AIR®
Advancing Evidence.
Improving Lives.

Program Evaluation Approaches & Methods

American Institutes for Research: Courtney Tanenbaum, Principal Researcher| Robert Nathenson, Senior Researcher| Eben Witherspoon, Researcher | Korantema Kaleem, Researcher

Fisk-Vanderbilt Regional Center of Excellence: ReAnna S. Roby, Postdoctoral Researcher

You Can Build It: Tools for Bridging Research, Practice and Scholarship Virtual Workshop | July 15-16, 2021

Agenda

1. Review Purposes and Types of Program Evaluation
2. Discuss Strategies for Selecting and Working with an Evaluator
3. Walkthrough the Steps of Developing and Implementing an Evaluation Plan
4. Explore Examples of Study Methods and Resources for Program Evaluation
5. Questions

AIR®
Advancing Evidence.
Improving Lives.

Program Evaluation Purposes and Types

What is Program Evaluation?

"The systematic collection of information about the activities, characteristics, and outcomes of programs to make judgments about the program, improve program effectiveness, and/or inform decisions about future program development" (Patton, 1997)

"The integration of program implementation with evaluation contributes to integrity, or truth-making" (AIHEC Indigenous Evaluation Framework, p. 12)

Two Main Types of Evaluation—Both are Important!

1. **Process/formative evaluation:** Is the program operating/being implemented as planned? (E.g., with respect to adherence to design, delivery, engagement, and dosage)

2. **Outcomes/summative evaluation:** Is the program achieving its objectives? What impact is it having?

AIR®
Advancing Evidence.
Improving Lives.

Selecting and Working with an Evaluator

Selecting an Evaluator: Considerations

- Internal or external
- Independent/autonomous evaluation or ***participatory/collaborative evaluation***
- Time/capacity of evaluator to carry out activities
- Training and experience in program evaluation design, methods, and reporting needs
- Potential conflicts of interest
- Budget/cost

Where to Find an Evaluator

- Your **own institution or partner institution** (e.g. faculty in the social sciences/school of education)
- Your **own network/word of mouth** (e.g. faculty at other colleges or universities or independent evaluators/consultants)
- **Professional settings** and organizations with experience/focus on broadening participation in STEM (e.g. a research organization like AIR)
- **American Evaluation Associate** website: *Find an Evaluator* tool searchable database
- Competitive **Request for Proposal** process to solicit bids

AEA Find an Evaluator Tool

Find an Evaluator

Use this page to identify AEA members available for evaluation consulting or to serve on evaluation teams due to specific expertise in particular methodologies.

First Name:

Last Name:

Evaluator Firm Name:

Evaluator Areas Of Expertise:

Evaluator Location:

Evaluator State:

Alabama	Kentucky	North Dakota
Alaska	Louisiana	Ohio
Arizona	Maine	Oklahoma
Arkansas	Maryland	Oregon
California	Massachusetts	Pennsylvania
Colorado	Michigan	Rhode Island

Tips for Working with Your Evaluator as a *Partner*

- Include your evaluator as a member of your program team
- Meet and communicate frequently
- Invite your evaluator to program events
- Foster transparency in sharing information, updates, learnings, and challenges
- Revisit evaluation design and plans regularly and introduce flexibility as may be necessary to account for unintended or unforeseen circumstances or to deepen learning

Developing an Evaluation Plan

Six Steps to Working with your Evaluator to Develop a Plan

1. Clearly define **program goals and objectives** evaluation will measure
2. Develop a **program logic model** or theory of action to ground evaluation design and focus
3. Develop **evaluation questions** aligned to steps 1-2
4. Determine **evaluation design** to effectively address questions
5. Establish a **data collection plan** and timeline
6. **Communicate and reflect** on findings

Step 1: Define Program Goals

- **Clear, well-defined, *reachable* goals** can clarify what you want to learn and report on from the evaluation, while additionally helping focus efforts, use time and resources productively, and increase relevance and value of results.

- Characteristics of "good" goals and objectives to drive evaluation:

  a. Specific, simple, and significant

  b. Measurable and *motivating*

  c. Attainable/achievable

  d. Relevant

  e. Time-based or time bound

  See this resource to see some specific examples of goals that satisfy these criteria.

Step 2: Develop a Program Logic Model or Theory of Action

- Model should clearly show the **flow or connection** between program **inputs/activities** and expected **outputs or "goal state**" resulting from these, and how this goal state will lead to observable and measurable **near- and long-term outcomes**.
- Once you have an overarching model, consider developing **"click down" models** for each activity/input .

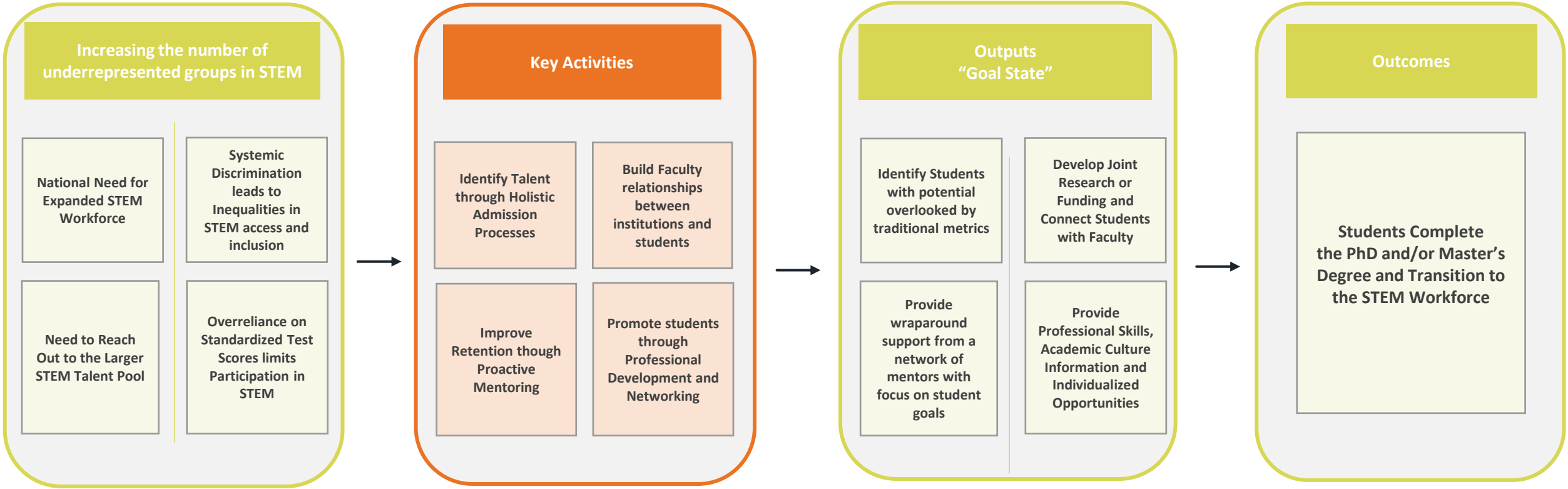
Start with an "anchor statement"

