ACADEMIC KNOWLEDGE BROKERS IN KENYA: 
A MIXED METHODS STUDY OF RELATIONSHIPS, 
CHARACTERISTICS AND STRATEGIES FOR INFORMING PUBLIC 
HEALTH POLICY

by
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ABSTRACT

Problem Statement: Academic knowledge brokers (KBs) are described as faculty serving as bridges between research and policy. Their established relationships with policymakers together with their reputations as trusted peers sought out for advice on evidence-informed decision-making (EIDM), render them important actors in the research to policy process to better understand. While recognition of their dual role as knowledge generator and knowledge broker has been recognized in select Western organizations, little research has examined KBs in low- and middle-income countries. This study explores the networks, attributes, and characteristics of academic KBs in the Kenyan public health context and their strategies for engagement with policymakers.

Methods: This study employed a mixed-methods design. Manuscript 1 uses a social network analysis (SNA) to characterize the academic-policymaker networks of faculty from 6 schools of public health (SPHs) in Kenya. A novel method of identifying KBs is developed and described. Manuscript 2 uses sociodemographic data from the SNA and interview data to describe the perceived attributes, capacities and skills of KBs. Manuscript 3 uses qualitative methods to explore strategies of engagement between academics and policymakers.

Results: Manuscript 1 depicts the architecture of the various ‘SPH-National Government’ networks through mapping individual ‘academic faculty-policymakers’ social capital underlying the institutional networks. Furthermore, it identifies 7 academic KBs. In addition to KBs’ sociodemographics, manuscript 2 describes other human capital characteristics perceived to be important: professional competence, experiential knowledge, interactive skills and personal disposition. Soft skills and a social conscience also emerged as valuable attributes. Manuscript 3 elaborates the current strategies as well as underutilized and underappreciated strategies for
engagement between academics and policymakers. The strategies varied by initiating party with
the majority being spearheaded by academia.

Conclusion: Several changes in Kenya are likely to compel academics in the future to
increasingly engage with policymakers at an enhanced level of debate, deliberation and
discussion. Academic KBs are perceived to have the networks, the competencies and the
experience to engage effectively with policymakers. By recognizing existing KBs, supporting the
emergence of potential KBs, and systematically hiring faculty with KB-specific characteristics,
SPHs can enhance their collective social as well as human capital so as to contribute to EIDM in
Kenya.

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“If you want to go fast, go alone. If you want to go far, go together”
-African proverb

There is no more apt a proverb than the one above for how I feel about this DrPH expedition – and indeed it has been an expedition; one sprinkled with immeasurable discovery and tempered with humbling challenges. This dissertation, and moreover this degree, could not have been possible without the support, guidance, encouragement and patience of several people who walked by my side at various points along this meandering journey. I am indebted to all those who have helped me make this day a reality.

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ABBREVIATIONS

AFIDEP African Institute for Development Policy
APHRC The African Population and Health Research Center
CARTA The Consortium for Advanced Research Training in Africa
CNHR Consortium for National Health Research
EIDM Evidence-informed decision-making
ENHR Essential National Health Research
ESPUDEC Maseno University School of Public Health and Community Development
GLUK Great Lakes University of Kisumu-Tropical Institute of Community Health
HIC High Income Country
ICC Inter-agency coordinating committee
ICIPPE International Centre of Insect Physiology and Ecology
IFPRI The International Food Policy Research Institute
ILRI The International Livestock Research Institute
KB Knowledge Broker
KEMRI Kenya Medical Research Institute
KEMU Kenya Methodist University
KIPPPRA Kenya Institute for Public Policy Research and Analysis
KUCCPS Kenya Universities and Colleges Central Placement Service
KUSPH Kenyatta University School of Public Health
LMIC Low and Middle-Income country
MoAg Ministry of Agriculture
MOH Ministry of Health
MoEd Ministry of Education
MoEnvr Ministry of Environment and Mineral Resources
MoICT Ministry of Information, Communication and Technology
MoLabour Ministry of Labour
MoLD Ministry of Livestock Development
MOMS Ministry of Medical Services
MOPHS Ministry of Public Health and Sanitation
MoPND Ministry of Planning and National Development
MoTrans Ministry of Transport
MoWater Ministry of Water
MSSP Ministry of State for Special Programmes
MTP Medium Term Plan
MUSOPH Moi University School of Public Health
NACC National AIDS Control Council
NACOSTI National Council for Science and Technology and Innovation
NCST National Council for Science and Technology
NGO Non-governmental organizations
PMO Prime Ministers Office
Presoff Office of the President
REACH-PI Regional East African Community Health Policy Initiative
SNA Social Network Analysis
SPH School of public Health
SPHUoN University of Nairobi School of Public Health
SSI Semi structured interview
TWG Technical working group
INTRODUCTION
BACKGROUND AND RATIONALE
Studies have shown that policies influenced by sound scientific evidence and best practices can improve public health outcomes [1] and contribute to national development. Evidence-Informed Decision Making (EIDM) therefore fosters the creation and application of public health policies that are equitable, effective, and efficient. Though the need for EIDM has been acknowledged, researchers who produce the evidence and decision-makers who subsequently consume it have been characterized as “distinct communities” whose infrequent interaction, varied priorities, and incongruent timelines, amongst other factors, impede the flow of evidence to policy and practice [2]. The gap between these two communities has been well documented in the literature [3-6] and highlighted at global meetings [7,8]. It is important to understand how to narrow this gap in order for researchers and policy makers to create and nurture productive relationships that facilitate the flow of evidence relevant to decision making. Knowledge Brokers (KBs) have emerged as one potential solution for bridging this gap.

KBs serve as the link and catalyst for knowledge synthesis and exchange, enabling the flow of information resources, and nurturing relations between “two distinct communities” who would not otherwise have the opportunity to interact [9-11]. Their role is of particular interest, therefore, in the health research, policy and practice arena [12-15], which is fraught with isolated and siloed actors [16-21] who are challenged with trying to promote EIDM [22]. Identifying such KBs can provide insight into who can be used to leverage action or accelerate information flow in the network.

Academic KBs in this study are characterized as faculty who are not only well connected to policymakers but also sought by their peers for advice and knowledge on strategies to engage in EIDM. Although the roles of academic KBs are ambiguous and no one model to-date captures the
complexity of their positions [23], UK higher education institutes are increasingly developing purposeful staff appointments for what they call ‘hybrid’ or ‘blended’ professionals who have “mixed backgrounds and portfolios, comprising elements of both professional and academic activity” [24]. This experimentation seems to be emerging in Africa where institutes of higher education and increasingly networks such as the Association of African Universities (AAU) are beginning to participate actively in developmental policymaking [25]. In thinking about academic KBs, Meyer’s work would suggest that they are connected to both worlds they bridge – that of academia as well as that of policy. The need for more research on the role of individual KBs and their networks - their social capital - as innovative means of bridging the research and policy domains is apparent in a wide body of publications across several disciplines [21,26-28].

Previous studies specific to academic-policymaker partnerships, and to knowledge brokering in particular, have varied in their foci ranging from frameworks to capture the complex dynamics of interactions between actors [29,30] and the organizational culture in which they operate [6,11,31]; to the roles of KBs and the fluid nature of their suite of activities [32-35]; and to the individual skills of KBs [17,24,36-39], their motivations [10,40-43] and their personalities [40,44]. However, most of the studies are informed by Western experiences and none of the frameworks to date capture the attributes, capacities and skills –the human capital - of academic KBs that are transferable to Low and Middle Income Countries (LMICs). In addition, while research has highlighted the importance of relationships with decision makers and networks [2,5,45], reciprocal strategies for initiation, enhancement and maintenance of these relationships have received less attention spurring Lewis to challenge public health practitioners to explore their strategies of engagement with policymakers [46].

In 1950, George Simmel argued that triadic relationships – those that involve a third actor serving as a broker – may provide more insight into networks than simply studying dyadic relations [47].
These “Simmelian ties” that directly link two parties through a third are more likely to persist over time [48,49]. Only one study to date has attempted to explore the networks of academic KBs and is embedded in the Australian context [50]. The study found that SNA was instrumental in identifying the most influential policy actors, who in this context were medically qualified, male academics. Although highlighted as an important area to study empirically [24,28], there are no such studies that feature LMICs. The two that we are aware of [51,52] use SNA to identify KBs but similarly, are not embedded in the academic-policy realm. This dissertation therefore aims to explore the social capital as well as human capital of academic KBs in Kenya.

The first manuscript in the dissertation maps the academic-policymaker networks of faculty from 6 SPHs with a view to depict the social capital through understanding the prevalence of relationships that exist, the range of connections with the various ministries in Kenya, and the breadth of these relationships. In addition to mapping individual relations, the study explores the institutional connections between SPHs and national Ministries as they manifest through the individual relations. Using several measures of centrality, the manuscript seeks to identify faculty serving in a KB capacity. The second manuscript focuses particularly on the attributes, capacities and skills of the KBs identified in Manuscript 1 - their human capital - that facilitate their roles as academic KBs in the Kenyan context. The third manuscript explores how KBs, academic leadership and policymakers leverage their relationships with each other and other strategies for engagement so as to contribute to public health EIDM in Kenya.

**STUDENT RESEARCHER INTERESTS**
Inherent to qualitative research is the acknowledgement that every study is framed by the researcher’s perspective, since the researcher serves as the data collection instrument whose values, beliefs and expectations are likely to chart the course of the interview process [53] as well
as the analytic process. The student investigator was born in Kenya and spent part of her childhood there prior to relocating to the UAE and then to Canada. She returned to Kenya from 2007-2010 while posted to a regional office for a Canadian Crown Corporation. During her tenure as a program officer there, she worked with several research institutes and researchers working on health systems research projects with the aim to influence policy and practice. Her exposure to the complexities and opportunities that academic faculty grapple with in their endeavors as well as her keen interest in health policy served as the impetus for this study.

**LITERATURE REVIEW**

**Knowledge Brokers (KBs)**
KBs have been recognized as being critical in the path of knowledge communication either as facilitators of knowledge flow or disruptors through gatekeeping [54]. There exist varied understandings of the role and responsibilities of KBs, evident through the multitude of synonymous terminologies [9,18,24,37,55-57], as well as an array of frameworks [30,32,33]. The various discussions about how to articulate the concept of knowledge brokering are captured in the continuum of roles articulated in Figure 1 below [35].
The concept of knowledge brokering, although steadily garnering much attention, is still “emerging.” It therefore suffers from a lack of acknowledgement, recognition and planning even where it does occur [58-60]. Within this emergence is the potential for institutions to serve as KBs. Hargadon’s assertion that organizations that “consult to others—have the potential to act as knowledge brokers (KBs)” [56] has led to experimentation with Knowledge Translation Platforms (KTPs) – “national- or regional-level institutions which foster linkage and exchange across a (health) system”[61] in East Africa [62], Zambia [63] and other parts of the world [64]. Furthermore, several other types of entities such as science journalists [11], advocacy coalitions [65] as well as development partners and funders [38], have been recognized as KBs in the research-policy interface. The potential of academic institutions as mediums for knowledge exchange however, has been recognized as important [12-14,22,24,66].

The UK Department for Business Innovation and Skills stated that “[. . .] universities are the most important mechanism we have for generating and preserving, disseminating and transforming knowledge into wider society and economic benefits” [67]. Johnston and colleagues suggest that
a new wave of pressure on higher education institutions [in the UK] to create and nurture engagement with external players such as industry stimulate “greater visibility or global standing; to signify world-class excellence in teaching and research; to attract more competitive resourcing strategies; to become more prominent regional players in facilitating knowledge translation, exchange and innovation activities; and to network more vigorously with partners” [27].

Within such institutions is the unique position of *individuals* - academic faculty who play a dual role: that of the knowledge generator as well as that of the knowledge broker particularly in the context of academic research institutions intending to influence policy and practice. Although the role of the KB depends on the organization, and the context in which brokering occurs, Canadian researchers [17] posit that there is a basic skill set summarized in Table 1.

**Table 1: Skills and roles of Knowledge Brokers**

<table>
<thead>
<tr>
<th>Skills required by knowledge broker</th>
<th>Tasks of a knowledge broker</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The ability to bring people together and facilitate their interaction;</td>
<td>• Bringing people together to exchange information and work together;</td>
</tr>
<tr>
<td>• The ability to find research-based and other evidence to shape decisions;</td>
<td>• Helping groups communicate and understand each other’s needs and abilities;</td>
</tr>
<tr>
<td>• The ability to assess evidence, interpret it, and adapt it to circumstances;</td>
<td>• Pushing for the use of research in planning and delivering healthcare;</td>
</tr>
<tr>
<td>• A knowledge of marketing, communication; and</td>
<td>• Monitoring and evaluating practices, to identify successes or needed changes;</td>
</tr>
<tr>
<td>• The ability to identify emerging management and policy issues which research could help to resolve</td>
<td>• Transforming management issues into research questions;</td>
</tr>
<tr>
<td></td>
<td>• Synthesizing and summarizing research and decision-maker priorities; and</td>
</tr>
<tr>
<td></td>
<td>• ‘Navigating’ or guiding through sources of research.</td>
</tr>
</tbody>
</table>


With the dearth of knowledge on the invisibility and dual role of academic researchers, Meyer challenges social scientists “to analyze more thoroughly their practices, the devices they create and use, and the benefits and drawbacks” of this unique position and status [11].

**Social Network Analysis**

A central premise of network analysis is that, “the structure of relations among actors and the
location of individual actors in the network have important behavioral, perceptual and attitudinal consequences both for the individual units and for the system as a whole” [68]. In the late 20\textsuperscript{th} century, mathematical models and statistical analyses were explored to better understand social influences, behaviors and their implications on networks [69]. Historically, social research focused on objects such as organizations and populations to which communities belonged but “neglected the links that tied these communities together” [70]. Network analysis thus emerged as a flexible approach among a variety of disciplines seeking to better understand behaviors; these range from physics [71,72] to communications [73] to social science [74-77] and even management [78]. It allows for a depiction of discrete objects or positions (nodes) and the relationships (ties) between these [74,79], which can not only vary in strength and direction [75] but also go beyond one degree of separation between the nodes. The relative symmetry or asymmetry between these objects can also be represented graphically [80].

The recognition of a need for more quantitative means to analyze these networks through interconnected individuals within communities rather than simple individual-level influences led to the evolution of social network analysis (SNA) [81]. Although SNA stems from network theory [79,82,83] it goes beyond descriptive analysis of communication and enters the realm of communication structures [80,84]. The key distinctive feature of SNA is the focus on actors and their relations in contrast to actors and their attributes [85] and allows for an analysis of influence at the individual as well as group level. It demonstrates the complex inter-relationships that exist within a network and permits enhanced visual capture of network activities and results compared to more traditional forms of evaluation [80]. Furthermore, it can assist in making invisible networks visible, which in turn can reveal strategic but under-utilized collaborations[86].

Networks exist in various forms and with varied success in order to promote change. Relations within these networks are often complex, entangled, open, fluid and dynamic [87]. The relative
successes of these networks are dependent on exogenous constraints as well as endogenous drivers [88]. Understanding the complexities of both is necessary for the enhanced efficiency and desired effect of the network structure. Policy networks are nebulous and include elements of formal and informal self-organization by individuals as well as formal structures mandated by institutional positions, rendering them more dynamic in nature [86] thus making such networks difficult to assess. Policy network mapping however, is a form of SNA that allows for the exploration of patterns of relationships, power structures, and resources within a policy process [85] and is recognized as a robust analytical approach to analyzing the architecture of policy networks. Hence, SNA serves to analyze the influence exerted by networks – whether social, political or economic in nature. It serves as a flexible and rigorous tool for mapping and quantifying relationships and their organizational structures within a multitude of contexts. It therefore provides an interesting prospect for exploring relations between academics and policymakers in the context of EIDM.

**Network analysis to explore academic-policymaker networks and to identify KBs**

In response to Meyer’s challenge, one method of exploring the dual role of academic faculty is through SNA. In assuming that KBs serve a “hub” role, they are recognized as being “enablers of knowledge transfer” [89] and their influence and span can be unpacked through an analysis of the networks that they nurture and straddle [6]. In SNA, KBs are referred to as weak ties - actors who connect disparate groups in a network - and therefore have been recognized as being important for information flow [90]. These weak ties often span structural holes in a network and can be identified from sociometric data that allows for triadic analysis [91-94].
There are several theories upon which one can draw for how and why KBs engage with peers and policymakers alike. The reasons for why policy makers seek out certain individuals have been documented as follows:

- **Belief Homophily Hypothesis**: Alignment of values, beliefs and ideologies [95-98]

- **Social capital reciprocity hypothesis**: Trust and willingness to collaborate [98-100].

- **Resource Dependent Theory**: Credibility, perceived power to influence and preferential political access [50,65,101-103].

Although the theories above are pertinent to why KBs capture their unique position in a network, Henry et al. articulate the role of the broker in the **Social capital brokerage hypothesis**, which states “policy brokers encourage the formation of collaborative ties embedded in transitive triads (whereby the broker-C, actively pursues the goals of forming a collaboration between two other actors A and B) and three-cycle configurations (whereby the broker, C, shares the potential for collaborations but does not initiate them)” [98]. The strength of these structures depends on whether KBs play an active or passive role in mediating relationships. The KB thus serves as a proxy for trust between two parties who otherwise may not have formed a relationship due perhaps to discordant ideologies, avoidance of redundant relations or a lack of opportunities to meet. Competing hypotheses posit that two-path (A-B, no C) relations may be more efficient in situations where coordination and collaboration poses no risk of exploitation [104] or when actors deliberately choose to span formerly disconnected groups [91].

Given that policy network mapping is used to study networks predominated by individual rather than organizational connections [80] as well as networks of communication channels between decision-makers and stakeholders [105], it provides potential for understanding the relationships between academic faculty and leaders and policymakers with whom they interact. In addition, recognizing that networks and institutions are shaped by political beliefs that go beyond individual intentions to cooperate is equally important. There is therefore likely to be an
interactive effect that occurs in policy networks [106]. Furthermore, when academics are attempting to ensure that research evidence is taken into consideration during policy making, there are few opportunities for direct connections with policymakers – thus providing opportunities for mediation through KBs.

Since different people can serve important roles in different ways, measures of centrality in SNA serve different functions. Table 2 provides descriptions of the various network parameters of interest.

<table>
<thead>
<tr>
<th>Table 2: Network parameters</th>
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<table>
<thead>
<tr>
<th>Network Parameters</th>
<th>Description</th>
<th>Formula</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Degree centrality</strong></td>
<td>The central locality of each of these actors within the network</td>
<td>$C'D(ni) = di(ni)/(g-1)$</td>
<td>The degree of a node, denoted by $d(ni)$, is the number of lines incident with it.</td>
</tr>
<tr>
<td><strong>In-degree centrality</strong></td>
<td>The total number of alters related to an individual</td>
<td>Number of ties TO any individual node</td>
<td>The degree of a node, denoted by $d(ni)$, is the number of lines incident with it.</td>
</tr>
<tr>
<td><strong>Out-degree centrality</strong></td>
<td>The total number of points any individual relates to</td>
<td>Number of ties FROM any individual node</td>
<td>The degree of a node, denoted by $d(ni)$, is the number of lines incident with it.</td>
</tr>
<tr>
<td><strong>Betweenness centrality</strong></td>
<td>An actor’s ability to connect others</td>
<td>$C_B(n_i) = \sum_{j-k} \frac{g_{jk}(n_i)}{g_{jk}}$</td>
<td>Actor lying on the shortest path between others in the network</td>
</tr>
</tbody>
</table>

Those actors identified with high in-degree centrality are often role models or champions for change [107]. Those with high outdegree centrality are considered influential. Those with high betweenness centrality serve as bridges and key players in the flow of innovative ideas between different clusters of people [108].
Although the use of SNA for understanding KBs is not altogether new, it has been employed predominantly in HICs [40,57,109-114] with evidence in some LMICs [51,52]. The use of SNA for this study is unique on two counts: first, its use to construct *academic-policymaker networks* in an LMIC context, and second its exploration of an alternate methodology of identifying KBs in a network.

**CONTEXT**

**Kenya Country Profile**
Kenya is situated in East Africa and comprises a population of 43.2 million. The principal economic drivers are agriculture, manufacturing, telecommunications and tourism. However, the global economic crisis as well as violent elections in 2007 resulted in a decline in all economic sectors. Kenya ranked 147 out of 187 on the Human Development Index in 2014 [115]. Kenya continues to witness geographic as well as socioeconomic inequities in service utilization as well as in mortality rates. The population suffers from a double burden of illness with infectious as well as non-communicable diseases on the rise. Key health indicators (Error! Reference source not found.) suggest a decline or stagnation in health status with little progress towards achieving the Millennium Development Goals.

Average life expectancy is 61 years and total expenditure on health was approximately USD84 per capita in 2012 [116]. Under-5 mortality rate was 73/1000 with acute respiratory infections being the leading cause of death at 18%. Diarrhea contributed to 10% of all U5 deaths, with HIV/AIDS and malaria each at 4%. Mortality due to injuries was 7%. The maternal mortality rate was 400/100,000 live births.
Government facilities are the primary providers for health care although private providers serve a large proportion of the population. The average physician to patient ratio was 1.8:10,000 [116].

**Figure 2: Kenya country profile**

<table>
<thead>
<tr>
<th></th>
<th>Country</th>
<th>Regional average</th>
<th>Global average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total population</strong></td>
<td>43,178</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Population living in urban areas</strong> (percent)</td>
<td>24</td>
<td>39</td>
<td>53</td>
</tr>
<tr>
<td><strong>Gross national income per capita</strong> (PPP int. $)</td>
<td>1,730</td>
<td>2,594</td>
<td>12,018</td>
</tr>
<tr>
<td><strong>Total fertility rate</strong> (per woman)</td>
<td>4.5</td>
<td>5</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>Life expectancy at birth</strong> (years)</td>
<td>61</td>
<td>58</td>
<td>70</td>
</tr>
<tr>
<td><strong>Life expectancy at age 60</strong> (years)</td>
<td>18</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td><strong>Health life expectancy at birth</strong> (years)</td>
<td>53</td>
<td>50</td>
<td>62</td>
</tr>
<tr>
<td><strong>Under-five mortality rate</strong> (per 1000 live births)</td>
<td>73</td>
<td>95</td>
<td>62</td>
</tr>
<tr>
<td><strong>Adult mortality rate</strong> (probability of dying between 15 and 60 years per 1000 population)</td>
<td>Male: 307</td>
<td>343</td>
<td>187</td>
</tr>
<tr>
<td></td>
<td>Female: 261</td>
<td>298</td>
<td>124</td>
</tr>
<tr>
<td><strong>Maternity mortality ratio</strong> (per 100,000 live births)</td>
<td>400</td>
<td>500</td>
<td>210</td>
</tr>
</tbody>
</table>

*Source: Adapted from WHO Kenya Country Profile (2012)*

**Political landscape**

**Governance**

Ethnic tensions are often implicated in distribution of resources in Kenya. The elections of 2007 exacerbated the tensions resulting in an upsurge of violence among rival ethnic groups particularly those loyal to the various presidential candidates. Conflict resolution resulted in the creation of a Coalition Government in 2008 that created positions for a President and Prime Minister that represented the two largest tribes in Kenya: Kikuyu and Luo. Kenya is a highly patriarchal society with approximately 10% female representation among parliamentarians. A new emphasis on advanced education for civil servants is underscored in the new Kenyan constitution [117] resulting in a restructuring of the public service with the aim of optimized competency-based staffing. Enhanced attention to academic qualifications of office-bearers has,
however, spurred questionable practices by politicians vying for positions for which they do not possess degrees [118].

**Health policy**
Kenya was among the first countries to adopt the Essential National Health Research (ENHR) strategy in June 1991. In 1994 emerged the Kenya Health Policy Framework which envisioned providing “quality health care that is acceptable, affordable, and accessible to all” in Kenya by 2010 [119]. Decentralization is the guiding strategy for Kenya’s health care reform and the policy framework was hence articulated in two five-year National Health Sector Strategic Plans: 1999-2004 and 2005-2010. Following the creation of the Coalition Government, the Kenyan Ministry of Health (MOH) was divided into two ministries: the Ministry of Public Health and Sanitation (MOPHS), and the Ministry of Medical Services (MOMS) each with distinct functions. Both continued to draw upon the same budget, which introduced a great need for inter-agency coordination as well as set the stage for competing practices for limited resources, duplication of efforts and ambiguous boundaries of responsibilities.

The March 2013 elections led, once again, to a restructuring of the Government and a collapse of two ministries back into a single MOH. Reorganization of the government in May 2013 resulted in a multitude of changes. Given the timing of this research as well as the focus period of 2008-2012 I have retained the original references to policy processes, government structures and key informant designations during the said period.

Kenya’s Vision 2030 states “Kenya will restructure the health delivery system and also shift the emphasis to “promotive” care in order to lower the nations’ disease burden” [120]. Furthermore, it aims to delink the two national health ministries (MOMS and MOPHS) from service delivery so as to allow them to focus on policymaking and research while placing the responsibility of
curative services on district health teams, private organizations and NGOs. Vision 2030 is implemented through successive five-year Medium-Term Plans (MTP), with the first covering the period 2008–2012 [121]. Several technical working groups and task forces were created in order to assist the ministries in achieving their MTP goals as well as engagement with research institutes, universities, NGOS and international organizations.

**Health Research**

During Kenya’s colonial history, health research was under the remit of the British Medical Research Council (MRC). Post-independence, the responsibility fell under the Ministry of East African Cooperation and the University of Nairobi School of Medicine, which focused on clinical research [122]. The collapse of the East African Community in 1977 precipitated the creation of the National Council for Science and Technology (NCST) – now the National Council for Science and Technology and Innovation (NACOSTI) – to advise the government on matters pertinent to research for development. Authority to coordinate research emerged in 1987. The government additionally created parastatals - semiautonomous Government agencies – to provide direct advice and research for the various ministries.

Of the seven health relevant parastatals¹, the Kenya Medical Research Institute (KEMRI) has a direct mandate to produce, translate and disseminate health relevant research [123]. However, KEMRI’s traditional focus on research in the biomedical field resulted in little attention to operational or implementation health research. Created in 2006, the Kenyan arm of the Regional East African Community Health Policy initiative (REACH-PI) was strategically located within KEMRI so as to fill this gap [62]. However, it is still in the process of fully operationalizing its mandate for disseminating, translating and transmitting research findings for evidence-based research.

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¹ Parastatals under the Ministry of Health include: Kenyatta National Hospital (KNH), Moi Teaching and Referral Hospital (MTRH), Kenya Medical Research Institute (KEMRI), National Health Insurance Fund (NHIF), Kenya Medical Training College (KMTC), Kenya Medical Supplies Agency (KEMSA) and National AIDS Control Council (NACC).
policy formulation and implementation. Policy advice to the government however, flows through
the Kenya Institute for Public Policy Research and Analysis (KIPPRA) created specifically to
conduct “objective public policy research and analysis; inform and advise decision-makers during
the policy-making process; and build capacity of the Government of Kenya to absorb, undertake
and analyze public policy” [124]. For an inventory of organizations that specialize in research,
research training, research funding and research to policy initiatives in Kenya, see Appendix A.

Inter-agency coordinating committees (ICCs) were created in order to harmonize research from
the various organizations that feed into MOH priorities [28]. Issues raised at monthly
departmental meetings, chaired by the Permanent Secretary, were subsequently shared with the
Minister through the bimonthly Ministerial Executive Committee meetings.

**Academic landscape**

**Governance**

There exist several institutions of higher education in Kenya – universities, colleges, vocational
and technical training institutes - with the majority located in the capital, Nairobi. Research is not
confined however, to traditional academic bodies. There exist several organizations that
specialize in research, research training, research funding and research to policy initiatives. An
inventory of these organizations can be found in Appendix A. Gender parity among academics in
2004 indicated 19.1% of all public university faculty were women, but only 14% of department
heads and 7% of full professors were women [125].

Public universities depend primarily on government funding coupled with student funded cost-
sharing schemes [126]. Funding deficits cause universities to consider commercial enterprises,
collaborate with donor agencies and increase fees in order to bridge the shortfalls. The strain
inevitably subjects them to engage in competitive behaviors for government as well as external
funding. In 1996, revenue from non-government resources in Kenyan public universities ranged from 16.4%-31.6% of total income [127]. A 1995 study of two public universities found that faculty pursued research opportunities in environments external to the organization in which they were employed [126]. In addition, some faculty resort to external consultancies to supplement their incomes. Until recently, private universities in Kenya, depended on endowments and student fees to finance the organization.

Several changes were underway during the period of the study. The recent Universities Act of 2012 [128] catalyzed sweeping new changes across academia including harmonization of governance processes for public and private universities as well as new fee guidelines for students [129,130] The Joint Admissions Board was replaced by the Kenya Universities and Colleges Central Placement Service (KUCCPS) to ensure more equitable distribution of high school graduates to both public and private universities, as well as to colleges [130].

**Schools of Public Health**

Of the approximately 39 universities in the country, [131] 6 have programs that encompass public health training: University of Nairobi School of Public Health (SPHUoN), Kenyatta University School of Public Health (KUSPH), Kenya Methodist University (KEMU), Maseno University School of Public Health and Community Development (ESPUDEC), Moi University School of Public Health (MUSOPH), and Great Lakes University of Kisumu-Tropical Institute of Community Health (GLUK). For the purpose of this study we refer to them all as SPHs. Each SPH varied in terms of their age, the size of their faculty and leadership, and their location. Universities that encompassed faculties of health sciences but not public health specific departments or public health research were excluded. While age of SPH did not factor into eligibility criteria it was taken into consideration in the context of understanding the findings of the study. Their geographic locations are depicted in Figure 3.
Figure 3: Map of Kenya - Geographical location of SPHs
While SPHUoN and KUSPH are the newest of all the SPHs in Kenya (2010 and 2011 respectively), SPHUoN is situated within Kenya’s oldest academic establishment, the University of Nairobi (est. 1970), and located across the street from many of the Ministerial offices. The smallest of all the SPHs, SPHUoN, evolved from a department of public health to an SPH comprising 17 full-time staff. MUSOPH and GLUK are located in the Western Provinces with their primary campuses in Eldoret and Kisumu, respectively. GLUK is the largest of the SPHs with 34 full-time faculty, most of whom are housed within the Tropical Institute for Community Health (GLUK-TICH). KEMU faculty cut across several departments that comprise their public health endeavors and have only recently sought to create a niche in health policy management, public health, and nutrition amongst others. While KEMU does have a campus in the capital, most of the health related faculty were in Meru – a four hour drive from Nairobi. ESPUDEC resides within Maseno University - a private university established in 1991. Located geographically in Maseno (Nyanza province) it is almost 400 km or a six-hour drive from Nairobi where most national policymakers are located and has no capital campus. Structurally, there are varied manifestations of Directorates of Research, at the university level at all SPHs, except GLUK, falling oftentimes under the remit of a Deputy Vice Chancellor. The responsibilities of these directorates varied across the SPHs including seeking research funds, providing assistance for proposal writing and research, facilitating publications, encouraging faculty consultancies, providing research grants, and supporting research conferences amongst others (see Table 3).
<table>
<thead>
<tr>
<th>UNIVERSITY</th>
<th>GOVERNANCE</th>
<th>No. CAMPUSES</th>
<th>LOCATION</th>
<th>STRUCTURE FOR RESEARCH DISSEMINATION</th>
<th>SCHOOL OF PUBLIC HEALTH (SPH)</th>
<th>LOCATION OF SPH WITHIN UNIVERSITY</th>
<th>TOTAL NO. F/T FACULTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moi University</td>
<td>Public. Created in 1984</td>
<td>4</td>
<td>Eldoret and Nairobi</td>
<td><strong>Directorate of Research and Extension:</strong> provide research grants, support research conferences</td>
<td>School of Public Health (MUSOPH) - 1998</td>
<td>College of Health Sciences at Town Campus, Eldoret</td>
<td>27</td>
</tr>
<tr>
<td>University of Nairobi</td>
<td>Public. Became a university in 1970</td>
<td>7</td>
<td>Nairobi</td>
<td><strong>Directorate of Research Production and Dissemination:</strong> Repository of university research outputs</td>
<td>School of Public Health (SPHUN) - 2010</td>
<td>College of Health Sciences at Kenyatta National Hospital campus, Nairobi</td>
<td>17</td>
</tr>
<tr>
<td>Great Lakes University, Kisumu (GLUK)</td>
<td>Private. Evolved from TICH 1998.</td>
<td>3</td>
<td>Kisumu (2), Nairobi (1)</td>
<td>N/A</td>
<td>Tropical Institute of Community Health and Development in Africa (GLUK-TICH) - 1998</td>
<td>GLUK in <strong>Kisumu Milimani Town Campus, Kibos main campus, and Nairobi campus</strong></td>
<td>34</td>
</tr>
<tr>
<td>Maseno University</td>
<td>Public. Became a university in 1991</td>
<td>3</td>
<td>Kisumu, Homa Bay and Maseno</td>
<td><strong>Directorate of Research, Publications and Consultancy:</strong> seek research funds, provide assistance in proposal writing and research, facilitate publications, create global peer networks, encourage faculty consultancies</td>
<td>School of Public Health and Community Development (ESPUDEC) - 2001</td>
<td>Maseno University in <strong>Maseno Siriba campus, Kisumu city campus, and Homa Bay.</strong></td>
<td>29</td>
</tr>
<tr>
<td>Kenya Methodist University (KEMU)</td>
<td>Private. Officiated in 1997</td>
<td>5</td>
<td>Meru, Mombasa, Nakuru, Nyeri and Nairobi</td>
<td><strong>Directorate of Research:</strong> provide research grants, support research conferences</td>
<td>Public health taught within Dept. of Public Health, Dept. of Nutrition, Dept. of Health Systems, Dept. of Nursing</td>
<td>School of Medicine and Health Sciences, <strong>Meru and Nairobi</strong></td>
<td>27</td>
</tr>
<tr>
<td>Kenyatta University</td>
<td>Public. Became a university in 1985</td>
<td>7</td>
<td>Kahawa-Thika, Nairobi</td>
<td><strong>Directorate of Research:</strong> provide research grants, support research conferences</td>
<td>School of Public Health (KUSPH) - 2011</td>
<td>Kenyatta University in <strong>Thika, Nairobi</strong></td>
<td>23</td>
</tr>
</tbody>
</table>
RESEARCH OBJECTIVE
The overall purpose of this study was to explore the unique position of academic faculty from SPHs in the evidence-to-policy process in Kenya through the following three objectives:

Objective 1: Understand the architecture of the various ‘SPH-National Government’ networks in Kenya by virtue of mapping individual ‘academic faculty-policymaker’ social capital that underlie the institutional networks; to identify individuals positioned as bridges and thus serving as academic KBs.

