) – organizational culture • **Co-production** of evidence • **Embedded researchers**	• Intra- and inter-agency **collaboration and support** • **Stakeholder engagement** • Availability of **funds**	• **Inter-agency collaboration** for knowledge sharing and advocacy • **Stakeholder engagement & strategic advocacy** • Organizational culture of **EBDM** • **Contextualization** of evidence • Evidence synthesis by experts • **Training opportunities** for DMs
Environmental Factors	• Availability of **transparent data** • Funders'/partners' **policies & influence** • **Global movement for EBDM**		• **Availability of data**, specifically population data) • **COVID-19 pandemic**

Key Inhibitors

	As Reported by Decision-Maker	As Reported by Modeler	As Reported by Boundary Org
Individual & Interpersonal Factors	• **Lack of (i) capacity** for model building, & (ii) **understanding** of modeled evidence • **Decision-maker attitudes** that evidence is not valuable for policy making • **Researcher attitudes** towards knowledge translation (KT)	• **Lack of (i) capacity** for model building, & (ii) **understanding** of modeled evidence • **Lack of professional working relationship** with (& access to) decision-makers • Decision-maker **attitudes that evidence is not valuable** for policy making	• **Lack of understanding** of modeled evidence • Decision-maker **attitudes that evidence is not valuable** for policy making • **Poor communication** styles • **Lack of time** for exchange

Organizational & Inter-Organizational Factors	• **Lack of training** on model use
	• Policy-makers and researchers **work in silos** in evidence synthesis
	• **Unsupportive governance structure**
		• **Lack of funds** for model building work
		• Policy-makers and researchers **work in silos** in evidence synthesis
		• **Time constraints**
			• **Lack of funds** for training in knowledge brokering
			• **Unsupportive governance structure**
			  ○ Weak coordination
			  ○ Unwieldy bureaucracy

Environmental Factors	• **Poor quality** (integrity) of data for model building ○ Lack of robust models	• **Lack of data** for model building	• **Lack of data** for model building

Background & Context

Modeled Evidence

Modeled evidence: mathematical models that **simulate different potential health scenarios**, including scenarios around disease transmission, and/or the impact of different policy interventions on health outcomes.

- Modeled evidence can be a **valuable tool** for helping decision-makers to prioritize and choose between **complex trade-offs**.
- The inability to ensure decisions are informed by modeling the best possible results in **efficiency, effectiveness, and impact**.

Relevant literature highlights the following as the barriers to evidence use (1):

- The availability of **timely and relevant research**
- The absence of a **connection between researchers and decision-makers**

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Relevant Literature from Nigeria

Barriers to evidence use in decision making-include:

- Weak research linkage between producers and users of evidence (2, 3, 4)
- Weak capacity to produce health policy and systems research evidence among researchers (2)
- Poor demand for and capacity to use research evidence among policy-makers (2, 3)
- Political and bureaucratic processes in getting research evidence into policy and practice (3)
- Lack of willingness of some policy-makers to use research (3)
- Limited research funding (3, 4)
- Insufficient time, lack of information resources, and lack of organizational mandate have also been reported among health workers (5)

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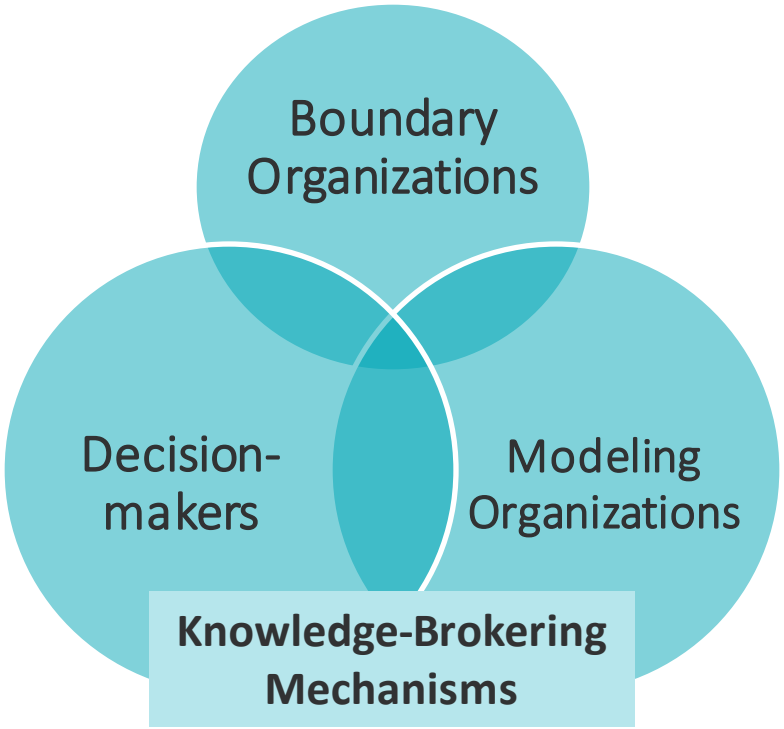
Modeling to Decision-Making Ecosystem



Organizations may play more than one of these roles

Modeling organizations: in-country organizations/researchers that produce modeled evidence

Boundary organizations: stand-alone organizations that help to translate evidence, distill findings, foster dialogue, and impact policy or practice

Knowledge-brokering mechanisms: task forces/working groups/or other formal, collaborative mechanisms that may sit within modeling or decision-making organizations or include them in their membership and help to translate evidence, distill findings, foster dialogue, and impact policy or practice

Decision-makers: users/potential users of modeled evidence and those who participate in making decisions for national and-subnational health policies & strategies

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Research Objectives

The goal of this study is to develop a shared understanding of what it means to be an effective boundary organization – the **traits and functions that facilitate research-to-policy collaboration and exchange in public health**.

1. **Understand a range of factors** at various levels (from the individual level to the ecosystem level) that **facilitate or inhibit exchange between decision-makers and modelers**.
2. **Evaluate partnership structures that support evidence translation** including but not limited to knowledge brokers and boundary organizations in target countries to deeply understand the challenges they face, what they are doing well, how they are learning, and where they need support.
3. **Offer recommendations to inform changes** to funding approaches, organizational structures, and practices including evaluative thinking and learning, and country or global policies that may better enable decisions to be informed by the best evidence possible.

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Methods

Research Team

Core research team

Obinna Onwujekwe – Principal researcher

Chinyere Mbachu

- Senior researcher

Prince Agwu

- Research communication

Other members of the research team

- Benjamin Uzochukwu
- God'stime Eigbiremolen
- Ifunanya Agu

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Research Partner

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Coordinator

BILL & MELINDA GATES foundation

Funder*

The findings and conclusions contained within this report are those of the authors and do not necessarily reflect the positions or policies of the Bill & Melinda Gates Foundation.