*The program identified [**problem**] based on [**evidence**]. To address this problem, the program adopted [**approach**], because [**rationale**]. Key activities in this approach include [**activities**] which will lead to [**outputs/goal state**]. Those outputs, in turn, will lead to [**measurable student/program outcomes**].*

Fisk to Vanderbilt Basic Logic Model - Overall

Mission: The mission of the Fisk-Vanderbilt Master's to PhD Bridge Program is to increase the number underrepresented minorities in STEM

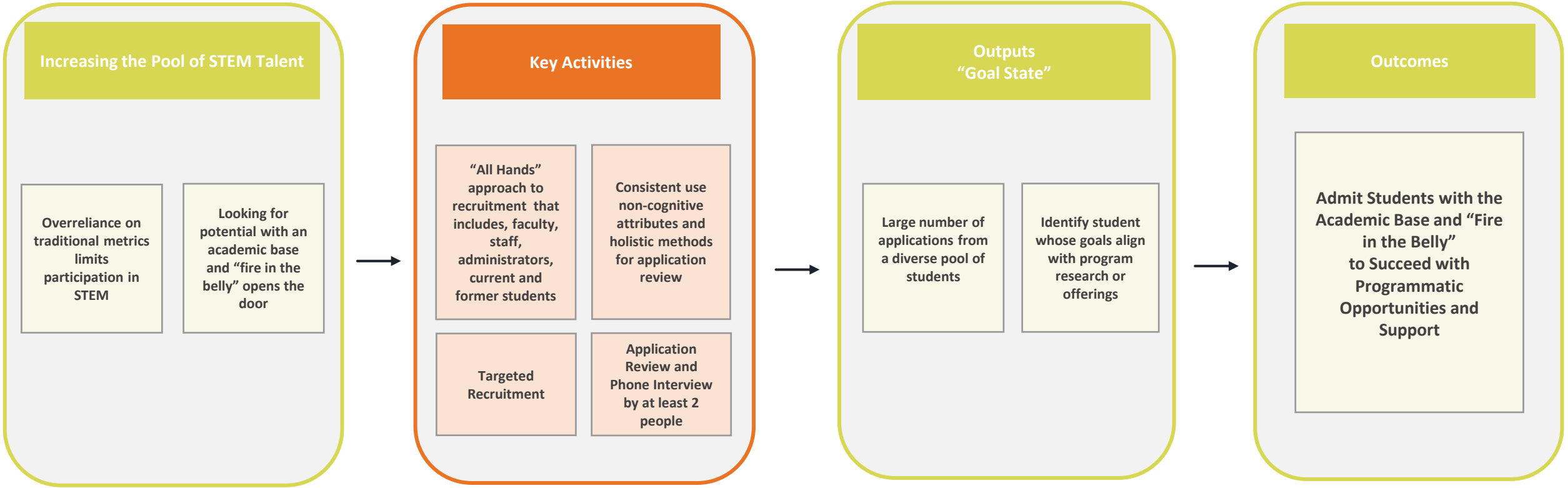
Rationale: Underrepresented students more frequently use the Master's degree as a stepping-stone to the PhD



Fisk to Vanderbilt Basic Logic Model – Recruitment and Admissions

Goal: To Identify student with clear potential and desire for the PhD that can be well-served by the program

Rationale: By using non-traditional metrics and looking for potential, we can reach a larger pool of students and increase STEM diversity



Step 3: Develop Evaluation Questions

- Consider the following:
  a. Why are we doing this evaluation? **What do we want to know?**
  b. Who is our primary **audience** and how will results be used?
  c. What data/sources of **data are available** to us?
  d. What **metrics** are needed to **progress on and achievement** of program goals and objectives?

Step 4: Determine Type of Evaluation Design

- Evaluation design is the **structure and methods** that provide the information needed to answer each of your evaluation questions. Possible designs:
  a. **Process** (non-experimental)
  b. **Outcome** (non-experimental)
  c. **Outcome/impact** (quasi-experimental or experimental)
- Considerations for **determining design**:
  a. **Primary purpose** of the evaluation and evaluation questions
  b. Your program's **logic model**
  c. **Resources** available and timeline for the evaluation
  d. Funder's **evaluation requirements** (if applicable)

Step 5: Establish Evaluation Implementation Plan & Timeline

- What **existing/extant data** are available? What **new data** will need to be collected?
- Will **IRB approval** be required?
- Who/what **population** should data be collected from to answer evaluation questions? How/what criteria will be used to identify **final sample**?
- Who **will collect the data**? How will **participants be recruited** (if applicable)
- Will data collection **protocols/instruments** need to be developed?
- **When will data be collected**?
- When will **reports or other dissemination activities** need to be produced?