Objective 2: Explore the perceived human capital - individual attributes, capacities and skills of academic KBs that affect their willingness and ability to fulfill this role.

Objective 3: Explore the complex interactions and the various strategies for engagement between these KBs and national health policymakers, as experienced by both parties, with the aim to document and encourage more effective relationship and network strengthening.

The intention was for the results of the study to serve several purposes:

At the individual level - contribute to understanding the position and role of academic faculty and leadership in bridging the research evidence to policy arenas; provide some direction with respect to capacity building of university academics intending to play an intermediary or KB role;

At the organizational level - shed light upon the necessary conditions and possible strategies and policies that universities as well as ministries in Kenya, can consider implementing when attempting to inculcate a culture that encourages evidence-to-policy initiatives; and

At the national level - inspire stronger links between universities and government agencies working towards improved public health.
RESEARCH DESIGN

Overview
Ball et al. conjecture that quantitative measures of networks, do not capture the quality of the relationships within the networks—whether dyadic or triadic [6]. While they may articulate the numbers of relationships as well as potentially the strength, as emphasized by the thickness of the ties or arrows, they do not capture the instability of the network and its dynamism due to entry and exit of individuals and changing political paradigms. For this reason, the study was conducted in two phases - Phase I: Social Network Mapping and Analysis of Public Health Academic-Policymaker Networks was complemented with Phase II: Qualitative Exploration of Relationships and Actors depicted in the networks. Data collection for this study occurred between January-May 2013.

The mixed-methods study design was relevant due to the study’s complexity as well as its thematic entry point of actors and their relations [132]. A mixed-method design in this case was not chosen solely for purposes of triangulation but rather for purposes of Development (use the results from one method to help develop or inform the other method), and Expansion (extend the breadth and range of inquiry by using different methods for different inquiry components) [133]. Furthermore, the sequential nature of the study [132] was deliberately designed due to the need for Complementarity – whereby “qualitative and quantitative methods are used to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon” [133]. Ultimately it provided for a pragmatic approach to exploring the research objectives of the study [132].

The SNA component shed light on the networks that, although invisible, do exist. The qualitative component explored the reasons for how and why these networks are created and maintained with a view to understand the characteristics of those who appear as key members of the networks.
Furthermore, an exploratory design provided flexibility to test and refine underlying assumptions [132].

**Actors of interest**

The primary unit of interest in this study was academic KBs: faculty who are not only well connected to policymakers but also sought out by their peers for advice and knowledge on strategies to engage in EIDM. The types of activities we envisioned would characterize KBs are captured in Box 1.

**Box 1: Examples of activities/initiatives of KBs**

Maintains and leverages *relationships* with policymakers as well as with academic researchers

Helps *policy planners* to develop evidence-informed policies/projects
- Serves in national health policy task forces or advisory groups
- Participates in national health decision making
- Provides research evidence for policy maker consideration

Helps *academic researchers* to develop policy relevant research
- Informs peers of policy relevant research priorities
- Provides assistance with evidence to policy/practice knowledge and activities

Organizes opportunities for *researcher-policymaker interaction*
- Champions policy dialogues
- Makes introductions and brokers relations

Is a vocal champion of evidence to policy/practice both internally as well as external to the SPH

**Phase I: Social network mapping and analysis**

For Phase I, all available faculty at the 6 SPHs were requested to partake in a sociometric survey administered by the student investigator. An overview of the faculty from the 6 SPHs and some observations regarding sociodemographics are provided in Appendix B. Sociometric survey questions were administered orally so as to limit “node-level” (network actors) as well as “tie-level” (relationship details) missing data. The survey instrument included demographic and socioeconomic information on each respondent including age, sex, highest academic degree obtained, countries where degree obtained, organization, years in organization, academic position, administrative position, years in position, and prior or current engagement in health policies. Potential reasons for pursuing relations were listed for the respondents and provided as guides during the survey. For detailed insight into the sociometric survey questions, please refer
to Appendix C. The final list of reasons for engagement with nominated alters can be found in Table 4.

Table 4: Select indicators from sociometric survey- reasons for engagement

<table>
<thead>
<tr>
<th>Reasons for engagement with policy makers (Category A)</th>
<th>Reasons for engagement with Peers who come to you for KT or policy relevant assistance (Category B)</th>
<th>Reasons for engagement with Peers who you go to for KT or policy relevant assistance (Category C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Share research results</td>
<td>1. Assist in knowledge translation/research communication capacity building,</td>
<td>1. Seek assistance in knowledge translation/research communication capacity building,</td>
</tr>
<tr>
<td>2. Learn about policy priorities for research</td>
<td>2. Provide advice on research to policy strategies</td>
<td>2. Get advice on research to policy strategies</td>
</tr>
<tr>
<td>3. Learn about policy processes/mechanisms</td>
<td>3. Utilize their research results in policy discussions</td>
<td>3. Request utilization of your research results in policy discussions</td>
</tr>
<tr>
<td>4. Provide advice on technical matters</td>
<td>4. Assist in KT activities such as policy dialogues, policy briefs, press releases etc..</td>
<td>4. Seek assistance in KT activities such as policy dialogues, policy briefs, press releases etc..</td>
</tr>
<tr>
<td>5. Project collaboration</td>
<td>5. Share policy priorities for research</td>
<td>5. Share policy priorities for research</td>
</tr>
<tr>
<td>6. Strategic engagement</td>
<td>6. Request introductions to policy makers</td>
<td>6. Request introductions to policy makers</td>
</tr>
<tr>
<td>7. Provide capacity training in research uptake</td>
<td>8. General institutional knowledge sharing</td>
<td>8. Other</td>
</tr>
<tr>
<td>8. General institutional knowledge sharing</td>
<td>88. Other</td>
<td>88. Other</td>
</tr>
</tbody>
</table>

The full network of each SPH by virtue of its faculty-policymaker connections was depicted graphically and key actors, including academic KBs, were made visible. Given the complexity of the individual networks, no single measure was expected to fully operationalize the concept of KBs. We reviewed the distributions of the various scores and created a composite. Detailed descriptions on data collection and analysis can be found in Manuscript 1.

Phase II: Qualitative exploration and analysis
The results of Phase I served as the platform for Phase II, which employed an exploratory approach for data collection through semi-structured interviews (SSIs). Investigative SSIs facilitated the exploration of faculty motivations for engaging in and “championing” research-to-policy attitudes and activities. They also allowed for situating such practices in the context of the researchers own background, experiences, roles and responsibilities [27].
Respondents of interest were all SNA-identified KBs, and all Deans/Directors of SPHs, and as many of the policy makers who were mentioned as possible. Faculty who, from the SNA, appeared not to be directly engaged with policymakers and therefore would have less to share with respect to policy-relevant personal experiences were excluded. Questions in the SSIs relevant for manuscripts 2 and 3 followed naturally and were administered as one continuous data collection tool (Appendix D and E). Detailed descriptions on data collection and analysis can be found in Manuscript 2 and Manuscript 3. The final codebook used for data analysis can be found in Appendix F.

In addition to SSIs, we reviewed SPH and Government websites to explore organizational structures and to verify respondent assertions where relevant, particularly in instances where there was uncertainty about structures and roles of particular departments, positions of identified persons, and details of teaching and/or research programs.

Figure 4 illustrates the various stages of the study including data collection tools and planned analysis, their sequence (circled numbers), and how results of Phase I feed into that of Phase II (red arrows). The results pertinent to each manuscript are encased in shaded boxes and labeled by manuscript number.
**ETHICAL APPROVAL**

The study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board and the Kenyatta National Hospital/University of Nairobi Research Ethics Committee.

**REFLEXIVITY**

Reactivity is the “influence of the researcher on the setting of individuals studied” [134]. The student investigator’s familiarity with the setting and her own relationships and networks had the potential to affect the research process and consequently the outcome. For this reason, a heightened sense of awareness and conscious reflexivity was important. Her affiliation with JHSPH was not expected to affect the study in so far as this was a student-led project; however, the credibility and prestige ascribed to JHSPH likely resulted in a heightened inclination to participate in the study and more prompt responses from respondents. Discussions often began with curiosity about the investigator. Being a fourth generation Kenyan rendered her “local”, resulting oftentimes in a softening of composure and an air of comfort from respondents. The investigator was often given the impression that respondents were less hesitant to share sensitive
or negative experiences due to their belief in her genuine desire to use the results in a constructive way for her birth country. Mentioning that she had no personal stake in the outcome of the study may have further assisted in alleviating some of the expected reactivity.

**Organization of This Document**

The remainder of this dissertation contains four chapters, including three manuscripts reporting primary findings from the study.

- In Manuscript 1, census data collected through sociometric surveys of faculty at 6 SPHs allow for the mapping of academic-policymaker networks in the Kenyan public health context. Social network analysis is used to measure the various metrics of individual influence with a view to identify academic knowledge brokers (KBs) and their *social capital*.

- In Manuscript 2, qualitative semi-structured interviews (SSI) with academic KBs, SPH leadership and national health policymakers are used to explore the perceived attributes, capacities and skills – *the human capital* – of academic KBs. A framework of key emerging domains is presented.

- In Manuscript 3, experiences of KBs, faculty leadership and policymakers with strategies for reciprocal engagement are explored through SSIs. Suggestions for untapped strategies as well as support for effective strategies are highlighted.

A conclusion chapter summarizes key findings across the study, policy and practice implications for SPHs as well as Government, as well as future research directions. Tables and figures are presented within each chapter.
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MANUSCRIPT 1: Do academic knowledge brokers exist? An exploration of research-to-policy networks of faculty from six Schools of Public Health in Kenya
ABSTRACT

Introduction
The potential for academic research institutions to facilitate knowledge exchange and influence Evidence-Informed Decision Making has been gaining ground. Schools of Public Health (SPHs) may play a key knowledge brokering role - serving as agencies of and for development. Understanding academic-policymaker networks can facilitate the enhancement of links between policymakers and academic faculty at SPHs, as well as assist in identifying academic knowledge brokers (KBs).

Methods
Using a census approach, we administered a sociometric survey to academic faculty across six SPHs in Kenya to construct academic-policymaker networks. We identified academic KBs using Social Network Analysis (SNA) in a two-step approach: First, we ranked individuals based on 1) Number of policymakers in their network; 2) Number of peers who report seeking them out for advice on Knowledge Translation; and 3) their network position as “connectors” between researchers and policymakers. Second, we triangulated the three scores and re-ranked individuals. Those scoring within the top decile across all three measures were classified as KBs.

Results
Each SPH commands a variety of unique as well as overlapping relationships with national ministries in Kenya. We identified 7 KBs out of 124 full-time faculty. KBs represented 4 SPHS, only 1 was female, and 4 held positions of leadership. Those scoring high on the first measure were not necessarily the same individuals scoring high on the second. KBs were also situated in a wide range along the “connector/betweenness” measure.

Conclusion
SNA is a valuable tool for identifying academic-policymaker networks in Kenya. We propose that triangulation of three scores, rather than reliance on the traditional use of “betweenness centrality,” best captures the nuances of the roles of KBs within these networks. More efforts to conduct similar network studies would permit SPH leadership to identify existing linkages between faculty and policymakers, shared linkages with other SPHs, and gaps so as to contribute to evidence-informed health policies.

Key words: Schools of Public Health, Kenya, Social Network Analysis, Knowledge Broker, Evidence-to-policy.
INTRODUCTION

The role of academia in policy influence
Health policies deliberated, enacted and implemented by governments affect large populations; evidence to inform the policy decision-making processes is therefore critical. Studies have shown that policies influenced by sound scientific evidence and best practices can improve public health outcomes [1] and contribute to national development. The ultimate aim of Evidence-Informed Decision Making (EIDM) is to foster the creation and application of public health policies that are equitable, effective, and efficient.

Though the need for EIDM has been acknowledged, researchers and decision-makers have been characterized as “distinct communities” whose infrequent interaction, varied priorities, and incongruent timelines, amongst others, impede the flow of evidence to policy and implementation platforms [2]. The gap between these two communities has been well documented in the literature [3-6] and highlighted at global meetings [7,8]. It is important to understand how this gap can be narrowed so that researchers and policy makers are able to nurture productive relationships, therefore contributing to public health policies that are better informed by research evidence.

One way to narrow the gap between researchers and decision-makers is to find and maintain opportunities for interaction. Although the onus of ensuring that evidence reaches the decision-making domains has historically been placed upon researchers, there have been two realizations: first, the dearth of researchers’ expertise and capacity to “package” their results for multiple audiences [9-13]; second, the potential role of specialists – either dedicated knowledge officers in organizations, or intermediaries/knowledge brokers (KBs) that straddle the two domains – as a means of filling this gap [14]. Past debates raised concerns as to whether KBs are neutral bridges or strategic gatekeepers with advocacy agendas [15]. Regardless of the intent of their activities, the fact that KBs lie on the plane between evidence and policy renders them important players.
Hargadon (1998) asserts that organizations that “consult to others—have the potential to act as knowledge brokers.” The potential therefore for institutions as KBs in the EIDM paradigm has led to experimentation with Knowledge Translation Platforms (KTPs) – “national- or regional-level institutions which foster linkage and exchange across a (health) system”[16]. Examples of attempts at KTPs in low- and middle-income countries (LMICs) include the Regional East African Community Health Policy Initiative (REACH-PI) [17], the Zambian Forum for Health Research (ZAMFOHR) [18], the Ebonyi State Health Policy Advisory Committee (ESHPAC) [19] and WHO’s Evidence-informed Policy Network [20].

Although other types of agencies such as donors, think tanks, the media and research institutes can serve a similar role, the potential of academic institutions as mediums for knowledge exchange has been gaining ground [21-26]. The UK Department for Business Innovation and Skills stated that “[. . .] universities are the most important mechanism we have for generating and preserving, disseminating and transforming knowledge into wider society and economic benefits” [27]. Johnston et al. suggest that a new wave of pressure on higher education institutions [in the UK] to create and nurture engagement with external players such as industry stimulate “greater visibility or global standing; to signify world-class excellence in teaching and research; to attract more competitive resourcing strategies; to become more prominent regional players in facilitating knowledge translation, exchange and innovation activities; and to network more vigorously with partners” [28]. The emergence of dedicated university-based KBs, originating in Canada and adopted in Scotland, led to the creation of the Scottish Economic and Social Science Knowledge Exchange Network [29]. Although the roles of such KBs are ambiguous and no one model to date captures the complexity of their positions [30], UK higher education institutes are increasingly developing purposeful staff appointments for what they call ‘hybrid’ or ‘blended’ professionals who have “mixed backgrounds and portfolios, comprising
elements of both professional and academic activity” [25].

This experimentation seems to be emerging in Africa where institutes of higher education and increasingly networks such as the Association of African Universities (AAU) are beginning to participate actively in developmental policymaking [31]. In thinking about academic KBs, Meyer’s work would suggest that they are connected to both worlds they bridge – that of academia as well as that of policy - and therefore are enrobed in a “double-peripherality” that is not always visible. As a consequence, academic KBs, although playing a catalytic role in leveraging intellectual capital, may suffer from lack of support, lack of training opportunities [32] and institutional failure to recognize and value the social processes that provide the undercurrent for successful relations [28] and subsequent informal networks.

The need for more research on the role of individual KBs and their networks as innovative means of bridging the research and policy domains is apparent in a wide body of publications across several disciplines [13,28,33,34]. While individual KBs in service-oriented industries such as clinical practice and community health may attract greater attention to the value of their contributions and roles, Surridge and Harris posit that “the value system and the hierarchies of the academic world, a world that rewards and prioritizes disciplinary training, journal papers, and research grants, may not be conducive to such visibility” [32]. Only one study to date has attempted to explore the role of academic KBs and is embedded in the Australian context [35]. Although highlighted as an important area to study empirically [25,34], there are no such studies that feature low-income countries.

In Kenya, Lairumbi et al. assert that although formal partnerships between academia and policymakers exist, these are suboptimal resulting in an under appreciation of the social value of research results [34]. This raises the question about the value of informal relationships and
networks between academia and policymakers in Kenya, and whether these serve as a conduit for enhanced EIDM. Anecdotal evidence from Kenya infers that faculty from academic institutes such as SPHs have been playing a KB role and serving as agencies of and for development. However, the extent of their reach, the relative credibility of their influence and the methods in which researchers as well as policy makers leverage them are undocumented. In order to further understand the role of academic KBs as agents of knowledge facilitation in low-income countries, we sought to explore this question using a public health lens.

**Context: Kenya**

Kenya, a low-income country, continues to witness geographic as well as socioeconomic inequities in health service utilization and mortality rates. The population is suffering from a double burden of illness with infectious as well as non-communicable diseases on the rise. Government facilities are the primary providers for health care although private providers serve a large proportion of the population. Following the creation of a coalition government in 2008, the Kenyan Ministry of Health (MOH) was divided into two ministries each with distinct functions: the Ministry of Public Health and Sanitation (MOPHS), and the Ministry of Medical Services (MOMS). Both continue to draw upon the same budget, which has introduced a great need for inter-agency coordination as well as set the stage for competing practices for limited resources, duplication of efforts and ambiguous boundaries of responsibilities.

There exist several institutions of higher education in Kenya with the majority located in the capital, Nairobi. These range from universities to vocational training institutes. Of the approximately 39 universities in the country [36], several encompass public health training and research. Research, research training, research funding and research to policy initiatives, however are not confined, to traditional academic bodies. For instance, the primary research arm of the MOH in Kenya is the Kenya Medical Research Institute (KEMRI) [37] and the policy arm of government is an autonomous think tank – Kenya Institute for Public Policy Research and
Analysis (KIPPRA) – dedicated solely to assisting the government with using evidence to inform their policies in all sectors [38]. Other organizations have emerged to promote capacity in the production [39,40] as well as utilization [17,41,42] of research evidence for policy and practice. The EIDM movement therefore is gaining prominence and importance in Kenya. This is further demonstrated by reference to evidence use in several policy documents such as Kenya’s Vision 2030 [43], the Kenya AIDS strategic plan 2009-2012 [44], the cost-effective HIV testing algorithm of 2013 [45], and decisions on the abolition of maternity care fees in public health facilities 2013 [46] amongst others. However, it was unclear from these and other health policies whether key sources of evidence emerged from these local universities, from the above-mentioned dedicated research institutes, or from international agencies. While it is likely that several sources of evidence were engaged, we sought to explore the role of universities in particular.

**Study Aims**

To understand the role of academic institutes in influencing *health policy*, we focused our study on Kenyan Schools of Public Health (SPHs) and the faculty within. We aimed:

a) To understand the architecture of the various ‘SPH-National Government’ networks in Kenya

b) To map the individual ‘academic faculty-policymaker’ connections that underlie the institutional networks

c) To identify individual persons playing a hub role and therefore serving as academic knowledge brokers

**Actors: Academic Knowledge Brokers**

The study draws on social network theory to explore the potential dual role of academic faculty – as knowledge generators as well as knowledge brokers. Social Network Analysis (SNA) has emerged as a flexible approach that can be used in a variety of disciplines that seek to better understand behaviors as well as flow of communication. The key distinctive feature of SNA is the
focus on actors and their relations in contrast to actors and their attributes [47] and allows for an analysis of influence at the individual as well as group level. Furthermore, it can assist in making invisible networks visible, which can result in recognizing strategic but under-utilized collaborations [48]. Hence, SNA serves as a useful tool to analyze the influence exerted by networks – whether social, political or economical in nature. Academic networks, like policy networks, are nebulous and therefore difficult to assess. Relationships are likely to be more informal and dynamic in nature [48] reflecting Haas’ description of epistemic communities: “...a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy relevant knowledge within that domain or issue-area” [49]

In instances where academics and policymakers have limited opportunities for direct interaction, relations may be mediated through KBs – members of a network who bridge “structural holes” [50-52]. KBs have been recognized as being critical in the path of knowledge communication either as facilitators of knowledge flow or disruptors through gatekeeping [53]. Identifying these KBs can provide insight into who can be used to leverage action or accelerate information flow in the network. Given that SNA is used to study networks predominated by individual rather than organizational connections [54] as well as networks of communication channels between decision-makers and stakeholders [55], it could allow for understanding the relationships between academic faculty and those with whom they interact.

This study is based on the belief that KBs serve a “hub” role, that they can be “enablers of knowledge transfer” [56] and that their influence and span can be better understood through an analysis of the networks that they nurture and straddle [6].
METHODS

Identification of Schools of Public Health
In order to map and understand the professional networks of academic faculty at Kenyan SPHs, we identified all six institutions that fit the criteria of teaching and conducting research in public health in Kenya: University of Nairobi School of Public Health (SPHUoN), Kenyatta University School of Public Health (KUSPH), Kenya Methodist University (KEMU), Maseno University School of Public Health and Community Development (ESPUDEC), Moi University School of Public Health (MUSOPH), and Great Lakes University of Kisumu-Tropical Institute of Community Health (GLUK).

Data collection
Data for this study was collected in March 2013. The Deans of each SPH approved the study and facilitated communication with the faculty. A roster of leadership and full-time faculty was requested in advance of the study in order to estimate the number of sociometric surveys required. All faculty in the various SPHs were contacted first via email followed by text messages and/or phone calls in order to have a census to the extent possible. Office-bearing individuals such as Chancellors, Vice Chancellors, and Departmental chairs or Directors within and external but relevant to the SPH were identified by Deans and invited to participate in the survey. Survey instruments were piloted in advance.

Sociometric survey questions were administered orally by the principal researcher so as to limit “node-level” (network actors) as well as “tie-level” (relationship details) missing data. The survey instrument included demographic and socioeconomic information on each respondent including age, sex, highest academic degree obtained, countries where degree obtained, organization, years in organization, academic position, administrative position, years in position, and prior or current engagement in health policies.
Respondents were requested to freelist up to a maximum of seven names of contacts – ‘alters’ – in each of three categories of relations: **A)** policymakers who they know and with whom they have worked/interacted (Policymakers in this study were defined as all those who had ability to influence policy within the national ministry); **B)** peers who approach them for assistance on knowledge translation activities; and **C)** peers who they approach for assistance on knowledge translation activities. Knowledge Translation (KT) activities included providing/receiving: KT capacity building, advice on research to policy strategies, peer research results for use in policy discussions, assistance in KT activities such as policy dialogues, policy briefs etc., and insights on policy priorities for research.

These relationships were selected in order to provide a sense of the size of the individual faculty networks relevant to evidence-to-policy activities (both with policy makers as well as within peers) as well as the size and structure of the SPH networks by aggregating the individual networks.

Curtailing the length of the survey to a manageable list of 7 alters per category of relations assisted with minimizing respondent fatigue. Concerns about truncated lists of alters due to sensitivity and fear of exposure were addressed by reassuring respondents of confidentiality and creating unique identifiers for all alters. To improve recall and capture weak ties, we probed for more infrequent and distant alters through role cues: types of relationships, location cues: places people interact, and chronological cues: prominent events during the period of interest [57].

Over time it became apparent that academic institutes in Kenya employed many part time staff and that full-time faculty at one institution often engaged in part time teaching at other institutions. For this reason we excluded part time faculty from the study.
The study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board and the Kenyatta National Hospital/University of Nairobi Research Ethics Committee.

**Data Analysis**
Participants were de-identified; their names were replaced with unique numerical identifiers.

Responses were entered in real-time into individual data entry forms within Excel, then consolidated and imported into STATA 12 [58] for descriptive and statistical analysis and into UCINet version 6.217 [59] for social network analysis. NetDraw 2.131 [60] was employed to generate sociograms for network visualization.

*Institutional Network Structure: SPH-National Government connections*

To characterize the relationship between SPHs and various national level government institutions, the frequency of dyadic connections from *individual* faculty to distinct policymakers was aggregated into dyadic *institutional* relations using two-mode data analysis [61]. Links between the institutions were “weighted” in order to visualize the breadth and depth of interlocking institutional connections.

*Individual Network Structure: Academic faculty-policymaker connections*

Excel data imported into UCINet in “node-list” format – one row per respondent – allowed each respondent and their alters to be converted into relational matrices. In order to overcome the concern about missing data, we retained faculty who declined or were unable to participate as nodes in the network as long as another member mentioned them. However, their personal “ego” networks and their reciprocal relations do not feature in the analysis. Faculty who existed but neither participated nor were mentioned as alters were classified in the analysis as isolates and do not appear in the network maps. We measured the *prevalence* of academic-policy maker relations at each SPH in two ways: the absolute number of faculty connected to at least one policymaker.
and the proportion of faculty who reported at least one policymaker contact. While respondents were restricted to a maximum nomination list of 7 per category of relations, we used the maximum nomination by any one members at the SPH as well as average policymaker contacts per faculty, as indicators for breadth of relations. Depth of connections was measured by the extent of overlap of policymaker connections amongst faculty within each SPH in terms of number of shared policymaker contacts as well as the proportion of shared policymaker contacts amongst the total number of policymakers in the SPH network.

Identification of Knowledge Brokers

There are several methods of identifying key actors in a network using SNA depending on what role they play. We therefore used measures of centrality to highlight the relative position within the three categories of relationship (A-C) introduced above:

A) Policy maker outdegree: respondents who mention a large number of policymakers who they know and reach out to are considered to possess high out-degree centrality and are considered influential.

B) Peer indegree: Actors who are named by others as people that they reach out to for introductions to policymakers, for advice on knowledge translation, and/or for knowledge on the policy process enjoy high in-degree centrality and are often those of high prestige, role models or champions for change [62].

C) Peer outdegree: similar to A above, captures the size of the peer network a respondent reaches out to for reasons similar to that of category B.

In addition, we also used betweenness centrality as an indicator of the extent to which one actor is connected to others who are not connected to each other. Persons with high betweenness centrality serve as bridges and key players in the flow of innovative ideas between different clusters of people [63].
In order to identify faculty playing an important role in the network and who were therefore potential knowledge brokers, we used all four measures mentioned here. Detailed descriptions of our calculations for measures of degree centrality and betweenness centrality are presented in Figure 5 below:

**Figure 5: Calculations for measures of degree and betweenness centrality**

<table>
<thead>
<tr>
<th>Degree centrality</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Policy makers out-degree normalized to the maximum possible nominees: ( \text{No. of alters}/7 )</td>
<td></td>
</tr>
<tr>
<td>B: Peer in-degree scores normalized to the size (N) of the SPH: ( \text{No. of alters}/(\text{No. of faculty at SPH} - 1) )</td>
<td></td>
</tr>
<tr>
<td>C: Peer out-degree normalized to the maximum possible nominees: ( \text{No. of alters}/7 )</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Betweenness centrality</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scores were normalized manually by readjusting to the maximum possible number of alter pairs as per the specifications above and recalculated using the formula below:</td>
<td></td>
</tr>
</tbody>
</table>

\[
\text{Raw betweenness score from UCINet}^a = \frac{[\text{No. of potential policymaker dyads for the SPH}^a + \text{No. of potential peer dyads within the school}^b]}{[\text{(No. of faculty at SPH} - 1)\times(\text{Tot No. of PolicyMakers in school network})]/2} \\
^a \frac{[\text{(No. of faculty at SPH} - 1)\times(\text{No. of faculty at SPH} -2)]}{2}
\]

Given the complexity of the individual networks, no single measure would fully operationalize the concept of KBs. For this reason, rather than any one score serving as the basis for determination of knowledge brokering, we reviewed the distributions of the 4 different scores and faculty members were subsequently classified as knowledge brokers if their normalized scores fell within the top 10% for Cat A, Cat B and Betweenness. We reasoned that a combination of faculty’s expanse of relations with policymakers (Cat A), the reliance his/her peers had on him with respect to knowledge translation like expertise (Cat B), and his relative betweenness position in the network (considers Cat A, B and C) provided for a more reliable indication of his/her role as a knowledge broker rather than any one single indicator. We did not isolate Cat C relations specifically. This was because Cat C relations by virtue of their reciprocal nature are captured in Cat B relations. For instance, if Person X nominates person Y and Z, then person X’s peer outdegree of 2 is captured by a peer indegree of 1 for person Y as well as for
person Z. In the remainder of the paper therefore, we focus on the results, and implications, of 3 measures: Cat A - Policymaker outdegree centrality, Cat B – Peer indegree centrality, and Betweenness centrality.

Finally, in order to ensure that the selection of indicators was reflective of our expectations, we used Pearson’s correlation to explore the association between the various centrality scores.

**RESULTS**
We were able to reach 124 of 157 full-time faculty, or between 81-94% of faculty onsite at each institution at the time of the study (Table 5). Across all SPHs, the average number of policymaker contacts per faculty was 2 (Mean 1.62, SD 1.95, range 0.88-2.35) with a median of 1.

Approximately 5% of surveyed faculty listed the maximum allowable of seven policymaker alters. These were faculty at MUSOPH, GLUK and KUSPH. Forty-eight faculty (38%) mentioned not knowing any decision-makers at the national level (Mode=0).

Unlike our descriptive analyses which focused on only those surveyed, for the purposes of sociometric analyses, all faculty who were mentioned (regardless of employment status, ability to partake in study, academic department, or higher leadership beyond the SPH eg. Chancellors, Principal, Heads of Research Directorates etc..) and all policy makers who were mentioned were retained in the network in order to allow for a complete network analysis. This yielded a total analytical sample of 168 faculty across the six schools (Table 5). A total of 204 mentions of policymakers (109 unique names, 95 recurring names) comprising 16 unique national government institutions including the Office of the President, the Office of the Prime Minister, Kenyan Parliament, and 13 ministries.

<table>
<thead>
<tr>
<th>Institution</th>
<th>No.</th>
<th>No.</th>
<th>No.</th>
<th>No. PM</th>
<th>No.</th>
<th>No. Gov’t</th>
</tr>
</thead>
</table>

Table 5: Overview of SPH respondents and associated policymaker connections
<table>
<thead>
<tr>
<th>Institution</th>
<th>Full-time SPH Faculty</th>
<th>Of respondents</th>
<th>faculty mentioned in the surveys*</th>
<th>contacts mentioned by respondents</th>
<th>Unique PM contacts</th>
<th>Institution connected to each SPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moi University School of Public Health (MUSOPH)</td>
<td>27</td>
<td>22</td>
<td>29</td>
<td>43</td>
<td>36</td>
<td>10</td>
</tr>
<tr>
<td>University of Nairobi School of Public Health (SPHUoN)</td>
<td>17</td>
<td>15</td>
<td>17</td>
<td>34</td>
<td>27</td>
<td>8</td>
</tr>
<tr>
<td>Great Lakes University, Kisumu (GLUK)</td>
<td>34</td>
<td>29</td>
<td>37</td>
<td>49</td>
<td>27</td>
<td>8*</td>
</tr>
<tr>
<td>Maseno University School of Public Health &amp; Community Development (ESPUDEC)</td>
<td>29</td>
<td>24</td>
<td>31</td>
<td>21</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Kenya Methodist University (KEMU)</td>
<td>27</td>
<td>17</td>
<td>31</td>
<td>17</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Kenyatta University School of Public Health (KUSPH)</td>
<td>23</td>
<td>17</td>
<td>23</td>
<td>40</td>
<td>31</td>
<td>6</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>157</strong></td>
<td><strong>124</strong></td>
<td><strong>168</strong></td>
<td><strong>204</strong></td>
<td><strong>109</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

*Number of faculty in this column differ from those in the previous one to the extent that they include leadership external to the SPH that were mentioned as relevant to the study (eg principal, chancellor, director of research etc).

**Institutional Network Structure: SPH-National Government connections**

As depicted in Figure 6 and Table 6, each SPH commands a variety of relationships with national government policymaking institutions. The reach of policymakers across faculty respondents per SPH ranged from 15 to 36. While all SPHs have connections to MOPHS and MOMS, the other government institutions to which each SPH has connections ranged (i) in number – from 6 to 10 ministries and (ii) in type. For instance, GLUK displayed unique connections to the Prime Minister’s Office (PMO) as well as the Ministry of Water (MoWater). The connection to MoWater however, was rooted in a relationship cultivated during the same policymaker’s tenure at MOPHS. KEMU was the only academic institution demonstrating connections to the Ministry of Information, Communication and Technology (ICT). While we witness a variety of unique connections among the SPHs, we also note a number of overlapping networks indicating shared relations and research interests, both within as well as across SPHs. Niche areas with high specialization such the integration of human, domestic animal and wildlife disease surveillance...
and control manifests as a shared connection between MUSOPH and SPHUoN to the Ministry of Livestock and Development (MoLD) through the OneHealth Initiative [64] for instance.

Figure 6: Institutional connections between SPHs and Government agencies
Figure 7: "Weighted" institutional connections between SPHs and Government agencies

Figure 7 displays number of connections between each SPH and relevant government institutions through “weighted ties”: the greater the number of individual faculty-policymaker relations between an SPH and the complement government institution, the thicker the lines between them.

While the figures above provide a sense of where the institutions as a whole lie on the SPH-Government relationship plane, exploration of individual connections was critical for understanding the prevalence of academic faculty-policymaker connections, exploring the distribution of individual relationships (breadth), and determining the extent of shared relations (depth).

**Individual Network Structure: Academic faculty-policymaker connections**
Whole network maps (sociograms) for each SPH were built using a combination of all three categories of individual relationships and therefore capture connections between each individual
faculty member, their respective peers and policymakers. Isolated faculty were excluded in order to provide a more complete appreciation of the network. For illustrative purposes, Figure 8 depicts the sociograms of two SPHS: ESPUDEC and KEMU. The sociograms of the other four can be found in Figure 9. The various colors delineate SPH academic faculty from policymakers across the various government institutions.

Figure 8: Academic-policymaker networks for two SPHs (ESPUDEC and KEMU)

Legend
- Academic Faculty
- Policymaker (various ministries)
- SPH
- Parliament
- MOHS
- MOH
- MoPND
- MoICT
- MoLabour
- MoTrans
- MoEnr
- MoWater
Analysis of the individual networks within each SPH presents various patterns. While all SPHs demonstrated multiple connections to policymakers, the distribution of these relationships varied across schools as depicted in Table 6. The highest scores within each indicator are circled in red.