Research Timeline: Sept 2021-June 2022

Workstream	Sept 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	June 2022
Landscaping Research										
Survey Research										
Interview Research										
Synthesis										

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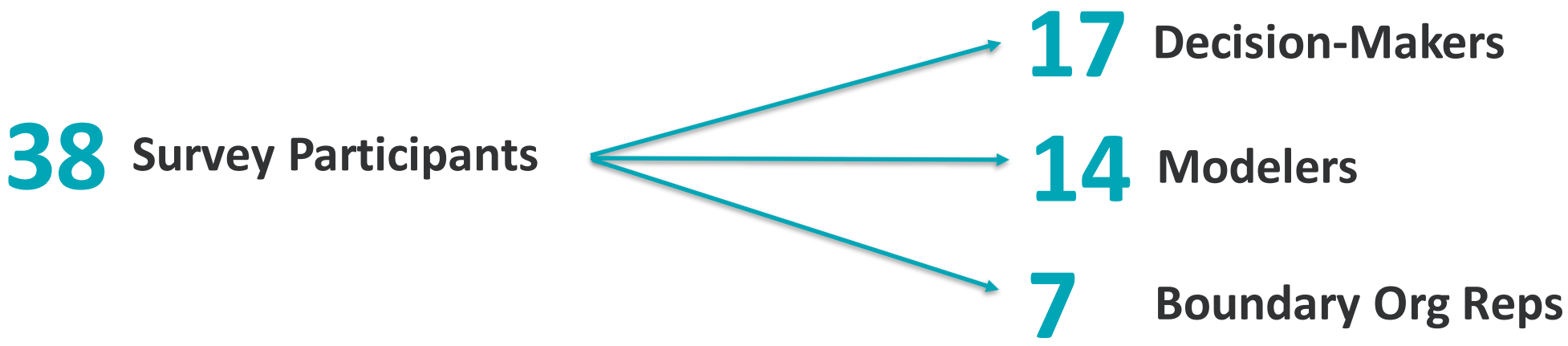
Survey Process



- Purposive selection of participants (for representation and diversity)
- The link to the online survey was distributed through emails and WhatsApp messages
- The Open Data Kit (ODK) was used
- Interviewees provided written consent
- Direct identifiers were removed from the data set
- The questionnaire had both closed- and open-ended questions to examine participants' views on using modeled evidence in decision-making, and the barriers and enablers to promoting the use of modeled evidence in policy and programs

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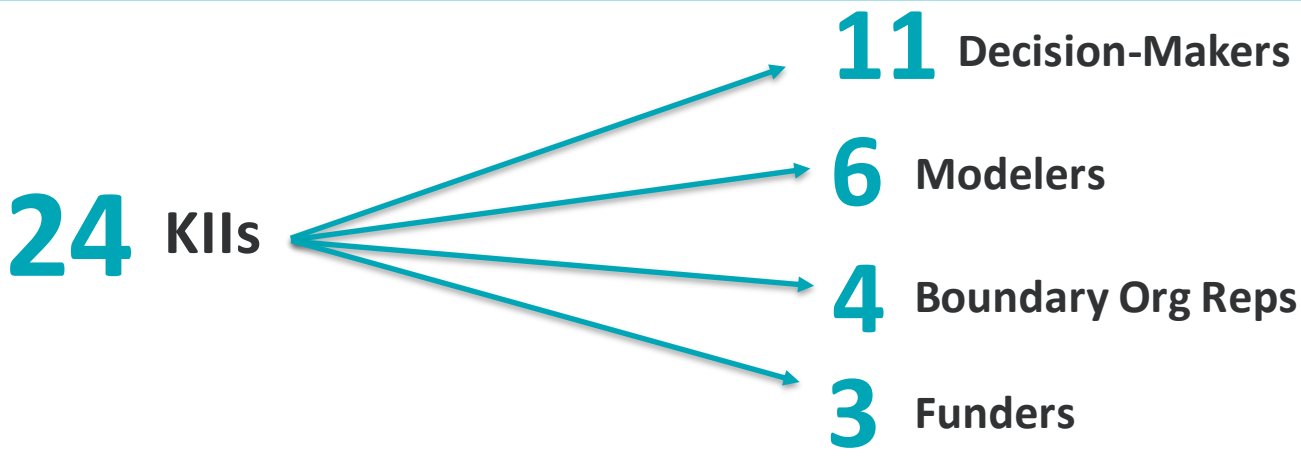
Key Informant Interviews



- Purposive selection of participants, who were a subset of survey respondents and non-respondents
- Telephone interviews were conducted and recorded
- Interviews were conducted by three researchers using a semi-structured interview guide
- Ethical approval from the National Health Research Ethics Committee (NHREC) was obtained
- Verbal informed consent was obtained
- Audio recordings were stored in a protected laptop

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Analysis Process

- Surveys
  - Descriptive analysis of survey
  - Disaggregated by respondent type – decision maker, modeler, boundary organization
- KIIs
  - All interviews were coded by the research team
  - A pre-defined codebook was used
  - NVivo was used to code the data and run queries
  - Data were managed through thematic analysis

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Findings

Participants

Type of Participant	Decision-Maker	Modeler	Boundary Org Rep	Funder
Survey Participant	17	14	7	0
Key Informant Interviewee	11	6	4	3
Gender	**Female**	**Male**	**Other**	
Survey Participant	8	30	0	
Key Informant Interviewee	4	20	0	
Organization Level	**Local/Regional**	**National**	**International**	
Survey Participant	10	27	1	
Key Informant Interviewee	3	18	3	

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Nigeria Landscape: key actors and sectors in the modeling to decision-making ecosystem