Step 6: Communicate & Reflect on Findings

Internally: Engage key stakeholders involved in programming

- **Share and discuss results** (the good and the bad!) Facilitate conversations to reflect on:
  - Did we make progress/reach our overall goals?
  - Which goals did we not make progress on/achieve? What kept us from doing so?
  - What can we do better or what did we do that was great that we can leverage/use to improve programming moving forward?
- **Act on findings** to support continuous improvement

Externally: Communicate accomplishments and lessons learned broadly

- **Disseminate/report results** to best reach different target audiences
  - Peer-reviewed academic journals
  - Peer-reviewed practitioner-oriented journals
  - Conferences
  - White papers, issue or data briefs
  - Data visualizations/infographics
  - Social media (e.g. blogs, twitter, etc.)
  - Webinars

Examples of Study Methods and Resources for Program Evaluation

Examples from AIR's study of the F-V Bridge Program and Other Resources and Tools to Consider for Your Own Evaluation

- Surveys
- Student administrative data
- Social Network Analysis

Online Student Surveys

Student Survey—Benefits

- Provides a strong and valuable complement to purely quantitative student progress and outcome data: What experiences, challenges, successes in programming are behind the numbers?
- Offers a less time and resource-intensive data collection than interviews and focus groups: Sample can be larger and is not dependent on interviewers' and respondents' schedules.
- Can capture a broad range/full population of perspectives and experiences on a consistent set of questions.
- Respondent can complete survey in multiple sessions and can be assured confidentiality/anonymity Often resulting in more willingness to share "honest" responses
- Follow up and reminders can be conducted via email to encourage participation and enhance response rates

Planning for the Survey

- Identify a **survey platform**
  a. SurveyMonkey is common, but there are others! A useful comparison of online survey tools by their key features and functionalities is available here.
- Determine when you need to have survey data in hand and **backward map a timeline** for survey development, survey pre-testing, participant recruitment, and administration window.

Developing the Survey

- Determine **target population**: Who do you need data from to answer EQs?
  a. Current students and/or former and alumni students?
- Determine **key topics** of interest to best address EQs
  a. Organize topics of interest and informally write a list of all the things you want to learn from respondents for each topic

Survey Item Development: Sourcing & Accessing Item Banks

Sample Databases

APA PsycTests - https://www.apa.org/pubs/databases/psyctests

- Database of psychological tests and measures designed for use with social and behavioral science research.
- Includes ready-to-use tests and measures from the APA
- Features instruments that are relevant to psychology and related fields, such as psychiatry, education, medicine, business, social work and more
- Each detailed test includes a summary, background information, development history, purpose, reliability and validity data (when available) and the citation for the peer-reviewed source document

ICPSR (Inter-university Consortium for Political and Social Research) - https://www.icpsr.umich.edu/web/pages/membership/join.html?utm_source=web&utm_medium=web&utm_campaign=web

- Search ICPSR for studies using surveys -- you may find a survey you can re-use for your own study (with proper attribution)
- Can also use the SEARCH/COMPARE VARIABLES search option to find specific variables to guide you in constructing your own survey questions

Accessing databases

- Select from individual subscriptions or institutional licenses on your platform of choice.
- Your institution may already be a member of the above databases.

Survey Item Development – Additional Resources

Additional resources

Resource	Subject Area	Site
Education Resources Information Center (ERIC)	Education research and information	https://eric.ed.gov/
Educational Testing Service (ETS)	General – with a focus on education The Test Collection at ETS is a database of more than 25,000 tests and other measurement devices.	https://www.ets.org/test_link/about
RAND	Health Care, aging, mental health, quality of life etc.	https://www.rand.org/health-care/surveys_tools.html
ProQuest Dissertation & Theses Global	Multidisciplinary index of dissertations and theses from all fields of study. Some of the dissertations include entire research documents.	https://about.proquest.com/en/
National Center for Education Statistics	Education	https://nces.ed.gov/nationsreportcard/experience/survey_questionnaires.aspx
University of Indiana – Center for postsecondary research	Postsecondary research National Survey of Student Engagement Faculty Survey of Student Engagement Beginning College Survey of Student Engagement	https://nsse.indiana.edu/

Survey Item Development – Additional Tips & Strategies

- **Check the surveys/scales researchers have used**; e.g. search information in the back of relevant published articles:
  a. you might then be able to find the actual survey instrument/measurement scale used for the study, or
  b. if the instrument/scale is only referenced, you can Google the name of the survey/measurement scale and check if it's available for download or purchase, or
  c. contact the researcher(s) and/or organization to see if it’s available to the public and/or if they'll share it with you.

Source: https://research.library.gsu.edu/surveys-and-qualtrics/surveys-scales-measurements

Survey Item Development – Finalizing Questions

- Examine and **prioritize items/questions** that have been validated and are reliable.
- **Create your own item bank** of potential survey items from existing sources (be sure to track/document the source of each item and note its original use).
- **Create a first survey draft** with prioritized items and accompanying respondent materials (e.g., survey introduction text, agreement page, survey instructions).
- Have the survey draft **reviewed internally** by colleagues who are not a part of the project.
  a. Reviewers should review all documents. They should **consider clarity, coverage of key concepts, consistency of formatting**, and so on.
- **Revise the survey** items based on internal review and **create a second survey draft for pilot testing** with individuals from the target population.

Conduct a Pilot Test

- Determine the appropriate method(s) for the pilot test.
  a. There are different ways survey items can be piloted. **Cognitive interviews** are probably the most common method for testing survey items.
- What are Cognitive Interviews?
  a. **One on one interview with a participant**. Interviews can take place in person or via an online platform (i.e., Zoom or Teams).
  b. A cognitive interview is **not** a test to see if the respondent answers questions correctly—its purpose is to **evaluates whether your respondents will understand the questions *as you intend***.
  c. It ensures that the instructions and questions are clear.
  d. It highlights issues within the survey and/or directions that are ambiguous or confusing to respondents.
- Appropriate number of cognitive interviews will depend on your full sample number; for a large sample, consider up to 8-10 participants.