Table 6: Characteristics of academic-policy maker relations across Kenyan SPHs

<table>
<thead>
<tr>
<th>Institution</th>
<th>No. respondents</th>
<th>No. PM mentions by respondents</th>
<th>No. Unique PM contacts</th>
<th>Prevalence* of PM relations</th>
<th>Breadth^ of PM relations</th>
<th>Depth§ of relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moi University School of Public Health (MUSOPH)</td>
<td>22</td>
<td>43</td>
<td>36</td>
<td>16</td>
<td>72%</td>
<td>7</td>
</tr>
<tr>
<td>University of Nairobi School of Public Health (SPHUoN)</td>
<td>15</td>
<td>34</td>
<td>27</td>
<td>12</td>
<td>80%</td>
<td>4</td>
</tr>
<tr>
<td>Great Lakes University, Kisumu (GLUK)</td>
<td>29</td>
<td>49</td>
<td>27</td>
<td>16</td>
<td>55%</td>
<td>7</td>
</tr>
<tr>
<td>Maseno University School of Public Health &amp; Community Development (ESPUDEC)</td>
<td>24</td>
<td>21</td>
<td>16</td>
<td>13</td>
<td>52%</td>
<td>3</td>
</tr>
<tr>
<td>Kenya Methodist University (KEMU)</td>
<td>17</td>
<td>17</td>
<td>15</td>
<td>7</td>
<td>41%</td>
<td>6</td>
</tr>
<tr>
<td>Kenyatta University School of Public Health (KUSPH)</td>
<td>17</td>
<td>40</td>
<td>31</td>
<td>12</td>
<td>71%</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>124</strong></td>
<td><strong>204</strong></td>
<td><strong>109</strong></td>
<td><strong>76</strong></td>
<td><strong>61%</strong></td>
<td><strong>n/a</strong></td>
</tr>
</tbody>
</table>

*Prevalence of academic-policymaker relations: absolute no. of faculty connected to >=1 policymaker; Proportion of same (Col 4/Col 2)

^Breadth of academic-policymaker relations: maximum no. of PM contacts mentioned by any one faculty at the SPH; Avg no. of relations (Col 2/Col 1)

§Depth of academic-policymaker relations: total no. of shared PM contacts in network; Proportion of relations shared (Col 6/Col 3)

In brief, we see that the absolute prevalence of academic-policy maker relations at each SPH ranged from 7 to 16 and the proportion ranged from 41% to 80%. While some faculty at the various SPHs do indicate a large policymaker outdegree (up to a maximum of 7), this was not ubiquitous within the SPHs as demonstrated by the average breadth of relations ranging from 0.88 policymaker contacts per faculty to 2.35.
In recognizing that quantity does not equate with quality, we cannot make any inferences about the importance of these relations. The depth of relations by way of overlapping and shared connections with policymakers among faculty within the same SPHs shows a smaller range of 13% to 33%. Although we do not purport to put a value statement on any one of these measures, we note that different SPH demonstrate different sources of strengths within their academic-policymaker networks and that no one SPH scores the highest or lowest on all indicators.

As depicted in the sociograms in Figure 8 and Figure 9, there were pockets of academic faculty within all the SPHs except ESPUDEC, who while externally well connected (outdegree>= 4 policymaker contacts), appeared to be internally disconnected (eg FF009). This was heightened at SPHUoN (4/12: 33%) and MUSOPH (4/16: 25%). There were also faculty who exhibited high indegree but no reported policymaker contacts (eg FB027).

**Identification of knowledge brokers**

Normalised outdegree centrality scores for Cat A (policymaker alters) ranged from 0 to 100 (Absolute number of alters ranged from 0 to 7) with 6/168 (3.5%) of faculty across the six SPHs indicating knowing seven (or more) policymakers. Twenty-one faculty scored in the top 10% corresponding to >=4 policymaker alters (normalized scores between 57.14 and 100). The top ten percentile of normalized indegree centrality scores in Cat B (peer alters) fell between 10.71 and 63.89 comprising 17 faculty. The top 10 percentile of normalized betweenness centrality scores fell between 2.97 and 22.74 comprising 17 faculty.

There were a total of 7 faculty members who consistently scored in the top ten percentile across the three measures and were therefore considered knowledge brokers by this definition. The 7 KBs are each enlarged and enclosed in a square in Figure 9. They represent the SPHs as follows: SPHUoN -1, MUSOPH -2, GLUK -2 and KUSPH-1. Of these, only 1 was female, and 3 held current positions of leadership within the SPH – 1 from KUSPH and 2 from GLUK. They ranged
in age from 44-67 years, all possessed a medical and/or PhD degree at the minimum, and had been at their respective SPHS between 4 to 23 years. Their academic positions varied from Lecturers to Professors. However, 6 out of 7 KBs had previously or currently been in administrative positions of responsibility and leadership such as department heads, deans, vice chancellors and chancellors. All but one KB pursued one of their degrees in a foreign country.
Although all 7 faculty members were identified as KBs through the SNA, their profiles varied.

With respect to normalized policy maker outdegree scores (Cat A), 3/7 scored 100, 1/7 scored 85.7 and the 3/7 scored 57.14 naming 7, 6 and 4 alters respectively. With respect to normalized
peer in-degree scores (Cat B), the scores were as follows: 63.9, 35.7, 25.0, 22.73, 18.75, 13.64 and 10.71. Normalised betweenness centrality scores for the 7 faculty were as follows: 22.7, 14.3, 9.9, 8.1, 7.1, 6.0 and 4.8.

Correlation analysis across the scores (see Table 7) yielded a small correlation (0.14) between Category A and Category C indicating that people with a strong network of policy maker relations are less likely to reach out to their peers for assistance in introductions to policymakers, in learning about the policy cycle, or in exploring methods to access or communicate with them. Hence they have a low peer outdegree score. However, we do see a higher correlation between Category A and Category B (0.41) whereby those with high policymaker contacts are more likely to have higher demand from their peers for assistance. The lowest correlation was between Category B and Category C, i.e. those with fewer policymaker connections have fewer peers likely to come to them for policy relevant assistance. Betweenness centrality scores indicate highest correlation with Category B (0.80) followed by Category A (0.56). This implies that those with increased number of peer faculty who come to them for KT and policy relevant assistance hold a more critical position in the network than those who have an increased number of policy maker contacts.

**Table 7: Correlation analysis across the four SNA scores**

<table>
<thead>
<tr>
<th></th>
<th>CAT A PolicyAlter_NrmOutDeg</th>
<th>CAT B PeerAlter_NrmInDeg</th>
<th>CAT C PeerAlter_NrmOutDeg</th>
<th>PeerPM_NrmBetwn</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAT A</strong> PolicyAlter_NrmOutDeg</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CAT B</strong> PeerAlter_NrmInDeg</td>
<td>0.4096</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CAT C</strong> PeerAlter_NrmOutDeg</td>
<td>0.1429</td>
<td>0.0603</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PeerPM_NrmBetwn</td>
<td>0.5588</td>
<td>0.7983</td>
<td>0.1997</td>
<td>1</td>
</tr>
</tbody>
</table>
Leadership and their roles as KBs

A total of 15 faculty in current leadership positions – both within the SPHs and in other departments – appeared in the networks. Of these, 9 were neither surveyed nor interviewed so full information on these individuals was not available. Of the 6 surveyed, 3 were amongst those identified as KBs as per the rubric outlined above: 2 from GLUK and 1 from KUSPH. A more in-depth review of socio-demographics of the 3 KBs in leadership positions indicates some similarities: they are all men who have well-established academic careers (associate or full professors), and had been with their respective institutions for over ten years. Their highest level of education comprised medical and/or doctorate degrees with qualifications obtained abroad in addition to Kenya. Furthermore, they all indicated having had extensive direct experience working with the various Ministries of Health either holding previous positions of authority or in an advisory capacity. However, even among this group of three, there were differences in their relative centrality scores, which ranged from 6 to 22.7, for instance, on normalized betweenness centrality. This paralleled the duration of their time holding positions of authority (2-7 years) – a likely contributor to their ability to leverage their positions for evidence to policy and practice initiatives.

DISCUSSION

SNA provided a novel method to understand academic-policymaker networks of public health faculty across 6 SPHs in Kenya. It permitted the exploration of individual relationships between academic faculty and policymakers, a depiction of how these manifest for SPHs as a whole, and identification of 7 academic KBs. Although the identified KBs were likely different in their attributes and experiences as demonstrated by the range of their various centrality and betweenness scores, their commonalities as KBs rendered them similar and noteworthy for further investigation.
Among these individual connections appeared a web of distinct as well as overlapping collective networks. While each SPH - by virtue of its faculty connections - demonstrated relative monopoly with some policymakers, the various SPH networks were linked through shared relations with other policymakers. The choice and ability to engage with relevant policymakers was likely driven by, amongst other things, the research priorities of the SPH as well as the relationships cultivated by individual faculty. SPHs with connections spanning fewer government institutions likely conducted research in niche areas with high specialization. Those whose connections fanned a multitude of organizations reflected perhaps not only the size of the SPH, but also their engagement in a greater variety of research topics. In cases where there appeared to be monopolies we note two explanations for the dynamic: the first is engagement in unique or niche subject areas for research. KEMU’s links to the Ministry of Information, Communication and Technology, for instance, were rooted in their joint exploration of links between education and ICT. In other cases such as GLUK, what appeared to be exclusive relations were, in reality, entrenched in former rather than current social capital. Social network mapping therefore, while capturing dynamic relations in a static format, urges us to consider elements of strategic relations that span several years in addition to instrumental relations that were pertinent at the time of the study.

While breadth of relations may be one indicator of an SPH’s embeddedness in the policy arena, using the quantity of shared connections to signify depth of influence can be equally informative. For instance, in situations where faculty within an SPH shared connections with the same policymakers, one can imagine closer institutional, in addition to, individual relationships with particular policymakers and their respective departments. This was visible in instances when faculty were engaged in research activities that were similar and therefore relevant to the same policymakers. Eg. GLUK demonstrated the greatest proportion of shared connections amongst all 6 SPHs. This could be explained by the fact that the majority of GLUK faculty were involved in
projects related to community health as well as human resources for health. Several faculty therefore were likely to engage with National Government Offices such as the Division of Community Health Services.

The relatively low proportion of shared policymaker connections (range 13%-33%) overall underscores the individual nature of several of these relationships as well as the “expertise” of certain academic faculty that facilitate such policy relevant engagement. However, the fact that these shared relationships exist – both within and between SPHs - creates opportunities as well as challenges for the network as a whole. Intersecting networks imply shared interests and therefore provide a natural vehicle for innovative ideas, collaborations on joint research and coalitions for policy influence. The OneHealth Initiative [64] is one such example. Furthermore, networks with more shared connections are likely to be less reliant on any one particular individual, hence rendering them more stable [50,65]. However, similar interests could also stimulate a more competitive environment unless well coordinated by the institutions.

With increased interests from governments and donors in joint multidisciplinary research, the benefits of collaborations and shared contacts between SPHs are likely to outweigh the costs of individual engagements that appear to be the current mode of conduct. More frequent efforts to conduct network studies similar to ours, would permit leadership at the various Kenyan SPHs to identify the linkages that exist between their faculty and policymakers, to identify the shared linkages with other SPHs and to see where the gaps exist. This could consequently spur deliberate peer-peer collaborations on shared research interests, steer a unified SPH strategy for policymaker engagement, and drive decisions regarding identified gaps – which may have particular implications for KBs. For all SPHs in Kenya, discussions on enhancing links with policy makers through academic KBs could perhaps ignite a movement on recognition of
promising faculty within the SPHs as well as spark initiatives for knowledge translation and brokering capacity building.

We note a distinct set of academic faculty who were externally influential but not necessarily internally prominent or sought after as advisors. Similarly, there were others who held positions of respect and trust among their peers but exhibited few if any connections to policymakers and thus didn’t necessarily enjoy analogous reputations beyond the walls of their institutions. Although correlational analysis indicated that those with high policymaker contacts were more likely to have higher demand from their peers for assistance (0.41), it is surprising that this correlation is not higher. Based on correlations with betweenness centrality, it appears that those who wield respect and serve as advisors within the SPH have a greater proclivity to be KBs than those with greater policymaker contacts alone. Peer trust therefore appears to be a necessary precondition and complement to policymaker relations when attempting to inculcate knowledge brokering as a role as well as a strategy for EIDM. Further research to better understand this dynamic would contribute to knowledge on how to leverage the expertise in an SPH, encourage capacity strengthening, and develop expanded networks. This may have implications for the type of social capital (networks) as well as human capital (attributes, skills and capacities) that are required for academic faculty to effectively assist with knowledge translation and evidence-to-policy activities. We explore this aspect elsewhere [Manuscript 2]. In addition, an exploration of the “potential knowledge brokers” ie. those faculty who scored high on two of the three indicators, would assist in understanding what is needed for them to fully realize their potential if they would so wish to.

The fact that KBs were scattered all along the betweenness centrality continuum supports our assertion that using it as a sole determinant of KB identification would have been misleading. While betweenness centrality identifies bridges, in this study it is a function of scores on
Category A, B and C relationships. It therefore provides a more nuanced perspective on the placement of KBs within a network. By normalizing the scores we can control for the size of the SPHs as well as better understand which score is the greater driver of KB identification when triangulating the three scores to identify the KBs. There is therefore no centrality score per se that can be transposed to other studies in order to identify KBs as these scores are a function of a multitude of factors. However, using thresholds – in this case the top 10 percentile across normalized scores for policymaker outdegree, peer indegree and betweenness centrality – can be a useful way of classifying KBs in a network.

Given that the identified KBs represented 4 out of 6 SPHs we note that the geographic proximity to Nairobi, and therefore to policymakers, may contribute to the networks of these KBs. MUSOPH and GLUK although in the Western Provinces, each had a campus in the capital Nairobi and therefore were similar to SPHUoN and KUSPH in their access to policymakers and the policy environment in Kenya. The evolution of SPHUoN had been accompanied by absorption of key faculty from the various health fields that had contributed to the creation of the new SPH. They brought not only their experiences with them, but their extensive networks as well. This may explain SPHUoN having a high ratio of relationships between faculty respondents and policymakers (1:2.27). We do acknowledge however that although these ratios imply that, on average, faculty at some SPHs were more connected to policymakers than others, they provide neither a sense of the distribution of these relationships, nor do they expose key individuals who may be reservoirs for multiple relationships. Relying on such computations, while expedient, can also be misleading.

Since the impetus for the creation of ESPUDEC was rural public health it is likely that, similar to other geographically distant SPHs, the influence on policies and practice occurred primarily at the local or regional levels therefore necessitating the expansion of networks with decision makers at
these administrative levels. Koon et al. indicate that while institutions that are geographically proximal to policymakers may influence their ‘embeddedness’ in a network, those more distal can enhance their centrality through strong linkages to policymakers [66]. SPHs without representation in the capital therefore need to explore more diverse and effective methods of engagement with policymakers if they wish to influence national policy.

Irrespective of the size of the individual SPH networks and the number of KBs within each, the fact that there are 6 SPHs with academic-policy networks that not only span several national government institutions but also have a fair amount of overlap is encouraging. Furthermore, with academic faculty spanning a national policymaker network of 109 across 16 agencies indicates that the social capital already exists. Combined efforts of networks of multiple actors are likely to increase the chances of policy impact [67]. As Bennett and colleagues assert, research networks serve to “strengthen the focus on national research priorities, enhance capacity through bringing together researchers with differing disciplinary skills, and facilitate longer-term trust-based” relations [68]. There is therefore potential for unification, coalition building and collective action among the six networks with the aim to influence policy as well as respond with research that is relevant for policy makers.

**Limitations**
The study focused on faculty at SPHs and their networks with national policymakers with the intention of understanding their relationships as means of influencing public health policy.

However, it is quite common for research relevant to public health policy to occur in faculties of medicine, nursing, agriculture, economics, etc. Therefore this study likely does not capture the full gamut of ‘public health’ researchers, and their associated networks, that influence policymakers in Kenya.
Due to the notion that freelistng likely elicits close and recent contacts, one could use this as a proxy for strength of relationships. However, it could also overestimate tie strength, underestimate network density and fail to capture weak ties [69]. Respondent fatigue, sensitivity towards naming alters and forgetting likely contributed to a limited list of alters in some cases leading to “node-level” missing data. To address the first concern, we attempted to keep the survey short and reassured respondents of confidentiality. In order to improve recall we probed for more infrequent and distant alters through role cues, location cues and chronological cues [57]. However, social desirability bias may have led to indications of more policymaker contacts through brief rather than substantial interactions in order to appear more connected. In the case of both instances, we acknowledge that incomplete network information may have affected the importance of individuals in the networks and their relative placement and classification as brokers or non-brokers.

Of note, we were unable to conduct sociometric surveys with all the policy makers that were mentioned in the network and therefore unable to verify the bidirectionality of relationships. To address the concerns about reciprocal relations, dyadic relations can be imputed in some cases where the ties are directed. However, due to concerns of over- or under-nominations of relevant alters we decided to rely only on triangulated indications as measures of reciprocity rather than using imputations. This was particularly important when understanding the relations between faculty and policymakers (Category A) where reciprocity cannot be assumed. A different decision on imputation could possibly provide different indegree and outdegree centrality scores as well as subsequent betweenness scores therefore leading to an emergence of a different set of KBs.

In addition, we recognize that classification of KBs was based on logical but debatable cutpoints for SNA scores: top 10 percentile for each of the three scores. Changes in these cutpoints may result in a different set of identified KBs. To verify we were not inadvertently missing any KBs
as a result of our criteria, we reviewed faculty who scored above the threshold on 2 of the 3
criteria in the event that recall bias was resulting in their low scores on the third dimension. Of
the 4 additional faculty who appeared in the revised set, 3 indicated that they were not previously
or currently engaged in national health policy discussions, technical working groups or in
advisory capacities. The fourth only had one policy maker contact. For this reason we believe that
our method of KB identification, at least in the Kenyan context, is accurately capturing this cadre.
While this paper focuses on the existence of connections using binary indicators, as well as the
size of networks as depicted by the quantity of connections, it does not comment on the quality of
these relationships. Further exploration of factors driving and maintaining the said connections
would be enlightening.

Quantitative SNA, although useful in depicting places, positions, and strength of relations
between actors in a network, cannot capture either the quality of the relationships within the
networks – whether direct or mediated [6], or the instability of the network, or even its dynamism
due to entry and exit of individuals and changing political paradigms. Provan et al. suggest that
complementary methods of investigating network quality such as interview and observations
should be considered [70]. In response to this assertion, we complement this paper with an
exploration of the personal attributes, capacities and skills of KBs [Manuscript 2] and the
strategies they employ for engagement with policymakers [Manuscript 3].

**Conclusion**
Irrespective of the methods for identifying KBs, it is apparent that there are Kenyan academic
faculty who engage in activities and relationships that place them in unique positions as
knowledge brokers and conduits for policy influence. Using SNA to identify these actors or KBs
can provide insight into who the advisors/resource persons for faculty in the SPHs are, who have
relationships with policy makers, who can be supported and leveraged for bridging the research to
policy (and vice versa) divide, and which members can convene to collectively influence public health policy.

The fact that there are six SPHs in Kenya - all with varied specialties, unique experiences, and overlapping interests - provides a unique opportunity for collaboration and coalition-building in order to influence national policies. The existence of academic KBs in some SPHs with relationships across several government institutions indicates that communication patterns revolve through key individuals within the network [35,71], regardless of organizational affiliation. These key agents understand the complexities of both arenas and are able to navigate them.

Keeping in mind the dynamic nature of networks as well as context specificities, SNA similar to this study could assist SPHs on several levels: situating themselves within the larger academic network of SPHs; uncovering the prevalence and distribution of individual academic-policymaker connections; demonstrating the reach of the SPH through individual academic-policymaker connections; positioning the SPH in the network of policymakers across government institutions; identifying and leveraging academic KBs; recognizing untapped potential KBs; and enhancing individual capacity and environmental systems required to realize this potential.

Furthermore, by attributing research interests to each academic faculty in such a network, SNA could contribute to national government in the following ways: identifying the location and distribution of academic expertise in a country; leveraging existing relations for the purposes of influencing health systems research and policy decisions; building strategic networks in areas where gaps exist; and understanding shared interests for the purposes of engaging in multidisciplinary and multi-sectoral governmental collaborations.
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MANUSCRIPT 2: THE HUMAN CAPITAL OF KNOWLEDGE BROKERS: AN ANALYSIS OF ATTRIBUTES, CAPACITIES AND SKILLS OF ACADEMIC FACULTY AT KENYAN SCHOOLS OF PUBLIC HEALTH
ABSTRACT

Introduction
Knowledge Brokers (KBs) serve as the link and catalyst for knowledge synthesis and exchange, enabling the flow of information resources, and nurturing relations between “two distinct communities” who would not otherwise have the opportunity to interact. Their role is of particular interest, therefore, in the health research, policy and practice arena. To better understand these unique actors, we explore the human capital - individual attributes, capacities and skills - that affect their roles as KBs.

Methods
During April 2013, we interviewed 12 academic KBs and faculty leadership from 6 Schools of Public Health (SPHs) in Kenya, and 11 national health policymakers with whom they interact. We analyzed data qualitatively using inductive thematic analysis to unveil key characteristics.

Results
Key characteristics of KBs fell into five categories: sociodemographics, professional competence, experiential knowledge, interactive skills and personal disposition. KBs’ reputations benefitted from their professional qualifications and content expertise. Practical knowledge in policy-relevant situations, and the resulting networks, allowed KBs to navigate both the academic and policy arenas and also to leverage the necessary connections required for policy influence. Soft skills and a social conscience were also important KB characteristics.

Conclusion
Several changes in Kenya are likely to compel academics to increasingly engage with policymakers at an enhanced level of debate, deliberation and discussion in the future. By recognizing existing KBs, supporting the emergence of potential KBs, and systematically hiring faculty with KB-specific characteristics, SPHs can enhance their collective human capital. Capacity strengthening of tangible skills and recognition of intangible personality characteristics could contribute to enhanced academic-policymaker networks. These in turn could contribute to relevant SPH research and teaching programs as well as evidence-informed public health policies.

Keywords: Kenya, Knowledge Brokers, attribute, capacity, skill, evidence-to-policy, qualitative, Schools of Public Health
INTRODUCTION

Knowledge Brokers
Known by a host of synonymous terms [1-6], Knowledge Brokers (KBs) serve as the link and catalyst for knowledge synthesis and exchange, enabling the flow of information resources, and nurturing relations between “two distinct communities” who would not otherwise have the opportunity to interact [1,7,8]. Their role is of particular interest, therefore, in the health research, policy and practice arena [9-12] which is fraught with isolated and siloed actors [2,13-17] who are challenged with trying to promote evidence-informed decision making (EIDM) [18].

Several types of actors have been recognized as KBs in the research-policy interface including science journalists [8], Knowledge Translation Platforms (KTPs) [19-21], advocacy coalitions [22] as well as development partners and funders [23]. With varied understandings of the role and responsibilities of KBs, a panoply of synonymous nomenclatures and an array of theoretical and practical manifestations, the concept of knowledge brokering, although steadily garnering much attention, is still “emerging.” It therefore suffers from a lack of acknowledgement, recognition and planning even where it does manifest [24-26]. Within this emergence is the unique position of academic faculty who play a dual role: that of knowledge generator as well as of knowledge broker, particularly in the context of academic research institutions intending to influence policy and practice. These academics have been referred to as “hybrid” or “blended” professionals [6] who are connected to both worlds they bridge and thus occupy a “double peripherality”[8,27]. For the purpose of this paper we call them academic KBs: faculty who are not only well connected to policymakers but also sought out by their peers for advice and knowledge on strategies to engage in EIDM.

In the field of health research and policy, knowledge brokerage is ‘all the activity that links decision makers with researchers, facilitating their interaction so that they are able to better understand each other’s goals and professional cultures, influence each other’s work, forge new partnerships, and promote the use of research-based evidence in decision-making.’ Jonathan Lomas (2007)
**Literature review**

Network theory defines social capital [28,29] as “the advantage created by a person’s location in a structure of relationships” [30] as well and human capital [31,32] as “a person’s advantage in terms of personal attributes” [30], capacities and skills that facilitate the creation and maintenance of relationships. Network theory therefore provides a platform for systematically reviewing the identification and characteristics of KBs.

Previous studies specific to academic-policymaker partnerships, and to knowledge brokering in particular, have varied in their foci ranging from frameworks to capture the complex dynamics of interactions between actors [33,34] and the organizational culture in which they operate [8,35,36]; to the roles of KBs and the fluid nature of their suite of activities [37-40]; and to the individual skills of KBs [4,6,14,23,41,42], their motivations [7,43-46] and their personalities [43,47]. However, most of the studies are informed by Western experiences and none of the frameworks to date capture the attributes, capacities and skills of academic KBs specific to Low and Middle Income Countries (LMICs). We sought to explore the sociodemographic characteristics as well as human capital of academic KBs contributing to public health EIDM in Kenya.

**Context**

At the time of this study, Kenya was at a critical point in its public health history as it transitioned into a more decentralized health system under Vision 2030 – the country’s development blueprint for the period 2008-2030 [48]. The national government was increasingly adopting a stewardship role while devolving management of service delivery and funding to the districts [48]. Vision 2030’s emphasis on investment in, and utilization of, scientific research to advance development caused a shift in the landscape of attitudes towards, value for, and demand on academia. Institutes of higher education and research in the country, therefore were pressed to align their activities and priorities so as to respond to these demands.
There exist several institutions of higher education in Kenya – universities, colleges, vocational and technical training institutes - with the majority located in the capital, Nairobi. Of the approximately 39 universities in the country [49], 6 had dedicated programs for public health research and training: University of Nairobi School of Public Health (SPHUoN), Kenyatta University School of Public Health (KUSPH), Kenya Methodist University (KEMU), Maseno University School of Public Health and Community Development (ESPUDEC), Moi University School of Public Health (MUSOPH), and Great Lakes University of Kisumu- Tropical Institute for Community Health (GLUK-TICH). We refer to them collectively as SPHs for the purposes of this study. While there were other organizations engaged in research and related EIDM activities, some had traditionally focused on the biomedical field [50], while others had emerged to fill the gap between research and policy [19,51,52]. None were embedded in university contexts where teaching, research and service compound the dual role of generating as well as translating evidence.

Academic knowledge brokers in the Kenyan context
The increasing demand for transparency from civil society, the strict accountability requirements of external funders and the emerging role of KBs places Kenya in a precarious position should it fail to uphold its commitments to invest in EIDM. The importance therefore of generating, accessing and utilizing policy relevant health systems evidence has attracted the attention of researchers and policymakers alike and has particular implications for SPHs, and the faculty within, who are well placed to provide this evidence base. However, little is known about the characteristics of such faculty. We previously explored the policymaker networks of 6 SPHs in Kenya resulting in an appreciation of the social capital of academic faculty and the identification of academic KBs [Manuscript 1]. In this paper, we explore the perceived human capital - individual attributes, capacities and skills of academic KBs and how these affect their roles.
METHODS

Descriptive data
The initial study (Phase I) upon which this qualitative exploration (Phase II) was based identified academic knowledge brokers in Kenya. The study, conducted during March and April 2013 included a census of faculty at SPHUoN, KUSPH, KEMU, ESPUDEC, MUSOPH and GLUK-TICH. Methods for faculty identification, sociometric survey data collection, and results of the Social Network Analysis (SNA) are reported elsewhere [Manuscript 1]. Sociodemographic and network data for each respondent was collected in Excel, then consolidated and imported into STATA 12 [53] for descriptive analysis.

Qualitative Data collection
Utilizing the results of the SNA from Phase I of the study, we employed an exploratory approach for data collection through semi-structured interviews (SSIs). We requested interviews with all 7 KBs identified through the SNA results, and all 7 Deans/Directors of SPHs (GLUK had two directors-one for each campus) and 37 of the 109 policy makers whose contact information was available. Policymakers in this study were defined as all those who had ability to influence policy within the national ministry. In addition, we interviewed one additional faculty who had a long history of involvement with policy decisions, was respected by academic colleagues as an expert in health policy issues; and who we suspected would have emerged as a KB had their particular sociometric survey not suffered from missing data. We excluded faculty who, from the SNA, appeared not to be directly engaged with policymakers and therefore would have little to share with respect to policy-relevant personal experiences. We first contacted respondents via email with further email and/or phone call reminders where appropriate. SSIs lasted between 0.5hr-1.5hrs depending on the respondent. Each interview was conducted in English, audio-recorded (with participant consent) and transcribed verbatim.
**Data Analysis**

**Descriptive data**

Variables of interest were as follows: size of each SPH, number of KBs in each SPH, their age, gender, academic position, administrative position, number of years in SPH, and foreign training.

**Qualitative data**

Transcripts were reviewed against the original recordings for accuracy prior to coding. Each SSI narrative was first analyzed deductively against the factors identified in the various conceptual frameworks from the literature and coded according to some pre-identified components [54]. Narratives were further coded using an open-ended approach through inductive thematic analysis [55,56] resulting in a detailed coding template with code categories corresponding to each major domain of interest included in the interview guide. Members of the research team independently coded a subsample of transcripts in order to ensure validity and reliability. Complete transcripts and codes were entered into ATLAS.ti in order to generate reports for each key domain. Upon further analysis, codes were collated and collapsed into emergent categories. For the purpose of this paper, the primary domain “KB skills and personality characteristics,” consisted of 5 item codes: expertise, networks, communication, soft skills, and political knowledge.

Additionally, we consulted SPH and Government websites to explore organizational structures and to verify respondent assertions where relevant, particularly in instances where there was uncertainty about institutional policies and practices. This was intended to serve as a means of data triangulation.
The study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board and the Kenyatta National Hospital/University of Nairobi Research Ethics Committee.

RESULTS

Respondent overview
SPHs were diverse in terms of age, size, location and governance. Consequently the number of faculty who were relevant to this study and available for SSIs varied as seen in Table 8.

Table 8: Faculty respondent overview

<table>
<thead>
<tr>
<th>UNIVERSITY</th>
<th>SCHOOL OF PUBLIC HEALTH (SPH)^</th>
<th>TOTAL No. (%) AVAILABLE F/T SPH FACULTY SURVEYED</th>
<th>TOTAL No. FACULTY INTERVIEWED* (KB:Knowledge Broker, L:Leadership, O:Other)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moi University</td>
<td>School of Public Health (MUSOPH) - 1998</td>
<td>22 (92%)</td>
<td>3 (KB:1/2, L:3, O:0)</td>
</tr>
<tr>
<td>University of Nairobi</td>
<td>School of Public Health (SPHUN) - 2010</td>
<td>15 (94%)</td>
<td>3 (KB:1/1, L:2, O:0)</td>
</tr>
<tr>
<td>Great Lakes University, Kisumu (GLUK)</td>
<td>Tropical Institute of Community Health and Development in Africa (GLUK-TICH) - 1998</td>
<td>29 (94%)</td>
<td>3 (KB:2/2, L:3, O:0)</td>
</tr>
<tr>
<td>Maseno University</td>
<td>School of Public Health and Community Development (ESPUDEC) - 2001</td>
<td>24 (92%)</td>
<td>0 (KB:0/0, L:0, O:0)</td>
</tr>
<tr>
<td>Kenya Methodist University (KEMU)</td>
<td>Public health taught within Dept. of Public Health, Dept. of Nutrition, Dept. of Health Systems, Dept. of Nursing</td>
<td>17 (81%)</td>
<td>2 (KB:0/0, L:1, O:1)</td>
</tr>
<tr>
<td>Kenyatta University</td>
<td>School of Public Health (KUSPH) - 2011</td>
<td>17 (85%)</td>
<td>1 (KB:1/2, L:1, O:0)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>124 (90%)</td>
<td>12 (KB:5, L:10, O:1)</td>
<td></td>
</tr>
</tbody>
</table>

^ While not all institutions were classified as SPHs within their organizations, we refer to them as SPHs in this study.
* Categorization is not mutually exclusive. (ie some faculty were KBs as well as Leadership)

A total of 12 faculty were interviewed – 5 out of 7 identified KBs, 10 leadership: 4 out of 7 SPH Deans /Directors, 6 current or past office bearers (ranging from Department Heads to Principals and Chancellors), and 1 “other” as explained in the methods. Some individuals were identified as both Leadership and KBs, so the categorization above is not mutually exclusive. Of 37 policymakers contacted, 13 agreed to be interviewed and 11 (~30%) were ultimately completed.
**Description of KBs**
The 5 KBs ranged in age from 47-67 years. All possessed at least a medical and/or PHD degree and had pursued higher education in a foreign country in addition to Kenya. Only 1 was female. The length of time respondent KBs had been at their respective SPHS ranged from 7 years-23 years. Professional positions varied from Lecturers to Professors. Four KBs simultaneously held leadership positions. They were generally men with well-established academic careers (associate or full professors), who had been with their respective institutions for over ten years. The one exception was a female senior lecturer. Each had extensive direct experience working for or with the various Ministries of Health (Ministry of Public Health and Sanitation (MOPHS); Ministry of Medical Services (MOMS)), either holding positions of authority or in an advisory capacity.

**Description of Leadership**
The ages of the 10 members of SPH leadership (past and present) ranged from 51-67 years with one outlier at 39 years. Academic positions ranged from senior lecturers to professors with 7 holding PhDs and 3 medical degrees as their highest degree. All members of this cadre indicated having gained at least one of their degrees in Kenya and one internationally. Two were female. Of the 6 faculty in leadership positions who did not emerge as KBs, only 3 (50%) indicated being actively involved with policy decisions at the time of the study. No leadership from ESPUDEC were available for an interview.

**Description of policymakers**
The 11 respondents originated from 4 of the 16 national government agencies that were mentioned in Phase I of the study: MOPHS (5), MOMS (1), Office of the President (PresOff-2) and Ministry of Livestock Development (MoLD-2). One respondent, now retired, was mentioned repeatedly during Phase I as an influential policymaker during her tenure and so was included as a key informant and labeled “previous policymaker.” Five had Masters or Medical degrees, 5 had Doctoral degrees, and 1 held a post-doctoral fellowship. Four had previously worked in an academic or research institution.
Qualitative Themes
The various attributes, capacities and skills of KBs that emerged from the study can be described under five categories as listed in Table 9.

Table 9: Five categories of KB characteristics

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<tr>
<th>Socio-Demographics</th>
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<td>Gender</td>
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<td>Academic qualifications</td>
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<td>Interactive Skills</td>
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<td>Interpersonal skills</td>
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<td>Personal Disposition</td>
<td>Social and moral conscience</td>
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<td></td>
<td>Determined and unrelenting</td>
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<td>Respectful</td>
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<td>Team player</td>
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Professional competence

Technical Expertise
Several of the faculty interviewed indicated that their academic credentials, their subject specialization and their technical expertise have facilitated their roles as KBs. Faculty indicated that graduating with a PhD or equivalent degree, particularly when they completed their training, was rare and therefore an asset in raising their profiles as experts. In addition, training or experience in health policy was an added benefit as expressed here: “so if you talk about doctors who have a background in say policy work. We are not more than five or six in the country so it’s not hard to find [us]” [KB, SPHUoN]. Having received academic qualifications from renowned universities as well as serving as experts, either in advisory or teaching capacity, overseas further enhanced faculty reputation.
Relevant Research Focus

Niche disciplines emerged as key for academics and policymakers alike. As one faculty member stressed, academics should “be focused in an area of expertise because then you become visible....and therefore to be sought after when there're issues that require policy engagement...regardless of who is in [office], or what the political structure is like” [Leadership, KB, GLUK]. The same respondent cautioned, however, that he was not proposing that such expertise would be gained from single isolated projects, but rather that academics should create a program of work that is focused and directed. A KB from SPHUoN, however, provided an alternate opinion with advice for academic researchers to tailor their interests to government priorities, or shape those priorities based on one’s expertise in order to take advantage of windows of opportunity. The respondent cautioned against getting “too sort of wrapped up in one particular issue - because the issue really depends on what’s the issue of the day. And so it would be easy to be pigeon holed...then it’s hard to re-invent yourself.” He then provided the example of the rising concern over non-communicable diseases: “Cancer has become very high profile because the last two ministers [of health] both had cancer. So suddenly there is a lot of opportunity.”