20-34

Average size of modeling organizations

Health systems

Sector/Disease Areas

HIV

COVID-19

MNCH

Major Funders

THE WORLD BANK

BILL & MELINDA GATES foundation

Foreign, Commonwealth & Development Office

UNFPA

World Health Organization

Regional Initiatives

ECOWAS

African Union

AFRICA CDC

The Fleming Fund

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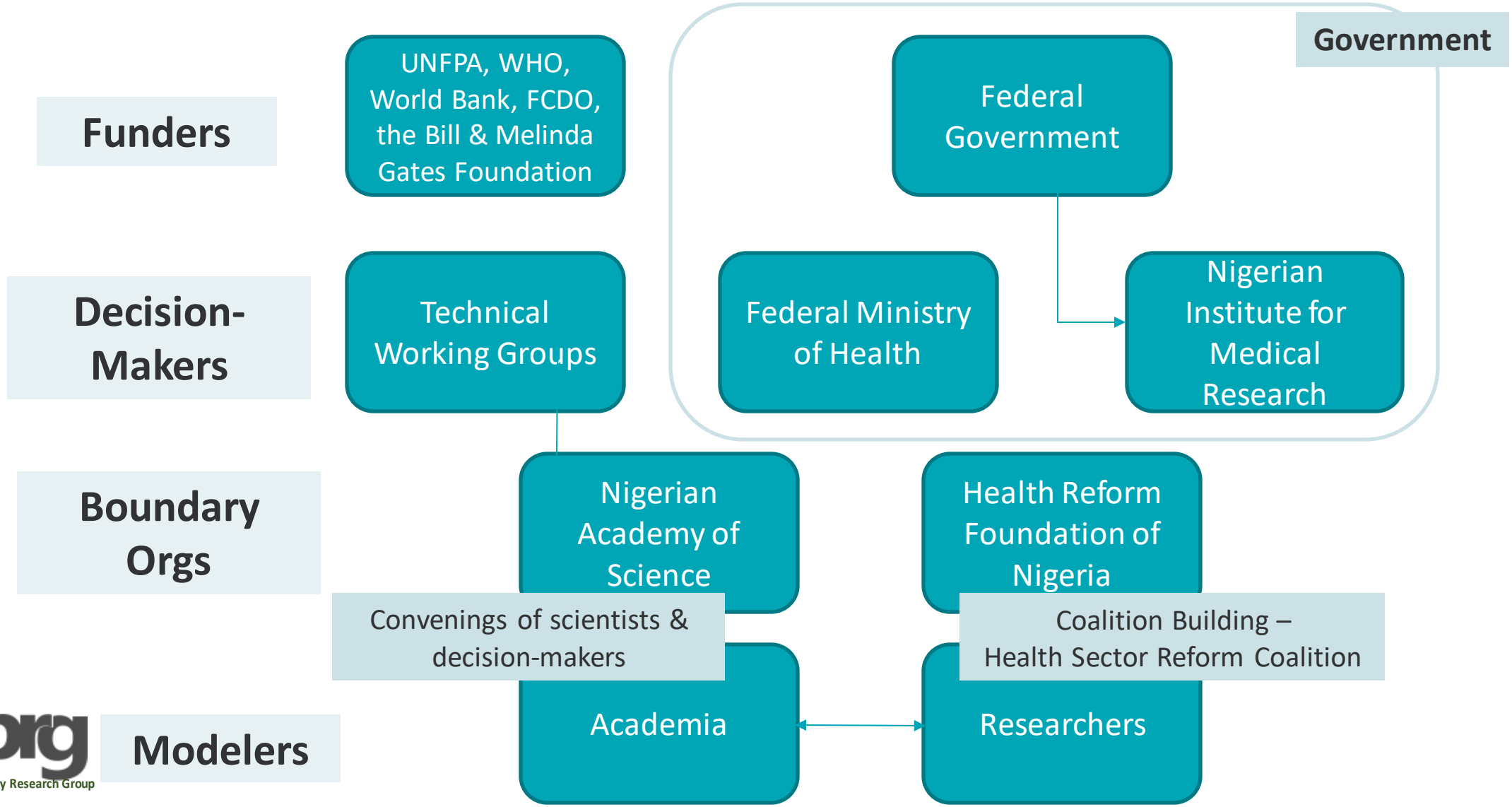
Nigeria Modeling to Decision-Making Ecosystem



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Research Question 1: Facilitators & Inhibitors of Exchange

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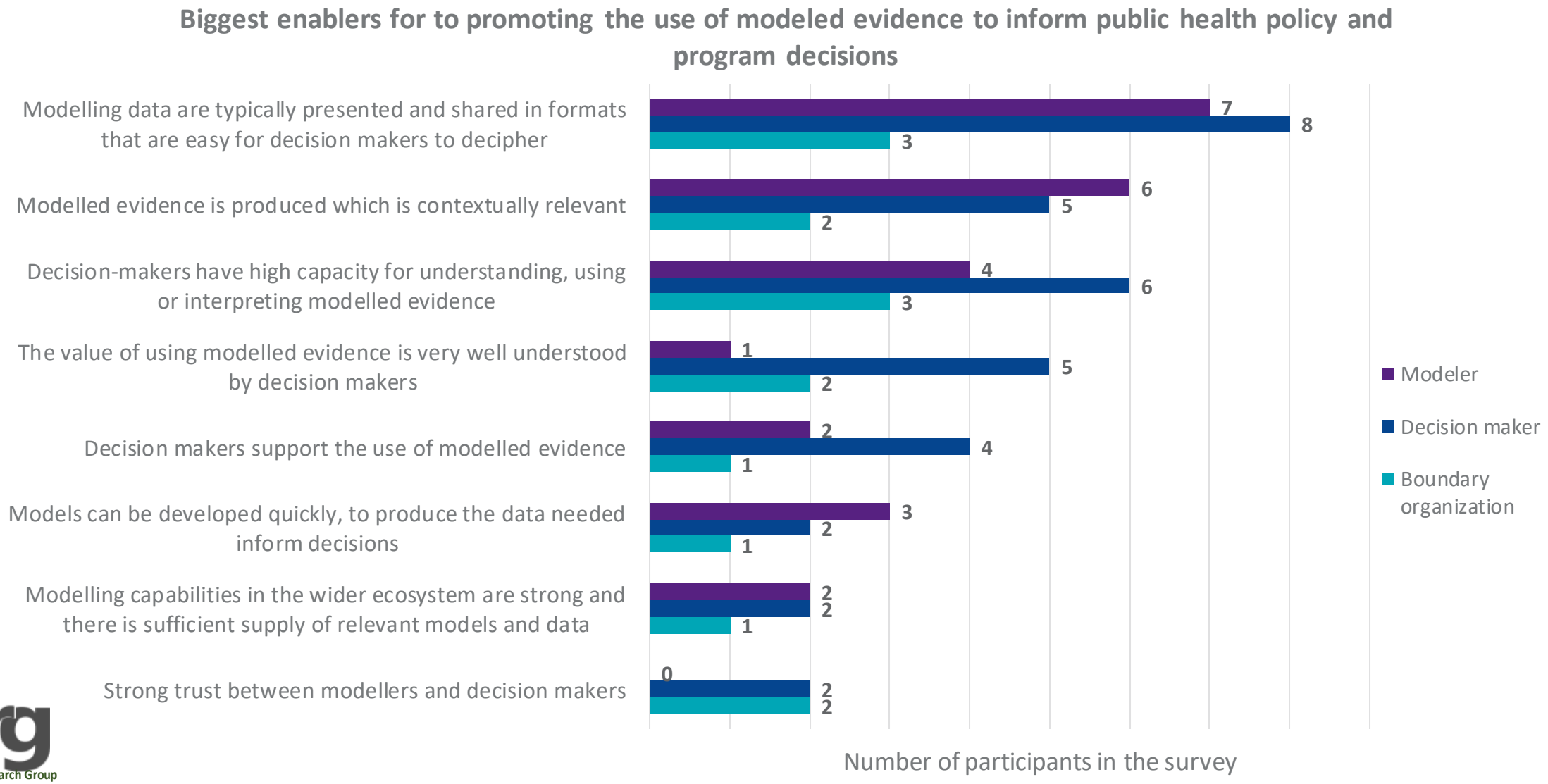
Biggest Enablers – Survey Results