How to Conduct and Use Data from Cognitive Interviews

- Respondents complete the survey as if they were an actual survey respondent but are asked to **provide verbal feedback to the interviewer on how they are understanding and interpreting the question and/or where they are confused** by a question, response option, or direction given as they go along.
- Interviewer should **document findings** from the cognitive interviews by taking detailed notes and/or audio recording the interview for transcription or review.
- Data from the full set of cognitive interviews completed should be **compiled, analyzed, and summarized**. Note that some platforms will analyze your results (i.e., Survey Monkey).
- Results should be used to **revise survey items, respondent materials, and other documents** pilot tested.

Additional Information About Cognitive Interviews

- How to Conduct a Cognitive Interview - A Nutrition Education Example (usda.gov) https://nifa.usda.gov/sites/default/files/resource/how-to-conduct-a-cognitive-interview.pdf
- Appendix 4: Cognitive Testing Interview Guide (cdc.gov) https://www.cdc.gov/nchs/data/washington_group/meeting5/wg5_appendix4.pdf

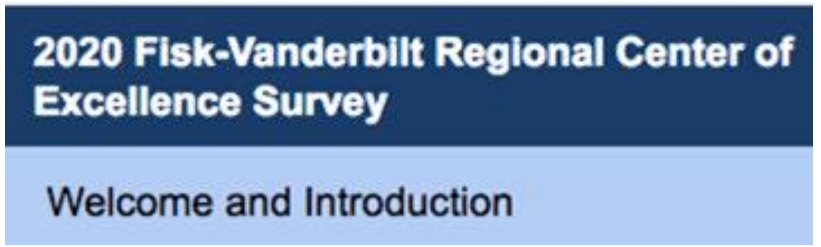
Final Steps

- Conduct a final “tech” test of the online survey with internal project team members to ensure technology/platform is operating correctly.
- Determine whether incentives will be provided.
- Prepare a timeline for communications with respondents, the survey administration period, and follow-up messages.
- Plan for tracking nonresponse and incentives.
- Prepare respondent recruitment and administration materials for actual survey.
  a. Survey invitation and introduction, with incentive information if offered
  b. Follow-up messages for nonresponse
  c. Thank you message

FVBP Study Student Survey—What We Did

- Rationale: Student survey would provide useful information in enriching qualitative and quantitative measures.
- For the purposes of our work, SurveyMonkey was utilized to develop and implement the survey.
- Prior to full administration to Bridge Stakeholders, the survey was refined through Cognitive Interviews.
    a. Purposely selected people with distance to the data analysis to help ensure the survey questions were comprehended in a meaningful way.
- Survey was administered online to Bridge students and data from such was used to support findings from other metrics.

Louis Stokes Alliance for Minority Participation
FISK – VANDERBILT REGIONAL CENTER OF EXCELLENCE



N= 20
10/15-31/2021

Student Administrative Data

Collection and Analysis of Student Progress & Outcome Data

- Types of information to gather
  - Participant **background information**
    - » Demographics, **undergraduate** institution **GPA**, locale, and type (e.g. HBCU, HSI, PWI, Carnegie classification), etc.
  - **Participation** in program activities, services, and supports
  - Key near-term and longer-term **outcomes**
    - » Current degree status in MA or PhD program (e.g., enrollment date, field of study, **completion date**)
    - » Credits earned/courses passed
    - » **Time** to MA/PhD completion
    - » Publications
    - » Conferences attended/conference presentations
    - » Etc.

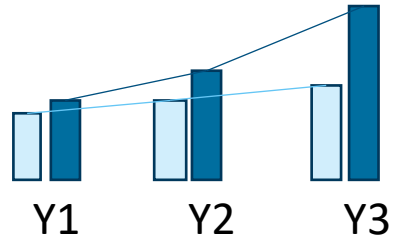
Collection & Analysis of Student Progress & Outcome Data: Tools

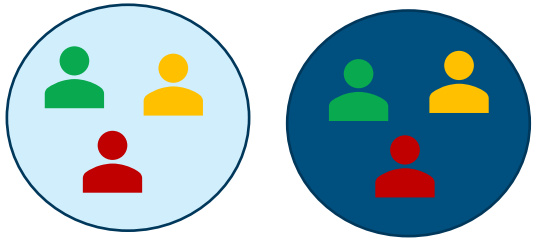
- Pros and Cons of various data platforms

	Low Cost	Customizable	Built-in Analytics
Google Forms/Sheets	****	**	*
Kintone	**	****	****
SurveyMonkey	***	***	***
Qualtrics	*	****	****

Collection and Analysis of Student Progress & Outcome Data: Design

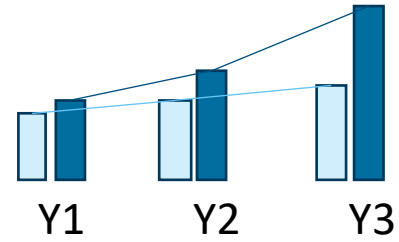
- **If feasible** (i.e., within scope, budget and capacity of evaluator), **strong** quasi-experimental or experimental **study design** can strengthen claims about program impact.
- For example:
  - Put structures in place to **gather key data consistently over time**
    - » Longitudinal data can be a powerful way to capture change!
  - Identifying a **matched comparison group**
    - » Reduces likelihood that explanation for program impact comes from other sources

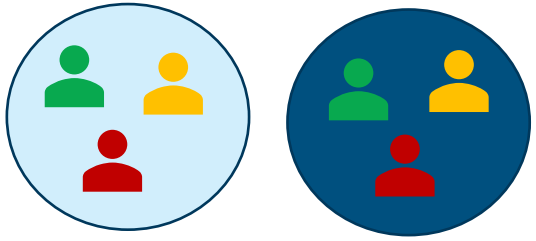




Our Approach for the F-V Study

- Example: Fisk-Vanderbilt Program Evaluation
  - **Internal Program Data:** Kintone Platform
    - » Historical data examined students' **progress through the program over time**
      - ◦ Undergraduate information, demographics, timing to program milestones
      - ◦ Used logistic regression to examine predictors of student trajectories through Masters program and into PhD
  - **External Comparison Data**: Tennessee Longitudinal Data System (TLDS)
    - » **Matched comparison group** allowed for more precise **estimate of impact**
      - ◦ Identified comparison group within STEM Masters students in TN schools
      - ◦ Matched on variety of available data (e.g., undergraduate GPA, demographics, major, cohort)