Understanding that policymakers have several competing priorities as well as pressure from other researchers to consider their research findings were important realizations for some faculty who indicated that placing an argument within a ‘systems perspective’ with these complexities in mind was imperative. Policymakers expressed appreciation for this kind of empathy explaining that, “just because the health policies are not addressing the issue that is your concern, doesn’t mean that they [policymakers] are doing nothing” [Former Policymaker]. In sum, being anchored in research that is applied and relevant to policy and practice served as an advantage.
Leadership Experience

We have noted that of the 7 SNA-identified KBs, 6 had a history of holding positions of leadership. This was important for policymakers, one of whom compiled numerous attributes of KBs in this one statement: “We had to get somebody who can lead this team, who is well known in the government circles, who knows politicians quite well, that is also quite conversant with the health situation in the country” (Policymaker, PresOffice).

Although several faculty believed that positions of leadership offered more opportunities for visibility, opportunity and engagement in EIDM, the importance of seniority was met with mixed opinions. While one faculty member confirmed the prevailing belief that “level of placement will indeed determine whether or not someone can engage: the more senior one is, the greater will be the opportunity to engage in in policymaking” [Leadership, KB, GLUK], another challenged junior faculty to overcome the stereotypes, believing that they can “make a contribution to the policy based on your experience even if you have not been a big person in society” [Leadership, KEMU]. While this latter statement is encouraging, in reality Kenyan policymakers place a heavy reliance on such senior positions as a proxy for expertise as demonstrated by a policymaker of MoLD who drew our attention to ‘protocol’ and the role of ‘authoritative’ figures.

Experiential Knowledge

Practical experience

Participants described the importance of practical experience outside of academia that provides faculty with more credibility, visibility, and confidence. Several policymakers expressed appreciation for academics who were not only experts in their field of inquiry but also familiar with the complexities of policy and/or program implementation. Some policymakers expressed frustration, however, with academics who they felt had no operational experience, stating that
recommendations that emerge from such faculty were not often anchored in practical realities.

For example, in the 2009 Kenyan H1N1 outbreak, one policymaker said,

“*We had many experts including people from the universities. But of course in an outbreak scenario, mostly they come to learn not really to [give] expert advice. They have theory [but] when we deal with an outbreak, which requires more practical input....We have other organizations which are very good like the WHO, UNICEF, CDC*” [Policymaker, MOPHS].

Urgent epidemiological health concerns were not the only areas in which policymakers preferred practical experience. Issues relevant to health systems and operational research were also raised. This requirement of practical experience likely explains why respondents who were identified as leaders or KBs in this study were generally older, were able to tailor their research to address current policy issues, and had a variety of professional experiences – some of which were embedded directly within government.

**Policy insight**

Throughout the interviews it became apparent that without knowledge of what the political environment presents, how the policy cycle unfolds, who has authority to make decisions, and what the relationships between actors are, strategic faculty engagement with policymakers would be suboptimal. More importantly, policymakers argued that academics who were more familiar with the structure of government were more likely to be strategic about their networks and interacting with pertinent persons.

This knowledge was garnered through various forms. While some faculty mentioned political partisanship as advantageous in terms of insight to government priorities and invitations to contribute to ‘manifestos,’ others indicated that overt political affiliations could be detrimental to researcher credibility and advancement. Several faculty had worked with the government either as previous office bearers or as experts on technical working groups and consulting contracts. These experiences were deemed critical not only for navigating the political environment, but
also for teaching: “If I was involved in developing a national policy and am teaching my students, first of all I would be best placed to disseminate that policy to my students. And I would do it in a way probably nobody else would do it because I would have firsthand experience of having developed it.” [Leadership, KEMU]. Teaching therefore provided opportunities for KBs to share policy relevant knowledge within academia (and not only academic knowledge with policymakers) thereby supporting the bidirectionality of their relations and knowledge. Regardless of source of political knowledge, KBs, leadership and policymakers were unanimous in underscoring its importance when attempting to encourage use of research during policy decision-making.

**Interactive Skills**

**Creation and maintenance of networks**

When asked how they identify in-country experts, policymakers indicated that they seek them out in a multitude of ways. We explore these strategies in detail elsewhere [Manuscript 3]. However, the most commonly described strategy was through personal networks and contacts. Policymakers used the terms “visible”, “exposed”, “credible” and “reputed” as they expressed the importance of academic prominence within their networks.

Although faculty mentioned the traditional path of publishing in academic peer-reviewed journals as one method of gaining recognition in a given field, they also stressed the importance of personal and professional networks. Several faculty indicated that their ability to engage with policymakers and academics alike was due to former collegial encounters, alumni friendships, student-teacher interactions and political family connections. One faculty member, for instance, revealed that his previous engagements with government, private institutions, the World Bank, UN bodies as well as “with presidents - both Moi and later Kibaki who was then the Minister for
Home Affairs… gave me the platform and confidence when I moved to the university that, I knew where to get certain support or help.” (Leadership, KB, MUSOPH)

The onus of building these academic-policymaker networks seemed to rest on the shoulders of academe. Several policymakers indicated that academic researchers need to be proactive in reaching out to them and “activist” in maintaining their interest and attention as demonstrated here: “I would advise them to be, how do I put it? To be aggressive or something. They should also be planning to engage us and find out how, what what’s new... Instead of waiting for those kind of other forums” [Policymaker, MOPHS]. Faculty also indicated “there is a big challenge for some people in terms of getting networks especially those who... just come to the office, they teach and they go home.” [Leadership, KEMU].

Faculty indicated that while some colleagues were generous with their introductions, others were less comfortable sharing contacts. One KB explained why: “There’s always a bit of politics because it is a consultancy you are competing with some groups, so depending on the size of the consultancy, either you are working together, or working in competition for a specific bit of work.” [KB, SPUoN]. While competition may be one reason for protecting relationships, another faculty respondent, while happy to share experiences with policy influence and KB attributes, refused to discuss the details of the persons in his network. The reasons given were concerns over breach of privacy as well as hesitancy to reveal contacts that had taken years of effort to build and nurture.

Communication skills

The ability to communicate in a convincing and articulate manner at an appropriate time in the EIDM cycle was raised in some form by all respondents. Each emphasized various aspects of
effective communication, which we categorize here into the audience, the message, the medium, and the messenger.

The Audience

Knowing your audience – their knowledge, skills and interests – emerged as critical to how researchers should phrase their messages as articulated here: “You have to present your policy in a way that I, who has never seen the inside of a hospital, whose children never get pneumonia – but I make decisions about funding and everything – can understand, internalize, and say: ‘This is the way to go.’ It will not work with: ‘This is statistically significant’” [Policymaker, MOPHS]. The respondent further cautioned that in cases where the recommendations are contentious, preparing for the opposition is critical: “If private sector is not happy, there’s no way you are moving with your policies.” Knowing the position of key stakeholders, therefore, was critical. One KB recommended sharing results with as many stakeholders as possible in advance of finalizing the policy brief: “because you don’t have room for...somebody to start saying, ‘But why haven’t you included this and that or the other?’ so there has to be a consensus in the report and make sure that there isn’t something that is so contentious- because somebody is going to reject it” [KB, SPHUoN]. The respondent signaled that consensus building was important due to health being an emotive subject – an astute assertion confirmed by a Policymaker in the President’s Office: “What you realize is some policy making is not only technical. Sometimes even emotions influence policy.”

The Message

While all policymakers appreciated the rigor and methodology of research, they suggested minimizing descriptions of the research process and focusing more on the justifications, the implications and the recommendations. The practical relevance of the research results as well as the operational aspects of implementing the policies was emphasized several times. For instance,
while researchers urged the swift roll out of pneumococcal vaccine, implementation processes eluded them. Part of the reason, as explained by a policymaker, was an under appreciation of the complexities of cold chain storage and transport:

“If I am doing this [vaccine] policy, it goes beyond saying ‘You’re going to save X babies’ lives.’ It has to be: ‘How do we need to implement it?’ … And the guy told me: ‘Expanding the cold chain is like building a country in itself because, what it means is that every health facility in any remote health in this country….needs a fridge,…and syringes… and power!’ And we said: ‘No no no, we can’t have fridges this size for drugs. Remove the needles. We can’t have vaccines packed for every baby. You need to put them in antimalarial packs and move anything else that doesn’t need to be in a fridge, before we can transport that.’ And that meant a whole change in the manufacturing process and everything. And that’s what it takes; the practical parts. Coz it’s one thing to get the vaccines to Nairobi, but it doesn’t mean a thing if a child in Lodwar cannot get it.” [Policymaker, MOPHS].

In line with the concerns about the logistical implications, the economic implications of any policy recommendations stemming from research were vital for policymakers and raised numerous times. No faculty mentioned cost effectiveness overtly as a critical part of their communication strategy. However, some appeared to be aware of its importance as reflected in their discussions and experiences. All KBs independently mentioned the importance of providing policymakers with solutions and not just problems. Furthermore, a member of leadership and KB at GLUK suggested including global evidence to support local arguments as it was perceived to enhance the importance as well as the credibility of the research.

The Medium

Printed mediums for research results such as policy briefs, short 2-3 page summaries, cabinet memoranda, and strategy papers were a popular request from all policy makers. A member of SPHUoN leadership supported condensing voluminous studies into succinct briefs by further noting that “when you do scientific work, you have to…sieve it out for policy makers to be able to understand, because they don’t have time to read your treatises...” With respect to oral presentations of results, policymakers as well as faculty indicated that the message needs to be short and impactful. What they would like to avoid is more experiences such as the following:
“We had one lecturer from (name of university redacted)...He was given like fifteen minutes, he lectured once for one hour, he was boring people but he could not get that he was boring...After that meeting, we were forewarned by one of our seniors not to be inviting that kind of persons who are coming to waste peoples’ time...because they are not able to differentiate policy issues and academic issues” [Policymaker, MOPHS].

A policymaker at MOMS went further to emphasize the impact of graphics in such presentations as a means of portraying the importance or severity of the situation: “if you go to a policy maker two slides are enough...If it is a line graph, a bar chart, if it’s a pie chart, it makes more sense to a policymaker than dry figures” [Policymaker, MOMS]. Faculty involved in policy influence in this study were not naïve to this requirement and expressed the need to “demystify” research so as to invite interest and engagement from not only the government but from the public as well.

Policymakers explained that communication mediums should be succinct, relevant and easy to understand, not because the content was necessarily above their intellectual thresholds, but because of time constraints and, more importantly, because they would be the ones ultimately defending the policy options. For this reason technocrats who present to the minister or to parliament needed to be confident in their understanding of the problem and the resulting solutions in order to respond to any queries that may arise. Academic faculty expressed frustration that the repackaging of research results were not skills that are deliberately taught through the curricula and therefore capacity in this area was relegated to few individuals who have had the fortune of attending communication workshops or have gained it over time. A member of the leadership at KEMU indicated, however, that there was a budget for professional development and for staff capacity enhancement that could perhaps be used for training on communication skills.

The Messenger
While communication skills were underscored as an essential skill for KBs, there were differing points of view on who should be communicating research implications. Some policymakers acknowledged that,

“Normally when somebody presents somebody else’s piece of work, there could be questions coming out of it and he’s not able to do it quite articulately. What we need to work on is, get [the academic researchers] to do the big pieces of work that they do. But also get them to know that they can present that big piece in fifteen minutes effectively that can actually bring the policy change. Because at the end of it, why are we doing all this research and all? To influence policy!” [Policymaker, PresOff]

Others demonstrated an appreciation for this as a specialized skill that perhaps could be outsourced to specially trained people. A leader at GLUK stressed in order for this to occur, as a leader or KB, one needs to “be able to recognize the different strengths amongst your faculty.” Furthermore, one policymaker alluded to the fact that the political hierarchy in Kenya oftentimes requires protocol and respect for authority. It was thus considered almost detrimental rather than advantageous for individual researchers to present their own results and recommendations.

“We have the line of command ...You need to have the professor or somebody at that level communicating to the director, so that is also very important. Because it bears more weight when it is communicated, for example, by the Principal Investigator in the project.” [Policymaker, MoLD]

This may explain why 6 of the 7 identified KBs had previously or currently been in a position of leadership at the SPH.

**Interpersonal skills**

While demonstrating network building skills, to a certain extent, suggests that being extroverted is an important character strength, social etiquette was considered essential regardless of one’s social predisposition. Leadership from several SPHs drew on their past experiences to emphasize what they deemed simple, but important, behaviors such as responding to policymaker emails within an acceptable time frame, avoiding inappropriate or informal language, and wearing
suitable attire for various occasions. Several other characteristics of academic KBs emerged from the interviews but were not presented within the context of defined experiences. These included charisma, humility, being accessible to policymakers, and possessing negotiation skills. While two policymakers raised “diplomacy” as an important character trait, neither was able to provide concrete examples of what that would mean in practice. One indicated that it was a matter of public relations while the other referred to it in the context of understanding the various other emotionally charged health issues policymakers were dealing with. However in both cases the essence of the assertion was the need for political and social astuteness.

**Personal Disposition**

**Moral and social conscience**

One key characteristic that resonated throughout the interviews was a deeply felt moral obligation to utilize research as a means to improve public health and save the lives of fellow citizens. Policymakers as well as faculty believed that in order to be a KB – to go beyond traditional academia that valued publications and teaching – faculty needed to be internally motivated. One policymaker asserted that there would be a sea change if researchers went beyond their silos and beyond publication to show the impact of their work and the influence it can have on society. These motivations however, need to be driven by a social conscience that would serve to propel action:

“*You have to be a change agent. You have to believe in that change, you have to be able to see that change, you have to be able to convince people that change is possible... it's not easy to change mindsets; It's not easy to get your agenda heard; It’s not easy to come up with even a communication strategy, it's not easy to do that. But if you believe in what it is that you try to do, and you can believe in getting people to see things in a different way, then you'll be successful*” [Faculty member, KEMU].

Several KBs and leadership emphasized that the only way to ensure that these passions materialize was to engage with policy as well as with the public.
“If you want to transform lives of people in Kibera - the slum area there - you don’t go there with all theories that you know about sanitation ... you have to go and listen to them and engage them, and work with them. And feel that they are part and parcel of you, even if you’re an academician, even if you’re on top there, a professor, you must stoop low, and go and work with the people; ... you have to sit with those people, listen to their stories it requires a lot of patience.” [Policymaker, PresOff]

Time constraints, particularly for faculty who were consumed with high teaching loads, were cited as barriers to knowledge brokering. However, for those who persevered, creating the time and space was considered crucial if indeed they believed that the research was a means to an end rather than an end in and of itself. One policymaker in particular felt strongly about this, stating that, “I’ve seen senior professors….they think they have no time, but you’ll not have time to do anything than leave a mark!” [Policymaker, PresOff]. Financial and logistical barriers were another constraint that KBs had to be willing to overcome as they weighed the immediate costs versus the potential positive outcomes of influencing policy.

**Determined and unrelenting**

Proactivity and persistence emerged as necessary attributes of academic KBs not only in the context of networking but also in the context of research to policy. The majority of policymakers interviewed insisted that the onus of ensuring that research results were considered by government rested on the shoulders of the researchers: “we had to make sure that within that team we also have a good advocate. Somebody who’s not scared of speaking to policy makers” [Policymaker, PresOff]. However, one respondent cautioned that there is a delicate line between persistence and insistence: “I don’t know how to describe it but sometimes you have these pushy characters who think they can push their way into Government... Present the good results and wait for change to happen in its own good time...It is a process so you cannot afford to be pushy....you can only listen” [Policymaker, MoLD]. Crossing this line can lead to needless resistance which, as one policymaker from the President’s Office asserted, can be overcome by patience.
The potential for proactive engagement to reap little reward was not lost among faculty who acknowledged the risk of being ignored or marginalized. Nevertheless, the need to be proactive, despite the risks, was unanimous among respondents, several of whom provided examples of when they ‘pushed’ for their cause. Although they acknowledged being led down the slippery slope of what they termed ‘activism’ or ‘lobbying’, it had ultimately allowed them to be heard and to make the difference they sought. One such example is related to a 2008 research study on the competencies of health facility managers in the country. Results indicated that clinicians were often required to assume positions of management and leadership without the requisite training. The subsequent inefficiencies in governance and frustrations with leadership led to extended engagement with the government and international donors for the eventual creation of the Kenya Institute of Health Management.

Respectful

Respect emerged as a constant thread throughout discussions on KB characteristics. It was embedded in positions of leadership as demonstrated above. Performance in one’s area of expertise also seemed to invite respect. For instance, policymakers who understood peer-review publications as the metric for academic performance indicated using this as one indicator of a faculty member’s respective expertise. In addition to being respected as an academic, being respectful was hailed as equally valuable. Attitudes that were patronizing, arrogant or derisive were frowned upon and likely to lead to disinterested policymakers as expressed here:

“I think that the most obnoxious behavior from academics is to treat everybody as ignorant...It shouldn't be assumed that people are challenging you because they're undermining you. It can be they're challenging you because they don't understand, and because of their own need for information. There's no substitute to a respectful approach. If you're disrespectful...I think it really kills the goose before it even lays the eggs.” [Former Policymaker].
Policymakers in this study expressed frustration at being considered ‘less educated’, particularly because several of them sported postgraduate qualifications. They therefore felt competent enough to not only understand the research but also interrogate it. Furthermore, mutual respect and trust were seen as necessary due to the interdependency of the two parties in satisfying their obligations to public health.Aligned with this assertion was an additional characteristic of value: effective listening skills. Some respondents, academics as well as policymakers, argued that having tunnel vision or being narrow-minded rendered academics blind to the complexities of the policy and practice arena whereas active listening and lateral thinking allowed for more receptive attitudes. A Policymaker at MoLD warned that without being open to ideas and suggestions from others, academics risked being relegated as “ivory tower theorists” with “citadel mentality.”

**DISCUSSION**

In this study, we found considerable consensus in terms of the attributes, skills and capacities required of academic KBs in Kenya that were characterized in five overarching themes: sociodemographics, professional competence, experiential knowledge, interactive skills and personal disposition. Academic positions of KBs ranged from lecturers to professors, but most identified KBs had a history of playing a leadership role in the SPH. This would suggest that factors contributing to academic promotions were less important than factors that contributed to administrative promotions. Vogel and Kaghan argue that the function of administrators “increasingly involves active brokering with worlds outside the university so that universities can better compete in a global marketplace while they simultaneously build increasingly complex relations with governments” [57]. However, given that half of faculty in positions of leadership were not classified as KBs but were engaged in policy endeavors would suggest that although senior administrative positions provide a conduit for network building, leadership position alone, while facilitative, was not sufficient for engaging in KB activities. Similar to Lewis’s experience
in Australia, decision-makers nurtured relations that were both *position-specific* [36], ie principal investigators, as well as *individual-specific* [58], ie renowned researchers.

Policymakers as well as faculty indicated that policy insight and a respectful appreciation of the place of academia in policy-making facilitated strategies for appropriate, meaningful and timely engagement. Not surprisingly, direct experience with the policymaking arena has served to provide faculty respondents with not only influential networks, but also a better appreciation of the complexities and nuances of navigating political structures and processes. In turn, this knowledge and experience has placed them in an advantageous space to develop and operate as true academic KBs. The results indicate, however, that while practical experience and leadership together provide a greater platform for KB opportunities, they alone are not sufficient. Less tangible characteristics such as patience, proactivity, persistence, humility, respect, and diplomacy, amongst others, were also important and acknowledged in other studies [43,59,60].

The attributes required to be a KB therefore cannot simply be taught. Consequently, for those who have the inclination and the passion, developing into a KB requires time – time to build credibility, time to hone one’s expertise, time to gain practical experience, and time to build a multitude of networks.

In order for this to occur, professional competence [59] and a web of contacts relevant to the field is required [61]. Relationships between KBs and some leadership of the SPH and government in Kenya have benefitted from personal networks and social capital built over time. Academic KBs in this study indicated a variety of entry points for their expanded policymaker networks including family history of involvement in politics, past positions of leadership in NGOs, involvement in consultancies and previous government positions. These connections have consequently served to provide KBs with credibility, perceived power to influence and preferential political access [22,58,62-64]. It is not surprising, therefore, that KBs and
policymakers alike indicated that for some faculty who are “connected” there was a tendency to hold policymaker relations close due to concerns of competition and a fear of betraying established trust. These academics therefore were not likely to surface as KBs but rather manifest as gatekeepers [30,45,65,66]. In addition to personalities, the proclivity to share or withhold contacts might be situation dependent and/or institutionally incentivized. Further research would shed light on this.

**Implications**

EIDM is not only a technical process but also a social one [17]. Several changes in Kenya are likely to compel academics to engage with policymakers at an enhanced level of debate, deliberation and discussion in the future. These changes include: emphasis on advanced education for civil servants as underscored in the new Kenyan constitution [67]; restructuring of the public service with the aim of optimized competency-based staffing; requirements by the Universities Act of 2012 for academia to “support and contribute to the realization of national economic and social development; and disseminate outcomes of the research conducted by the university” [68], and a new DFID-funded initiative designed to optimize the use of research in decision-making for Health in Kenya [69]. The “two distinct communities” [1,17] paradigm may therefore begin to fade and academics will need to be equally knowledgeable about Kenyan health policy structures and processes.

The attributes, capacities and skills of KBs identified in this study support Burt’s assertion that well-networked individuals are generally better educated, have a higher social status, and are earlier adopters of innovations [70]. Furthermore, their personalities reflect those of an “entrepreneurial outsider (versus conforming and obedient insider)...and who thrives on advocacy and change (versus stability)” [43]. This introduces consideration of intrinsic motivations that drive change and validate the required time investment. The most common
drivers mentioned were: being propelled by a moral conscience, retaining a deep sense of social justice, and possessing a passion for research as a means to improving health. While these characteristics cannot be taught, they can certainly be acknowledged, appreciated and encouraged. Perhaps tailoring SPH recruiting practices to take academic, practical as well as personal qualities into deliberate consideration when hiring faculty [71] would encourage employment of such individuals. Furthermore, it would also recognize such individuals who already exist but whose contributions and worth are measured predominantly through traditional metrics of academic success such as publications. As McCormack and colleagues assert, “the change agent role does not seem to require a formal position or formal authority, with social influence and social interaction being key components of the role”[4]. Further research could perhaps explore the organizational/environmental aspects that affect knowledge brokering activities of faculty as well as interactions between researchers and policymakers. Incentive and recognition structures could shed additional insight on the role of KBs and perhaps their own views of their academic and social value.

A ‘human capital’ audit of academic faculty would provide SPHs with not only a sense of the existing capacities and gaps across the organization but inform strategies to fill any gaps and leverage assets. SPHs who appear to have KBs would benefit from exploring ways to recognize, support and leverage such faculty with the ultimate hope that it would raise the profile of the SPH as a whole. SPHs without any KBs might consider their role and relevance to public health decision-making and how best to nurture the creation of a link or bridge whereby research results as well as the activities of the SPH are shared. Furthermore, including training on the various nuances of communication for the policy and practice worlds – the audience, the message, the medium and the messenger – would alert students and other academic faculty to potential challenges when engaging with policymakers.
While the factors mentioned are divided into distinct categories that enhance the roles of KBs, we note that there is a delicate balance and interplay of all the characteristics of a KB thereby requiring different combinations of skills for different purposes. Accepting that it is unrealistic to expect all faculty to nurture these characteristics, we encourage SPHs to consider the importance of faculty with some or many of these attributes, skills and capacities – either individually or as a collective – in furthering the relevance and goals of the SPHs to social justice.

Limitations
This study focused on the attributes of KBs and therefore emphasized the perspectives of KBs as well as policymakers who engage with KBs. However, without discussions with non-KB faculty, we may be missing how they perceive KB attributes, and why they may seek out KBs for advice. In terms of our respondents, nominations of relatively senior policymakers, unreliable government email addresses, access to limited publicly listed personal email addresses, and dependence on contact information provided by faculty respondents limited the number of policymakers we were able to interview. Furthermore, as most policymakers interviewed had advanced academic degrees, this may have influenced their appreciation of the value of research and researchers in general. Policymakers with less positive attitudes towards research may have been less likely to respond, therefore subjecting the study to a selection bias. In order to address this potential limitation, willing policymakers were probed on negative attitudes and experiences with academic faculty.

Further research
Given that internal attributes of individuals are not divorced from the external contributors that affect effective evidence-to-policy brokering by this cadre, understanding the greater political, regulatory and socio-cultural context within which academic faculty in Kenyan SPHs operate would be critical in understanding the reasons why certain perceptions and behaviors exist. Particular attention to the gender differentials would be of additional interest. While a social conscience and feelings of moral obligation to the public were highlighted as key for propelling
academic faculty to engage with policymakers as well as peers on issues of policy-relevant research, it would be naïve to believe that these were the only motivators for knowledge brokering. Further research on intrinsic and extrinsic motivators for KB engagement with policymakers, prevailing attitudes surrounding the value of research as well as the value of EIDM would provide deeper understanding of some of the preconditions for engagement. Additionally, these research foci would shed light on the ‘why’ of academic knowledge brokering in Kenya thereby complementing research on ‘who does it?’ [Manuscript 1] and ‘how do they do it?’ [Manuscript 3].

**Conclusion**

There is a growing momentum of knowledge brokering as a role, as a profession and as a strategy to bridge the research and policy arenas. In the context of Kenyan SPHs, academic KBs, while relatively rare, already exist [Manuscript 1]. Furthermore, they are playing the dual role of knowledge producers as well as knowledge brokers as a result of a unique interplay of their sociodemographic attributes, professional competencies, experiential knowledge, interactive skills and personal disposition. By recognizing existing KBs as well as supporting the emergence of potential KBs through capacity strengthening of tangible skills and recognition of intangible personality characteristics, SPHs can enhance “public health policies and ultimately, better health” [72].
REFERENCES


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MANUSCRIPT 3: Navigating the academic and political environment: Strategies for engagement between public health faculty and policy makers in Kenya
ABSTRACT

Introduction
Universities aim to build technical capacity, generate new knowledge and utilize both for the advancement of society. However, gaps in the passage between research results and their influence on policy decisions are one of several explanations of why universities in Sub Saharan Africa are not fully realizing their potential and intended social impact. Narrowing the gaps requires deliberate and strategic engagement between academics and policymakers in order to enhance Evidence-informed Decision Making. In order to understand and enhance these strategies, locally contextualized studies are required.

Methods
Between March and April 2013, we conducted semi-structured interviews with 12 academic faculty from 6 Schools of Public Health (SPHs) in Kenya. In addition we interviewed 11 national health policymakers. Inductive analysis permitted a development of emergent ideas.

Results
Policymakers predominantly engaged with academia through expert invitations and deliberative dialogues. Academics employed a greater array of strategies including directed dissemination of research results, leveraging student professionals, honorary appointments for policymakers and some forms of mediated engagement. A plethora of underappreciated or underutilized emerged – all of which were expected to be SPH-led: face-to-face individual interactions, institutionalized collaborations, other forms of mediated engagement-particularly utilizing knowledge brokers (KB) and the media, and enhanced visibility.

Conclusions
Both current and underutilized strategies for engagement suggest a delicate balance between leveraging personal individual relationships and establishing more sustained institutional partnerships. Regardless of the effectiveness of each strategy on its own, a combination of deliberate and opportunistic strategies is likely required for increased chances of success in academic faculty and policymaker engagement. The perceived responsibility for engagement continues to reside with academia. Identifying, encouraging and leveraging academic KBs within Kenyan SPHs can serve to fulfill this expectation.

Keywords: Kenya, Schools of Public Health, evidence to policy, strategies for engagement, knowledge broker
INTRODUCTION
Universities aim to build technical capacity, generate new knowledge and utilize both for the advancement of society. Their role in contributing to national policies therefore, has been recognized by academics [1-5], policymakers [6] and funders [7,8] alike. However, gaps in the passage between research results and their contributions to policy decisions are one of several reasons contributing to why universities in Sub Saharan Africa (SSA) are not fully realizing their potential and intended social impact [9,10]. Narrowing the gaps requires deliberate and strategic engagement between academics and policymakers in order to enhance Evidence-Informed Decision Making (EIDM).

Evidence-informed Decision Making
EIDM is defined as “the process of distilling and disseminating the best available evidence from research, practice and experience and using that evidence to inform and improve public health policy and practice” [11,12] and ultimately strengthen health systems. In order to strengthen health systems, partnerships between government and academia are imperative [13] and should be deliberate, enduring [14] and meaningful [15] rather than isolated activities interspersed between academic and political agendas. This has led to interest in understanding, identifying, creating, maintaining and nurturing academic-policymaker networks within the field of public health [16,17].

Emphasis on EIDM in public health has grown in importance as well as prominence [6,18-20] leading to the emergence of several investigative theories [21,22], measurement frameworks [23-29] and facilitative tools [30-34].

Strategies for engagement
The various theories and frameworks relating to the importance of relationships between academics and policymakers has led to experimentation with respect to capacity enhancement of researchers to generate and package policy-relevant research: “researcher-push” [24,25], capacity
strengthening of policymakers to appreciate and demand research: “research-user pull” [14,25,35,36], and opportunities for interactions between academics and policymakers: “integrated approach”[25,37]. The methods of engagement that populate these models are based on a variety of experiences from regions such as Europe [14,38,39], North America [40,41] and the Middle East [42,43].

A systematic review by McCormack and colleagues revealed limited evidence on the generalizability of strategies for engagement [44] and whether preconditions for EIDM such as academic freedom [3], policymaker appreciation of research [25], and a favorable policy context [45], amongst others [46], are present in all cases. Given the importance of context, governance, values and culture in national health policymaking [3,47], it is not surprising that the models and frameworks mentioned above may not be universally transferable. In order to understand and support EIDM in the public health context, locally contextualized studies on strategies for engagement between academics and policymakers are required.

**Academic Knowledge Brokers**
Efforts to build partnerships between academia and policy as a means to promote public health EIDM in Africa are not entirely absent as evidenced by studies in Uganda [48,49], Zambia [49,50], Nigeria [51], Ghana [45,52] and elsewhere on the continent [49,53]. Furthermore, initiatives to improve African universities’ capacity to serve as knowledge brokers (KBs) in the EIDM process have also emerged. One such example is the 5 year Development Research Uptake in Sub-Saharan Africa (DRUSSA) program which supports 24 universities in Sub Saharan Africa at to “improve participation in and impact on policy and practice” [54]. To date, few studies have explored the process of knowledge exchange or brokering in the health policy arena in general [29,55]. In his study of consultants, Sin notes that more research on intermediaries and their roles will assist in a more “sophisticated understanding of the process of linking evidence to policy and practice.”[56].
While research has highlighted the importance of relationships with decision makers and networks [23,33,57], strategies for initiation, enhancement and maintenance of these relationships have received less attention, spurring Lewis to challenge public health practitioners to explore their strategies of engagement with policymakers [58]. This is particularly important in countries such as Kenya where multiple Schools of Public Health (SPHs) exist, and where results from their research could contribute to public health policies.

**Health Governance in Kenya**

Kenya’s Vision 2030 states that “Kenya will restructure the health delivery system and also shift the emphasis to “promotive” care in order to lower the nations’ disease burden” [59,60].

Following the creation of a coalition government in 2008, the Kenyan Ministry of Health (MOH) was divided into two ministries each with distinct functions to promote this vision: the Ministry of Public Health and Sanitation (MOPHS), and the Ministry of Medical Services (MOMS). Until April 2013 when government structures changed once again, both ministries drew upon the same budget, introducing substantial need for inter-ministerial coordination as well as potential competition for limited resources, duplication of efforts and ambiguous boundaries of responsibilities.

There exists a demand for evidence to influence decision-making in Kenya [61]: technical working groups (TWGs) and task forces comprised of individuals from universities, research institutes, and Non Governmental Organizations (NGOs) were anticipated to assist the various ministries in achieving their Vision 2030 goals. While such mediums encourage deliberations on issues and potential solutions for government to consider, other strategies of engagement between academia and policymakers in order to influence EIDM and promote social development remain obscure.
Study aims
Given the dearth of knowledge on the dual role of academic researchers - that of knowledge producer as well as of knowledge broker - Meyer challenges us “to analyze more thoroughly their practices, the devices they create and use, and the benefits and drawbacks” of this unique position and status [62]. We conducted an initial study to identify academic KBs in the Kenyan context – faculty who are not only well connected to policymakers but also sought by their peers for advice and knowledge on strategies to engage in EIDM [Manuscript 1]. Taking the results of this initial study, we explored the complex interactions and the various strategies for engagement between identified KBs and national health policymakers, as experienced by both parties, with the aim to document and encourage more effective relationship and network strengthening. This paper therefore addresses the following questions:

In the context of public health policymaking in Kenya:

- What methods of engagement between academic faculty and policy makers are employed and under what circumstances?
- What strategies for engagement are underappreciated or underutilized?
- What are the differences between perspectives of policymakers and faculty, if any, with respect to these various strategies?
- What are the implications for SPHs and Government alike in terms of EIDM?

We acknowledge that the approaches to and frequency of interaction between SPH faculty and policymakers are influenced by a myriad of factors including the nature of the issue, the characteristics of the relationship between faculty and policymakers, and the context of the project [63]. Furthermore, we understand that individual characteristics as well as and institutional cultures affect the nature and extent of engagement [17,44,64,65]. These complementary factors, while important, are beyond the scope of this paper and are reported elsewhere [Manuscript 2].
METHODS
We previously conducted a Social Network Analysis (SNA) of academic-policymaker networks across all 6 SPHs in Kenya. The SNA assisted in identifying 109 policymakers in the networks, 16 distinct ministries, and 7 academic faculty who emerged as KBs [Manuscript 1]. We drew from these results to identify participants for this qualitative study.