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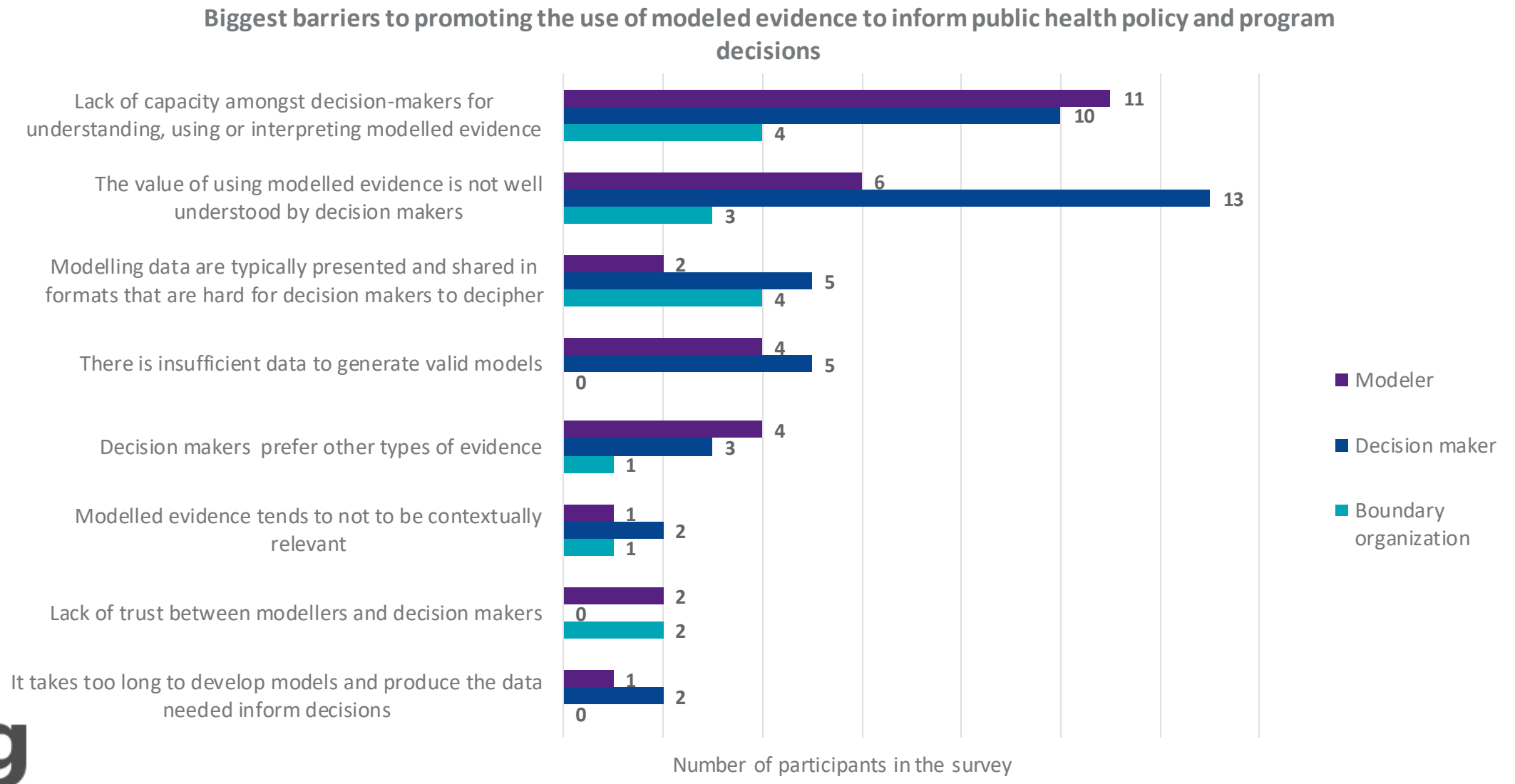
Biggest Barriers – Survey Results



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Key Facilitators

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Organizational & Inter-Organizational Factors	• Intra- and inter-agency **knowledge sharing** • Strategic **stakeholder engagement** • Availability of **champions of evidence-based decision making** (EBDM) – organizational culture • **Co-production** of evidence • **Embedded researchers**	• Intra- and inter-agency **collaboration and support** • **Stakeholder engagement** • Availability of **funds**	• **Inter-agency collaboration** for knowledge sharing and advocacy • **Stakeholder engagement & strategic advocacy** • Organizational culture of **EBDM** • **Contextualization** of evidence • Evidence synthesis by experts • **Training opportunities** for DMs
Environmental Factors	• Availability of **transparent data** • Funders'/partners' **policies & influence** • **Global movement for EBDM**		• **Availability of data**, specifically population data) • **COVID-19 pandemic**

Facilitator: Individual capacity to produce and understand modeled evidence

- Capacity was expressed by all types of respondents. This includes the skills of researchers to produce policy-relevant modeled evidence as well as the capacity of decision-makers to understand it.
- It is easier to convince decision-makers to use modeled evidence when they understand how models work
- Modelers who are able to incorporate multiple situational variables, including the opinions of decision-makers, are able to create mixed useful models
- Although high capacity was occasionally mentioned as a facilitator, lack of capacity was more commonly raised as a barrier to the use of modeled evidence

"You know, well, that [convincing policy-makers] *wasn't much of a problem. I think the policy-makers were aware enough to know that the models might not go that way."* **(R16, Male, Boundary Org Rep)**

"…to move from theory into practice and to be able to make that link… you are not going to restrict yourself in modeling…You will also recognize other situational variables that may not necessarily lend themselves to the quantification. So, the idea of using mixed methods is more admissible." **(R02, Male, Modeler)**

Facilitator: Clear communication of modeled evidence

- Clear communication was a recurrent theme across all types of respondents
- This refers to the presentation of modeled evidence using simple (non-technical) language and formats through appropriate and user-friendly channels
- Communication of modeled evidence should be transparent and tailored to the level of understanding of the decision-makers
- Hence, modelers and knowledge brokers are required to be mindful of the capability of the target audience for the modeled evidence

"….you want to ensure that the scientists bring a case [evidence] *clearly through appropriate channels…When they are called to give presentations, they are aware of their audiences."* **(R16, Male, Boundary Org Rep)**

"The output we share with policy-makers are processed data. But we present to them in charts, graph and in report…without having to do with the technicality of the model itself." **(R30, Male, Modeler)**

"Getting [decision-makers'] *trust and confidence in the first instance in the model output is often what one needs to overcome. Fortunately, interpreting the models in a very clear way that will enable them to see through empirical evidence of what is happening in the sector proves profoundly successful."* **(R27, Male, Knowledge broker)**

Facilitator: Intra- and inter-agency knowledge sharing

- All categories of respondents highlighted that there is a culture of information and data sharing among departments and units within (intra) and across (inter) government and non-government agencies
- Data sharing also happens among development/implementing partners, modelers and government agencies
- In some instances, there are formalized data sharing agreements. In other cases, there are just unwritten rules.

"For the AMR [anti-microbial resistance] *work that we do, we have our incident files where we are generating AMR data…there is collaboration with NCDC* [Nigeria Centre for Disease Control] *sentinel sites with an understanding that we use the data."* **(R15, Female, Decision-maker)**

"I told you there are other organizations that collect data. WHO has offices at the state level…zonal level and…national level…they collect data too. When [our data] *are not available for one reason or the other, we make use of data collected by partner agency."*

(R14, Male, Decision-maker)

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Facilitator: Availability of funds for model building

- This encompasses internal and external research grants that are either ear-marked for modeling or awarded through competitive research proposals
- It also refers to model building work that is commissioned by government agencies and international organizations
- This facilitator only came up among modelers

"If you are familiar with the modeling environment, you will know that it is highly capital intensive. Models that are used for the purpose of medium-term plans are very sophisticated, complex and require a lot of resources. The highest model I built for the Ministry of Finance, Budget and National Planning involved a partnership with the Office of the Special Assistant to the President as well as UNDP that commissioned the development of the model." **(R30, Male, Modeler)**

"It's [the model building work] *from commissioned research…The researcher would have to come up with the concept…Like the ones I know so far, they are usually internal grants from the institute…The most recent fund is from the Federal government."* **(R26, Male, Modeler)**

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Facilitator: Organizational culture of evidence-based decision making

- Organizational policies and leadership that promote the use of evidence in decision-making for program planning and implementation
- It includes both documented policies and plans (such as the National Health Policy, 2016) that support EBDM, and the 'undocumented' practices of a leader that becomes an organizational norm
- This was iterated by some decision-makers and modelers

"The current ED [Executive Director] *of NPHCDA* [National Primary Health Care Development Agency], *shortly before I left, in fact as at the time I was leaving, he was already encouraging the use of that* [evidence in decision making]." **(R30, Male, Decision-maker)**

"We collect a lot of data, and our data, both the surveillance data, the process data, all the information we collect feeds into our decision making. We are implementing our National Action Plan. So we are constantly assessing how we are performing, and part of the work we are supposed to do in the NCDC is to inform policy. It is nowhere near perfect...but we are translating a lot of things into policy."

