

# 12th Annual Conference on the Science of Dissemination and Implementation in Health

Co-Hosted by the National Institutes of Health and AcademyHealth

## Mapping knowledge brokers in media ecosystems to assess the use of research evidence

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### Active Surveillance of Policy Ecosystems and Networks (ASPEN)

RESEARCH INFRASTRUCTURE	KNOWLEDGE BROKERING	TRAINING
<p><u>Surveillance and Environmental Scan</u></p> <ul style="list-style-type: none"> <li>Health indicators data.</li> <li>Legislative/executive/judicial actions.</li> <li>Public and constituent opinion data.</li> <li>News coverage and social media content/sentiment.</li> <li>Key stakeholders' positions / concerns.</li> <li>New research / guidelines.</li> </ul> <p><u>Analysis</u></p> <ul style="list-style-type: none"> <li>Tracking trends.</li> <li>Assessing knowledge needs and gaps.</li> <li>Detecting windows of opportunity.</li> <li>Formulating audience-centered engagement strategy.</li> <li>Identifying influential brokers.</li> </ul> <p><u>Dissemination &amp; Engagement Strategy</u></p> <ul style="list-style-type: none"> <li>Targeting (audience)</li> <li>Packaging and tailoring (content)</li> <li>Channels (distribution)</li> </ul>	 <p>Knowledge/Engagement Portal</p> <p><u>Products and Tools</u></p> <ul style="list-style-type: none"> <li>Research briefs.</li> <li>Policy briefs.</li> <li>Research news and alerts.</li> <li>Data visualizations.</li> <li>Stories and testimonials.</li> <li>Interactive data dashboard.</li> <li>Social media feed.</li> <li>Community feedback tools.</li> <li>Links to research resources.</li> <li>Data collection tools.</li> </ul>	<ul style="list-style-type: none"> <li>Science communication.</li> <li>Audience segmentation.</li> <li>Branding.</li> <li>Facilitation.</li> <li>Media advocacy.</li> <li>Influence analysis.</li> <li>Evaluation.</li> </ul>

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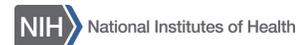


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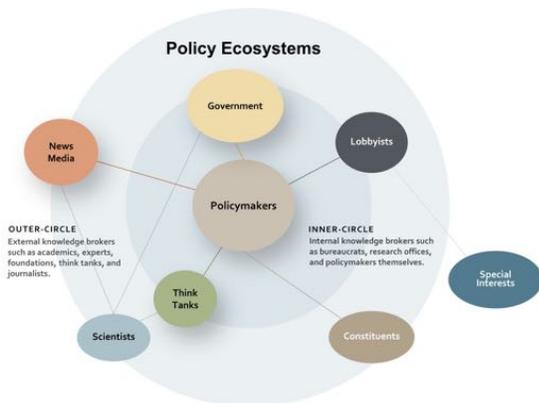
# Knowledge Brokerages in Policy Ecosystems

- **Knowledge brokerage** is defined as the full suite of activities required to achieve evidence-based decision-making
  - **Knowledge brokers** are agents who support this agenda by facilitating interaction and engagement among researchers and end-users to enhance knowledge exchange, enable the use of scientific knowledge in decision-making processes, and strengthen research impact.
- Knowledge brokers act in a variety of capacities; mapping of information flows provides a key methodological tool for identifying those key actors based on their positional roles (e.g. Burt, 2002)

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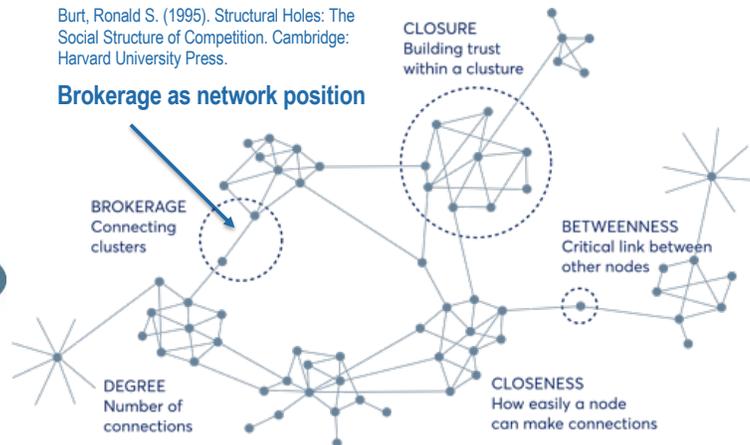


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Burt, Ronald S. (1995). *Structural Holes: The Social Structure of Competition*. Cambridge: Harvard University Press.