Qualitative Data collection
We employed an exploratory approach for data collection. We requested semi-structured interviews (SSIs) with all 7 identified KBs, all 7 Deans/Directors of SPHs (GLUK has two directors-one for each campus) and 37 of the 109 policy makers for whom we had contact information. Policymakers in this study were defined as all those who had ability to influence policy within the national ministry. In addition, we interviewed one additional faculty who had a long history of involvement with policy decisions, was respected by academic colleagues as an expert in health policy issues; and who we suspected would have emerged as a KB had their particular sociometric survey not suffered from missing data. Identified respondents were contacted first via email with further follow up by a reminder email and/or phone call where appropriate. SSIs lasted between 0.5hr-1.5hrs.

Each interview was conducted in English, audio-recorded (with participant consent) and transcribed verbatim. Transcripts were reviewed against the original recordings for accuracy prior to coding. Using the qualitative software package Atlas.ti, each SSI transcript was first analyzed deductively against the factors identified in the various conceptual frameworks from the literature and coded according to some pre-identified components [66]. Transcripts were further coded using an open-ended approach through inductive thematic analysis [67,68] resulting in a detailed coding template with code categories evolving from questions in the interview guide (Appendix
F). Another member of the research team independently coded a subsample of transcripts in order to ensure trustworthiness. Upon further analysis, codes were collated and collapsed into emergent categories. In addition, we reviewed SPH and Government websites to explore organizational structures and to verify respondent assertions where relevant for purposes of data triangulation.

The study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board and the Kenyatta National Hospital/University of Nairobi Research Ethics Committee.

RESULTS

Respondent overview
A total of 12 faculty were interviewed – 5 out of 7 identified KBs, 10 leadership (including 4 out of 7 SPH Deans /Directors, and 6 current or past office bearers ranging from Department Heads to Principals and Chancellors), and 1 “other” as described in the methods. There were instances where individuals were identified as Leadership as well as KBs. The categorization above therefore is not mutually exclusive. Of the 5 KBs interviewed, 4 held either current or past leadership positions within their respective SPHS - 1 from KUSPH, 1 from MUSOPH and 2 from GLUK. The other KBs was from SPHUoN. No leadership from ESPUDEC were available to be interviewed. For a list of faculty interviewed see Table 10.
Table 10: Overview of faculty respondents

<table>
<thead>
<tr>
<th>UNIVERSITY</th>
<th>SCHOOL OF PUBLIC HEALTH (SPH)^</th>
<th>TOTAL No. F/T PHI FACULTY</th>
<th>TOTAL No. FACULTY MENTIONED IN SOCIOMETRIC SURVEY*</th>
<th>TOTAL No. FACULTY INTERVIEWED#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moi University</td>
<td>School of Public Health (MUSOPH) – 1998</td>
<td>27</td>
<td>29</td>
<td>3 (KB:1/2, L:3, O:0)</td>
</tr>
<tr>
<td>University of Nairobi</td>
<td>School of Public Health (SPHUN) – 2010</td>
<td>17</td>
<td>17</td>
<td>3 (KB:1/1, L:2, O:0)</td>
</tr>
<tr>
<td>Great Lakes University, Kisumu (GLUK)</td>
<td>Tropical Institute of Community Health and Development (GLUK-TICH) - 1998</td>
<td>34</td>
<td>37</td>
<td>3 (KB:2/2, L:3, O:0)</td>
</tr>
<tr>
<td>Maseno University</td>
<td>School of Public Health and Community Development (ESPUDEC) - 2001</td>
<td>29</td>
<td>31</td>
<td>0 (KB:0/0, L:0, O:0)</td>
</tr>
<tr>
<td>Kenya Methodist University (KEMU)</td>
<td>Public health taught within Dept. of Public Health, Dept. of Nutrition, Dept. of Health Systems, Dept. of Nursing</td>
<td>27</td>
<td>31</td>
<td>2 (KB:0/0, L:1, O:1)</td>
</tr>
<tr>
<td>Kenyatta University</td>
<td>School of Public Health (KUSPH) - 2011</td>
<td>23</td>
<td>23</td>
<td>1 (KB:1/2, L:1, O:0)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>157</strong></td>
<td><strong>168</strong>*</td>
<td><strong>12 (KB:5, L:10, O:1)</strong></td>
</tr>
</tbody>
</table>

^While not all institutions were classified as SPHs within their organizations, we refer to them as SPHs in this study.

*Faculty serving in a leadership position in the university but external to the SPH were included if mentioned as a resource for evidence to policy knowledge, capacity and networks.

#Categorization is not mutually exclusive. (ie some faculty were KBs as well as Leadership)

Thirteen of the 37 policymakers who were contacted agreed to be interviewed and 11 (~30%) interviews were ultimately conducted. Respondents originated from 4 of the 16 national government agencies that were mentioned in Phase I (Table 11). One respondent, although an independent consultant at the time of the study, was mentioned several times as an influential academic in the past as well as policymaker during the given period. The individual was therefore included under policymakers. Of the 11 policymakers interviewed 5 had Masters or Medical degrees, 5 had Doctoral degrees, and 1 held a post-doctoral fellowship. Four had worked in an academic or research institution in the past.
Table 11: Overview of policymaker respondents

<table>
<thead>
<tr>
<th>GOVERNMENT INSTITUTION</th>
<th>ACRONYM</th>
<th>No. PMs MENTIONED</th>
<th>No. PMs WITH AVAILABLE CTCT. INFO</th>
<th>No. PMs INTERVIEWED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliament of Kenya</td>
<td>Parliament</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Ministry of Public Health and Sanitation</td>
<td>MOPHS</td>
<td>40</td>
<td>18</td>
<td>5</td>
</tr>
<tr>
<td>Ministry of Medical Services</td>
<td>MOMS</td>
<td>26</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Office of the President</td>
<td>PresOff</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Ministry of State for Special Programs</td>
<td>MSPP</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Ministry of Livestock Development</td>
<td>MoLD</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Ministry of Agriculture</td>
<td>MoAg</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ministry of Planning and National Development</td>
<td>MoPND</td>
<td>10</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Ministry of Education</td>
<td>MoEd</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ministry of Transport</td>
<td>MoTrans</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ministry of Environment and Mineral Resources</td>
<td>MoEnvr</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Prime Ministers Office</td>
<td>PMO</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ministry of Water and Irrigation</td>
<td>MoWater</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ministry of Information and Communication</td>
<td>MoICT</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Ministry Of Labour and Human Resource Development</td>
<td>MoLabour</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Ministry of Health (previous ministry officials when MOH existed)</td>
<td>MOH</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Self employed/Independent Consultants (Previous ministry official)</td>
<td>Self</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>109</td>
<td>37</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

While not all respondents had deliberately reflected on current or potential strategies for engagement, all provided ideas of what, in their opinions, were effective or ineffective approaches.

Engagement between policymakers and faculty within Kenyan SPHs was not uncommon and the strategies for such engagement were varied. The convener of these arrangements seemed to depend, however, on the relevant interests of the initiating party. Table 12 summarizes, in no particular order, the various current strategies described by respondents. Suggested strategies can be found in Table 13. The pursuing results are organized accordingly.
Current strategies for engagement

Table 12: Current strategies for faculty-policymaker engagement

<table>
<thead>
<tr>
<th>Current Strategies</th>
<th>INITIATING PARTY</th>
<th>SPH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National Level Government</strong></td>
<td><strong>Directed dissemination</strong></td>
<td><strong>Leveraging student professionals</strong></td>
</tr>
<tr>
<td>Expert invitations</td>
<td>1) Institutional requests for policy relevant technical expertise (Eg: Technical Working Groups (TWGs))</td>
<td>1) Printed dissemination of research results (Eg: journal articles)</td>
</tr>
<tr>
<td></td>
<td>2) Individual requests for policy relevant technical expertise (Eg: TWGs)</td>
<td>2) Printed distillation of research results (Eg: policy briefs)</td>
</tr>
<tr>
<td></td>
<td>3) Open tenders for consultancies</td>
<td>3) Invitations to knowledge sharing forums (Eg: at scientific conferences, public health grand rounds, journal clubs)</td>
</tr>
<tr>
<td>Deliberative dialogues</td>
<td><strong>Honorary appointments</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4) Establishment of recurrent bilateral strategic meetings</td>
<td>6) Invitations for seats on academic boards</td>
</tr>
<tr>
<td></td>
<td>5) Invitations for subject specific discussions</td>
<td>7) Creation of positions for guest lecturing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8) Establishment of supervisory roles for students</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

National Level Government initiated strategies

We identified two dominant strategies that policymakers leverage when engaging with academia: expert invitations and deliberative dialogues. The nuances of each are elaborated below.

*Expert invitations*

Technical Working Groups (TWGs) were a common and institutionalized form of eliciting expert input into policy deliberations in Kenya. The identification of “experts” to serve on these TWGs occurred through a variety of means including formal institutional requests to SPHs for faculty recommendations, informal outreach to individual academics and open tenders for consultancies.

With respect to institutional requests, faculty from more established universities appeared to have a historical advantage over their peers in newer institutions. For instance, policymakers actively sought out expertise from SPHUoN, given its affiliation to a university with a reputable medical
school. This served as a proxy for competence. In such cases, invitations were directed to the leadership at the SPH particularly in instances where ministry officials were unfamiliar with which individuals would be of most value. When policymakers were asked how they identified ‘experts,’ a variety of sources were mentioned: personal contacts, prevailing reputations, recommendations from colleagues, lists of speakers from conferences, responses to open tenders, etc. Given that the Director of Medical Services [DMS] was traditionally the Registrar of the Medical Practitioner and Dentists Boards, all registered professionals were accessible to MOPHS and MOMS staff. This indicates that policymakers who rely on such boards for their experts assume that public health expertise resides within the medical and clinical fields. Stakeholder forums were another means of inviting expert attendance.

The situation was somewhat different with individual outreach where policy makers elicited for expert input through personal networks and contacts. Reasons for why personal outreach often prevailed included delays caused by institutional bureaucracy, preference for personal and trusted contacts, and unsuitable referrals as expressed here: “they might send somebody to me who is not very relevant” [Policymaker, MoLD].

Although policymakers admitted a reflexive tendency to reach out to alma maters or past academic colleagues, most indicated that they preferred formalized institutional mechanisms for engagement and that academic faculty on a TWG would be serving in an institutional rather than personal capacity. Not surprisingly, SPH leadership tended to agree stating that “if [engagement] was part of an institution...it would be more effective. Because people they come and go. If it was institutional, then there is continuity and sustainability” [Leadership, SPHUoN].

Deliberative Dialogues
The recognized value of deliberate engagement between policymakers and researchers on topical issues of relevance has led to the establishment of several recurrent government-led forums. Some of these were influenced by examples from other countries such as structured and frequent meetings between the Minister of Public Health in Cuba and university leadership. According to a policymaker at MOMS, the DMS followed suit with Vice Chancellors of all Kenyan universities. Other forums emerged from a genuine desire for more sustained and pointed engagement with academia. For instance, the National AIDS Control Council (NACC), housed within the President’s Office, launched a series of debates in 2012/2013 to attract discussions and deliberations on HIV issues. These were deliberately held at universities,

“so that universities start looking at themselves as not only places where people go to read or do exams but also where people discuss topical issues that affect them….it gives the university some profile…and at the same time it also helps us to now start knowing who are the top management within the university.” (Policymaker, PresOff)

Although the original intention was to encourage debate around topical issues, it spurred interest across several universities and nurtured close collaborations between the NACC and academia.

Deliberative dialogues, also referred to as organized forums, seemed to manifest in different formats convened by either party. While there was expressed desire for more of these, there was no consensus on who should spearhead them. Questions regarding the frequency of such meetings met with equally varying opinions with meeting objectives and whose needs it was satisfying being cited as the main determinants. Financial, time and spatial resources surfaced as barriers to engagement in multiple scenarios. Limited capacity for sustained leadership and incentives to attend also emerged: “proper facilitation mechanisms…such as transport, accommodation, environment, resources…equipment…a moderator” and compensation for attending (Leadership, KEMU). This was particularly relevant for academic faculty at SPHs not located in Nairobi.
**SPH initiated strategies**

With respect to SPHs initiating engagement with policymakers, we saw a wider range of strategies – some more proactive than others - as demonstrated below.

**Directed dissemination**

Academic KBs and Leadership mentioned writing policy briefs and distributing published articles to keep relevant ministry stakeholders abreast of new research. Although peer-reviewed publications were generally perceived to be ineffective in providing research results to policymakers, those with academic backgrounds did occasionally peruse them to inform their discussions with academic as well as policy peers. All policymakers stressed that documents that were distilled, free of jargon and of direct relevance to them would not only be welcome but more likely to be considered. In Kenya, these documents often manifest as cabinet memoranda. One policymaker from MOMS went even as far as to assert that academics should not only be familiar with such memoranda but also be able to produce them. Only one faculty respondent specifically mentioned inclusion of “how to write those cabinet memos with my students, just knowing that this is an added, or a required skill for them” [Knowledge Broker, MUSOPH].

Oral forms of dissemination were also common. Several SPHs confirmed inviting ministry officials to their annual scientific conferences in order to encourage research dissemination, provide training opportunities, and facilitate networking. SPHUoN, in conjunction with the medical faculty, hosted biweekly ‘public health grand rounds ‘ – many of which touched upon current national concerns: “sometimes [ministry officials] come and sit in, like when we were discussing social health insurance” (Leadership, SPHUoN).

Similar to forums spearheaded by the government, SPHs also indicated the need for creating opportunities for more deliberate, directed and recurrent engagement with government.
University-hosted breakfast journal clubs were one strategy for results dissemination coupled with informal opportunities for networking and engagement. Early morning (7.30-8.30am), prior to the commencement of the official workday, was considered optimal for faculty and policymakers alike.

*Leveraging student professionals*

Students were considered important not only as liaisons to the policy arena but also as vehicles for sharing practical perspectives with academia. Student placements (also referred to as internships, practicums and apprenticeships) as formal mechanisms were considered beneficial to SPHs in two ways: first, providing students exposure to practical public health realities; and second as a means of indirect policy influence. Appendix G illustrates the various SPH-Ministry collaborations on such initiatives. Policymakers, however, were ambivalent about these benefits indicating that a more collaborative approach to the design of internships would allow for more fruitful interaction. One policymaker from MOPHS highlighted Moi University and Kenyatta University as examples of structured internships with well-articulated objectives. However, it was unclear whether the respondent was referring to experiences with SPH internships versus those related to the School of Medicine, for instance.

Faculty respondents also described potential for leveraging relationships with policymakers, practitioners and managers currently enrolled as students in graduate programs such as the Masters of Health Systems Management at KEMU. They provided several examples of student initiated requests for guidance on policy deliberations, for subject matter advice on disease control, and for identification of experts. For faculty, these requests allowed for indirect policy influence.

*Honorary appointments*
Positions of prestige and responsibility for policymakers within the SPHs were mentioned as instrumental for more frequent and relevant engagement with research and with academic faculty. These ranged from dedicated placements in academic governing bodies to deliberate appointments as faculty. SPHUoN, for instance, reserves a seat on the academic board for MOPHS/MOMS in order to formalize relations as well as for mutual knowledge sharing. The frequency of a ministry representative attending key meetings and the extent of his/her contributions, however, was unknown.

Some policymakers with academic backgrounds mentioned retaining their connections to academia in the form of teaching and guest lecturing. While these were oftentimes ad-hoc or temporary, one policymaker stated that his academic position had raised the profile of his ministerial department. As one former policymaker indicated, guest lecturing fulfilled three purposes: “to address the issues of challenges and opportunities in the ministry of health, ...also [it is] morale boosting because [the policymakers] come to address the students...” and permits co-publication of policy relevant documentation. SPHs also benefitted in two ways: guest lecturers enlightened students on prevailing policy concerns, and their affiliated SPHs became natural partners for collaboration when seeking out expertise.

*Mediated engagement*

Similar to other LMIC countries, international actors such as “WHO, UNICEF, USAID, World Bank are people who also influence policy and they have also got their contacts among the scientific community in the country. So there is that route of influencing policy.” (Leadership, SPHUoN). Collaborating with these actors often provided an avenue for policy engagement as part of the many consulting engagements that faculty undertook.
While research results emerging from these collaborations were accepted as more likely to attract policymaker attention, some respondents expressed reservations. For instance, a former DMS frustrated by past experiences with external agency pressure to roll out male circumcision in Kenya rejected requests from another externally funded agency to discuss the results of home based HIV testing. A faculty member from MUSOPH involved in mediating the relationship offered two explanations: the DMS was skeptical about whether the particular research angle was a priority for the country; and he was uncertain whether the agency was acting in the nation’s best interest or responding to donor agendas. Another example comes directly from a policymaker who underlined the importance of local capacity in contributing to long-term gains similar to those of other emerging markets: “[Brazil, India, Korea, Singapore] have managed to move forward by investing a lot of resources in research and also investing in their nationals, because foreigners can never develop a country. You need to invest in your people …I mean the wealth of the nation is the human resource.” [Policymaker, PresOff].

**Underappreciated and/or underutilized strategies**
Throughout the study, respondents reflected on strategies that they perceived were underutilized, underappreciated, or unconsidered. As with current strategies, these were suggested with the initiating party in mind. Surprisingly, faculty and policymakers alike felt like the onus remained in the hands of academia as we see from the numerous suggestions that follow.
Table 13: Underutilized strategies for engagement

<table>
<thead>
<tr>
<th>Face to Face Individual Interactions</th>
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<tbody>
<tr>
<td>1) Opportunistic attendance at relevant government meetings</td>
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<tr>
<td>2) Proactive pursuit of purposeful in-person meetings</td>
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<table>
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<tr>
<th>Institutionalized Collaborations</th>
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<tbody>
<tr>
<td>1) Establish standing joint committees (Eg: research priority setting)</td>
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<tr>
<td>2) Request government input to academic decisions (Eg: curricular review, student placements)</td>
</tr>
</tbody>
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<tr>
<th>Mediated Engagement</th>
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</thead>
<tbody>
<tr>
<td>1) Leverage academic knowledge brokers (Eg: colleagues and peers with greater contacts/stronger relationships, alumni networks)</td>
</tr>
<tr>
<td>2) Assign knowledge translation responsibility to Directorates of Research</td>
</tr>
<tr>
<td>3) Disseminate results through the media</td>
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<tr>
<th>Enhanced visibility</th>
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<tbody>
<tr>
<td>1) Improve digital profiles (Eg: of expertise, publications, or projects)</td>
</tr>
<tr>
<td>2) Promote multidisciplinary teams of academics across and within SPHs</td>
</tr>
<tr>
<td>3) Engage in persistent and recurrent “activism”</td>
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Face-to-face individual interactions

When asked how they would like to engage with academia, most policymakers encouraged an open door policy for faculty as long as they were proactive.

“If they sit and say ‘Oh if the government wants our advice, let them come!’ that is not going to work really...just visit me and ask me: ‘There’s this policy that has come or there’s this research that is coming and the academia is finding this. What do you think? How will that affect you?’” (Policymaker, MOPHS).

Policymakers professed a clear aversion to visitors seeking meetings without a clear objective, attempting to engage in political rather than professional discussions, or raising controversial issues. This was particularly pertinent due to looming presidential elections in May 2013 and subsequent ministerial reorganization.

Some indicated that there would be a welcome space for academia at monthly departmental meetings chaired by the Permanent Secretary. In addition, majority of policymakers signaled that they preferred in-person, face-to-face interaction to written documentations as it provided opportunity for network building. Furthermore, in-person communication was touted as an advantage with respect to concerns of documents being too long and complex. However,
respondents recommended leaving behind some printed evidentiary support for the meetings regardless.

When challenged with the belief that acquiring direct and dedicated time with policymakers seemed elusive to most faculty, we heard variations on a similar theme: “You see, it’s just a matter of writing a letter… to the officer and he responds and tells you ‘On this date we are ready for you. Come! We are giving you one hour.’ (Policymaker, MOMS). Faculty, however, were ambivalent in their responses. While some were optimistic, several believed that the open door policy was more rhetoric than reality. It was unclear, however, whether the skeptics based their opinions on prevalent beliefs or previous experiences.

Of note was the location of SPHs. Given the highly centralized approach to policy making in Kenya, geographic proximity to Nairobi emerged as a key determining factor for the feasibility, frequency and sustainability of faculty-policymaker engagement. Utilization of technology to bridge the distance was not commonplace and therefore placed SPHs located far from the capital at a particular disadvantage with respect to national policymaking. However, engagement at the local levels seemed predominant and important for faculty whose research was directed at locally relevant policy and practice.

*Institutionalized collaborations*

Policymakers and faculty respondents (KBs and Leadership in SPHs) both desired more collaborative activities as a means for relevant engagement, enhanced relationship building, and enriched EIDM. One common suggestion was that of joint research formulation. Several faculty respondents indicated that an effective method of sustained interest from policymakers was to “interest them in setting up of the questions, so that when you come with the answers they may
want to listen...They will be looking forward. I don’t know why it’s not adopted as a regular thing” (Leadership, SPHUoN). Policymakers shared a similar desire for protracted involvement.

Perhaps one reason for delayed or infrequent adoption of joint research formulation was a deficiency in appropriate and compelling communication as expressed by a member of MOPHS:

“we had one lecturer ...[who] was given like fifteen minutes [to explain the relevance of the research topic for policy]. He lectured once for one hour...but he could not get that he was boring...” [Policymaker, MOPHS]. So instead, the department changed their mode of interaction with this particular academic and requested his written comments in lieu of his verbal presentation. Another reason for infrequent collaborative activities was related to cost as alluded to by this respondent:

“At the time we were fortunate to get some funding for the Rockefeller Foundation and the research questions that were developed at that workshop, we were then able to implement. And from that workshop, the policymakers agreed to form a TWG...for more than ten years now we’ve been meeting them every four or so months” (Leadership, Knowledge Broker, GLUK).

However, academic faculty frequently emphasized that a key challenge to joint research formulation (or any research that was not a response to a call for proposals) was that limited funds for research were compounded by high teaching loads for faculty and few opportunities for interaction with policymakers to set a common research agenda. Research directions were thus dictated by student interests.

A policymaker at NACC explained that his frustrations with lack of local capacity for costing and assessments related to health policies led to discussions between the University of Nairobi School of Economics and his office, ultimately resulting in the school developing and offering courses in Health Economics. Engagement at this level was important since “most public health universities and private universities before they get clearance to teach any health related courses, their
Curricula deliberations for SPH programs were an important opportunity for formal and recurrent engagement that was valued by both parties. However, academic KBs and leadership conceded that the relevance of the theoretical curricula to practical skills was amiss.

“There’s disconnect. If dialogue had taken place between academicians, at the curricular development (stage) with the policy makers as to what it is that they expect, then we would have produced medical officers who are not only capable of treating, but also capable of taking care of these facilities. And probably we’d not have so many institutional or facility problems that we have in the country” [Leadership, KEMU]

The respondent further emphasized the importance of developing competency-based curricula for the next health workforce generation and the necessity for resulting degrees and diplomas to be recognized within the public sector scheme of service. Similarly, policymakers from all four government agencies in the study expressed a desire to be involved in the content and even structure of SPH curricula in order to keep public health programs relevant to government needs and priorities, as well as to adequately prepare graduates with the necessary skills for employment.

**Mediated engagement**

**Academic knowledge brokers**

All respondents recognized that some circumstances necessitate engagement of an intermediary, particularly in more hierarchical organizational cultures where line of command is important:

“The person approaching the policymaker needs to have enough authority...sometimes they are better communicated by the head of the institution in which the research has been done.” (Policymaker, MoLD).

While the concept of selecting the appropriate ‘messenger’ was supported by all faculty respondents, the perceived reasons were somewhat different: “we have done a stakeholder
analysis, and we have lined up all the people who we need to talk to ...we have to be strategic about who goes to see who, when. And part of that strategy, it goes all the way up to, up to tribe and gender as well” (Knowledge Broker, SPHUoN). The respondent further explained that the choice of messenger was directly associated with the intended audience and that the sensitivities of the dynamics in the Kenyan context must be heeded. In addition, one KB emphasized the importance of an individual’s communication skills as a point to consider when choosing who would be best placed to present research outcomes.

Furthermore, Leveraging academic KBs with stronger networks and access to policymakers was recognized as one method of strategic engagement: “if you want to change the policy when you don’t know that person, you create a media to that person, you create a third party who will know him so that bridge is the way how you see that policy” (Leadership, GLUK). While some mentioned individual KBs, others reasoned that Directorates of Research should be responsible for this “bridge” role.

**Directorates of research**

While structural manifestations of Directorates of Research at the university level were quite similar, their mandates varied (See Table 3 in Introduction). Perceptions of their potential value to faculty, as well as their effectiveness were largely negative. The ability of such directorates to serve as a knowledge translation platform, was met with skepticism with one respondent asserting that until EIDM becomes commonplace, “that structure will evolve and you can’t declare it into existence, even if you have money, you find that it has nothing to do just now because it has not been the culture. But once the culture begins to catch up, then it becomes automatic that we need clearing house for the research work and so on.” [Leadership, SPHUoN]
Media

Although media engagement occurs for purposes of SPH public relations, utilization of the media as a medium for engaging policymakers evoked mixed feelings amongst faculty. Some cautioned that while media may be useful for sensitizing the public to key health issues, the sharing of research results has often resulted in distortion as well as sensationalism. One such example relates to a study on the rollout of home-based HIV testing. Among other revelations, the results indicated that prevalence of HIV was higher among married couples. The media reported it as follows: “There are more married couples who are engaged in extra marital affairs and they get infected.” (Leadership, MUSOPH). The misrepresentation of the results raised much alarm, confusion, and friction between family members of those infected, ultimately jeopardizing the potential of home-based HIV testing and concomitantly fostering distrust in the media. The same respondent echoed concerns mentioned by other faculty with respect to the costs of media engagement being prohibitive, and that it was preferable to “entice journalists to seek you out rather than the other way around.” Despite a few unfortunate encounters, some faculty still advocated for involvement with the media as a means for highlighting research results, spotlighting academic researchers, and creating opportunities for networking with journalists. In instances of controversial or sensitive research results, a member of KEMU’s leadership cautioned that only those trained to talk to the press should be permitted to do so, i.e., those in leadership positions.

Policymakers emphasized newspapers as a key source of information, stating “if you have new research findings…put it in the newspapers. [Policymakers] don't read the journals, they may not attend the conferences…but they are going to read it in the papers if it is there” (Policymaker, MOPHS).
Some faculty however insisted that “the attitude is even whatever we write, even in the public place, even in the regular media is not heard. The scientific press is not heard at all in Kenya and even the academia do not read a lot of it” (Leadership, GLUK). Research on the East Coast Fever Vaccine provides evidence however of a positive media outcome. The Institute of Livestock Research (ILRI) perused the local newspapers to highlight optimistic research results. Although the Director of MoLD was involved throughout the process, media interest allowed for greater attention from the Permanent Secretary and the Minister ultimately leading to the ‘gazettement’ or public enforcement of access and use of the vaccine. In another example, a policymaker from MOPHS asserted that press conferences have at times attracted academics to contribute to stated policy positions by asking questions, posing challenges and pursuing further engagement on the issue. These had planted the seed for new relationships and brought to the fore experts that government was unaware of.

In general, policymakers indicated that more contribution from academics in the media, either in the form of commentaries, cartoons or reactions, would foster a better appreciation of existent local expertise. While several KBs and Leadership acknowledged that engagement with multiple audiences, including the media and the public, extended several advantages - raising the political profile of a public health issue, spotlighting key researchers, and creating potential for network building - they also explained a discomfort in such practices due to a lack of training or capacity in effective advocacy.

_Enhanced visibility_

**Online presence**

Regardless of mode of outreach, policymakers stated that although they prefer open and transparent sources of information such as faculty biographies on university websites and accessible research databases, they are often frustrated by the difficulty in obtaining relevant
information on experts. A review of SPH websites showed that of the 6 SPHs in this study, only 2 had complete profiles and CVs of all faculty publicly available online in addition to a list of publications by year and author. Furthermore, only 1 SPH provided links to freely downloadable research publications. According to some policymakers, SPHs lacking the requisite information on their websites, risked being excluded in the search for relevant expertise.

Policymakers and faculty provided several ideas for ‘low cost – high visibility’ activities such as profiling the faculty and their areas of specialty on the SPH websites, creating a staff skills inventory, linking the SPH to relevant ministerial websites, and appointing focal persons on both sides to assist with liaison-like activities.

**Promote multidisciplinarity**

Aside from SPHs needing to present themselves as institutions that are respected, credible, open to sharing knowledge, and relevant to ministries, policymakers requested that academics “market” or promote themselves as multidisciplinary rather than siloed, “because the challenge we've had is...you will get an area where you need more than one expertise. You, you just don’t need a doctor with a public health background; you may need an economist, you may need a statistician, you may need a planner and others” (Policymaker, MOPHS). While this seems obvious in theory, putting it into practice remains a challenge given the organizational culture of universities and the complexity of public health policy.

“Policy making is so diverse. It may be a health policy but you actually require people from political science, or people from school of agriculture if it's a nutrition issue.... The environment within the universities is really the failure to engage each other collaboratively to form meaningful networks...” [Knowledge broker, MUSOPH].

While the harmonization of SPHs to influence policy may not be commonplace, KBs recognized the need to leverage each other’s strengths as demonstrated here: “unless we collaborate...we’ll
never make it, so that if a university comes up with a major project, you can now bring on board other experts from the sister universities” (Leadership, Knowledge Broker, KUSPH).

Several policymakers recognized that multiple skills contribute to effective engagement, which may not always be found within one person but rather within a team of professionals. One example of this emerges from the time that external funding for HIV in Kenya was in jeopardy due to the global economic crisis in 2009 and shifts in donor priorities. The Kenyan government pre-emptively mobilized a team of experts to formulate a plan that would convince the treasury to support a sustainable HIV country strategy that would be more financially sound and less vulnerable to external withdrawal of funds and shocks.

“And we said, “... we will need people to do analytical work and, people who understand health, people who understand economics,” and that’s when we narrowed down to the universities; We also got the key government institutions that actually would have a stake in the financing. We also got development partners on board. So it was a mix of academia and all these other key players of finances for HIV.” (Policymaker, PresOffice).

Three years later, in December 2012, after much consultation, civic engagement and financial analysis, the cabinet memorandum for HIV sustainability was approved.

**Recurrent ‘activism’**

Policymakers emphasized the need for a persistent presence of academics in the form of ‘activism’, ‘advocacy’ or ‘lobbying’ as a strategy to be heard by an array of stakeholders.

“Away in the form of making a presentation to [Parliamentarians]. So you don’t just stop at the PS [Permanent Secretary] … or even your Minister, you go out to other ministers and to other you know, members of parliament - other people within the decision making body you know, make sure that they are also aware of this coming up issue so that they can support you in it.” [Policymaker, MoLD].

A policymaker from NACC explained that advocacy was often required in order to sustain political interest, particularly for sensitive issues with underlying moral implications such as health care for stigmatized, marginalized or vulnerable populations. Many academic faculty saw a
role for advocacy groups, and even civil society, in bringing key issues to the attention of policymakers; few believed that they themselves should use ‘advocacy’ as a strategy for engagement for fear that it might result in a reputation that belies researcher neutrality.

“You might, you will see me in the corridors all the time and then I happen to bump into ‘so-and-so’ and ‘so-and-so’ is part of this grouping...someone might begin to associate and say, “You must be associated with so-and-so’. And I don’t want to be associated with anyone. I mean, you want to be as independent as you can be.” (Knowledge Broker, SPH-UoN).

“Sometimes these relationships can be looked at as suspicious. If I have now a personal relationship with the minister for health, that relationship may not necessarily be looked at positively by everyone on my team, or even within the university leadership” [Leadership, Knowledge Broker, GLUK].

When it did occur, advocacy by faculty had been leveraged more as a result of frustration and as a method of last resort than a premeditated strategy. One faculty member explained his quest to garner attention for the AIDS crisis in Kenya: “Between 1990 to 1999 we [in academia] kept on telling the government that AIDS is going to kill. But the President had not listened to us for a long time. And most of us had to go to the activists, from academia to activism for anybody to hear us.” (Leadership, GLUK).

The ambivalence with respect to ‘activism,’ ‘advocacy’ and ‘lobbying’ expressed by academic faculty could perhaps be explained by the diverse interpretation of the terms, which ranged from concern with one’s physical attire – “So even the way you dress is activism...” (Leadership, GLUK) – to employment of diverse means of communication, to active political engagement. While all three terms imply partisan and political intentions, perhaps a tempered interpretation that neither supports political prejudices nor negates researcher independence is required. This interpretation seemed to resonate with comments from several policymakers who often referred to knowledge sharing and dissemination of research results as ‘advocacy.’
DISCUSSION
Boit asserts that universities in Kenya enhance the nation’s human resource capital, generate and disseminate knowledge relevant to national development, serve as repositories of expertise and forums for debate and analysis, and inculcate a sense of national unity and identity [69]. Contributing to public health policies through strategic engagement with policymakers can thus serve to complement the traditional three-pronged mandate of academic researchers in Kenya - teaching, research and public service.

Our study identified a variety of strategies for engagement between academic KBs and leadership from SPHs as well as national level policymakers across numerous ministries in Kenya. Although policymakers in this study initiated some efforts, most were spearheaded by academics. Moreover, policymakers were under the impression that SPHs were underutilizing several potentially effective strategies for engagement. While this may be true in general, academic KBs and leadership from SPHs often mentioned engaging in some of the very strategies that policymakers indicated were underutilized – such as leveraging the media, engaging in advocacy activities, pursuing face-to-face interactions. Furthermore, they possessed knowledge of the policy cycle and demonstrated the drive that policymakers deemed critical. This would suggest that while most faculty may not have the necessary networks or the appropriate strategies to engage with policymakers, KBs are distinct amongst their peers: they were attuned to the policy environment and to the processes required to engage with policymakers.

The strategies for engagement perceived to be effective are collated in the following section as recommendations. These would be relevant to all SPH faculty intending to engage policymakers with the intention for enhancing EIDM.

“You build a staircase of convincing people to change a policy...you don’t carry out the burden as if it’s yours of changing the policy. The burden has to be shared and that’s why networks and multiple approaches are so important to change policy” [Leadership, GLUK].
Increase faculty-led face-to-face to interactions

While conventional forms of engagement initiated by academia such as individual dissemination of academic publications, and distillation of research results were common [10,17,24,25,27,47,61], policymakers underscored that proactive but informal approaches such as spontaneous and relevant visits to government offices were favored, recommended and likely to develop into formal relationships over time. Unlike in the Ugandan context [48] the importance of face-to-face interactions emphasized here and reinforced in previous studies [23,70,71], are vital for relationship building in the Kenyan context. Embedded within this informality, however, is a required respect for appropriate protocol and hierarchy, which may differ across and within ministries and may dictate who from within the SPH would be offered an audience.