(R15, Female, Decision-maker)

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Facilitator: Strategic stakeholder engagement

- This refers to the formalized process of involving a carefully selected list of decision-makers and organizations throughout the process of developing the (modeled) evidence
  - These stakeholders include powerful and influential policy-makers, development partners & donors, and CSOs
- This was identified by all three categories of respondents
- Co-producing evidence with decision-makers enabled trust in the research/modeling outputs, and a better understanding of models by the decision-makers

"The fact remains that if you want to have impact, you have to look at the major stakeholders; the number one are the legislators…Then the second people that you must have their buy-in are the policy-makers at the ministries, departments and agencies." **(R23, Male, Boundary Org Rep)**

"Getting their trust and confidence in the first instance in the model output is often what one needs to overcome. Interpreting the models in a very clear way will enable them see through empirical evidence of what is happening in the sector or another. The approach [we used] really was to co-produce models with the actors…every Tuesday evening, the modelers were meeting with policy-makers and the programmatic people. I think that was definitely one strong strategy." **(R27, Male, Decision-maker)**

Facilitator: Global movements and crises

- This encompasses all the global movements and trends in favor of evidence gathering, knowledge sharing, knowledge translation and evidence-based decision making
- It also includes global crises such as the COVID-19 pandemic that necessitated epidemiologic modeling and the use of modeled evidence in the pandemic response

"We are involved in a lot of international discussions around infection prevention and control. In the Ministry of Health, every sector is screaming, "Data! Data! Data!" Everybody is emphasizing on the need for quality data. In WHO, NCDC, data is everybody's watchword…the fact that the world is a global village; people want to know what is happening. Anything that is happening to one country is relevant to other parts of the world."

(R15, Female, Decision-maker)

"Actually, this is the current instance now. In the COVID-19, Lagos state has used modeling most…even more than the Federal government to project where things might go." **(R16, Male, Boundary Org Rep)**

"I think COVID was really a great foster child in saying how modeled data on epidemic becomes relevant for decision making." **(R27, Male, Decision-maker)**

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Facilitator: Funders' policies and practices

- These refer to the guiding principles for model building and use in decision making that are peculiar to a funder or to any externally-funded project/program
- If the development and/or use of modeled evidence is in the funder's policy, the decision-makers will abide by it
- This was only explicitly stated by a decision-maker
- However, it is a reality that decision-making processes are influenced by external funders, and this includes whether or not evidence is used for decision-making, and the type of evidence that gets to be used

"World Bank provided grant for the Nigeria Primary Healthcare Development project and there a number of decisions that were taken based on modeling."

(R14, Male, Decision-maker)

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Facilitator: Availability of data

- This encompasses the availability of data repositories, access to data repositories, and the quality of data
- Only the decision-makers and funders alluded to data availability as a facilitator of exchange between modelers and decision-makers
  - This could be because they were referring to forms of evidence (other than modeled evidence) that are used for decision-making
- None of the modelers stated that data availability was a facilitator. However, several saw the lack of data as an inhibitor.

"In all those sub-offices, these officers work with DHIS team in the Federal Ministry of Health and states to make sure that we have routine data for decision making. We try to augment with other data from national surveys such as NDHS and MICS."

(R35, Male, Funding org.)

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Key Inhibitors

	As Reported by Decision-Maker	As Reported by Modeler	As Reported by Boundary Org
Individual & Interpersonal Factors	• **Lack of (i) capacity** for model building, & (ii) **understanding** of modeled evidence • **Decision-maker attitudes** that evidence is not valuable for policy making • **Researcher attitudes** towards knowledge translation (KT)	• **Lack of (i) capacity** for model building, & (ii) **understanding** of modeled evidence • **Lack of professional working relationship** with (& access to) decision-makers • Decision-maker **attitudes that evidence is not valuable** for policy making	• **Lack of understanding** of modeled evidence • Decision-maker **attitudes that evidence is not valuable** for policy making • **Poor communication** styles • **Lack of time** for exchange

Organizational & Inter-Organizational Factors	• **Lack of training** on model use
	• Policy-makers and researchers **work in silos** in evidence synthesis
	• **Unsupportive governance structure**
		• **Lack of funds** for model building work
		• Policy-makers and researchers **work in silos** in evidence synthesis
		• **Time constraints**
			• **Lack of funds** for training in knowledge brokering
			• **Unsupportive governance structure**
			  ○ Weak coordination
			  ○ Unwieldy bureaucracy

Environmental Factors	• **Poor quality** (integrity) of data for model building ○ Lack of robust models	• **Lack of data** for model building	• **Lack of data** for model building

Inhibitor: Lack of capacity to produce, translate, understand and use modeled evidence

This encompasses:

1. Lack of capacity to produce modeled evidence among **researchers**
2. Lack of capacity of **boundary organizations** and **knowledge brokers** to understand and translate modeled evidence to decision-makers
3. Lack of capacity of **decision-makers** to understand and use modeled evidence in decision making, including a lack of exposure to modeled evidence
4. This was the most recurrent theme in the interviews, and it reflected across the three categories of respondents

"The models are there but [the] *challenge is mainly in translation. There are some evidence that came out during the* [COVID] *pandemic* [that] *I even didn't understand…If you put me on the spot to engage with policy-makers, I will not be able to do that* [because] *I don't even understand the models."* **(R11, Female, Knowledge broker)**

"Modeling is…a new process as far as healthcare in Nigeria is concerned. The capacity to model is actually very very poor in the entire system. The other thing is that modeling is complex [and] *it becomes a challenge to policy-makers* [to understand]."**(R21, Male, Decision-maker)**

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Inhibitor: Attitudes of decision-makers and researchers or modelers

- This includes references by respondents to (i) decision-makers not valuing or considering research or modeled evidence worthwhile for policy making and planning or (ii) researchers/modelers not caring to either produce policy-relevant evidence or interpret and communicate the evidence to decision-makers
- The negative attitudes of both decision-makers and modelers/researchers were recurring themes across the three types of respondents

"Researchers just do research and throw it away once [it has been] *published, and count how many papers* [they] *have published* [rather than] *how many was implemented* [translated to policy]." **(R32, Male, Decision-maker)**

"There were other instances of colleagues that do not have data use as a culture. They don't see the need to reference data in budgeting or planning but rather would rely on historical budgeting…We have always done it this way and so [they] *do not listen to signals from modeled evidence."* **(R27, Male, Decision-maker)**

"The greatest barrier is that policy-makers do not even look at the research we are doing. They make their decision [and] *policies without recourse to research findings."* **(R25, Male, Modeler)**

Inhibitor: Lack of professional working relationships and experience with decision-making