**Brokerage as network position**



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## Mapping the Policy Ecosystem

- Mapping of the policy ecosystem provides context for understanding the environment of policy implementation
  - The context of implementation may matter; this is well established in individual and group settings (Jacobs, Weiner and Bunger, 2014) in implementation science
    - E.g. theory of innovation implementation (Klein and Sorra, 1996) emphasized the importance of the overall attitude of stakeholders in implementation contexts
- Our focus is on external policy contexts; our aim is to understand the policy climate and to identify key actors in order to identify knowledge brokers who can serve to advance implementation goals
  - Extends more broadly from political science and organizational change literature but has been extended to research in this domain (e.g. Urquhart, Porter, Sargeant, Jackson & Grunfeld, 2014; socio-political climate external to the organization)

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## Example: Mapping New Jersey

The U.S. Preventive Services Task Force guidelines recommend routine screening for depression in children and adolescents aged 12 to 18-years-old.

In response, 21 states recently introduced or are considering legislation that will mandate universal access to adolescent depression screening in public schools ([Source](#): National Conference of State Legislatures).

Researchers work collaboratively with patient advocacy organizations (PAOs) to build local and/or regional research infrastructure that can produce research that is responsive to policymakers' knowledge needs regarding the implementation of evidence-based practices/policies.

Researchers and PAOs also collaborate on establishing mechanisms and tools for collecting and analyzing data (analytics) regarding key aspects of the policy ecosystem (e.g., news coverage, public opinion, stakeholders' positions, etc.) to identify potential barriers and opportunities for promoting and implementing evidence-based practice/policy.

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## Example: Mapping New Jersey

### ASSEMBLY, No. 3926 STATE OF NEW JERSEY 218th LEGISLATURE

INTRODUCED MAY 10, 2018

AN ACT concerning student mental health and supplementing chapter 40 of Title 18A of the New Jersey Statutes.

**BE IT ENACTED** by the Senate and General Assembly of the State of New Jersey:

1. a. A board of education shall ensure that each student in grades seven through 12 annually receives a health screening for depression. The screening shall be administered by a school physician or school nurse and shall consist of a written self-report tool

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## Merging Mapping & Knowledge Brokerage

### Data Sources

- State level media coverage of legislation and other activities aimed at addressing adolescent depression
- Policy data at the state level
  - Used to identify key actors and issues
- Social media analysis of Twitter data in order to identify ongoing conversation both within and beyond policy circles

### Building a Network

- Network tie
  - An actor is connected to a piece of research evidence by referencing it in a hearing or in an interview
- Network type
  - 2-mode (2 types of actors)
  - "research evidence" to "actors"
- Convert to a 1-mode network
  - "actors" connected to "actors" based on reference to a common piece of research evidence

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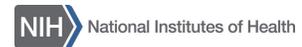


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## Method: Social Media Tracking

- Focusing on joining disparate datasets by connecting actors & evidence as key points of intersection
  - Social media data tracking: open-source **Social Feed Manager** and use the Twitter API to automatically sample key Twitter feeds
  - Additional analysis of local news media data via Archive-IT
  - Collection of policy data via manual search of local NJ state databases

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## Method: Social Media Tracking

- Social media tracking → focus on Twitter data collection due to availability of access via the Twitter API
  - Challenges associated with identifying the right conversations and geo-locating social media content
    - Query: #breakthestigma OR #itsokaytonotbeokay OR #LetsTalkAboutIt OR #mentalhealth OR #SuicidePrevention OR #TeenMentalHealth OR #teensuicide OR #TeenSuicidePrevention OR #youarenotalone
    - Alternative approach involves tracking by account; both approaches can be merged
    - Accounts were identified by using the document analysis to identify a seed list of key actors and then identify their related social media accounts.