Leverage technologies to improve access

In an increasingly digitized and globalized world, a dynamic and attractive online presence is a necessity for SPHs as well as national government ministries. This may not only alleviate sole dependency on personal networks, and minimize challenges of ‘gatekeeping’ [72-75], it would support a more inclusive process of selection by providing greater access to policymakers and faculty whose professional reputations, and social networks are still in their infancy. Furthermore, investments in, and use of, technology to transcend the challenges imposed by geographic distance and encourage remote engagement would contribute to several objectives: utilization of expertise residing outside the capital, reduced travel costs, and expanded relationships and networks within academia as well as between academia and national government. However, with plans for devolution, the importance of contribution to local policies may become more important and possible.

Co-convene deliberative dialogues

While conferences and seminars were notably valuable for knowledge sharing and networking,
they were deemed less appropriate for policy influence. More innovative, frequent and sustained measures of institutional engagement that were focused and interactive forums were desired. With finances, time and logistics often described as the greatest barriers to engagement, most respondents however, preferred to let the responsibility of convening forums rest in the hands of the opposite party. The risks associated with this default are that either such forums do not occur, or if they do, they are limited in scope and prone to addressing unilateral interests. One potential solution would be to co-convene, co-fund, and co-manage deliberative policy dialogues similar to those that have demonstrated success in neighboring countries such as Burkina Faso, Cameroon, Ethiopia, Nigeria, Uganda and Zambia [76,77].

**Tailor curricula to meet the needs of students and policymakers alike**

SPH curricula need to remain relevant and current in order to meet the cognitive and practical needs of executive students and their ultimate workplaces. Ensuring relevant policymakers as well as KBs are able to partake in curricula design would assist SPHs in: implementing competency-based curricula; demonstrating their relevance to the health system; attracting key health policymakers, practitioners and managers to their programs; and providing opportunities for deliberate engagement and ongoing relationships between the SPH and government.

**Understand and navigate the political environment and the policy process**

The required sensitivity to political and social imperatives in the policymaking process is prevalent in the literature [15,29,78,79]. While all policymakers and academic KBs in this study deemed this critical, there was concern that in general, most academic faculty were barely cognizant of its importance. Ensuring that all faculty are familiar with the policymaking process, structures and people is consequently a direct responsibility for SPHs. For SPHs with faculty who have experience in policy influence, such as academic KBs, there is value in leveraging this knowledge for the benefit of the SPH. All the academic KBs in the study indicated utilizing their
own policy relevant experiences to enhance their curricula. Leveraging this to strengthen the
to enhance the knowledge of peers would be beneficial. For SPHs lacking in this expertise, capacity
strengthening through external courses or seminars in the short term and recruitment of health policy researchers in the long run would better position the institutions.

*Encourage the creation and maintenance individual academic faculty-policymaker networks*

In drawing upon global experiences, Bennett and Jessani [30] noted that knowledge translation often relies upon partnerships, collaborations, and personal contact between researchers and research-users. Consistent with views from program-based researchers in Kenya [10] and analogous to other studies, homophilous personal contacts with policymakers [80-82], past successful collaborations, and a history of entrenched trust [83-86] were important hallmarks of the social capital amassed by respondents. Similar to policymakers in Mexico [71], India and Ukraine [87], policymakers in Kenya indicated their inclination to nurture relations that were both *position-specific* (i.e. academic leadership), as well as *individual-specific* (i.e. renowned researchers).

According to Ball and colleagues, individual reputation is intrinsically linked to institutional reputation because evidence from “academics within prestigious universities lends legitimacy, authority and an air of rigour to ideas and research” [88]. Similar to other studies, [23], our data also demonstrates the reverse: where in the hierarchy a particular school of public health ranked with respect to being leveraged as a knowledge resource depended, to a large extent, on a policymakers’ relationship with individuals within that organization. While institutionalized connections are also important, feedback loops related to individual contributions within the institution are critical for optimal institutional cooperation [89]. In Ghana, academic-policymaker networks “are cited as the only functional communication channel between researchers and policy-makers” [52].
Support KB endeavors

KBs, similar to Coleman’s explanation of trustworthy intermediaries [85], serve as bridges between two parties – other academic peers and policymakers – who each have trust in the KB as demonstrated by individual relations but perhaps not in each other. Such KBs – given their characterization as externally influential as well as internally trusted [Manuscript 1] - could serve as advisors and mentors for academic peers as well as students wishing to build relationships with media in order to promote their research results and opinions. They could also be the critical link between SPHs and journalists trained in science reporting given the success of similar initiatives in Kenya [90]. SPHs therefore need to not only passively support knowledge-brokering activities but also actively invest in individual KB endeavors in order to build and maintain mediated institutional relations with policymakers.

Institutionalize relationships and expand networks

Sustained engagement between academics and policymakers over longer periods of time are important particularly because policy formulation is inherently a long process influenced by a multitude of actors, changing political imperatives and competing pressures [63,91]. While individual relations provide preferred political access in some instances and circumvent transactional costs inherent to institutional outreach in others, faculty were cautious of how such close alliances could be perceived. Furthermore, a dependence on personal relationships and individual social capital, while advantageous in the short term as in the case of KBs in this study as well as in Ghana [45], however, risks disruption over time as political structures alter [85]. Therefore, academic engagement with policymakers that are anchored on individual persons rather than organizational positions may suffer from a loss of social capital when individual mobility transpires [81,82,84] and render the network less stable [92,93]. This suggests that, similar to Vietnam [84], Korea and Peru [94], engagement between SPHs and the government
should be modeled on institutional structures and processes that, while facilitated through individual networks, are not entirely dependent on them.

Formalized institutional relationships for sustained engagement are likely to promote mutual appreciation of the roles and institutional cultures of each, and increase the likelihood of “developing policy and practice environments that are more reflexive and receptive to research evidence” [95]. Mexico, for instance, attributes its success of integrating research into decision-making to the rotation of researchers through government departments [71]. Other institutionalized mechanisms could include position-specific (as opposed to individual-specific) “pairing” of policymakers with academics similar to that between University of Uganda and Members of Parliament [94]. Given that several policymakers, practitioners and managers enroll as students in graduate SPH programs, the potential for such “pairing” already exists thereby providing an additional conduit for introduction, engagement and relationship building between academia and health policymakers. Additionally, similar to the University of Nairobi School of Economics [96], a multi-stakeholder academic advisory board/committee (similar to TWGs for academic engagement in policy) at the school or even departmental level could be considered.

*Engage in partnerships that facilitate research uptake*

Advocacy emerged as a necessary method for assigning importance to issues and for sustaining political interest. However, fear of political alignment, misinterpreted associations and compromised neutrality rendered some Kenyan academics cautious of recurrent engagement with the same policymakers. In a highly politicized system of civil service, and at politically charged time in Kenyan elections, this is not altogether surprising. When a more inclusive interpretation of “activism”, “advocacy” and “lobbying” is employed, however, it becomes apparent that policymakers and faculty alike expressed the need for research results to be shared with policymakers using a variety of mediums and strategies in order to attract and retain their
attention as in the examples of Land Law Reform and Agricultural Policy [61].

There exist national government organizations [97,98] as well as independent organizations [99-102] whose goals are to support EIDM endeavors in Kenya. Partnering with these organizations, with each other, as well as the media could facilitate advocacy of research implications. As Bird et al. state, “Government may be more likely to listen to researchers and civil society when they have a coherent and consistent message. This may be best achieved when several organizations coordinate” [47]. Needless to say, advocacy-like activities must be orchestrated with caution so as to uphold the reputation of academia as an honest source of knowledge with social and moral, rather than political, motivations for influencing policy.

Leverage the media

Kenyan policymakers’ dependence on newspapers as a source of research information, emphasizes the role of media as critical players in EIDM similar to that in other countries [47,103]. However, media engagement appears to be a fragile strategy in Kenya - one that is tainted with unfortunate experiences [104] and simultaneously laced with possibilities [90]. Hesitancy from some faculty - whether due to prior negative experiences, their relatively junior position in the academic hierarchy, or a genuine lack of capacity - suggests that Kenyan SPHs might consider exploring institutional, in additional to individual, links to science journalists and media houses. In the absence of such a structure, leveraging KBs comfortable with media engagement could be a viable step.

Limitations
Our study was constrained by two main factors: number of participants and political context.

First, we were only able to interview a relatively limited number of policymakers impacted by nominations of relatively senior policymakers, unreliable government email addresses, access to
limited publicly listed personal email addresses, and dependence on contact information provided by faculty respondents. However, the multitude of ministries that are involved in public health research and policy in Kenya provides a new perspective on strategies for engagement, each with varying levels of acceptability within each sub context. While more interviews may have provided additional potential strategies for engagement, we feel we reached saturation in current commonly used strategies in Kenya. Second, the study was conducted shortly before the May 2013 presidential elections, which were expected to bring changes to government structures and university governance. This may have influenced the number of policymakers willing and able to partake in the study. Furthermore, it may have affected respondent sensitivity to questions relevant to policy processes.

Responses were restricted to experiences during the time of the Coalition Government (2008-2012) for two purposes: the first was to limit responses to a period when governance processes were stable; the second was to minimize the potential for recall bias. Additionally, we note the importance of faculty involvement at various points in the research to policy process [16] and acknowledge that the opinions of non-KBs on strategies for engagement were not captured in this study. Although the structure of the government as well as the oversight of universities was altered in late 2013, we trust that processes for interactions will still be driven by prevailing attitudes and relationships within the networks of academia and policy that existed at the time of this study and therefore the suggested strategies for engagement are likely to remain valid.

Conclusion
Academic faculty as well as national level policymakers described reciprocal initiatives for engagement, some of which were considered more reliable and effective than others. Several suggestions for perceived underutilized and undervalued strategies also emerged, almost all of which were directed at SPHs. The current as well as suggested strategies for engagement in this study suggest a delicate balance between leveraging personal individual relationships and
establishing more sustained institutional partnerships. Regardless of the effectiveness of each strategy on its own, a combination of deliberate and opportunistic strategies is likely required for increased chances of success in academic faculty and policymaker engagement [103].

Recognition of local expertise and context knowledge by Kenyan policymakers proffer opportunities not only for more direct engagement between academia and policymakers but also indirect engagement through various other local mediating agencies. However, the fact that most suggestions for engagement were directed at SPHs indicates that policymakers either don't want to, don't know how to, or don't have the means to be the drivers of closing the gap between research and policy. The responsibility for engagement therefore continues to lie with academia. Identifying, encouraging and leveraging KBs in Kenyan SPHs can serve to fulfill this expectation.
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CONCLUSION
The complexity of health policymaking is compounded by the variety of actors that influence it. Amongst these actors are academic researchers who have the potential to contribute to Evidence-informed Decision Making (EIDM). Given that much knowledge is generated by academia, the challenge in its subsequent use is perhaps more of a knowledge exchange problem rather than one of production [1]. In the quest for EIDM, the importance of information flow through key actors suggests a role for Knowledge Brokers (KBs) serving as the link and catalyst for knowledge synthesis and exchange, enabling the flow of resources, and nurturing relations between academics and policymakers who would not otherwise have the opportunity to interact [2,3]. KBs therefore serve as bridges between research and policy [4-11].

This dissertation examined the academic-policymaker networks that exist between schools of public health (SPHs) and national health policymakers in Kenya using a mixed-method approach that employed SNA as well as qualitative interviews. Of particular interest was the existence and role of academic KBs - faculty who are not only well connected to policymakers but also sought by their peers for advice and knowledge on strategies to engage in EIDM – and their role in bridging academia and policy.

**Methodological Insights**

Similar to Wonodi et al., we employed SNA as a heuristic device for actor identification and network explorations. While the literature suggests using the betweenness score for the identification of KBs [12-14], we used multiple indicator composite – policymaker outdegree centrality, peer indegree centrality and betweenness centrality - normalized on manually re-calculated network size. Individuals scoring in the top 10th percentile on all three indicators were subsequently identified as KBs. This unique approach provided us with a more nuanced perspective on the placement of KBs within a network. Other methods for identification of KBs could be explored, particularly when multiple disparate networks such as SPHs are connected to
common and overlapping networks of policymakers through the strategic position of key actors in the overall web.

Employing a sequential mixed-methods approach offered opportunities for information triangulation (convergence of results), complementarity (elaboration and illustration), and development (using results from one method to inform another) [15], hence permitting a deeper understanding of the evolution of these networks and how they are shaped by key actors.

**SUMMARY OF FINDINGS**
The study revealed 6 unique institutional SPH networks of relationships with 109 policymakers across 16 ministries. The unexpected but welcome revelation that there exist a large number of ministries in which policy maker contacts were embedded highlights the multidisciplinary nature of public health concerns and research that extends beyond the two ministries dedicated to health. The prevalence, breadth and depth of academic-policymaker relations demonstrates the reach of SPHs and hence their current as well as potential influence on public health policies from a variety of perspectives and in a multitude of ways. Some SPHs had larger networks than others; others had unique relations with some ministries that others did not; each SPH therefore, within its own context and constraints, occupies a unique position within the academic-policymaker network. While a physical presence in the capital, Nairobi, provided its advantages such as easier logistical access to policymakers as well as opportunities to capitalize on strategic but spontaneous meetings, SPHs lacking in policy relevant research, mature networks, or KBs were further disadvantaged regardless of their location.

The existence of 7 academic KBs spanning 4 SPHs indicates that not only does social capital already exist but that communication patterns revolve through key individuals within the academic-policymaker network [16,17]. Five overarching characterizations of the attributes,
capacities and skills of academic KBs in Kenya emerged and included aspects of: sociodemographics, professional competence, experiential knowledge, interactive skills, and personal disposition. While none were sufficient in and of themselves, all were necessary to varying degrees in order to facilitate KB activities. Inherent to many of the characteristics mentioned was the dimension of accrued experience thereby underscoring that, for those who have the inclination and the passion, developing into a KB requires time – time to build credibility, time to hone one’s expertise, time to gain practical experience, and time to build a multitude of networks. In addition, KBs were mentioned as being propelled by a moral conscience, retaining a deep sense of social justice, and possessing a passion for research as a means to improving health. While there may be incentives to build capacities of faculty to enhance some of the soft skills as well as technical capacities, the findings indicate that several of the characteristics required to be a KB cannot simply be taught but are dependent to a certain extent on internal motivations.

While individual characteristics contribute to the ability of academic faculty to engage in knowledge brokering, sustainable processes are likely to depend on organizational policies, culture and modus operandi. Brokering thrives in organizations that provide a “collaborative environment, sufficient resources for the job, processes to identify and capture knowledge generated by both employees and outside parties, and a desire to build intellectual capital” [18]. While not all academic faculty may be inclined towards the translation of research results beyond traditional academic avenues of dissemination, for those who have the proclivity to do so, an environment that is supportive of such activities would facilitate the development and recognition of KBs. Appropriating time as well as financial resources required for knowledge translation and networking activities emerged as key. In addition, consideration of the value of such activities as well as their outcomes in faculty tenure and promotion systems could further validate such endeavors [19]. Hiring practices at SPHs could be guided by selection criteria that encompass
more than academic qualifications and seek to include diverse measures of competencies and inclinations for this type of work.

We sought to explore why the correlation between academic faculty with high policymaker outdegree and those with high peer indegree was lower than expected (0.41). Results revealed that the personal nature of relationships tended to introduce protective behaviors. Concerns of competition, fear of betraying established trust, and a genuine lack of outreach to peers resulted in some faculty playing a gatekeeping rather than brokering role. Social network mapping therefore, while capturing dynamic relations in a static format, urges us to consider elements of established relations that span several years in addition to instrumental relations that are more transient in nature. Recognition of individual social capital and the potential detrimental costs of jeopardizing such capital must, consequently, be respected and heeded.

Several other faculty, including gatekeepers, demonstrated a “potential” to be KBs by virtue of either their large external policymaker networks (policymaker outdegree) or their internal prominence as trusted peers (peer indegree). Of the two, peer trust appeared to be a larger determinant of whether academic faculty possessed the potential to be KBs. This suggests that efforts to enhance the capacity and role of those with high peer indegree, may result in increased potential of such faculty to develop into KBs.

Academic KBs, academic leadership, as well as national level policymakers demonstrated reciprocal initiatives for engagement, some of which were considered more reliable and effective than others. Although policymakers in this study initiated some efforts such as expert invitations and organized forums, most were initiated by academics. These fell under four main categories: directed dissemination, leveraging student professionals, honorary appointments and some forms of mediated engagement. Several suggestions for perceived underutilized and undervalued
strategies also emerged – almost all of which required SPHs to take the initiative. These included promoting face-to-face individual interactions, sustainable institutional collaborations, other forms of mediated engagement - particularly utilizing KBs and the media, and enhanced visibility. Knowledge of the political priorities, policy processes and key government office bearers emerged as critical for strategic engagement. The variety of strategies for engagement that were considered effective and desirable suggest a delicate balance between leveraging personal individual relationships and establishing more sustained institutional partnerships. Regardless of the effectiveness of each strategy on its own, a combination of deliberate as well as opportunistic strategies is required for increased chances of success in academic faculty and policymaker engagement.

**IMPLICATIONS FOR POLICY AND PRACTICE**
Several changes in Kenya are likely to compel academics and policymakers to engage at an enhanced level of debate, deliberation and discussion in the future for contributions to EIDM. These changes include: emphasis on advanced education for civil servants as underscored in the new Kenyan constitution [21]; restructuring of the public service with the aim of optimized competency-based staffing; requirements by the Universities Act of 2012 for academia to “support and contribute to the realization of national economic and social development; and disseminate outcomes of the research conducted by the university” [22]; and a new DFID-funded initiative designed to optimize the use of research in decision-making for Health in Kenya [23]. Understanding academic-policymakers networks, and elucidating strategies for leveraging these for enhanced EIDM would assist in appropriate preparation for the above-mentioned changes. The results of this study are therefore relevant to SPHs as well as national government agencies in Kenya.
We believe that evidence generated through SNA could be used by the national government in the following ways: (a) identifying the location and distribution of academic expertise in a country; (b) leveraging existing relations for the purposes of influencing health systems research and policy decisions; (c) building strategic networks in areas where gaps exist; (d) and understanding shared interests for the purposes of engaging in multidisciplinary and multi-sectoral governmental collaborations.

SPHs, in turn, would benefit from ascertaining their reputations as credible and relevant academic institutions for policymakers. Several recommendations for SPHs emerged through the study. These are summarized in
Box 2.
Box 2: Consolidated list of recommendations for Kenyan SPHs

In order to serve as valuable intellectual partners for governments, SPHs should develop strategies to enhance their profile, their visibility and their expertise. They should position themselves as relevant and reliable resources from which the government has much to gain as well as contribute to. Some of the recommendations emerging from our study are listed below.

**RECOMMENDATIONS**

- **Employ SNA to identify academic-policymaker networks:** A network mapping exercise similar to that in this study would assist SPHs in situating their relationships and expertise within the larger academic network of SPHs; uncovering the prevalence and distribution of individual academic-policymaker connections; demonstrating the reach of the SPH through individual academic-policymaker connections; identifying gaps in relationships (structural holes in networks); identifying academic KBs; and recognizing untapped potential KBs. Results of such analyses could lead to explorations of potential areas for synergies, coalition building and collective action with other SPHs; strategies for potential policy entry points based on identified gaps; supporting and leveraging identified KBs; enhancing individual capacity and environmental systems required to realize this potential; and spark initiatives for knowledge translation. A social capital analysis as well as a human capital analysis will create a platform for which further action on external policy influence as well as internal capacity strengthening can occur.

- **Enhance visibility and market expertise:** SPHs with publicly available profiles of their staff, their multidisciplinary research endeavors, and their publications are likely to attract more attention and interest than those who do not. We would go further to suggest that public mention of contributions to national and regional policies, guidelines and deliberations may also enhance the status and reputation of individuals as well as institutions engaged in public health. Kenyan SPHs should consider making these no-cost enhancements to their websites as soon as possible.

- **Institutionalize processes for sustained engagement:** The ubiquity of government responses in desiring input to public health curricula indicates that key government officials (eg in MOH, MoMS, MOPHS, MoEd) should be informed, invited and included in deliberations regarding enhancements or alterations to the content, structure and delivery of public health courses at the SPHs. SPHs whose curricula include aspects of the political processes as well as the practical competencies required in the professional setting are likely to gain favor amongst students, policymakers and practitioners alike. Creation of SPH or departmental advisory boards would allow sustained input of policymakers to SPH decisions and directions as well as maintain ongoing relations. Position-specific (as opposed to individual-specific) “pairing” of policymakers with academics would enhance mutual learning and benefit. Other formalized institutional relationships for sustained engagement such as co-location (policymakers as guest faculty, student/faculty attachments to government departments etc.), and collaboration (joint research priority setting and implementation) would be advantageous.
• **Invest in technological solutions**: To overcome the constraints introduced by physical distances, SPHs and national policymakers alike should explore the use of video conferencing and other technology so as to a) benefit from expertise that lies outside the capital, b) reduce costs associated to travel, c) enhance the profile of the SPH as relevant to public health policy - regardless of location, and d) expand relationships and networks between academia and government.

• **Engage with policymakers and peers alike**: There lie several opportunities for engagement in EIDM. SPHs and the faculty within should utilize existing strategies more effectively and evoke underutilized and underappreciated strategies more frequently. Given policymaker preferences for personalized interactions, face-to-face exchanges should be sought to the extent possible. Leveraging the media as well as KBs in situations where relationships are mediated by individual connections should be approached with requisite sensitivity and respect.

• **Increase faculty capacity to understand and navigate the policy environment**: Ensuring that all faculty are familiar with the policymaking process, structures and people is a direct responsibility for SPHs. Furthermore, SPHs and academic faculty should deliberately and systematically be aware of, take heed of, and seek out the multiple enviro-political windows of opportunity that facilitate interactions with each other. For SPHs with faculty who have experience in policy influence, such as academic KBs, there is value in leveraging their knowledge for the benefit of the SPH. Leveraging KB experiences in the policy arena to strengthen the knowledge of other faculty peers would be beneficial. For SPHs lacking in this expertise, capacity strengthening through external courses or seminars in the short term and new hires of health policy researchers in the long run could be a potential strategy.

• **Collaborate with other SPHs**: The fact that there are 6 SPHs in Kenya - all with varied specialties, unique experiences, and overlapping interests (as well as policymaker relations) - provides a unique opportunity for multi-disciplinary collaboration and coalition building in order to influence national policies.

• **Actively support and encourage knowledge brokering**: SPHs need not only to passively support knowledge-brokering activities but also actively invest in individual KB endeavors in order to build and maintain mediated institutional relations with policymakers. Discussions on enhancing links with policy makers through academic KBs could perhaps ignite a movement on recognition of promising faculty within the SPHs as well as spark initiatives for knowledge translation and brokering capacity building.
STUDY STRENGTHS
This is the first study of its kind to our knowledge that explores not only the existence of academic-policymaker networks and key actors within them, but also the characteristics of these actors and how they influence the networks. Although researchers have employed this method to explore the role of social networks in the governance of eye-care health systems in Ghana [24] as well as to examine decision-making processes on new vaccine introduction in Nigeria [25], social network mapping and traditional methods for identification of brokers were utilized in both cases. In exploring academic-policymaker networks in Kenya, an adaptive use of SNA paired with SSIs served as a novel approach to investigate the existence of academic KBs, their characteristics and their strategies for engagement.

The mixed-methods approach contributes to the credibility and confirmability of results. Interviews with policymakers as well as document and website review assisted with elaboration and verification of perceptions and experiences [26,27]. The various data collection instruments were pilot tested for validity and reliability. It is important to note that while the content of the instruments would not be directly generalizable due to the context specificity of the study, the constructs should have transferability across different academic settings.

SNA provided an objective means of identifying KBs, therefore avoiding researcher bias in preselecting these persons. The credibility of the qualitative results is enhanced by the student researcher’s prolonged engagement within the Kenyan context and her rapport with several academics in the country (see reflexivity section in introduction) [28,29]. Attempts were made to identify contradictory viewpoints so as to strengthen interpretation of results and peer review for data interpretation was sought so as to affirm conclusions and minimize bias. Prior to publication of results, member checking through select participant review of the manuscripts will contribute towards ensuring accuracy of representation. Dependability was pursued through mechanical
recording of interviews, inclusion of verbatim quotations from interviews, and maintenance of an audit trail of analytic methods [28,29].

We posit that the methods as well as results of this study are relevant to other SPHs outside of Kenya as well as to academic organizations in general that seek to understand and influence policy. Furthermore, some of the insights from policymakers could serve to inform others in decision-making situations at the local, regional as well as national levels in Kenya. Discussions on knowledge brokering in this context are also relevant to broader discussions on research capacity strengthening as well as EIDM strategies.

**STUDY LIMITATIONS**

It is quite common for research relevant to public health policy to occur in faculties of medicine, nursing, agriculture, economics, etc. While the results from this study provide insight to the academic-policy networks within public health, we acknowledge that as a result of limiting our respondents to faculty at SPHs and their networks with national policymakers, we may not have captured the full gamut of ‘public health’ researchers that influence policymakers in Kenya.

While our SNA data collection and analysis pursued a rigorous approach, there were some inherent weaknesses largely related to recall of participants and their sensitivity to naming alters that could lead to incomplete network information and error in the relative placement of individuals within networks. Furthermore, the caliber of policymakers nominated as well as constraints with contact information limited our respondents within this cadre. The nature of these study limitations is described in more detail in Manuscript 1.

Of note, strategies for engagement were documented as per the experiences shared by policymakers as well as KBs and leadership in the study. In the absence of opportunities to
observe these experiences and behaviors, we are unable to distinguish ideal strategies from realistic ones. Furthermore, we recognize that with the exclusion non-KB faculty, we may be missing another perspective on KB attributes, and faculty may seek out KBs for advice, and challenges to policymaker engagement.

Finally, the study was conducted between March and May 2013 when presidential elections were on the horizon and sweeping changes to government structures as well as university governance were expected. However, the connections that we were able to uncover suggested relationships that had been built and nurtured over several years. We therefore feel that the networks we describe are more likely to be influenced by loss of key individuals than they are of political shocks. We trust that processes for interactions will still be driven by prevailing attitudes and relationships within the networks of academia and policy that existed at the time of this study and therefore the suggested strategies for engagement are likely to remain valid.

FURTHER RESEARCH
We note that the complexities introduced by the greater political, regulatory and socio-cultural context within which academic faculty in Kenyan SPHs operate would be equally critical in understanding the reasons why certain perceptions and behaviors exist and how these affect the proclivity and ability of KBs to engage. The interplay between organizational and academic faculty KB characteristics would likely determine the extent to which a KB is able to engage in brokering activities [20]. Further understanding of the attitudes, the processes, the incentives and the challenges to knowledge brokering as imposed by the environment would shed further light on means to enhance this role, skill and profession.

We note a distinct set of academic faculty who were externally influential but not necessarily internally prominent or sought after as advisors. Similarly, there were others who held positions
of respect and trust among their peers but exhibited few if any connections to policymakers and thus didn’t necessarily enjoy analogous reputations beyond the walls of their institutions. An exploration of these “potential knowledge brokers” would assist in understanding what is needed for them to fully realize their potential if they would so wish to and how SPHs could further enhance their policymaker networks through some of these individuals. Further research on intrinsic and extrinsic motivators for KB engagement with policymakers, prevailing attitudes surrounding the value of research as well as the value of EIDM however, would provide deeper understanding of some of the preconditions for engagement. Additionally, a greater understanding of how evidence shared by academic KBs contributes to strengthening policy and practice would shed light on the role of KBs in not only contributing evidence to decision making processes but to enhancing EIDM outcomes.

While this study mapped out the academic-policymaker networks of SPH faculty with the assumption that these are pathways to policy influence, we acknowledge the role of NGOs, international donors, and civil society organizations amongst other actors that also play a role in influencing health policy. The position of these other actors and how they contribute to the flow of information in these academic-policymaker networks would shed light on the embeddedness of the networks from this study within the greater arena of policy influence. Our respondents indicated that external agencies assist local academics gain greater credibility within Kenya by way of recognizing them, bringing their expertise to policymaker attention, recommending them for TWGs as well as requesting their services as consultants on externally driven Kenyan projects. The relationships between academia and these other actors therefore would be interesting to explore further.
CONCLUSIONS
As documented in previous literature [30-32] and supported by respondents in this study, academic faculty do engage with policymakers as independent consultants, as technical experts and as committee members as required by external organizations or the government. Our study confirms furthermore that academic KBs do exist in the Kenyan public health context and are connected to both worlds they bridge – that of academia as well as that of policy – each with their own distinct networks of social capital. However, the disconnect between the two communities continues to persist suggesting that the number of KBs are insufficient, the role of KBs are underappreciated, the need for KBs is still uncertain or all of the above! As a consequence, the activities of academic faculty as KBs, are at times invisible resulting in an under appreciation of the social processes that provide the undercurrent for successful relations [33] and subsequent informal networks. The individual attributes, capacities and skills of KBs are not unique in and of themselves, but are advantageous when employed strategically and collectively. While some may be innate, others can be learned. Strategies for engagement, similarly, have more effect when tailored to policymaker preferences, are responsive to current political requirements, and personalized. Enhancing the visibility of KBs, supporting their roles as intermediaries both within the SPHs as well as externally, and leveraging their networks would begin to alleviate the continued disconnect and consequently serve to enhance the relevance of SPHs for public health policies, strengthen the capacity of faculty and students seeking to understand EIDM, and enhance cultural compatibility [34,35]. Effective engagement with policymakers in a variety of ways that are institutionalized, regular, sustainable and complementary would further serve to enhance relations.

REFERENCES


APPENDICES
APPENDIX A: INVENTORY OF SELECT KENYAN PARASTATAL AND INDEPENDENT RESEARCH INSTITUTES

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<tr>
<th>Institute or Initiative Type</th>
<th>NAME</th>
<th>MISSION/OBJECTIVE</th>
<th>FUNCTIONS</th>
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<tr>
<td>SCIENTIFIC RESEARCH INSTITUTE</td>
<td>Kenya Medical Research Institute (KEMRI)</td>
<td>The Kenya Medical Research Institute (KEMRI) is a state corporation established through the Science and Technology (Amendment) Act of 1979, as the national body responsible for carrying out health research in Kenya. Since its inception, KEMRI has developed a critical mass of scientists and technical personnel, to enable it mount a competitive research infrastructure to rank as a leading centre of excellence in health research both in Africa as well as globally.</td>
<td>• Carry out research in human health. • Cooperate with other research organizations/institutions of higher learning on matters of relevant research and training. • Work with other research bodies within and outside Kenya carrying out similar research • Cooperate with the Ministry of Public Health and Sanitation, the Ministry of Medical Services, the National Council for Science and Technology (NCST) and the Medical Sciences Advisory Research Committee in matters pertaining to research policies and priorities.</td>
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| International Centre of Insect Physiology and Ecology (ICIPE) | ICIPE’s mission is to help alleviate poverty, ensure food security and improve the overall health status of peoples of the tropics by developing and extending management tools and strategies for harmful and useful arthropods, while preserving the natural resource base through research and capacity building. | • Create knowledge for bioscience and technology information
• Build capacity of researchers & institutions in Africa
• Develop policy by working with African governments and institutions at the local level, & policy-making organizations at regional/international levels.
• Reduce poverty |
| --- | --- | --- |
| The International Food Policy Research Institute (IFPRI) | This mission flows from the CGIAR mission: "To achieve sustainable food security and reduce poverty in developing countries through scientific research and research-related activities in the fields of agriculture, livestock, forestry, fisheries, policy, and natural resources management." | • Identify and analyze alternative international, national, & local policies in support of improved food security & nutrition.
• Capacity strengthening of people & institutions in developing countries that conduct research on food, agriculture, and nutrition policies;
• Engage in policy communications, link research & policy |
| The African Population and Health Research Center (APHRC) | APHRC is a non-profit, non-governmental international organization committed to conducting high quality and policy-relevant research on population and health issues facing sub-Saharan Africa. | • Contribute to science through high impact research projects and publications (primary data collection, secondary data analysis, syntheses)
• Inform Policy Decisions with research evidence;
• Strengthen Research Capacity in sub-Saharan Africa |
| The International Livestock Research Institute (ILRI) | ILRI is part of the CGIAR that “works with partners to help poor people keep their farm animals alive and productive, increase and sustain their livestock and farm productivity and find profitable markets for their animal products.” | • Research
• Capacity building |
<table>
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<th>POLICY RESEARCH</th>
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<tr>
<td><strong>Kenya Institute for Public Policy Research and Analysis (KIPPRA)</strong></td>
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<tr>
<td>- Conducting objective public policy research and analysis;</td>
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<td>- Informing and providing advice during policy-making process;</td>
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<tr>
<td>- Building capacity of the Government of Kenya to absorb, undertake and analyze public policy;</td>
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<td>- Strengthening working modalities with the Government of Kenya and other stakeholders;</td>
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<td>- Enhancing KIPPRA’s institutional capacity in order to effectively support the policy process.</td>
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<th>RESEARCH CAPACITY STRENGTHENING</th>
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<td><strong>Initiative to Strengthen Health Research Capacity in Africa (ISHReCA)</strong></td>
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| **The Consortium for Advanced Research Training in Africa (CARTA)** | CARTA is a program that aims to enhance the skills of doctoral students in health research, particularly through the acquisition of skills in multidisciplinary research and knowledge translation |
| - PhD research grants |
| - PhD capacity building in KT |
# RESEARCH COORDINATION

**Consortium for National Health Research (CNHR)**

[http://cnhrkenya.org](http://cnhrkenya.org)

CNHR was established in order to address a broad spectrum of issues affecting health research, including research coordination, prioritization of research activities, training, strengthening the legislative environment and enhancing the sharing of knowledge in order to strengthen the capacity of health research in Kenya.

- Research and training grants
- Internship programs
- Resource mobilization
- Create Centres of Excellence (COE)
- Create a health research repository
- Translation of health research evidence into policy

# KNOWLEDGE TRANSLATION

**African Institute for Development Policy (AFIDEP)**

[www.afidep.org](http://www.afidep.org)

AFIDEP is a non-profit organization whose mission is to facilitate the creation, translation, and utilization of research evidence for policy formulation and resource allocation in Africa.

- Knowledge generation through synthesis of evidence, policy analysis
- Evidence-based policy advocacy
- Capacity building in Knowledge Translation and Use

**Regional East African Community Health (REACH) Policy Initiative**


The REACH-Policy Initiative in Kenya is a permanent, dedicated, professional mechanism operating in East African Health Research Commission (EAHRC), an Institution of the EAC. It will function as an intermediary or “a bridge” linking researchers with policy-makers - an independent “Knowledge broker.” It seeks to access, synthesize, package and communicate evidence required for policy and practice.