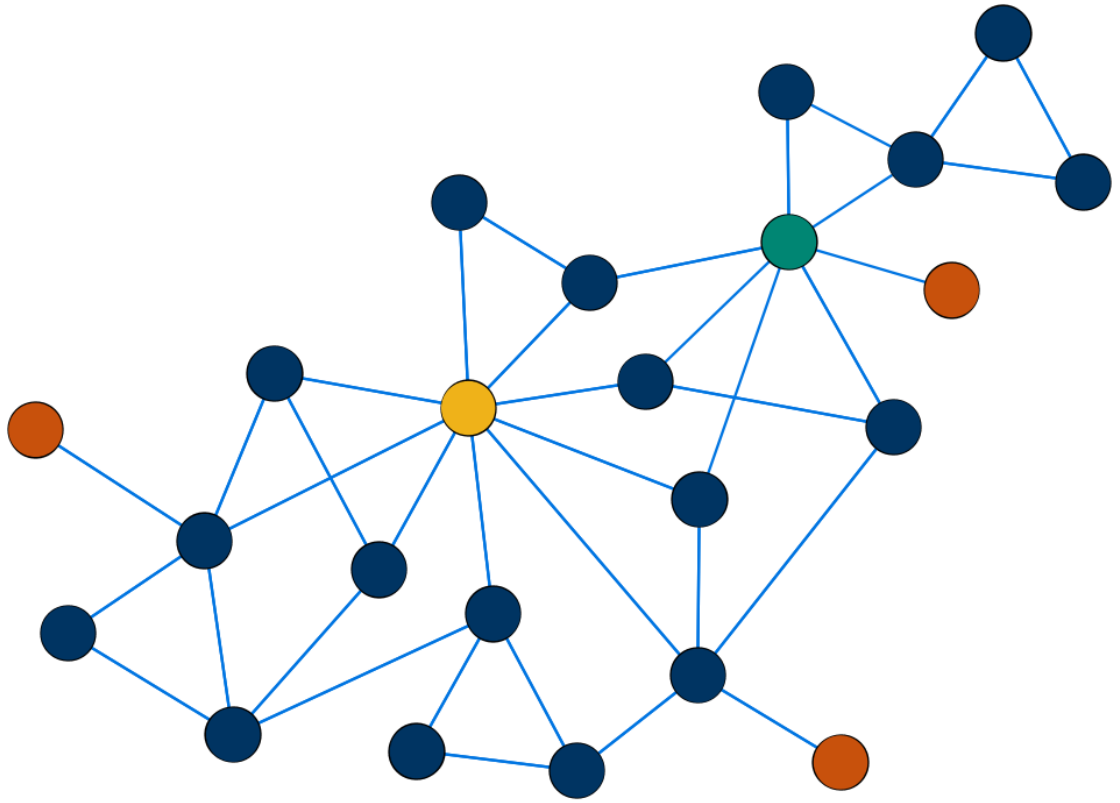


AIR®
Advancing Evidence.
Improving Lives.

Social Network Analysis

Social Network Analysis

- What is social network analysis (SNA)?
  - Rather than individual experiences, focuses on the structure of relationships between individuals in an organization.
  - SNA surveys ask questions like:
    - » Who do you go to for advice/support?
    - » How often do you go to them?
    - » What are the types of advice/support you get from them?



Social Network Analysis

- Although social network analysis has a way of sounding complex, the general components of it are actually quite common in our daily lives.
- For instance, let's take **happy hour.** We can see in this image a number of individuals celebrating happy hour.

Social Network Analysis

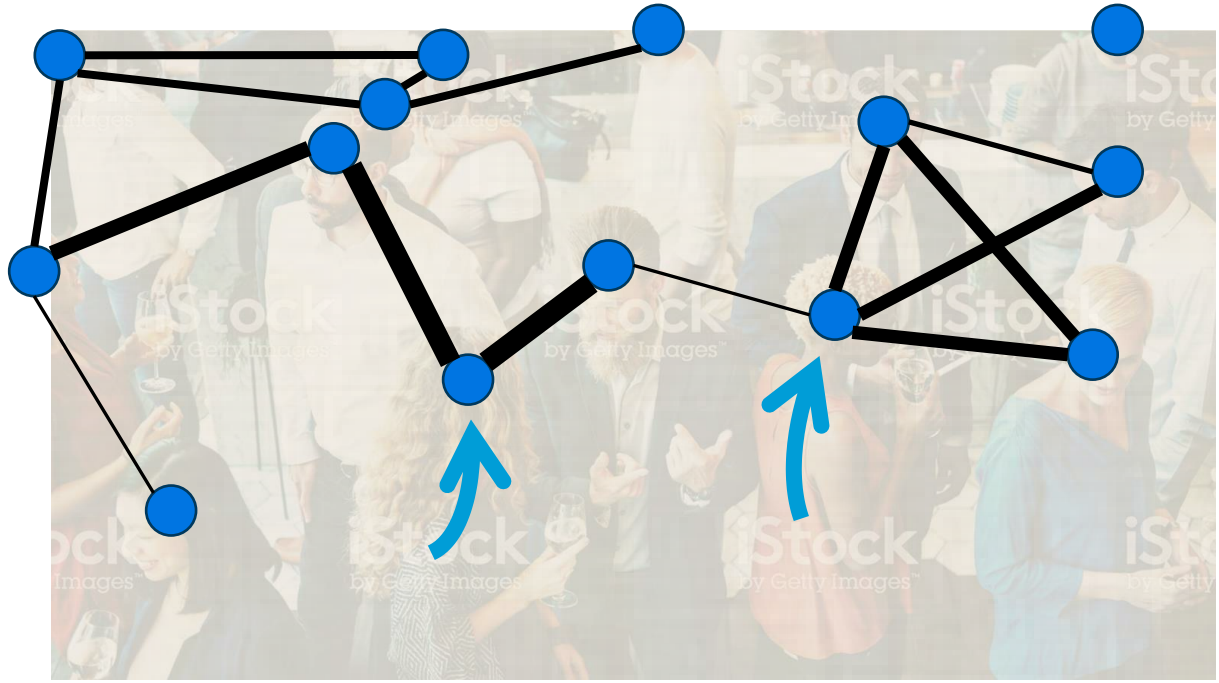
- All of these individuals can be represented by a blue dot, or node.