- This is a situation where modelers/researchers are unable to share modeled evidence with decision-makers because (i) they do not have professional working relationships, (ii) they do not have opportunities to interact with decision-makers, or (iii) they lack experience in the decision-making process
- This constraint came up only in the interviews with modelers

"Outside of my system, I have not been able to interact directly with the policy-makers [with] *whatever we come up with as a statistician or as a modeler."* **(R31, Male, Modeler)**

"Unfortunately, I don't have much experience in the aspect of health policy that is beyond just working with other researchers to produce a paper." **(R02, Male, Modeler)**

"The policy-makers, some of them, put themselves very far so that you will not even see the opportunity to interact with them…If you even try to see them, you will not have access to them." **(R25, Male, Modeler)**

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Inhibitor: Lack of funds

- This is defined as the lack of or insufficient dedicated funds from internal (government) and external (donor) sources to
  i. Support researchers to generate modeled evidence
  ii. Train intermediaries or boundary organizations on how to facilitate knowledge exchange
  iii. Train decision-makers on evidence-based decision making
- This constraint came up among the modelers and boundary organizations

"We used to [organize] *retreats* [training workshops] *for them* [decision-makers]*; that was when we used to have the financial capacity."* **(R23, Male, Boundary Org Rep)**

"Well, practically, you know the way research is in Nigeria. It is the grant you get…that will determine whether you model or not." **(R28, Male, Modeler)**

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Inhibitor: Policy-makers and researchers working in silos

- This is defined as the lack of structures to ensure that knowledge exchange between researchers and decision-makers is formalized, consistent, sustained and continuous in order for evidence to be translated to policy and practice
- Working in silos is also used here to underline the deliberate and indeliberate actions of policy-makers and researchers that prevent them from interacting or leveraging opportunities for the purpose of knowledge exchange
- Some decision-makers and modelers highlighted this inhibitor to knowledge exchange

"There is a lot more to the use of evidence than talking to stakeholders once in a while. I have not seen any organization that practically engages the ministry to support the ministry to use evidence in decision making…we interact once in a while but, there is no active support."

(R29, Male, Decision-maker)

"It's because most of the time, they [decision-makers] *are cut off from the reality on ground. They spend most of their time attending meetings and meetings which will not give the time to interact with them."*

(R26, Male Modeler)

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Inhibitor: Governance issues

- This refers to governance problems that prevent, interrupt or delay knowledge exchange between decision-makers and researchers in the Nigerian health ecosystem. It includes lack of policy directive and unwieldy bureaucratic processes.
- Several decision-makers stated the issue of lack of policy guidelines for the translation of research evidence (including modeled evidence) into decision-making in the Federal Ministry of Health

"We do not have medium to long-term blueprint on how things should go. There were modeling [works] *that went on for a couple months and years, and it was not very clear the sort of actions to take to get the desired output."* **(R27, Male, Decision-maker)**

"It [modeled evidence] *comes up in different discussions every now and then…but there is no policy directive in that regard."* **(R31, Female, Decision-maker)**

"One of the things I think is the fact that the leadership does not see the need for it [modeled evidence]." **(R29, Male, Decision-maker)**

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Inhibitor: Time constraints

- This is used to define references to lack of time to organize, facilitate and participate in (attend) knowledge exchange translation activities
- The modelers identified that the time requirements to engage decision-makers could be a challenge for them, as well as for the decision-makers who have competing time demands and very busy schedules
- This implies that although both parties are desirous for knowledge exchange, this may not be realized due to conflicting schedules

"So, you can do a methodology workshop where you look for ideas from them [decision-makers]. *At the end of the study, you also go back to them to do dissemination workshop and get their feedback. That kind of arrangement is time consuming."* **(R02, Male, Modeler)**

"Most of the times, they spend most of their times attending meetings and meetings which will not give time for the person in charge to really be in tune…to interact. There should be better interaction between the policy-makers and researchers." **(R26, Male, Modeler)**

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Inhibitor: Data issues

- These include (i) the lack of data for building models, (ii) the poor quality (and inadequacy) of available data in terms of accuracy and completeness, and (iii) the lack of access to data for modelers
- The incompleteness of population data (including vital statistics) was highlighted as a major constraint to developing robust and reliable models
- Lack of data was very commonly expressed by all the respondents as an inhibitor of exchange between modelers and decision-makers

"What are you modeling? Think about it. We don't know the number of persons that are being born in this country. We don't know how many people are dying. We don't know the age distribution. So, where will the modeling data come from?" **(R15, Female, Decision-maker)**

"Severally, we do not have enough in-country data; you know, [speaking of] access to the available in-country data to do the work." **(R26, Male, Modeler)**

"We often run into a conundrum in Nigeria around models and the reason is we don't have good and complete data…In order to construct very good and reliable models, you need good quality data in the first place."

(R27, Male, Decision-maker)

Research Question 2: Structures to Enable Exchange Between Modelers & Decision-Makers

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Knowledge and evidence exchange structures and mechanisms in Nigeria

- We identified different types of structures for knowledge exchange in the country and a few that have engaged in the translation of modeled evidence for decision-making

- Based on the mechanism of engagement, these structures are broadly grouped into:
  1. Academic/scientific alliances
  2. Research consortia – including government-led and independent research coalitions
  3. Technical working groups and advisory committees
  4. Advocacy and civil society coalitions
  5. Alliance of development partners

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Eight of these structures are described in detail in subsequent slides

1. Nigerian Academy of Science (NAS)

- The Academy is an **alliance of academia in the sciences**
- It is referred to as the foremost *"independent scientific society in the country"* (R16)
- At the time of collecting this data, there were 268 fellows of the Academy across all the sciences and about 10% of them were women
- The Academy receives funding from "interested funders", including Rockefeller Foundation, Ford Foundation, and Danjuma Foundation in Nigeria
- A goal of the academy is to provide decision-makers with evidence-based recommendations that could inform policies and strategies
- Convenings and consensus activities are used by the Academy to facilitate knowledge exchange between scientists and decision-makers
- Notable EBDM initiatives of the Academy include:
  - The Forum on Evidence-Based Health Policymaking in Nigeria (2006-2011)
  - The Policy Review Evidence for effective working of the Nigeria health system – PREVIEW project (2011-2012)

2. NAS PREVIEW Project

- A collaboration between the Nigerian Academy of Science and the Lagos State Ministry of Health
- The goal of the project was to stimulate the culture of utilizing research evidence in policy making and policy pronouncements
- The project spanned from March 2011 to September 2012
- The interventions were targeted at top-level and senior health care managers (the key decision-makers) in the Ministry of Health
- Two major activities were implemented – training workshops on EBDM and policy making retreats
- Each set of participants attended one training workshop and two policy retreats

3. Nigeria COVID-19 Research Coalition (NCRC)

- A **government-led research coalition** and scientific advisory group comprising of major health institutions and academia – Nigeria Centre for Disease Control (NCDC), National Institute for Medical Research (NIMR), NUC (National Universities Commission), Tertiary Education Trust Fund (TETFUND), universities, and the private sector

- Tasked to synthesize research evidence on COVID-19, interpret the evidence and make evidence-based recommendations to decision-makers, including the Presidential Steering Committee, Federal Ministry of Health (FMOH), NCDC and development agencies

- They adopted three main strategies to facilitate EBDM:
  1. Co-production of research evidence with policy-makers
  2. Use of peer reviewed evidence
  3. Technical working group

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4. Health Sector Reform Coalition (HSRC)