- Convene and manage fora involving policy makers and researchers
- Facilitate access to research
- Commission syntheses of research of high policy relevance
- Package research syntheses for high policy impact
- Communicate/advocate/inform policy and research agendas
- Strengthen regional capacity for knowledge translation
APPENDIX B: DESCRIPTIVE OVERVIEW OF FACULTY RESPONDENTS

Due to several faculty being away for various reasons such as sabbaticals, study leave, student field training or illness a complete census was not possible. However, out of a total 157 full-time faculty, we were able to reach between 81-94% of those who were onsite at each institution at the time of the study, thereby totaling 130. Exclusion of 6 part time faculty that had initially been surveyed yielded a final sample size of 124 across the 6 schools.

The overview below provides a sense of the contexts in which the faculty respondents function by virtue of understanding the demographics of their collective peers. Table 14 captures some of the socio-demographic characteristics of the 124 faculty across the 6 SPHs.

<p>| Table 14: Faculty respondent overview |
|--------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                                      | Moi University School of Public Health | University of Nairobi School of Public Health | Great Lakes University, Kisumu | Maseno University School of Public Health and Community Development | Kenya Methodist University | Kenyatta University School of Public Health |
|                                       | n (%)          | n (%)           | n (%)           | n (%)          | n (%)          | n (%)          |
| Sex                                    |                |                |                |                |                |                |
| Male                                   | 11 (50%)       | 9 (60%)        | 12 (41%)       | 16 (67%)       | 4 (24%)        | 12 (71%)       |
| Female                                 | 11 (50%)       | 6 (40%)        | 17 (59%)       | 8 (33%)        | 13 (76%)       | 5 (29%)        |
| Total                                  | 22 (100%)      | 15 (100%)      | 29 (100%)      | 24 (100%)      | 17 (100%)      | 17 (100%)      |
| Academic Position                      |                |                |                |                |                |                |
| Tutorial Fellow                        | 0 (0%)         | 1 (7%)         | 0 (0%)         | 2 (8%)         | 1 (6%)         | 10 (59%)       |
| Assistant Lect.                        | 4 (18%)        | 0 (0%)         | 6 (21%)        | 7 (29%)        | 8 (47%)        | 0 (0%)         |
| Lecturer                               | 12 (55%)       | 7 (47%)        | 16 (55%)       | 7 (29%)        | 5 (29%)        | 3 (18%)        |
| Senior Lect.                           | 5 (22%)        | 2 (13%)        | 3 (10%)        | 1 (4%)         | 2 (12%)        | 2 (18%)        |
| Associate Prof.                        | 1 (5%)         | 4 (27%)        | 3 (10%)        | 5 (21%)        | 1 (6%)         | 1 (6%)         |
| Professor                              | 0 (0%)         | 1 (7%)         | 1 (3%)         | 2 (8%)         | 0 (0%)         | 0 (0%)         |
| Total                                  | 22 (100%)      | 15 (100%)      | 29 (100%)      | 24 (100%)      | 17 (100%)      | 17 (100%)      |
| Education                              |                |                |                |                |                |                |
| Bachelors                              | 0 (0%)         | 0 (0%)         | 0 (0%)         | 0 (0%)         | 1 (6%)         | 0 (0%)         |
| Masters/Medic.                         | 13 (59%)       | 8 (53%)        | 23 (79%)       | 11 (45%)       | 10 (59%)       | 10 (59%)       |
| Doctoral (PhD)                         | 9 (41%)        | 7 (47%)        | 6 (20%)        | 12 (50%)       | 6 (35%)        | 7 (41%)        |
| Post-Doc                               | 0 (0%)         | 0 (0%)         | 0 (0%)         | 1 (4%)         | 0 (0%)         | 0 (0%)         |
| Total                                  | 22 (100%)      | 15 (100%)      | 29 (100%)      | 24 (100%)      | 17 (100%)      | 17 (100%)      |
| Countries where various qualifications obtained |                |                |                |                |                |                |</p>
<table>
<thead>
<tr>
<th>Country</th>
<th>TFs (%)</th>
<th>Lecturer (%)</th>
<th>PhD (%)</th>
<th>Other (%)</th>
<th>Full (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>21 (95%)</td>
<td>14 (93%)</td>
<td>26 (90%)</td>
<td>21 (88%)</td>
<td>16 (94%)</td>
</tr>
<tr>
<td>Uganda</td>
<td>0 (0%)</td>
<td>1 (7%)</td>
<td>3 (10%)</td>
<td>1 (4%)</td>
<td>1 (6%)</td>
</tr>
<tr>
<td>Tanzania</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (3%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Other African country</td>
<td>2 (9%)</td>
<td>1 (7%)</td>
<td>3 (10%)</td>
<td>1 (4%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>USA</td>
<td>2 (9%)</td>
<td>4 (27%)</td>
<td>4 (10%)</td>
<td>3 (13%)</td>
<td>3 (18%)</td>
</tr>
<tr>
<td>Canada</td>
<td>2 (9%)</td>
<td>1 (7%)</td>
<td>0 (0%)</td>
<td>1 (4%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Australia</td>
<td>2 (9%)</td>
<td>0 (0%)</td>
<td>1 (3%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>UK</td>
<td>4 (18%)</td>
<td>5 (33%)</td>
<td>2 (7%)</td>
<td>4 (17%)</td>
<td>2 (12%)</td>
</tr>
<tr>
<td>Germany</td>
<td>1 (5%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>1 (5%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (4%)</td>
<td>1 (6%)</td>
</tr>
<tr>
<td>Other European country</td>
<td>3 (14%)</td>
<td>1 (7%)</td>
<td>3 (10%)</td>
<td>1 (4%)</td>
<td>1 (6%)</td>
</tr>
<tr>
<td>Other Asian country</td>
<td>1 (5%)</td>
<td>0 (0%)</td>
<td>2 (7%)</td>
<td>1 (4%)</td>
<td>1 (6%)</td>
</tr>
</tbody>
</table>

The academic career system in Kenya provides for entry level teaching positions that serve as continued mentoring traineeships for recent Masters level graduates. Termed Tutorial Fellows (TFs), these positions are often reserved for those entering their academic careers but currently pursuing PhDs. These TFs are not restricted to pursuing their PhDs at the SPHs where they have teaching responsibilities. Among respondents at KUSPH, 10 out of 17 (59%) were TFs. This proportion varied between 0% and 8% at the other SPHs. The Lecturer position was the most dominant at almost all SPHs with MUPSH and GLUK boasting 55% of their faculty at this level. Of the respondents at KEMU, the most frequently mentioned academic position was that of an Assistant Lecturer (47%). As expected, the absolute numbers as well as the proportion of Full Professors in the SPHs were quite small: 4/124 (3%) across all SPHs and between 0% and 8% at individual institutions. In all four cases these were men.

Overall, gender distribution across faculty as a whole was fairly evenly distributed. However, some SPHs had a more skewed distributed with close to 70% at ESPUDEC and KUSPH faculty being male. The case at KEMU seemed to be inverse with 76% being female. When analyzed by sex (Figure 10) there seemed to be equal proportions of TFs but higher proportions of female faculty up to the level of Lecturer. At academic positions above this, the scale shifts to indicate increasing proportions of men attaining higher positions.
The difference in academic positions that were senior in title (Senior lecturer, Associate Professor, Professor) between sexes indicated that women were 69% less likely to hold such positions as compared to men ($\chi^2 = 7.88$, $p=0.005$). An analysis of leadership or administrative positions indicates that out of 34 faculty in leadership positions, only 38% were female. While this is not proportional to the equal gender distribution of faculty we see across the schools in general, it parallels what was observed for academic position trajectories.

Given that academic promotion systems in Kenya are similar to that in other countries, in that they are dependent first and foremost on academic qualifications, we sought to explore the association between academic positions and education levels with the expectation that those with higher degrees are more likely to hold higher positions in general. All faculty except one among the respondents had at the minimum a Masters or Medical degree: 45% of ESPUDEC respondents, 53% at SPHUoN, 59% at MUSPH, KEMU and KUSPH, and the highest proportion at GLUK at 79%. There were a total of 48 faculty (38%) who reported having attained a doctoral degree or postdoctoral fellowship as their highest academic qualification. This varied across
SPHs with the smallest proportion at GLUK 6/29 (20%) followed by KEMU (35%), MUSPH and KUSPH (41%), SPHUoN 47% and the highest at ESPUDEC (54%). In absolute numbers however, all schools were similar with between 6 to 9 faculty in this position. Of those with Masters or medical degrees only 6/75 (8%) held senior positions, whereas 29/48 (60%) of those with doctoral or postdoctoral qualifications held such titles. The association between education level and academic position, was statistically significant (Fischer’s exact = 0.000) which is not surprising given that University policies require masters degrees for promotion to a lecturer position and doctoral degrees for senior lecturer positions and above.

An observation that 19/48 PhD/post-doc holders were still occupying more junior level faculty positions could be explained by the fact that academic qualifications serve as minimum standards that are to be supported by a set number of publications which oftentimes leads to delayed academic promotions. The total numbers of faculty with doctoral degrees or higher that were in junior positions were similar across genders (9/19 men versus 10/19 women).

An analysis of the relationship between administrative position and education level showed that three quarters of senior leadership positions were held by those with a doctoral degree or higher, of which 19 (67%) were men. Gender parity would be proportional to the distribution of male and female faculty with doctoral degrees: 44% and 33% respectively. However, the difference was not statistically significant (Fischer’s exact: 0.847). Two thirds of faculty in leadership positions held senior academic positions (senior lecturer, associate professor, professor), which would imply that leadership positions such as department heads, directors, deans, and principals are reserved for those with advanced academic qualifications and extensive publication records.

Countries where faculty gained their academic qualifications were quite varied. At a minimum each SPH had at least 88% of respondents having completed at least one degree in Kenya with up
to 95% at MUSOPH. Ten respondents in total (8%) had obtained all their qualifications from abroad. Three of these were from ESPUDEC and three from GLUK, and one each from the other 4 institutions. Nine people mentioned studying in another African country such as include Botswana, South Africa (3), Burundi, Cameroon, Ghana (2), and Zimbabwe. Ten people mentioned studying in another European country with 3 people indicating Israel and 3 in Belgium. Other European countries mentioned were Russia (2), Austria, Denmark and France. One person mentioned two European countries. Across all six SPHs approximately a quarter (26%) had studied either in the UK or USA or both. With respect to studying in Asia, 3 out of 6 persons mentioned India and on individual each mentioned Japan, Pakistan and Thailand. The proportion of faculty surveyed who indicated having pursued at least one degree outside of Kenya was highest at SPHUoN and MUSOPH at 73% with proportions ranging between 33%-45% among the other four SPHs.
### APPENDIX C: DATA COLLECTION INSTRUMENTS: SOCIOMETRIC SURVEY

#### 1. DEMOGRAPHIC AND SOCIOECONOMIC INFO

<table>
<thead>
<tr>
<th>UNIQUE IDENTIFIER</th>
<th></th>
</tr>
</thead>
</table>
| **F1.1** Organization name | 1= Moi University  
  2= University of Nairobi  
  3= Great Lakes University of Kenya  
  4= Maseno University  
  5= Kenya Methodist University  
  6= Kenyatta University |
| **F1.2** Years with Organization |  |
| **F1.3** Academic Position (*check all that apply*) | 1= Tutorial fellow/ Research Fellow  
  2= Assistant Lecturer  
  3= Lecturer  
  4= Senior Lecturer  
  5= Assistant Professor;  
  6= Associate Professor;  
  7= Professor;  
  8= Director/Department Chair;  
  9= Associate Dean;  
  10= Dean;  
  11= Principal;  
  12= Vice Chancellor;  
  13= Chancellor  
  88= Other: ____________ |
| **F1.4** Years in current position |  |
| **F1.5** Sex | 0= Male  
  1= Female |
<table>
<thead>
<tr>
<th>F1.6 Year of birth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

| F1.7 Highest academic qualification obtained | 1=University or college diploma; 2=Bachelors degree 3=Masters degree or medical degree; 4=Doctoral degree (eg PhD) 5=Post doctoral fellowship 88=Other (Specify)____________________ |
|--------------------------------------------|

| F1.8 Countries where qualifications obtained (check all that apply) | 1=Kenya 2=Uganda 3=Tanzania 4=other African country (Specify) 5=USA 6=Canada 7=Australia 8=UK 9=Germany 10=The Netherlands 11=other European country (Specify) 12=other Asian country (Specify) 88=other (Specify) |
|-------------------------------------------------------------------|

<table>
<thead>
<tr>
<th>F1.9 Primary area of research expertise</th>
<th>1=Infectious diseases (which…...); 2=Non communicable diseases (which…...); 3=Maternal and/or child health; 4=Reproductive health 5=Health systems governance; 6=Health care delivery; 7=Health care financing; 8=Human resources for health 9=Environmental health 10=Nutrition, food safety, food security 11=Health services management 12=Health policy 13=Health Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>14</td>
<td>Health promotion</td>
</tr>
<tr>
<td>15</td>
<td>Occupational Health and safety</td>
</tr>
<tr>
<td>16</td>
<td>Epidemiology/disease control</td>
</tr>
<tr>
<td>17</td>
<td>Biomedical Science and Technology</td>
</tr>
<tr>
<td>18</td>
<td>Health Economics</td>
</tr>
<tr>
<td>19</td>
<td>Microbiology/immunology/virology</td>
</tr>
<tr>
<td>20</td>
<td>Measurement/biostatistics</td>
</tr>
<tr>
<td>88</td>
<td>Other (Specify)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column</th>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1.10</td>
<td>Have you ever been engaged in national policy decision-making?</td>
<td>0 = no</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = yes, directly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = yes, indirectly (Specify)</td>
</tr>
<tr>
<td>F1.11</td>
<td>Are you currently active in national policy decision-making?</td>
<td>0 = no</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = yes, directly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = yes, indirectly (Specify)</td>
</tr>
<tr>
<td>F1.12</td>
<td>Are you Full-time or part time staff</td>
<td>0 = part time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = Full-time</td>
</tr>
<tr>
<td>F1.13</td>
<td>Primary geographic location</td>
<td>1 = Nairobi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = Kisumu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 = Eldoret</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 = Meru</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 = Siriba</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 = Homa Bay</td>
</tr>
<tr>
<td>F1.14</td>
<td>Secondary geographic location</td>
<td>1 = Nairobi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = Kisumu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 = Eldoret</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 = Meru</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 = Siriba</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 = Homa Bay</td>
</tr>
</tbody>
</table>
2. NETWORKS

I will ask you to provide a list of policy makers, researchers at the SPH and external peers whom you interact with when bringing research results to the policy arena and when relaying policy priorities to researchers. By “interacted,” I mean individuals who you worked with or communicated with in the context of the issue at hand. These names will help me to build a map of the network of people. If I have not already contacted them, I will add them to my list of people to interview and survey. I will not tell them who identified them, and it is possible that another respondent has already identified them. In the final analysis, maps will not be linked to individual names, but I will describe groupings according to their relevant characteristics (for example, organizations or research expertise). [Here I will show a sociogram as an example of what the output will look like]. It is up to you whether you do or do not want to name an individual contact. Do you have any questions?

a. Policy makers: Could you provide me with a list of policy makers at the national level with whom you have shared or discussed research evidence either in the past or currently? These could be members of parliament, ministers, heads of departments.

<table>
<thead>
<tr>
<th>Name 1 Position and Org:</th>
<th>Name 2 Position and Org:</th>
<th>Name 3 Position and Org:</th>
<th>Name 4 ----upto 7 Position and Org:</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2.A1 How long have you known</td>
<td>____ yrs ____ mos</td>
<td>____ yrs ____ mos</td>
<td>____ yrs ____ mos</td>
</tr>
<tr>
<td>F2.A2 How do you know</td>
<td>1. Classmates</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Friends</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Colleagues (where)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Alumni connection</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Relative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Introduced by someone</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Classmates</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Friends</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Colleagues (where)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Alumni connection</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Relative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Introduced by someone</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

174
|---|---|---|---|---|---|---|---|---|
**F2.A6 How often do you communicate with _____?**

| 1. | 1-2 times a week | 1. | 1-2 times a week | 1. | 1-2 times a week | 1. | 1-2 times a week |
| 2. | 1-2 times a month | 2. | 1-2 times a month | 2. | 1-2 times a month | 2. | 1-2 times a month |
| 3. | 3-5 times a year | 3. | 3-5 times a year | 3. | 3-5 times a year | 3. | 3-5 times a year |
| 4. | 1-2 times a year | 4. | 1-2 times a year | 4. | 1-2 times a year | 4. | 1-2 times a year |
| 5. | Annually | 5. | Annually | 5. | Annually | 5. | Annually |

**F2.B1 How long have you known ______?**

<table>
<thead>
<tr>
<th>Name 1</th>
<th>Name 2</th>
<th>Name 3</th>
<th>Name 4 ---- UPTO 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>___yrs ___mos</td>
<td>___yrs ___mos</td>
<td>___yrs ___mos</td>
<td>___yrs ___mos</td>
</tr>
</tbody>
</table>

**F2.B2 Who initiated the relationship/communications?**

| 4. | Intermediary (who) | 4. | Intermediary (who) | 4. | Intermediary (who) | 4. | Intermediary (who) |

**F2.B3 What is the reason for engagement?**

| 1. | Assist in knowledge translation/ research communication capacity building, | 1. | Assist in knowledge translation/ research communication capacity building, | 1. | Assist in knowledge translation/ research communication capacity building, | 1. | Assist in knowledge translation/ research communication capacity building, |
| 2. | Provide advice on research to policy strategies | 2. | Provide advice on research to policy strategies | 2. | Provide advice on research to policy strategies | 2. | Provide advice on research to policy strategies |
| 3. | Utilize their research results in policy discussions | 3. | Utilize their research results in policy discussions | 3. | Utilize their research results in policy discussions | 3. | Utilize their research results in policy discussions |
| 4. | Assist in KT activities such as policy dialogues, policy | 4. | Assist in KT activities such as policy dialogues, policy | 4. | Assist in KT activities such as policy dialogues, policy | 4. | Assist in KT activities such as policy dialogues, policy |

b. **Colleagues within SPH who have approached you:** In relaying research results from your SPH, could you provide a list of faculty who have approached you to assist with sharing their research results with policymakers? eg: assist in knowledge translation capacity building, provide advice on research to policy strategies, utilize their research results in policy discussions, assisted in KT activities such as policy dialogues, policy briefs, press releases etc…
<table>
<thead>
<tr>
<th><strong>F2.B4</strong> What is the primary method of communication?</th>
<th><strong>F2.B5</strong> How often has ____ approached you for advice or assistance on evidence to policy initiatives?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Email</td>
<td>1. 1-2 times a week</td>
</tr>
<tr>
<td>2. Telephone</td>
<td>1. 1-2 times a week</td>
</tr>
<tr>
<td>3. SMS/Text</td>
<td>2. 1-2 times a month</td>
</tr>
<tr>
<td>4. Face to face meetings</td>
<td>3. 3-5 times a year</td>
</tr>
<tr>
<td>5. Group meetings (conferences, TFs, TWGs)</td>
<td>4. 1-2 times a year</td>
</tr>
<tr>
<td>88. Other</td>
<td>5. Annually</td>
</tr>
<tr>
<td>88. Other</td>
<td>6. Event/project dependent</td>
</tr>
</tbody>
</table>

---

c. Colleagues within SPH who you have approached: In relaying research results from your SPH, could you provide a list of academic researchers who you have approached to assist with sharing your research results with policymakers? eg: seek assistance in knowledge translation capacity building, get advice on research to policy strategies, request utilization of your research results in policy discussions, seek assistance in KT activities such as policy dialogues, policy briefs, press releases etc…

<table>
<thead>
<tr>
<th><strong>F2.C1</strong> How long have you known ____</th>
<th><strong>Name 1</strong></th>
<th><strong>Name 2</strong></th>
<th><strong>Name 3</strong></th>
<th><strong>Name 4 ---- UPTO 7</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>____yrs ____mos</td>
<td>____yrs ____mos</td>
<td>____yrs ____mos</td>
<td>____yrs ____mos</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>F2.C2</strong> Who initiated the relationship/communications?</th>
<th><strong>Name 1</strong></th>
<th><strong>Name 2</strong></th>
<th><strong>Name 3</strong></th>
<th><strong>Name 4 ---- UPTO 7</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Intermediary (who)</td>
<td>4. Intermediary (who)</td>
<td>4. Intermediary (who)</td>
<td>4. Intermediary (who)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>F2.C3</strong> What is the reason for</th>
<th><strong>Name 1</strong></th>
<th><strong>Name 2</strong></th>
<th><strong>Name 3</strong></th>
<th><strong>Name 4 ---- UPTO 7</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Seek assistance in knowledge translation/</td>
<td>1 Seek assistance in knowledge translation/</td>
<td>1 Seek assistance in knowledge translation/</td>
<td>1 Seek assistance in knowledge translation/</td>
<td>1 Seek assistance in knowledge translation/</td>
</tr>
<tr>
<td>Engagement?</td>
<td>Research Communication</td>
<td>Capacity Building,</td>
<td>Research Communication</td>
<td>Capacity Building,</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------</td>
<td>-------------------</td>
<td>------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>2. Get advice on research to policy strategies</td>
<td>2. Get advice on research to policy strategies</td>
<td>2. Get advice on research to policy strategies</td>
<td>2. Get advice on research to policy strategies</td>
<td>2. Get advice on research to policy strategies</td>
</tr>
<tr>
<td>3. Request utilization of your research results in policy discussions</td>
<td>3. Request utilization of your research results in policy discussions</td>
<td>3. Request utilization of your research results in policy discussions</td>
<td>3. Request utilization of your research results in policy discussions</td>
<td>3. Request utilization of your research results in policy discussions</td>
</tr>
<tr>
<td>4. Seek assistance in KT activities such as policy dialogues, policy briefs, press releases etc..</td>
<td>4. Seek assistance in KT activities such as policy dialogues, policy briefs, press releases etc..</td>
<td>4. Seek assistance in KT activities such as policy dialogues, policy briefs, press releases etc..</td>
<td>4. Seek assistance in KT activities such as policy dialogues, policy briefs, press releases etc..</td>
<td>4. Seek assistance in KT activities such as policy dialogues, policy briefs, press releases etc..</td>
</tr>
<tr>
<td>5. Share policy priorities for research</td>
<td>5. Share policy priorities for research</td>
<td>5. Share policy priorities for research</td>
<td>5. Share policy priorities for research</td>
<td>5. Share policy priorities for research</td>
</tr>
<tr>
<td>6. Request introductions to policy makers</td>
<td>6. Request introductions to policy makers</td>
<td>6. Request introductions to policy makers</td>
<td>6. Request introductions to policy makers</td>
<td>6. Request introductions to policy makers</td>
</tr>
<tr>
<td>88. Other</td>
<td>88. Other</td>
<td>88. Other</td>
<td>88. Other</td>
<td>88. Other</td>
</tr>
</tbody>
</table>

| F2.C4 What is the primary method of communication? | 1. Email | 1. Email | 1. Email | 1. Email |
| | 2. Telephone | 2. Telephone | 2. Telephone | 2. Telephone |
| | 3. SMS/Text | 3. SMS/Text | 3. SMS/Text | 3. SMS/Text |
| | 4. Face to face meetings | 4. Face to face meetings | 4. Face to face meetings | 4. Face to face meetings |
| | 5. Group meetings (conferences, TFs, TWGs) | 5. Group meetings (conferences, TFs, TWGs) | 5. Group meetings (conferences, TFs, TWGs) | 5. Group meetings (conferences, TFs, TWGs) |
| | 88. Other | 88. Other | 88. Other | 88. Other |

| F2.C5 How often have you approached ______ for advice/assistance on evidence to policy initiatives? | 1. 1-2 times a week | 1. 1-2 times a week | 1. 1-2 times a week | 1. 1-2 times a week |
| | 2. 1-2 times a month | 2. 1-2 times a month | 2. 1-2 times a month | 2. 1-2 times a month |
| | 3. 3-5 times a year | 3. 3-5 times a year | 3. 3-5 times a year | 3. 3-5 times a year |
| | 4. 1-2 times a year | 4. 1-2 times a year | 4. 1-2 times a year | 4. 1-2 times a year |
| | 5. Annually | 5. Annually | 5. Annually | 5. Annually |
APPENDIX D: DATA COLLECTION INSTRUMENTS: SSI GUIDE FOR FACULTY

SECTION 1: DEMOGRAPHIC AND SOCIOECONOMIC INFORMATION
First I would like to ask you some basic demographic questions about yourself. REFER to sociometric survey (I will fill in most of this in advance of the interview)

SECTION 2: NETWORKS – RELATIONSHIPS WITH POLICYMAKERS, COLLEAGUES AND EXTERNAL PEERS
See Sociometric Survey

IF RESPONDENT IDENTIFIED THROUGH SOCIOMETRIC SURVEY IN QUESTION F.1.11 AS ENGAGING IN KB ACTIVITIES, GO TO 3.1
IF RESPONDENT IDENTIFIED THROUGH SOCIOMETRIC SURVEY IN QUESTION F.1.11 AS NOT ENGAGING IN KB ACTIVITIES, GO TO 3.2
IF RESPONDENT IDENTIFIED THROUGH SOCIOMETRIC SURVEY AS SOMEONE IN AN ACADEMIC LEADERSHIP ROLE, ADMSITER 3.3 IN ADDITION TO EITHER 3.1 OR 3.2

SECTION 3.1: ROLE OF RESEARCHERS IN BRINGING EVIDENCE TO BEAR IN POLICY MAKING (KNOWLEDGE BROKERS)

1) Could you share your thoughts on how you feel about academic faculty engaging in policy decision-making?

2) Why do you personally engage in such activities?

3) Could you provide me with an overview of the nature of your involvement? (This question aims to provide a sense of the types of exchanges that the informant has had and that can be used in the rest of the interview. Probe: what are the different ways in which you get involved? At what level? At what point in the process? How does it begin – active pursuit or by invitation?)

4) Could you walk me through one particular example of your involvement in a policy issue?
   b. Probe: What was the role of research evidence in the policy discussions?
   c. Probe: Can you tell me about the evidence that was used to inform the policy options? (eg: specific publications, studies, reviews)
   d. Probe: Can you tell me how the evidence came to be shared with policymakers?
5) What do you do to encourage **policy makers** to **use research evidence in their decision making and policies**? *(This question aims to provide a sense of the types of strategies that the informant employs when sharing research results with decision makers. As the respondent is speaking, I will construct a list of strategies based on their narrative. I will use this list to guide a discussion related to process, people, events, and outcomes). I will use this list to guide a discussion related to process, people, events, and outcomes).*

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<tr>
<td>b. When is such a strategy effective? (in what situations?)</td>
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<td></td>
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<tr>
<td>c. What makes this strategy effective in such a situation?</td>
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</table>

6) What do you do to make sure that your **colleagues** are aware of **policy maker priorities**, particular in terms of their needs for different types of evidence? *(This question aims to provide a sense of the types of strategies that the informant employs when sharing policy priorities with researchers. As the respondent is speaking, I will construct a list of strategies based on their narrative. I will use this list to guide a discussion related to process, people, events, and outcomes).*

<table>
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<tr>
<td>b. When is such a strategy effective? (in what situations?)</td>
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<tr>
<td>c. What makes this strategy effective?</td>
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</tbody>
</table>
7) Can you give tell me what you think makes you effective as a knowledge broker?
8) Could you share with me what the organizational policies are with respect to academic faculty engaging with decision makers? *(Probe: if these are implicit, explicit and how they are shared)*
9) Could you explain how policymaker engagement or policy uptake of research results affects faculty recognition? *(Probe incentives and disincentives, ask for examples of situations where each has occurred)*

ADVICE *(for KBs only)*
10) If a colleague approached you to ask you what s/he could do to engage in more policy engagement, what advice would you give them?
11) If a colleague approached you to ask you what s/he could do to share policy relevant knowledge with fellow researchers, what advice would you give them?
12) If an SPH wanted to enhance the capacity of faculty in engaging in research–to-policy activities and vice versa, what would you advise them to do?

**SECTION 3.2: ROLE OF RESEARCHERS IN BRINGING EVIDENCE TO BEAR IN POLICY MAKING (NON KNOWLEDGE BROKERS)**

1) Could you share your thoughts on how you feel about academic faculty engaging in policy decision-making?
2) Could you share your thoughts on why some academic faculty do engage with policy making? *(Probe: reasons for engagement)*
3) Could you share your thoughts on why some academic faculty do *not* engage with policy making? *(Probe: reasons for non-engagement)*
4) Why *do you not* personally engage in such activities?
5) Can you give tell me what you think *would make you* effective as a knowledge broker?
6) Could you share with me what the organizational policies are with respect to academic faculty engaging with decision makers? *(Probe: if these are implicit, explicit and how they are shared)*
7) Could you explain how policymaker engagement or policy uptake of research results affects faculty recognition? *(Probe incentives and disincentives, ask for examples of situations where each has occurred)*
8) Can you share with me what you would need from your organisation if indeed you were keen on exploring your involvement in the policy arena?

**SECTION 3.3 ORGANIZATIONAL MECHANISMS AND POLICIES (LEADERSHIP – SUPPLEMENTARY TO 3.1 OR 3.2)**

1) Could you share with me other mechanisms for how the institution shares research results *internally*?
2) Could you share with me other mechanisms for how the institution shares research results *externally*?
3) What are the resources, if any, that are directly allocated to dissemination of research results?
SECTION 4: BROKER CHARACTERISTICS (ALL)
There are many labels attached to people who serve as a bridge between two distinct communities. In this context we are interested in those who play a role in bridging the divide between research and policy. In so doing, these actors attempt to ensure that policies are evidence-informed and simultaneously attempt to ensure that research is policy relevant. I would like to ask your opinion on some of the characteristics of such persons.

FACILITATORS
1) What do you think are some of the characteristics of such persons that allow them to play this role? (allow freelisting)
   a. Probe: personality traits, skills, experiences, academic training, practical training
2) What other factors contribute to how effective such a person can be?
3) What external factors facilitate KB?
   a. Probe: environmental, political, social, Organizational, professional. Ask or specific examples
4) Now that we have a list of the many traits of academic knowledge brokers, which do you think are the most important?

HINDRANCES
1) What personal characteristics or capacities do you think hinders someone in engaging in KB?
2) What external factors do you think hinder effective KB? (Probe: environmental, political, social, Organizational, professional)
3) What do you think hinders knowledge brokers from being effective?

SECTION 5: DOCUMENTATION
I would be very interested in reading and learning more about the Task forces, advisory groups and special committees you have served on that relate to the policies you mentioned. Would you be willing to share key documents related to these with me? [I intend to use this as a means to collect documents for documentary analysis on the role of research in the decision-making processes]

SECTION 6: CLOSURE
I don't have any more questions for you but is there anything that you would like to share with me about any of the topics we covered above or that you think would be important for me to know?

Do you have any questions for me?

That’s the end of our interview today. Thank you very much for your time. Would you mind if I contacted you again should I need any clarifications on this interview?
APPENDIX E: DATA COLLECTION INSTRUMENTS: SSI GUIDE FOR NATIONAL HEALTH POLICYMAKER

SECTION 1: DEMOGRAPHIC AND SOCIOECONOMIC INFORMATION
First I would like to ask you some basic demographic questions about yourself.
(I will fill in most of this in advance of the interview)

<table>
<thead>
<tr>
<th>UNIQUE IDENTIFIER</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P1.1 Organization name</td>
<td>1= Ministry of Health</td>
</tr>
<tr>
<td></td>
<td>2= Ministry of Medical Services</td>
</tr>
<tr>
<td></td>
<td>3= Ministry of Public Health and Sanitation</td>
</tr>
<tr>
<td>P1.2 Years with Organization</td>
<td></td>
</tr>
<tr>
<td>P1.3 Political Position</td>
<td>1=Minister;</td>
</tr>
<tr>
<td></td>
<td>2= Assistant Minister;</td>
</tr>
<tr>
<td></td>
<td>3= Permanent secretary;</td>
</tr>
<tr>
<td></td>
<td>4= Director (specify department);</td>
</tr>
<tr>
<td></td>
<td>5= Deputy Director</td>
</tr>
<tr>
<td></td>
<td>6=</td>
</tr>
<tr>
<td></td>
<td>88=Other: _____________</td>
</tr>
<tr>
<td>P1.4 Years in current position</td>
<td></td>
</tr>
<tr>
<td>P1.5 Sex</td>
<td>0= Male</td>
</tr>
<tr>
<td></td>
<td>1= Female</td>
</tr>
<tr>
<td>P1.6 Age</td>
<td></td>
</tr>
<tr>
<td>P1.7 Ethnic affiliation</td>
<td>1= Kalenjin</td>
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<tr>
<td></td>
<td>2= Kamba</td>
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<td></td>
<td>3= Kikuyu</td>
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<tr>
<td></td>
<td>4= Kisii</td>
</tr>
<tr>
<td></td>
<td>5= Luhya</td>
</tr>
</tbody>
</table>
SECTION 2: ROLE OF RESEARCHERS IN BRINGING EVIDENCE TO BEAR IN POLICY MAKING

1) Could you share your thoughts on how you feel about academic faculty engaging in policy decision-making?
2) Could you tell me if you engaged with academic faculty in the last 5 years? (*This question establishes the academic faculty as one who engages with academic faculty/researchers*)

3) Could you provide me with an overview of how you engaged with academic faculty/researchers? (*Probe: How. This question aims to provide a sense of the types of exchanges that the informant has had and that can be used in the rest of the interview. As the respondent is speaking, I will construct a matrix of exchanges based on their narrative. I will use this matrix, to guide the remainder of the questions related to process, events, and outcomes.*)

4) Could you walk me through one particular example of your involvement with an academic faculty/researcher? (*Probe from a previous interview if necessary. Else: How did you become involved with them? Who initiated? Why? At what point in the process? How did it evolve? How did it end? What was the effect? Impact? Utility?*)
   a. Probe: What was the role of research evidence in the policy discussions?
   b. Probe: Can you tell me about the types of evidence that were used to inform the policy options? (*Probe: specific publications, studies, reviews and how each was perceived: quality, relevance, local applicability*)
   c. Probe: Can you tell me how the evidence came to be shared with you? (*This question aims to extract the methods and channels used to gather the necessary information*)

5) What do you do to ensure academic organizations are aware of policy research interests and priorities? (*This question aims to provide a sense of the types of strategies that the informant employs in communicating government priorities. As the respondent is speaking, I will construct a list of strategies based on their narrative. I will use this list to guide a discussion related to process, people, events, and outcomes.*)

<table>
<thead>
<tr>
<th>a. In your opinion How effective is strategy _____?</th>
<th>Strategy A</th>
<th>Strategy B</th>
<th>Strategy C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Not at all effective</td>
<td>1. Not at all effective</td>
<td>1. Not at all effective</td>
<td></td>
</tr>
<tr>
<td>2. Fairly ineffective</td>
<td>2. Fairly ineffective</td>
<td>2. Fairly ineffective</td>
<td></td>
</tr>
<tr>
<td>3. Neither effective nor ineffective</td>
<td>3. Neither effective nor ineffective</td>
<td>3. Neither effective nor ineffective</td>
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<tr>
<td>5. Very effective</td>
<td>5. Very effective</td>
<td>5. Very effective</td>
<td></td>
</tr>
</tbody>
</table>

b. When is such a strategy effective? (in what situations?)

c. What makes this strategy effective in such a situation?
6) What do you do to access and use research results in your own organization for policy making? (This question aims to provide a sense of the types of strategies that the informant employs for access and uptake for research results. As the respondent is speaking, I will construct a list of strategies based on their narrative. I will use this list to guide a discussion related to process, people, events, and outcomes).

