

EXPANDING D&I SCIENCE CAPACITY LOCALLY & GLOBALLY

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ACKNOWLEDGMENTS

DISC Executive Leadership Team (Drs. Borsika Rabin, Nicole Stadnick, Gregory Aarons, and Lauren Brookman Frazee)

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The University of California San Diego Altman Clinical and Translational Research Institute Dissemination and Implementation Science Center (DISC) and the Altman Clinical Translational Research Institute (UL1 TR001442)

AGENDA

1. **Background**
2. **Review of D&I Centers (Paper #1)**
3. **DISC Center Evaluation(Paper #2)**
4. **Key Takeaways**
5. **Discussion Questions**

DISC PUBLICATIONS

- Viglione, C., Stadnick, N.A., Birenbaum, B., Fang, O., Cakici, J.A., Aarons, G.A., ... & Rabin, B.A. (2023). A systematic review of dissemination and implementation science capacity building programs around the globe. *Implementation Science Communications*, 4(1), 1-41. <https://shorturl.at/dfBNI>
- Viglione, C., Rabin, B., Fang, O., Sheckter, L., Aarons, G.A., Brookman-Frazee, L., & Stadnick, N.A. (2023). Process evaluation of an academic dissemination and implementation science capacity building program. *Journal of Clinical and Translational Science*, 7(1), e207. <https://shorturl.at/rKOR5>



INTRODUCTION

- D&I has grown rapidly as a field over the past 10–15 years
 - substantial increase in implementation science submissions and publications
 - increased D&I funding
 - interest from global organizations, including WHO
- Of 27 Institutes and Centers at NIH, 18 participate in the D&I Research in Health Program Announcement (PAR-18-017)
- Programs focused on DIS training, mentorship, and capacity building have been developed nationally and internationally
- The demand for training and mentoring far exceeds available opportunities
- **Finding ways to accelerate the pace of DIS capacity building and training has been recognized as an international priority**

RELATED PUBLICATIONS TO DATE

- 1) Darnell, D., Dorsey, C.N., Melvin, A. et al. **A content analysis of dissemination and implementation science resource initiatives: what types of resources do they offer to advance the field?** *Implementation Sci* **12**, 137 (2017)
- 2) Davis, R., D'Lima, D. **Building capacity in dissemination and implementation science: a systematic review of the academic literature on teaching and training initiatives.** *Implementation Sci* **15**, 97 (2020).
- 3) Schultes, MT., Aijaz, M., Klug, J. et al. **Competences for implementation science: what trainees need to learn and where they learn it.** *Adv in Health Sci Educ* **26**, 19–35 (2021).
<https://doi.org/10.1007/s10459-020-09969-8>
- 4) Huebschmann, A. G., Johnston, S., Davis, R., Kwan, B. M., Geng, E., Haire-Joshu, D., ... & Rabin, B.A. (2022). **Promoting rigor and sustainment in implementation science capacity building programs: A multi-method study.** *Implementation Research and Practice*, 3, 2633489522 | 146261.

A SYSTEMATIC REVIEW OF D&I
SCIENCE CAPACITY BUILDING
PROGRAMS AROUND THE GLOBE

PAPER #1

OBJECTIVE

This project sought to identify and describe existing **D&I capacity building programs** and describe their strategies to bolster D&I capacity building efforts.

DEFINITION OF CAPACITY
BUILDING PROGRAM

An entity (e.g., organization, program or center) with at least one capacity building activity (e.g., consultation, technical assistance, networking events, journal club meetings) with an explicit focus or goal of building practical knowledge and skills to conduct DIS for public or population health work.

METHODS

Review Phase	Description
1	DIS Program Identification <ul style="list-style-type: none">• Conducted structured Google searches for DIS terms and synonyms (e.g., diffusion, knowledge transfer, improvement science)• Used Apify to extract the search result title, website, and description
2	DIS Program Screening <ul style="list-style-type: none">• Screened first 50 results from each of the 140 searches screened for DIS relevance & structure according to inclusion/exclusion criteria• Second screening performed by DISC leadership to confirm accuracy of inclusion/exclusion of programs and remove duplicates• Applied D&I categories to programs (e.g., dissemination and implementation, community engagement, quality improvement, and policy)• Final expert review by DISC leadership and external DIS experts
3	Additional Program Searches <ul style="list-style-type: none">• Reviewed currently funded programs (i.e., NIH CTSA, P and U awarded programs)• Screened results for duplicates and inclusion/exclusion criteria• Added missing and relevant programs to final list
4	Website Abstraction <ul style="list-style-type: none">• D&I concentration/s and D&I activities abstracted from each site on final list
5	Capacity Building Survey <ul style="list-style-type: none">• Distributed Capacity Building Survey via e-mail to all eligible programs• Summarized survey data