Social Network Analysis

- All of these individuals can be represented by a blue dot, or node.
- We can also draw lines, or ties, between two or more people who interact.

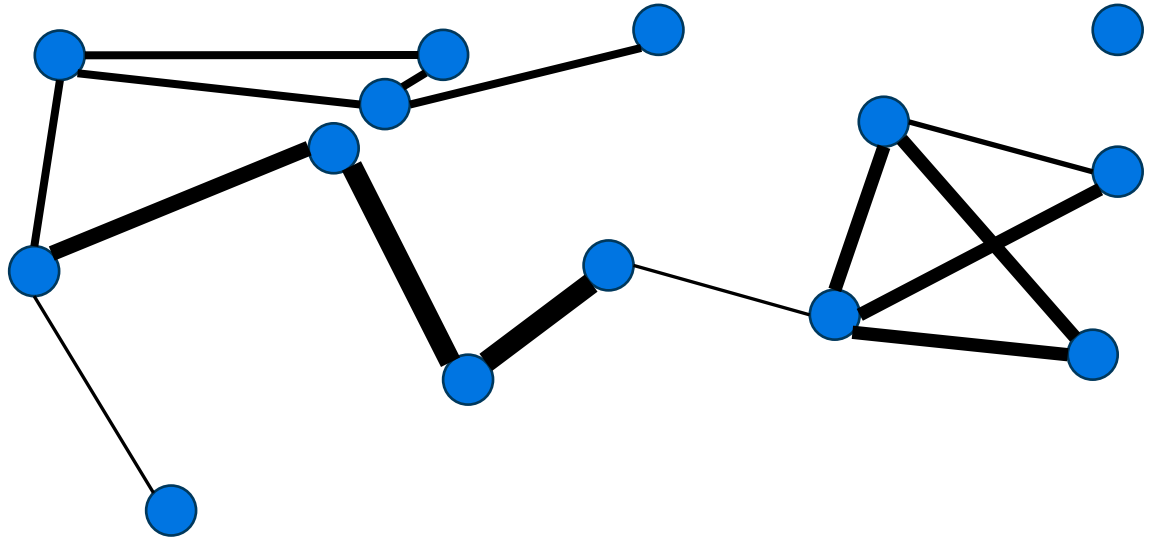
Social Network Analysis

- All of these individuals can be represented by a blue dot, or node.
- We can also draw lines, or ties, between two or more people who interact.
- Over time, we can start to see patterns such as individuals who:
  - interact with a greater number of people, or
  - interact with a few people more frequently.



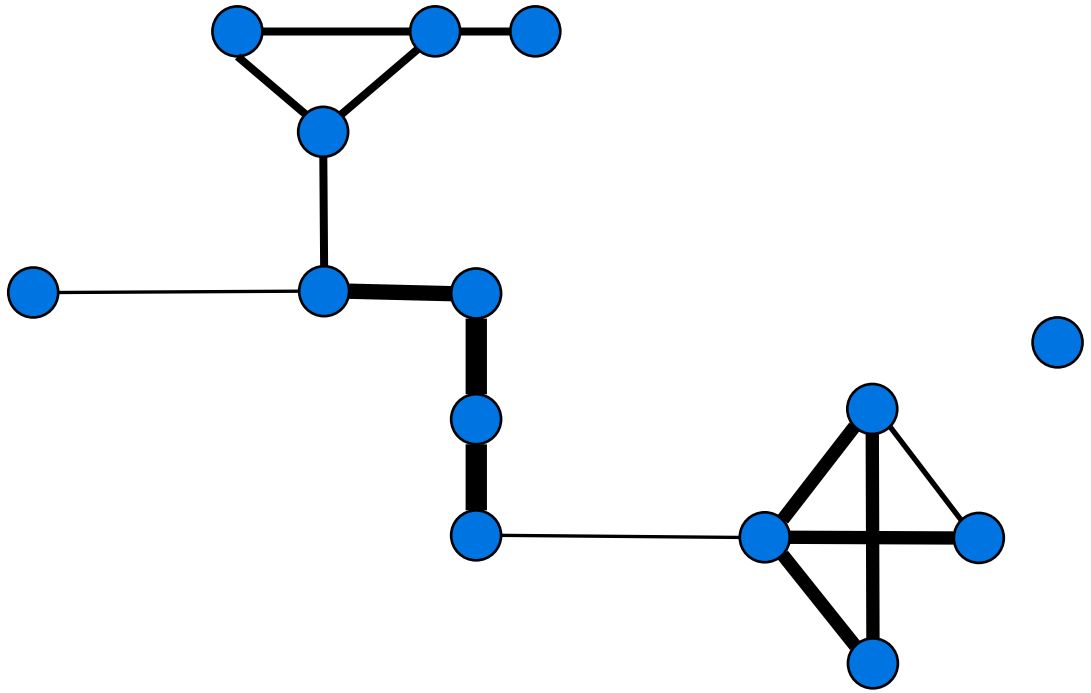
Social Network Analysis

- These visualization, or sociograms, can be rearranged, resized, and recolored to more clearly demonstrate network structure.
- Network measures can be analyzed with data about the actors to understand how the network structure influences behavior in an organization.