<table>
<thead>
<tr>
<th></th>
<th>Strategy A</th>
<th>Strategy B</th>
<th>Strategy C</th>
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</thead>
<tbody>
<tr>
<td>a. In your opinion How effective is strategy _____?</td>
<td>1. Not at all effective</td>
<td>1. Not at all effective</td>
<td>1. Not at all effective</td>
</tr>
<tr>
<td></td>
<td>2. Fairly ineffective</td>
<td>2. Fairly ineffective</td>
<td>2. Fairly ineffective</td>
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<tr>
<td></td>
<td>3. Neither effective nor ineffective</td>
<td>3. Neither effective nor ineffective</td>
<td>3. Neither effective nor ineffective</td>
</tr>
<tr>
<td></td>
<td>5. Very effective</td>
<td>5. Very effective</td>
<td>5. Very effective</td>
</tr>
<tr>
<td>b. When is such a strategy effective? (in what situations?)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>c. What makes this strategy effective in such a situation?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADVICE
7) If a researcher approached you to ask you what s/he could do to engage in more policy engagement, what advice would you give them?
8) If a colleague approached you to ask you what s/he could do to share policy relevant knowledge with academic researchers, what advice would you give them?
9) If an SPH wanted to enhance the capacity of faculty in engaging in research–to-policy activities and vice versa, what would you advise them to do?

SECTION 3: ACADEMIC BROKER CHARACTERISTICS
There are many labels attached to people who serve as a bridge between two distinct communities. In this context we are interested in those who play a role in bridging the divide between research and policy. In so doing, these actors attempt to ensure that policies are evidence-informed and simultaneously attempt to ensure that research is policy relevant. I would like to ask your opinion on some of the characteristics of such persons.

FACILITATORS
1) What do you think are some of the characteristics of such persons that allow them to play this role? (allow freelisting)
   a. Probe: personality traits, skills, experiences, academic training, practical training
2) What other factors contribute to how effective such as person can be?
3) What *external* factors facilitate KB?
   a. Probe: environmental, political, social, Organizational, professional. Ask for specific examples
4) Now that we have a list of the many traits of academic knowledge brokers, which do you think are the *most* important?

**HINDRANCES**
5) What *personal* characteristics or capacities do you think hinder someone in engaging in KB?
6) What *external* factors do you think hinder effective KB? *(Probe: environmental, political, social, Organizational, professional)*
7) What do you think hinders knowledge brokers from being effective?

**SECTION 4: DOCUMENTATION**
*If mentioned, then:* I would be very interested in reading and learning more about the Task forces, advisory groups and special committees you mentioned. Would you be willing to share key documents related to these with me? *[I intend to use this as a means to collect documents for documentary analysis on the role of research in the decision-making processes]*

**SECTION 5: CLOSURE**
I don't have any more questions for you but is there anything that you would like to share with me about any of the topics we covered above or that you think would be important for me to know?

Do you have any questions for me?

That’s the end of our interview today. Thank you very much for your time. Would you mind if I contacted you again should I need any clarifications on this interview?
## APPENDIX F: CODEBOOK FOR QUALITATIVE DATA ANALYSIS

<table>
<thead>
<tr>
<th>NO.</th>
<th>MNEMONIC CODE/TITLE</th>
<th>FULL DESCRIPTION OF CODE</th>
<th>WHEN TO USE AND WHEN NOT TO USE THE CODE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>POLICYMAKING PROCESS</td>
<td>The process of how policies are made in Kenya and the persons responsible for making decisions</td>
<td>Use this code for statements that explain how policies are made in Kenya, what the steps are and who the decision makers are.</td>
</tr>
<tr>
<td>2.0</td>
<td>BACKGROUND AND EXPERIENCES</td>
<td>The professional. Personal, social and political backgrounds of the faculty or policymaker that shapes their approach to e2p</td>
<td>Use this code for statements that indicate justification or explanation for engagement in e2p and how that has shaped the way that they view and approach e2p.</td>
</tr>
<tr>
<td>2.1</td>
<td>POLICY SPECIFIC EXPERIENCES</td>
<td>True example of policies that respondents were involved in. The problem, people, the processes etc... Explanation or mention of the dynamics of the relationship between academics and policymakers</td>
<td>Use this code for statements describing past or current experiences with policies requiring input from academics (academic research). Examples of key policies that have been underway can be captured here. Explanation or mention of the dynamics of the relationship between academics and policymakers.</td>
</tr>
<tr>
<td>2.2</td>
<td>BIDIRECTIONAL EXPERIENCE</td>
<td>Experience/training of policy makers in academia or vice versa.</td>
<td>Use this code for text that refers to formal training, or understanding, or experience being on “both sides” i.e. a policy maker that has been academic or vice versa.</td>
</tr>
<tr>
<td>3.0</td>
<td>UNDERSTANDING E2P</td>
<td>This category covers the different ways in which academics and policymakers define E2P, the participants in E2P, and their various roles.</td>
<td>Use 3.0 grouping of codes according to parameters listed under 3.1-3.5. If text refers to the E2P process but doesn’t fit neatly into 3.1-3.5 simply code as 3.0 (unspecified)</td>
</tr>
<tr>
<td>3.1</td>
<td>DEFINING E2P</td>
<td>The different ways in which interviewees defined E2P; Explanation of “what is E2P”</td>
<td>Code should be used for interviewee’s response to the question “what is E2P to you?” or for text in which the interviewee expresses their understanding of what the process entails or why it is used.</td>
</tr>
<tr>
<td>3.2</td>
<td>ROLES OF ACADEMICS</td>
<td>Explanation of roles or expectations of academics in E2P</td>
<td>Code should be used for interviewee’s response to the question “what is the role of academics in contributing to health policy decisions in Kenya”? Any advice on strengthening this role should be included here.</td>
</tr>
<tr>
<td>3.3</td>
<td>ROLE OF POLICY MAKERS</td>
<td>Explanation of roles or expectations of policymakers in E2P</td>
<td>This should be used with text explaining the various policymakers in E2P at the national, local, provincial levels etc. Code should be used text referring to how policymakers contribute to encouraging or</td>
</tr>
<tr>
<td>NO.</td>
<td>MNEMONIC CODE/TITLE</td>
<td>FULL DESCRIPTION OF CODE</td>
<td>WHEN TO USE AND WHEN NOT TO USE THE CODE.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>hindering use of evidence in decision-making. Any advice on strengthening this role should be included here.</td>
</tr>
<tr>
<td>3.4</td>
<td>ROLE OF KNOWLEDGE BROKERS/INTERME DIARIES</td>
<td>Explanation of definitions, roles or expectations of knowledge brokers in E2P</td>
<td>Code should be used in instances where an interviewee provides an expression of their understanding of a KB. Including interviewee’s response to the question “what is the role of KBs in contributing to health policy decisions in Kenya”</td>
</tr>
<tr>
<td>3.5</td>
<td>ROLE OF RESEARCH IN POLICY</td>
<td>Explanation of the role that evidence plays in health policymaking</td>
<td>This should be used when there are statements reflecting opinions on whether, evidence should be used, what type, why and when for the purposes of decision making</td>
</tr>
<tr>
<td>4.0</td>
<td>REASONS FOR ENGAGEMENT OR NON-ENGAGEMENT</td>
<td>These are reasons behind the motivation of academic faculty and/or policymakers to engage (or not) in E2P. The financial, professional, political, social and personal gains/losses for engaging in E2P</td>
<td>Use 4.0 grouping of codes according to parameters listed under 4.1-4.5.</td>
</tr>
<tr>
<td>4.1</td>
<td>PROFESSIONAL</td>
<td>The types of reasons cited that relate to professional enhancement, advancement and requirements.</td>
<td>Use this code for statements where participants express motivations, interests and benefits that relate directly to professional, career and work related reasons: (career advancements, mentoring junior faculty, publications, networking, conference, acknowledgement in reports, shared credit etc, capacity building)</td>
</tr>
<tr>
<td>4.2</td>
<td>SOCIETAL/MORAL</td>
<td>The types of motivations cited that relate to contributing to improving public health / Motivations related to a sense of obligation to enhance use research results for health system improvement as part of a moral conscience.</td>
<td>Use this code for statements where participants express genuine desire to improve public health as well as moral obligations of equity and ethics.</td>
</tr>
<tr>
<td>4.3</td>
<td>FINANCIAL</td>
<td>Reasons cited that indicate monetary implications</td>
<td>Use this code for statements where participants express motivations, interests and benefits of engaging in E2P that indicate financial support to a programme, as well as individual rewards or savings</td>
</tr>
<tr>
<td>4.4</td>
<td>PERSONAL</td>
<td>Reasons cited that are related to self fulfillment, character enhancements, reputation and identity</td>
<td>Use this code for instances when participants express motivations that reflect self interests</td>
</tr>
<tr>
<td>NO.</td>
<td>MNEMONIC CODE/TITLE</td>
<td>FULL DESCRIPTION OF CODE</td>
<td>WHEN TO USE AND WHEN NOT TO USE THE CODE.</td>
</tr>
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</tr>
<tr>
<td>4.5</td>
<td>POSITIONAL/REPUTATIONAL</td>
<td>Reasons that emphasize position in an institution or reputation that enhances or hinders opportunity to engage</td>
<td>Use this code to highlight statements that reflect opportunity for engagement tied directly to position, reputation or seniority in the institution.</td>
</tr>
<tr>
<td>5.0</td>
<td>STRATEGIES FOR ENGAGEMENT BETWEEN ACADEMIA AND POLICY</td>
<td>The various ways in which academics and policymakers can interact and engage <em>(it is not assumed that these are independent of each other)</em></td>
<td>Use this code for statements related to how to access and engage with policymakers/academics: means, methods, fora, frequency etc… Use 5.0 grouping of codes according to parameters listed under 5.1-5.5. If text refers to a strategy but doesn’t fit neatly into 5.1-5.5 simply code as 5.0 (unspecified)</td>
</tr>
<tr>
<td>5.1</td>
<td>INFORMAL</td>
<td>Expressions of informal means of engagement, information flow and priorities</td>
<td>Use this code for statements that either directly or indirectly indicate more informal forms of getting research results into policy decision making people and/or processes</td>
</tr>
<tr>
<td>5.2</td>
<td>FORMAL</td>
<td>Expressions of formal means of engagement, information flow and priorities</td>
<td>Use this code for statements that either directly or indirectly indicate more formal forms of getting research results into policy decision making people and/or processes</td>
</tr>
<tr>
<td>5.3</td>
<td>EFFECTIVENESS</td>
<td>Opinions on level of effectiveness of strategies mentioned</td>
<td>Use this code when text indicates a judgment on strength or weakness of a particular strategy for engagement mentioned and reasons why. Do not use on statements related to effectiveness of policies themselves.</td>
</tr>
<tr>
<td>5.4</td>
<td>INITIATION AND LEADERSHIP</td>
<td>Who initiates and/or leads the various forms of engagement</td>
<td>This code should be used to capture statements on who initiates, spearheads or leads each strategy of engagement that is mentioned.</td>
</tr>
<tr>
<td>5.5</td>
<td>RESOURCES</td>
<td>The types of resources needed to roll out a strategy</td>
<td>Use this code when text indicates opinion or concerns about what would be required to operationalize a strategy for engagement with respect to HR, time, funding, space, etc…</td>
</tr>
<tr>
<td>6.0</td>
<td>CHALLENGES AND FACILITATORS OF “CROSSING THE DIVIDE”</td>
<td>Any negative (constraint, frustration, hindrance, set-back, or conflict) or positive (facilitator, enabler, catalyst) reasons mentioned by either academics or policymakers during the process of e2p</td>
<td>Use 6.0 grouping of codes according to parameters listed under 6.1-6.8. If text refers to a challenge or facilitator but doesn’t fit neatly into 6.1-6.8, simply code as 6.0 (unspecified)</td>
</tr>
<tr>
<td>NO.</td>
<td>MNEMONIC CODE/TITLE</td>
<td>FULL DESCRIPTION OF CODE</td>
<td>WHEN TO USE AND WHEN NOT TO USE THE CODE.</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------</td>
<td>--------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>6.1</td>
<td>FINANCIAL</td>
<td>Any mention of financial resources as a barrier or facilitator</td>
<td>This includes mention of constrained resources, grants, funding, payment, salary, etc of either academics or policymakers in relation to E2P processes and projects</td>
</tr>
<tr>
<td>6.2</td>
<td>TIME</td>
<td>Mention of time as a facilitator or challenge in E2P projects and partnerships</td>
<td>This could be used if respondents express time burdens or constraints when engaging in E2P (full-time jobs limit them from regularly attending TWG meetings, or if the regular planning meetings between partners take up too much time, short deadlines, etc).</td>
</tr>
<tr>
<td>6.3</td>
<td>WORK CULTURE</td>
<td>Work culture, environment, expectations, work flow, language/jargon use etc. between academics and policymakers</td>
<td>This should be applied if a difference in work culture is specifically listed as a challenge or facilitator. (perhaps due to different work flow, norms, use of scientific or particular terms, etc.)</td>
</tr>
<tr>
<td>6.4</td>
<td>NETWORKS</td>
<td>Extent of personal connections, contacts and networks</td>
<td>Should be applied when respondent mentions access as a result of network strength/weakness with which to navigate relationships (including student/teacher networks)</td>
</tr>
<tr>
<td>6.5</td>
<td>EXPERIENCE</td>
<td>Extent of experience in academia or policymaking environments</td>
<td>Should be applied when a specific reference to experience in knowledge translation, policy engagement, exposure to policymakers and/or academia</td>
</tr>
<tr>
<td>6.6</td>
<td>INSTITUTIONAL REPUTATION</td>
<td>The role Institutional affiliation and reputation plays in power dynamics between partners</td>
<td>Use this code to describe instances when being associated with an institution can help or hinder the relationship</td>
</tr>
<tr>
<td>6.7</td>
<td>GEOGRAPHIC LOCATION</td>
<td>The role that location plays in relationship building or access to each other</td>
<td>Use this code to describe instances when the physical location of an SPH helps or hinders the access, relations, collaborations etc.</td>
</tr>
<tr>
<td>6.8</td>
<td>OTHER ACTORS</td>
<td>The role that other actors play is facilitating or hindering the work of the SPH/Gov’t</td>
<td>Use this code when the respondent mentions complexities of several actors that either contribute to enhancing e2p or hindering it</td>
</tr>
<tr>
<td>6.9</td>
<td>RELEVANCE</td>
<td>Topical relevance</td>
<td>Use this code when the respondent mentions the relevance or the priority of policy and research discussions</td>
</tr>
<tr>
<td>7.0</td>
<td>PERSONALITY OR SKILLS REQUIRED TO BE A KB</td>
<td>Perceptions of the skills or personality traits necessary to be an effective knowledge broker</td>
<td>Use 7.0 grouping of codes according to the parameters listed under 7.1-7.4.</td>
</tr>
<tr>
<td>NO.</td>
<td>MNEMONIC</td>
<td>FULL DESCRIPTION OF CODE</td>
<td>WHEN TO USE AND WHEN NOT TO USE THE CODE.</td>
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<td>------------------------------------------</td>
</tr>
<tr>
<td>7.1</td>
<td>EXPERTISE</td>
<td>Content knowledge, expertise, repute</td>
<td>Use this code for statements referring to personal (not institutional) reputation and expertise.</td>
</tr>
<tr>
<td>7.2</td>
<td>NETWORKING</td>
<td>Interpersonal relationship building between academic, intermediary, and/or policymaker</td>
<td>Use this code for statements where informants describe interpersonal relationship based on inference, friendship, solidarity, business interactions, or some other type of social commitment; describe context in how these relationships are developed (i.e. working as a service provider in clinic, through a connector) or maintained (i.e. attending birthday party, speaking engagements).</td>
</tr>
<tr>
<td>7.3</td>
<td>COMMUNICATION</td>
<td>Research communication and/or Knowledge Translation relevance</td>
<td>Should be used for statements that refer to appropriate language, methods, means and fora for packaging and communicating research results with policymakers or academics. Do not use for describing social communication channels (i.e not to be used for statements that indicate frequency of email communication).</td>
</tr>
<tr>
<td>7.4</td>
<td>“SOFT SKILLS”</td>
<td>Impressions of “soft skills” such as diplomacy, humility, open mindedness, inclusiveness, etc…</td>
<td>Perceptions of “soft skills” often overlap with technical skills. Use this code for skills that seem intangible and do not fit neatly in categories above. Eg: being a “people person”</td>
</tr>
<tr>
<td>7.5</td>
<td>UNDERSTAND POLICY PROCESS AND ENVIRON</td>
<td>Knowledge of institutional policy processes, people and structures</td>
<td>Assertion that knowledge of the policy processes and environment can hinder or support E2P activities and uptake.</td>
</tr>
<tr>
<td>8.0</td>
<td>INSTITUTIONAL ENVIRONMENT</td>
<td>These are the policies, processes, people and resources within research institutions (either faculty or policymaker) that affect the E2P project</td>
<td>Use 8.0 grouping of codes according to parameters listed under 8.1-8.5.</td>
</tr>
<tr>
<td>8.1</td>
<td>PEOPLE</td>
<td>The prevailing attitudes, biases, stigmas, mindsets, actions and behaviors demonstrated by people in the institution where the research teams work</td>
<td>Use this code for instances when faculty or policymakers express satisfaction or frustration with collegial, and moral levels of understanding from people in their institutions. The type of support indicated by attitudes and behaviors of peers, supervisors and leaders should be captured here.</td>
</tr>
<tr>
<td>8.2</td>
<td>POLICIES</td>
<td>The policies and practices within the institution that facilitate or hinder E2P</td>
<td>Use this code for instances when faculty or policymakers express satisfaction or frustration with policies or practices within their institution that affect the efficiency of effectiveness with which they are able to conduct E2P.</td>
</tr>
<tr>
<td>8.3</td>
<td>PROCESSES</td>
<td>The processes within the institution that facilitate or hinder E2P</td>
<td>Use this code for instances when faculty or policymakers express satisfaction or frustration with any of the various steps required to</td>
</tr>
<tr>
<td>NO.</td>
<td>MNEMONIC CODE/TITLE</td>
<td>FULL DESCRIPTION OF CODE</td>
<td>WHEN TO USE AND WHEN NOT TO USE THE CODE.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>satisfy in order to either initiate, implement or complete E2P initiatives</td>
</tr>
<tr>
<td>8.4</td>
<td>POLITICS</td>
<td>Political and legal changes (temporal, social, political, legal, institutional) that result in widespread changes in university policies and practices etc., as well as in health care systems and delivery</td>
<td>Use this code to capture any sweeping change in organizational or political policies as a result of the new laws, reforms, social norms etc… This code should be used to capture political decisions on public health financing and governance (ongoing devolution, the new University Act, unification of two health ministries)</td>
</tr>
<tr>
<td>8.5</td>
<td>PROMOTIONS</td>
<td>Incentives and criteria for recognition and academic promotions</td>
<td>This code should be used in response to whether faculty are recognized for their E2P activities, whether they feature in recognitions and promotions, what other incentives for promotions there are etc… (In instances where promotions overlap with policies, double code with 8.2)</td>
</tr>
<tr>
<td>9.0</td>
<td>INVOLVEMENT OF OTHER STAKEHOLDERS</td>
<td>This category applies to any text referring to engagement with other users of research that serve as intermediaries</td>
<td>Use 10.0 grouping of codes according to parameters listed under 10.1-10.3. Capture reference to media, NGOs, Int'l orgs, community, advocacy groups etc</td>
</tr>
<tr>
<td>9.1</td>
<td>DOMESTIC</td>
<td>Domestic stakeholders and intermediaries that affect the path of evidence to policy</td>
<td>Use this code whenever there is mention of the role of a domestic or local actor that either supports, hinders or mediates the decisions as well as the path of evidence use in decision making</td>
</tr>
<tr>
<td>9.2</td>
<td>REGIONAL</td>
<td>Regional stakeholders and intermediaries that affect the path of evidence to policy</td>
<td>Use this code whenever there is mention of the role of a regional actor that either supports, hinders or mediates the decisions as well as the path of evidence use in decision making</td>
</tr>
<tr>
<td>9.3</td>
<td>INTERNATIONAL</td>
<td>International stakeholders and intermediaries that affect the path of evidence to policy</td>
<td>Use this code whenever there is mention of the role of an international actor that either supports, hinders or mediates the decisions as well as the path of evidence use in decision making</td>
</tr>
</tbody>
</table>
## APPENDIX G: INTERNSHIP/PRACTICUM STRUCTURE AT THE VARIOUS SPHs

<table>
<thead>
<tr>
<th>SPH</th>
<th>Academic programs</th>
<th>Internship requirement</th>
<th>Internship structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSOPH</td>
<td>Diploma – Community health</td>
<td>N</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>BSc – Environmental Health</td>
<td>Y</td>
<td>Field attachments: yr 2 – rural, yr 4 – urban</td>
</tr>
<tr>
<td></td>
<td>MPH</td>
<td>Varies</td>
<td>Mandatory three-week organizational placements for those studying Health promotion. Ad-hoc field placements for those studying Disaster Management. Spontaneous visits to health departments/health facilities for those studying Health Management</td>
</tr>
<tr>
<td>SPHON</td>
<td>MPH</td>
<td>N</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>MSc - Health Systems Management</td>
<td>Y</td>
<td>6 month mandatory attachment in Yr2</td>
</tr>
<tr>
<td>GLUK/TICH</td>
<td>Diploma - Community Health and Development</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Diploma - Community Nutrition</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>BSc - Community Health and Development</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>BSc - Community Nutrition</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>MSc - Community Health and Development</td>
<td>Y</td>
<td>“Partnership Program” - apprenticeship program where graduate students carry out two operations research projects. Through elective courses, students also pursue “attachments” to various gov’t and NGO offices</td>
</tr>
<tr>
<td></td>
<td>MSc - Community Nutrition</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MBA - Health Services Management</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MBA - Hospital Administration</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>ESPUDEC</td>
<td>BSc - Public Health with IT</td>
<td>Y</td>
<td>Mandatory 3 month internship with MoH in rural and urban settings</td>
</tr>
<tr>
<td></td>
<td>MPH - Management of Health Services</td>
<td>Y</td>
<td>4-6 week mandatory field activities</td>
</tr>
<tr>
<td></td>
<td>MPH - Epidemiology and Population Health</td>
<td>Y</td>
<td>4-6 week mandatory field activities</td>
</tr>
<tr>
<td></td>
<td>MPH - Health Promotion and International Health</td>
<td>Y</td>
<td>4-6 week mandatory field activities</td>
</tr>
<tr>
<td></td>
<td>PhD</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>KEMU</td>
<td>BSc – Community Health</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSc – Health Systems Management</td>
<td>N</td>
<td>The program is intended for managers and executives currently in health care institutions</td>
</tr>
<tr>
<td>KUSPH</td>
<td>BSc – Nursing and Public Health</td>
<td>Y</td>
<td>One year mandatory internship with MoH</td>
</tr>
<tr>
<td></td>
<td>MPH</td>
<td>N</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>MSc-Infectious Diseases</td>
<td>N</td>
<td>n/a</td>
</tr>
</tbody>
</table>


Bennett, S., Agyepong, I. A., Sheikh, K., Hanson, K., Ssengooba, F., & Gilson, L. (2011). Building the field of health policy and systems research: an agenda for action. *PLoS Medicine, 8*(8), e1001081. doi:10.1371/journal.pmed.1001081; 10.1371/journal.pmed.1001081


Coburn, A. F. (1998). The role of health services research in developing state health policy. *Health Affairs (Project Hope), 17*(1), 139-151.


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Shaxson, L., & Gwyn, E.Developing a strategy for knowledge translation and brokering in public policymaking *Special Workshop on Knowledge Translation and Brokering,* Montreal, Canada.


StataCorp. (2011). *Stata Statistical Software: Release 12*. College Station, TX: StataCorp LP.


Vincent, R. Health journalists: Mistrusted and sensationalist, or important allies for researchers? Examining the barriers to effective health journalism. *Global Forum for Health Research, Beijing, China.*


CURRICULUM VITAE
NASREEN JESSANI

EDUCATION
JOHNS HOPKINS UNIVERSITY (BLOOMBERG SCHOOL OF PUBLIC HEALTH)
Doctorate in Public Health (DrPH-International Health exp. May 2015)
Certificate in Risk Sciences and Policy (May 2011)

UNIVERSITY OF NORTH CAROLINA - CHAPEL HILL (GILLINGS SCHOOL OF GLOBAL HEALTH)
Master of Science in Public Health (MSPH-Health Policy and Administration)
Certificate in Global Health (May 2004)

MCGILL UNIVERSITY
Bachelor of Science (BSc-Anatomy and Cell Biology - Great Distinction) May 2000

HONORS AND AWARDS
May 2014 Center for Qualitative Studies in Health & Medicine Dissertation Enhancement Award
May 2014 JHU-SPH Robert and Helen Wright Award – Dept of International Health
May 2013 JHU-SPH Nancy Stephens Award – Dept of International Health
May 2012 JHU-SPH Robert and Helen Wright Award – Dept of International Health
2010-2012 Aga Khan International Scholarship
2006-2007 International Program on Development Evaluation Training (IPDET) Scholarship
2003-2004 UNC-CH Graduate Merit Assistantship - Dept of Health Policy and Administration
2002-2003 UNC-CH Graduate School Fellowship Award
May 2003 Health Policy and Administration Department international internship grant
May 2003 University Centre for International Studies Summer internship award
March 2003 Alpha Epsilon Lambda Honor society
March 2000 McGill University Scarlet Key Award for excellence and outstanding leadership

PROFESSIONAL EXPERIENCE
CONSORTIUM FOR HEALTH POLICY AND SYSTEMS RESEARCH LEAD EVALUATOR
• Drive and oversee the summative evaluation of CHEPSAA’s achievements and challenges, unintended positive or negative outcomes; lessons for future work; and position relative to other similar initiatives;

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH RESEARCH ASSISTANT
June 2011-June 2014 MD, USA
• Future Health Systems: research capacity assessment & development plans for 7 SPHs in East Africa
• USAID Health Finance and Governance Project: part of strategic planning team tasked to provide guidance for USAID- Washington to integrate and enhance health systems research/ strengthening
• International Injury Research Unit RS-10 project: road safety and injury prevention in Vietnam

INTERNATIONAL HEALTH POLICY PROGRAM, THAI MINISTRY OF HEALTH EXTERNAL EVALUATOR
January 2013 Thailand
• Part of a four-person team of external evaluators tasked with assessing the performance of IHPP and providing strategic recommendations for future positioning and programming within the Thai context
ROAD SAFETY IN 10 COUNTRIES PROGRAM, HANOI SCHOOL OF PUBLIC HEALTH  Dec 2012  Vietnam
EXTERNAL EVALUATOR
• Conducted a process evaluation of data collection activities, management structures and communication mechanisms for the RS-10 project partnership with Johns Hopkins University on Road Safety in Vietnam

THE EUROPEAN OBSERVATORY ON HEALTH SYSTEMS AND POLICIES  Apr 2011  Belgium
RESEARCHER AND WRITER
• Developed sub-frameworks and publications for health systems knowledge-brokering models in Europe.

PROGRAM OFFICER – GEH AND RESEARCH MATTERS
• Assessed health system research proposals, including conceptual, methodological, operational, evaluative, and financial aspects of research-policy-practice initiatives from institutions in low and middle-income countries
• Developed and implemented “Research Matters” strategy with respect to creating and brokering links between researchers, media, networks and decision makers in the field of health systems and Knowledge Translation
• Monitored and provided technical research and management support to grantees and affiliated institutions
• Managed a budget of approximately $2.5million portfolio of projects in the East and Southern Africa Region
• Pursued strategic partnerships with like-minded donors and institutions - WHO, SDC, UN, academia and MOH
• Spearheaded a Monitoring and Evaluation strategy that permits Outcome Mapping, particularly on extent of research-to-policy and practice linkages in projects supported by Research Matters.

• Critically reviewed research proposals from institutions in LMICs and recommend alliances and funding
• Administered a geographically as well as thematically balanced program on issues pertaining to health systems and policy research (HSPR), civic participation, governance and equity
• Provided advice on budget utilization of approximately $6million p/a portfolio of projects (ranging from fair financing of health care, to ARV therapy in S.Africa, to social protection in health in Latin America)
• Facilitated program external review and evaluation, organize partners’ meetings, coordinate representation at international conferences, and develop communications strategies.
• Screened, interviewed and supervised GEH interns, summer students and professional development awardees

THE FUTURES CONSTELLA GROUP INTERNATIONAL (TFGI)  June–Aug 2004  NC, USA
CONSULTANT
• Designed a model to capture all costs, efficacies, incidence and prevalence rates of diseases that contribute to the cost-effectiveness analyses for the draft Child Survival Model for Nigeria
• Researched literature on parameters for use in economic modeling for POLICY II project for Nigeria

FAMILY HEALTH INTERNATIONAL (FHI)  Jan-May 2004  NC, USA
STUDENT RESEARCHER
• Analyzed FHI interventions in Kenya regarding IUD use and investigated trends of contraceptive use worldwide
• Developed a strategy and recommended countries for FHI’s interest in the potential reintroduction of IUD
**UNITED NATIONS: WORLD HEALTH ORGANIZATION (WHO)** Sep 2003 - Jan 2004 Switzerland

**ASSOCIATE: HIV/AIDS COUNSELING AND TESTING EXPERT WORKING GROUP**

- Instrumental in the initial conceptualization and design of HIV/AIDS Counseling and Testing (C&T) toolkit
- Provided technical support and assisted in editing and revision of content for publication

**UNITED NATIONS: INTERNATIONAL LABOR ORGANIZATION (ILO)** Apr 2002 Bangladesh

**CONSULTANT**

- Planned and organized 3-day training workshop for ILO, BRAC, Grameen Bank and collaborators on Micro-Health Insurance schemes for rural women of Bangladesh (MHIB)
- Evaluated appropriateness and suitability of 33 existing ILO manuals and guides and made recommendations for use at different levels of training and for various target groups (Translated documents from French to English)
- Designed and enhanced health-insurance training & advocacy materials for local & international dissemination

**BANGLADESH RURAL ADVANCEMENT COMMISSION (BRAC)** 2001-2002 Bangladesh

**VOLUNTEER INTERN – BRAC MAINSTREAM HEALTH PROGRAM**

- Adapted, developed and produced materials to promote MHIB (see above)
- Incorporated appropriate awareness-raising materials in the field of HIV/AIDS
- Investigated models to evaluate enrollment and traveled to rural areas for project implementation
- Submitted articles for BRAC’s quarterly newsletter. Photographer for ‘Health Services Promotion Calendar’
- Developed script and narration for BRAC Limb and Brace Center video

**TEACHING AND FACILITATION EXPERIENCE**

<table>
<thead>
<tr>
<th>2012-2014</th>
<th>Introduction to International Health: Teaching Assistant, JHSPH</th>
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<tbody>
<tr>
<td>Jul 2013</td>
<td>Knowledge Translation and the creation of issue briefs: Lead Facilitator, PAHO/Caribbean Epidemiology Center.</td>
</tr>
<tr>
<td>Jan-Mar 2012</td>
<td>Health Policy Analysis in Low and Middle Income Countries: Teaching Assistant, JHSPH</td>
</tr>
<tr>
<td>2003-2004</td>
<td>Finance for Healthcare organizations: Teaching Assistant, UNC-Chapel Hill</td>
</tr>
<tr>
<td>Sep-Dec 2003</td>
<td>Introduction to Health care Policy and Administration: Teaching Assistant, UNC-Chapel Hill</td>
</tr>
<tr>
<td>Sep-Dec 2002</td>
<td>Computers in Health Administration: Teaching Assistant, UNC-Chapel Hill</td>
</tr>
</tbody>
</table>

**SELECT PUBLICATIONS**


**Scientific Conference Presentations**

• “Do academic knowledge brokers exist? An exploration of research-to-policy networks of faculty from six Schools of Public Health in Kenya” - Panel presentation, Third Global Symposium on Health Systems Research, Oct 2014, Cape Town, South Africa

• " Institutional Strengthening in Health Systems Research: Experience with the use of a capacity self-assessment tool in seven schools of public health"– Poster presentation, Second Global Symposium on Health Systems Research, Oct 2012, Beijing, China

**Professional Activities and Affiliations**

**Advisory board member:** AcademyHealth Translation and Dissemination Institute

**Task Force member:** WHO- FoodBorne Diseases Expert Reference Group: Knowledge Translation and Policy

**Peer Reviewer:** Health Policy and Planning, BioMed Central, Elsevier Editorial System - PUHE

Associate, American College of Healthcare Executives (ACHE)

HPAA Academic Standards Committee & HPAA Advisory Board

Graduate School Ambassador to NC State Legislature

CIDA consultation on the African Health Systems Initiative

WHO-Canada Dialogue on Health Systems Research

WHO-EVIPnet Global Resource Group

**Professional Development**


International Program on Development Evaluation Training (IPDET) (June ’06 and ’07)


Interacting effectively in the workplace workshop: IDRC (Feb 2006)

Outcome mapping (OM) as an evaluation technique workshop: IDRC (Nov 2005)

Qualitative research methods: Michael Quinn Patton - IDRC (Aug 2005)

**Skills and Personal Interests**

**Computer Software:** Microsoft Office, STATA, ATLAS.ti, UCInet, NetDraw

**Graphic Applications:** Harvard graphics, Printshop Deluxe, Adobe Photoshop

**Languages:** Fluent in English and Kutchi. High proficiency in French and Swahili. Ability to communicate in Gujarati, Urdu, Hindi.

**Interests:** Painting, sculpture, Hockey, skiing, Flying single engine aircraft