- Established by the Health Reform Foundation of Nigeria (HERFON) and other civil society organizations (CSOs) that were active in the health sector in 2011, with the initial aim of galvanizing legislative approval and presidential assent of the National Health Bill (now the National Health Act). HERFON acts as the secretariat of the HSRC.
- It is currently a powerful **advocacy** coalition of over 50 'powerful' CSOs, development partners and international agencies that primarily advocate for health reforms
- It targeted (and still targets) legislators at the national and state levels and policy-makers in ministries, departments and agencies
- Retreats and workshops were organized to build the capacity of legislators and policy-makers in EBDM. The trainings were facilitated by technical experts.
- Policy dialogues were used to facilitate knowledge exchange between policy-makers and scientists
- Policy papers/briefs were produced periodically and disseminated to decision-makers to sustain knowledge sharing

5. Primary Health Care Top Management Team

- An **advisory committee** to the Executive Director (ED) of the National Primary Health Care Development Agency (NPHCDA) on matters related to PHC
- Comprises senior healthcare managers (directors) from relevant departments in the Agency and the Ministry of Health, as well as from partner agencies
- The committee meets regularly to articulate and make recommendations to the ED on what needs to be done in the Agency, routinely
- It relies primarily on information (including research evidence) that is synthesized through the Department of Planning Research and Statistics (DPRS) to make decisions
- Other sources of information include development partners in the PHC space and implementing partners at the state and local government levels
- The activities of this Management Team are funded by the Agency

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6. Antimicrobial Resistant Coordination Committee

- This is a government-led **advisory committee** domiciled in the NCDC, which coordinates its activities
- It is a multi-stakeholder and multi-sector committee with representation from government agencies such as Ministry of Agriculture, Ministry of Environment, and National Agency for Control of HIV/AIDS (NACA) and international agencies such as WHO
- Their mandate is to discuss and make decisions to improve the data infrastructure for antimicrobial resistance (AMR), and to develop guidelines for infection prevention and control (IPC)
- The Committee engages the “orange network” of hospitals in discussions on the implementation of a uniform plan for IPC which is called, “one nation, one plan”
- It provides a platform for learning and exchange on AMR and IPC
- The activities of the Committee are funded by UK’s Fleming Fund

7. National Health Research Committee (NHRC)

- Established by the Federal government (as stipulated in the National Health Act, 2014), this is a tenure-based **independent advisory committee**
- It provides technical guidance and oversight to the Federal Ministry of Health on research and knowledge translation
- Comprises representatives from the FMOH, NIMR, UN agencies, academic and research organizations
- The secretariat is the FMOH's Department of Health Planning, Research and Statistics
- Statutorily, they are supposed to meet quarterly. However, this has not been regular.
- The Committee recently reviewed the National Health Research Policy and Priority (2021) – this provides guidance to researchers on evidence that is needed to strengthen the health system and drive progress towards UHC

8. Development Partners' Group for Health (DPG-Health)

- This is an **alliance of development partners and funders** in the Nigerian health sector
- Comprises UN agencies, bilateral agencies, donor agencies and civil society organizations that are supporting the Nigerian health sector

  "It's a big group that sometimes is more than 100 agencies" **(R35, Male)**
- Established by the Federal government to provide advice on health issues
- Meets quarterly or more frequently when there are emerging issues – has met monthly since the COVID-19 pandemic
- DPG-Health has its representatives in national technical committees such as the Presidential Steering Committee on COVID-19 and the National Technical Working Group on Health Financing
- It provides technical advice through its representatives in these committees

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Other Structures

- National Council on Health (NCH)
  - An initiative of the Federal government
  - Proceedings are documented and widely disseminated to guide health action and progress with implementation is reviewed in the next NCH
- Forum of Commissioners for Health in Nigeria
- Nigerian Governors' Forum
- National technical working groups
  - Health Financing

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Strength: Co-production of evidence

- This is used to refer to collaborations between researchers and decision-makers to synthesize and interpret evidence
- It applies more to both types of research coalitions, government-led and independent
- This process was used by the NCRC to ensure that decision-makers' **participation**, **representation**, **ownership** and **trust** in the epidemiological models of COVID-19
- Modelers (scientists) met with the decision-makers on a weekly basis to share and interpret epidemiological models and assumptions. Comments from decision-makers were used to recalibrate the models, where necessary.

"Getting their trust and confidence in the first instance in the model output is often what one needs to overcome. Interpreting the models in a very clear way will enable them see through empirical evidence of what is happening in the sector or another. The approach [we used] *really was to co-produce models with the actors…every Tuesday evening, the modelers were meeting with policy-makers and the programmatic people. I think that was definitely one strong strategy."*

(R27, Male, Decision-maker)

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Strength: Credibility of evidence

- This is used to refer to the practices of researchers, scientists and knowledge brokers that contribute to making research evidence trustworthy and reliable.
- This is particularly useful for modeled evidence
- It applies to all the structures, and more so to the research coalitions
- It includes (i) being transparent about the sources of data (ii) balanced review of all forms of evidence (no 'cherry picking') and (iii) subjecting research evidence to rigorous peer review
- Credible evidence improves the potential for policy recommendations to be accepted and used in policy making

"What I am telling you is that you need acceptance; for anybody to understand…modeling…you must quote the source if you are bringing any fact." **(R27, Male, Decision-maker)**

"So, we look and use every piece of credible research out there. This forms what we would consult and interpret to do our work." **(R16, Male, Boundary Org Rep)**

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Strength: Multidisciplinary committees

- This is used to describe the good practices that enable decision-makers to contribute and/or acquire new knowledge through interactions with people from other sectors, departments, and fields
- This process is used by the Association of Medical Research Charities (AMRC) and NAS to promote **participation** and **learning** across stakeholders

"We identify every stakeholder that is involved in infection prevention and control (IPC). There is a constant discussion and engagement for learning." **(R15, Female, Decision-maker)**

"We have consensus activities which is the gold standard methodology, in which case we would have to constitute a multidisciplinary committee…You always get a mix of policy or decision-makers and scientists." **(R16, Male, Boundary Org Rep)**

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Strength: Technical expertise

- This refers to the availability and inclusion of experts (methodical and knowledge) in the knowledge exchange structures
- It occurs more in research coalitions and advisory committees
- The inclusion of experts in the technical working group of the NCRC advanced confidence (among decision-makers) in the models that were developed, and it became easier to convince decision-makers to use and reference the models
- Moreover, the caliber of scientists in the NAS, the diversity of scientific fields that are represented, and the rigorous process of selection of Fellows of the Academy increase their credibility among decision-makers

"The Academy is like the supreme court of science; what we can call knowledge translation." **(R16, Male, Boundary Org Rep)**

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Challenge: Lack of funding

- This refers to the non-availability of funds to support generation of evidence and knowledge translation structures and activities
- This could result from the lack of budget line, non-release of budgeted funds, or unpredictable sources of funding
- Funding challenges were a recurring theme among all categories of respondents

"For the evidence-based policy platform, some funding has been appropriated but it hasn't been released." **(R27, Male, Decision-maker)**

"We are working on [engaging with decision-makers]*. If you can fund us, we can organize a national event involving different groups, including people outside* academics."