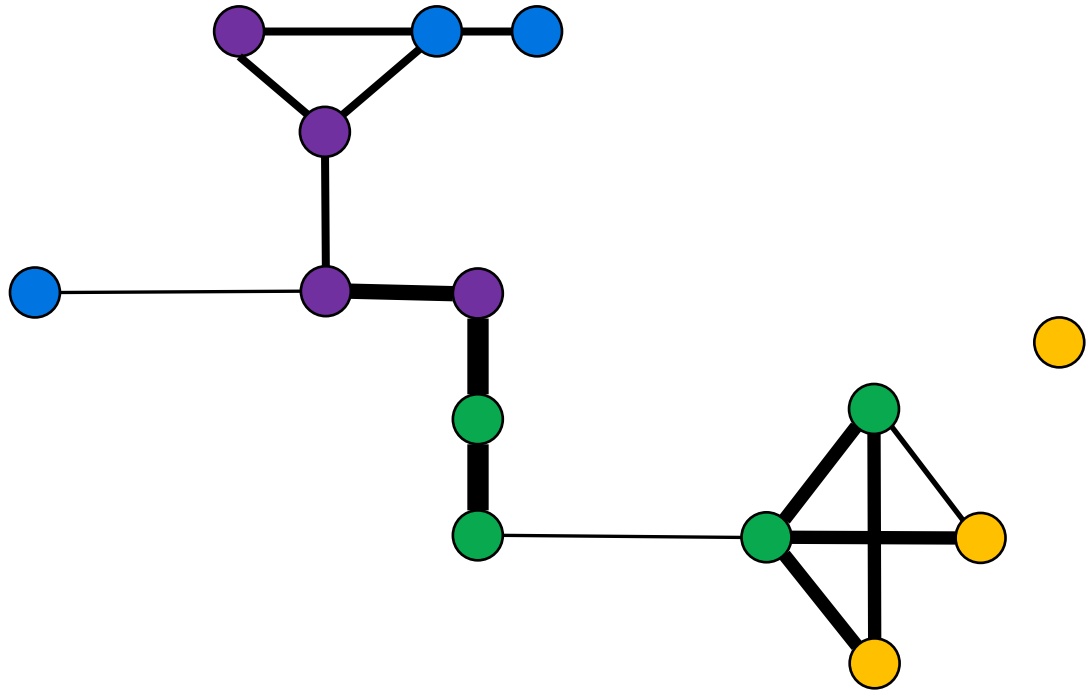
Social Network Analysis

- These visualization, or sociograms, can be rearranged, resized, and recolored to more clearly demonstrate network structure.
- Network measures can be analyzed with data about the actors to understand how the network structure influences behavior in an organization.



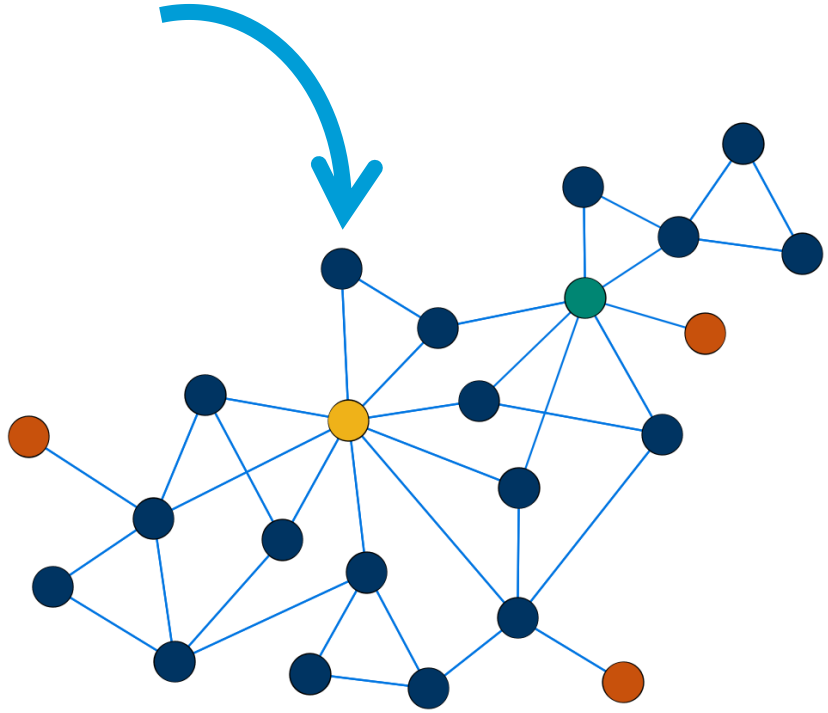
Social Network Analysis

- These visualization, or sociograms, can be rearranged, resized, and recolored to more clearly demonstrate network structure.
- Network measures can be analyzed with data about the actors to understand how the network structure influences behavior in an organization.