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Collection Sets / NJ Adolescent Depression Test 2 / NJ Local Content

## NJ Local Content

Twitter filter  
Collection is active. Turn off to edit.

Turn off -  
Deactivate -  
Edit  
Export

Data collected: 71 files (15.0 MB)

Stats:  
• tweets: 17,342

Details -

Seeds [Download seed list](#)

Active <sup>1</sup> Deleted

Search

Filter criteria

Messages

- Track: #breakthestigma, #itsokaytonotbeokay, #LetsTalkAboutIt, #mentalhealth, #SuicidePrevention, #TeenMentalHealth, #teensuicide, #TeenSuicidePrevention, #youarenotalone

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## Method: News Media Tracking

- Mapping of specific NJ environment
  - Use of **Archive-IT** to crawl and aggregate content at the statewide level; automated tracking and data collection for 678 local New Jersey media outlets and use of link analysis to track connections between organizations
    - e.g. two organizations are connected if they reference each other within a one-month period
  - Use of **Issue Crawler** web tool to perform initial crawl and identify relationships between key organizations

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## Method: Policy Tracking

- Mapping of policy documents
  - Manual search of New Jersey State Legislature key hearings and bills
  - Manual coding of hearings and bills in order to identify key actors results in two significant outcomes
    - A directory of key actors who can be identified on social media and in news coverage
    - A network of bill co-sponsors (e.g. a legislative network)

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## Example: Mapping NJ



**Local NJ 3**

**Co-Link Map Details:**

Author: Matthew Walker  
 Email: matthew.walker@nih.gov  
 Created: 4 Nov 2019 - 10:00  
 Co-Link: 1  
 Average clustering coeff: 0.77  
 Co-Link Average Path: 1.00  
 Diameter: 1  
 Co-Link Depth: 1  
 Nodes: 3  
 Edges: 3

Map generated from dissemination link to the Science of Dissemination, Implementation, and Health

**Legend:**

● (Large) ● (Small)

**Select Link Layers:**

Link: on

**Statistics:**

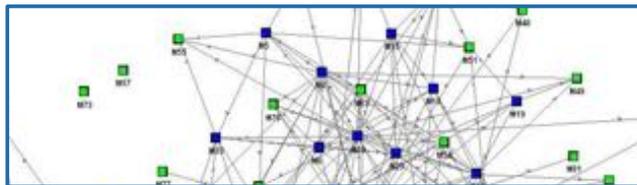
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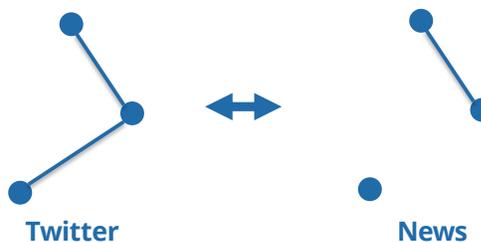
## Method: Union of Data Sets



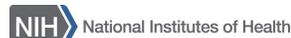
{Twitter} U {News} U {Policy}

Where directed ties across levels of the network affirm a high probability of tie formation

e.g. structural equivalence



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## Example: Mapping NJ

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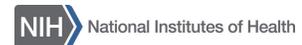


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## Extensions to Implementation Science

- The external environment is a key (and understudied) aspect of innovation adoption and implementation processes; equally relevant to the study of health policy formation (Fisher, Shortell and Savitz, 2016)
  - Forman et. al (2013) point to external barriers to implementation of policy in a study of addressing policy regarding school psychology services; media environment mapping can help to identify stakeholders as barriers
- Merging of data science approaches with implementation science of external environments provides a path for mapping key stakeholders and identifying knowledge brokers who may be able to mobilize research evidence but are not part of the traditional policymaking environment

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## Extensions to Implementation Science

- Looking at our network analysis of evidence flow, we can identify key stakeholders who are or should be engaged in conversation around a particular issue
- The structure of the stakeholder network can guide who you engage with (affiliation aside) and help to affect change in the external socio-political climate; similarly can help to detect policy windows based on climate
- News media are brokers – they introduce and guide attention to issues – and this type of analysis can reveal key brokers in that space (especially at local levels)

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# Thank you!

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