(R25, Male, Modeler)

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M&E for Learning

- No specific efforts in M&E for learning have been made towards modeled evidence and decision-making in the country

- However, several of the knowledge-translation structures stated that they undertake stakeholder mapping to understand the interests, alignments and preferences of decision-makers for evidence use

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Research Question 3: Recommendations from Participants

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Developing Models

- Build and strengthen in-country capacity for model building and interpretation (including among research staff of departments of Planning, Research and Statistics (PRS) in different Ministries, Departments and Agencies (MDAs)
- Capacity building of researchers in modeling for EBDM
- Strengthen data and information systems through digitalization
- Make national and sub-national data more accessible to modelers

"If I must push for anything else, [it is] *about* [strengthening] *capacities for evidence building and modeling in the country…together with that is our data. We need concerted efforts to digitalize our data, getting network systems that allow data to be more accessible to people."*

(R27, Male, Decision-maker)

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Communicating Models

- Capacity building of boundary organizations and knowledge brokers to understand and interpret modeled evidence
- Prioritize the translation of modeled evidence in partner-supported programs and projects
- Organize evidence dissemination meetings for stakeholders
- Use appropriate dissemination outputs such as policy briefs
- Hold one-on-one discussions with policy-makers

"We need to reach out to the policy-makers, and then hold [dissemination] *meetings once we have the studies* [evidence]*. If it is going to be a policy brief, go to their offices and not just dump it on the desk, but find time to discuss your findings* [with decision-makers]*...Development partners like WHO, World Bank, and other international agencies should begin to look at* [translating modeled evidence] *and put it on their agenda to disseminate* [to] *stakeholders."*

(R24, Male, Decision-maker)

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Using Models

- Capacity building for decision-makers to understand and use modeled evidence through:
  - Legislations to institutionalize regular trainings to sustain a critical mass of experts in EBDM
  - Secondment of researchers/modelers in policy making organizations
- More investment (funding), by all partners, in EBDM
- Strengthen relationships for knowledge sharing/translation between policy-makers and researchers through:
  - Regular knowledge exchange meetings and dialogues
  - Early coaching of mid-level health care managers (future decision-makers) in EBDM
  - Mutually beneficial partnerships and collaborations in research and evidence synthesis
  - Researcher embeddedness in government-funded policies and programs

"I would want to see renewed and better partnership between researchers and policy-makers – to be expanded, to be sustained. [A situation where] *researchers and policy-makers are inseparable because they need each other...If government is funding any project within the policy space or by policy-makers, there would be embedded researchers."* **(R33, Female, Decision-maker)**

Discussion & Recommendations

Key Themes

- Modelers of evidence have **limited capacity to communicate** modeled evidence to decision-makers
- Similarly, decision-makers have **limited capacity to understand and use** modeled evidence in decision making
- Although **several structures exist** (and have been used) to facilitate knowledge exchange and EBDM in Nigeria, only a few of them have involved the translation of modeled evidence
- However, **these structures are viable platforms** for promoting the use of modeled evidence in decision making, provided that the capacity needs of modelers, knowledge brokers and decision-makers are addressed

Key Themes

- There is **low level of EBDM culture** among decision-makers in the health MDAs. This could be explained by the fact that it is not an explicit requirement for decision-making, or it could be that decision-makers are demotivated by the lack of capacity in EBDM.
- **Professional working relationships are almost non-existent** between modelers and decision-makers, and as such, modelers do not have the experience of decision making process
- The **unavailability and lack of access to quality (accurate and complete) data** for modeling, which were regularly mentioned, were particularly expressed among modelers as a major challenge to creating robust and reliable models

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Summary of Mechanisms

- The types of mechanisms that exist for translating modeled evidence to decision-making in Nigeria include academic/scientific alliances, research consortia, technical working groups, technical advisory committees, civil society coalitions, and alliance of development partners
- The strengths of these mechanisms include (i) collaboration to produce evidence, (ii) transparency in data sharing, (iii) emphasis on credibility of evidence, (iv) fosters participation and cross-learning, (v) harnesses technical expertise across multiple disciplines and sectors
- These mechanisms of knowledge exchange require significant time commitments and capital (money), both of which are usually in very limited supply

Recommendations to Improve Modeling for Decision-Making in Nigeria

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Recommendations for Funders & Global Policy Leaders

Funders and global policy leaders should promote model building and use in decision making in funded programs and projects by:

- **Dedicating more funds** to translational research and model building work
- Insisting that **capacity building** of modelers and decision-makers is embedded into projects and programs
- Developing process and outcome indicators for **monitoring and tracking** the translation of modeled evidence to decision making
- **Harnessing the potentials of the existing structures** for knowledge translation in the country (such as the NAS) and working more closely with them in knowledge brokering
- Building (or supporting the building of) **robust data repositories** that are easily accessible to modelers

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Recommendations for Decision-Makers & Policy-Makers in Nigeria

- Provide **adequate funding** for translational research and model building work
- **Build (and sustain) capacity** for modeling for decision making through:
  - Training workshops for staff of DPRS in MDAs
  - Secondment of modelers and researchers in the DPRS
  - Formal mentorship arrangements with modeling/research and boundary organizations
- Develop a **framework for the use of research** (and modeled) evidence in policy and decision making
- Establish a **robust data repository**, and make this accessible to researchers and modelers

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Recommendations for Decision-Makers & Policy-Makers in Nigeria continued…

- Establish a **repository of outputs of research** (and modeled) evidence that policy-makers can easily access in decision making

- This repository could be in form of:
  - a database of policy briefs, technical reports, working papers, journal articles, and slides;
  - a health observatory; or
  - both

- The National Health Research Ethics Committee should emphasize the **knowledge translation plan as an ethical requirement** for all research proposals

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Recommendations for Modeling Organizations in Nigeria

- Ensure that every research project includes plans for:
  - **Building or strengthening the capacity** of researchers to produce modeled evidence
  - **Engaging decision-makers to effectively communicate** modeled evidence (knowledge translation)
- **Formalize relationships with decision-makers** through
  - Collaborations in model building work (and other forms of evidence synthesis)
  - Participation in the knowledge translation platforms of FMOH and its agencies
  - Secondment of modelers in DPRS
  - Provision of mentorship to staff in DPRS
- **Formalize relationships with boundary organizations** and/or knowledge brokers to enable knowledge translation of modeled evidence through effective engagement of (and communication with) decision-makers

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Recommendations for Boundary Organizations & Knowledge Brokering Mechanisms in Nigeria

- **Leverage available training opportunities** to build or strengthen boundary organizations' capacity to understand and interpret modeled evidence to decision-makers
- Include **evidence from model building research** to the pool of evidence that is used to engage decision-makers in policy dialogues, when appropriate
- **Formalize relationships with modeling organizations** and modelers by commissioning new research, undertaking joint design of policy instruments, and joint evaluation of policy impacts of modeled evidence [6]
- Develop **easy to understand sustainable communication protocols** (such as policy briefs and fact sheets) for knowledge brokering and translating modeled evidence into policy and practice

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Limitations

- The researchers relied on their knowledge and networks to recruit participants into the study, and as such may have missed out some people in the modeling to decision making ecosystem in Nigeria
- The response to invitations to participate in the survey and KIIs was low
- We were unable to interview several of the key informants that participated in the survey, and as such we could not explore some of their responses with them through KII
- We particularly had very low response rate from women in the KIIs. This could mean that their views were under-represented in the study.

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