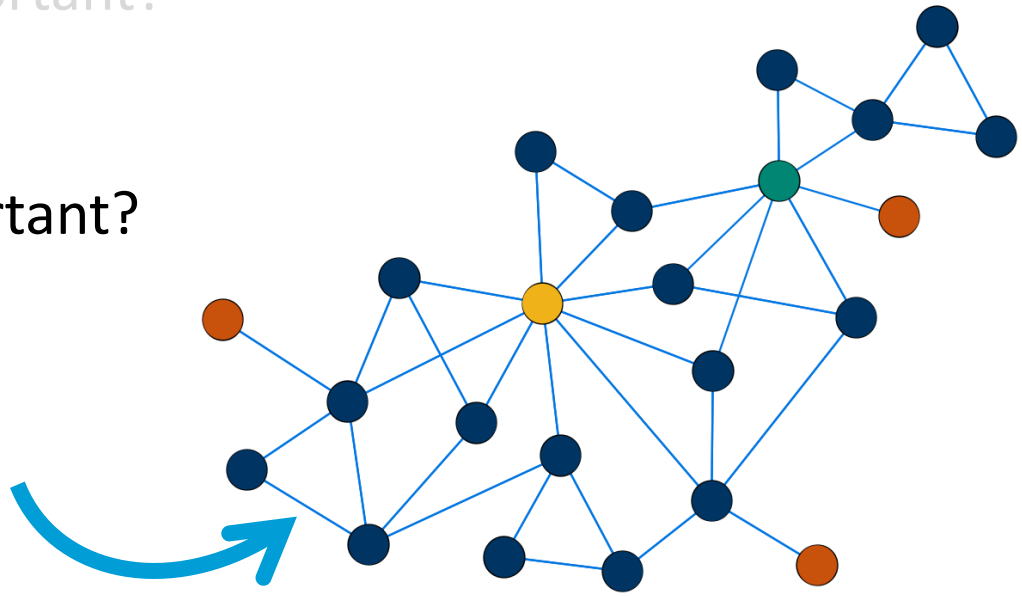
Social Network Analysis

- What questions can SNA help me answer?
  - Who are the key **actors** that make up your network?
    - » What attributes of the actors might be important?



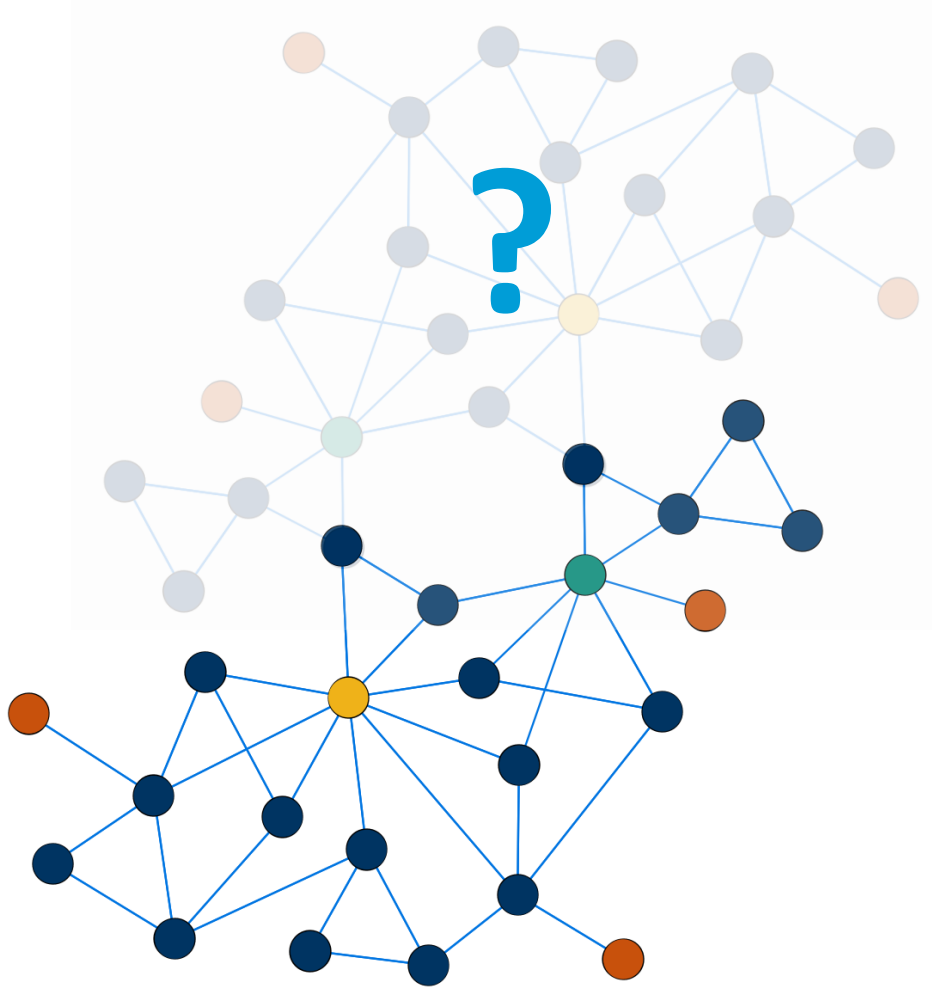
Social Network Analysis

- What questions can SNA help me answer?
  - Who are the key **actors** that make up your network?
    - » What attributes of the actors might be important?
  - What **relationships** might connect the actors?
    - » What types of relations that might be important?



Social Network Analysis

- What questions can SNA help me answer?
  - Who are the key **actors** that make up your network?
    - » What attributes of the actors might be important?
  - What **relationships** might connect the actors?
    - » What types of relations that might be important?
  - How does the network **change over time**?
    - » How does this impact network function?



Social Network Analysis

General steps for planning an SNA:

- **Step 1**: Determine the type of network you have.
  - *Bounded* (*e.g.,* all students in a classroom)
  - *Unbounded* (*e.g.,* open-enrollment workshop)
- **Step 2:** Develop and refine research questions.
  - *e.g.,* Who are the most connected members in the organization? What members are most isolated?
- **Step 3:** Determine type of data to collect.
  - *e.g.,* Social relationships or advice networks? Binary (yes/no) or frequency of interactions?
- **Step 4**: Select data collection tools.
  - Typically surveys or interviews
- **Step 5:** Select data collection method.
  - *Full network* (*e.g.,* all individuals in a network)
  - *Snowball sample* (*e.g.,* reach out to connections as they are identified)
- **Step 6:** Analyze the data.
  - Visualizations (*e.g., sociograms*)
  - Statistical analyses (*e.g.,* associations between network features and outcomes)

[1] Adapted from Digital Promise

AIR®
Advancing Evidence.
Improving Lives.

Questions and Discussion

Thank you!

Courtney Tanenbaum
Principal Researcher
202-403-5304
ctanenbaum@air.org