PHASE I - DIS
CAPACITY
BUILDING
PROGRAM
SEARCH
STRATEGY

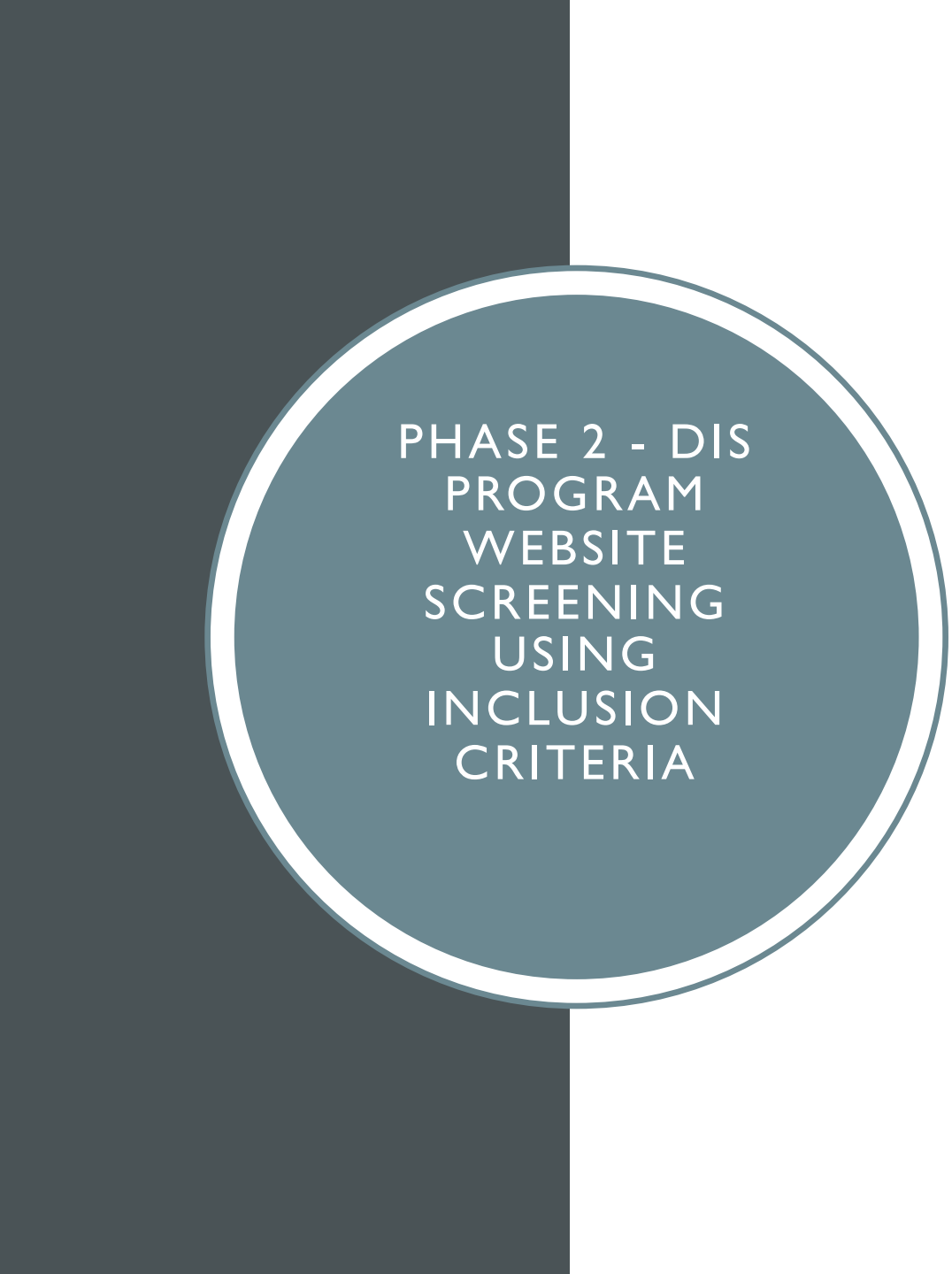
- Google searches for “dissemination and implementation” and nine synonyms that are common outside of USA (e.g., diffusion, knowledge transfer, improvement science) with and without the word “program” along with 13 synonyms (e.g., institute, center, collaborative)
- The first 50 search results were extracted from each unique search
- We used Apify, an online web-scraping tool, that allowed us to automatically extract the search result title, website, and description thus limiting the number of searches run

Table 1 Dissemination and implementation science capacity building program

From: [A systematic review of dissemination and implementation science capacity building programs around the globe](#)


Google search results	
Dissemination and implementation	Search results
"dissemination and implementation" AND "center"	1,730,000
"dissemination and implementation" AND "centre"	1,630,000
"dissemination and implementation" AND "institute"	1,660,000
"dissemination and implementation" AND "institution"	1,350,000
"dissemination and implementation" AND "program"	2,390,000

- “dissemination and implementation” and nine synonyms that are common outside of the USA (e.g., diffusion, knowledge transfer, improvement science) with and without the word “program” along with 13 synonyms (e.g., institute, center, collaborative)



PHASE 2 - DIS
PROGRAM
WEBSITE
SCREENING
USING
INCLUSION
CRITERIA

- 1) Research assistants screened webpages from Google ($n=7000$) to identify DIS programs meeting eligibility criteria
- 2) Study coordinator independently reviewed all programs to confirm and screened list for duplicate programs.
- 3) 2 faculty researchers independently reviewed 50% of the included programs to confirm program inclusion



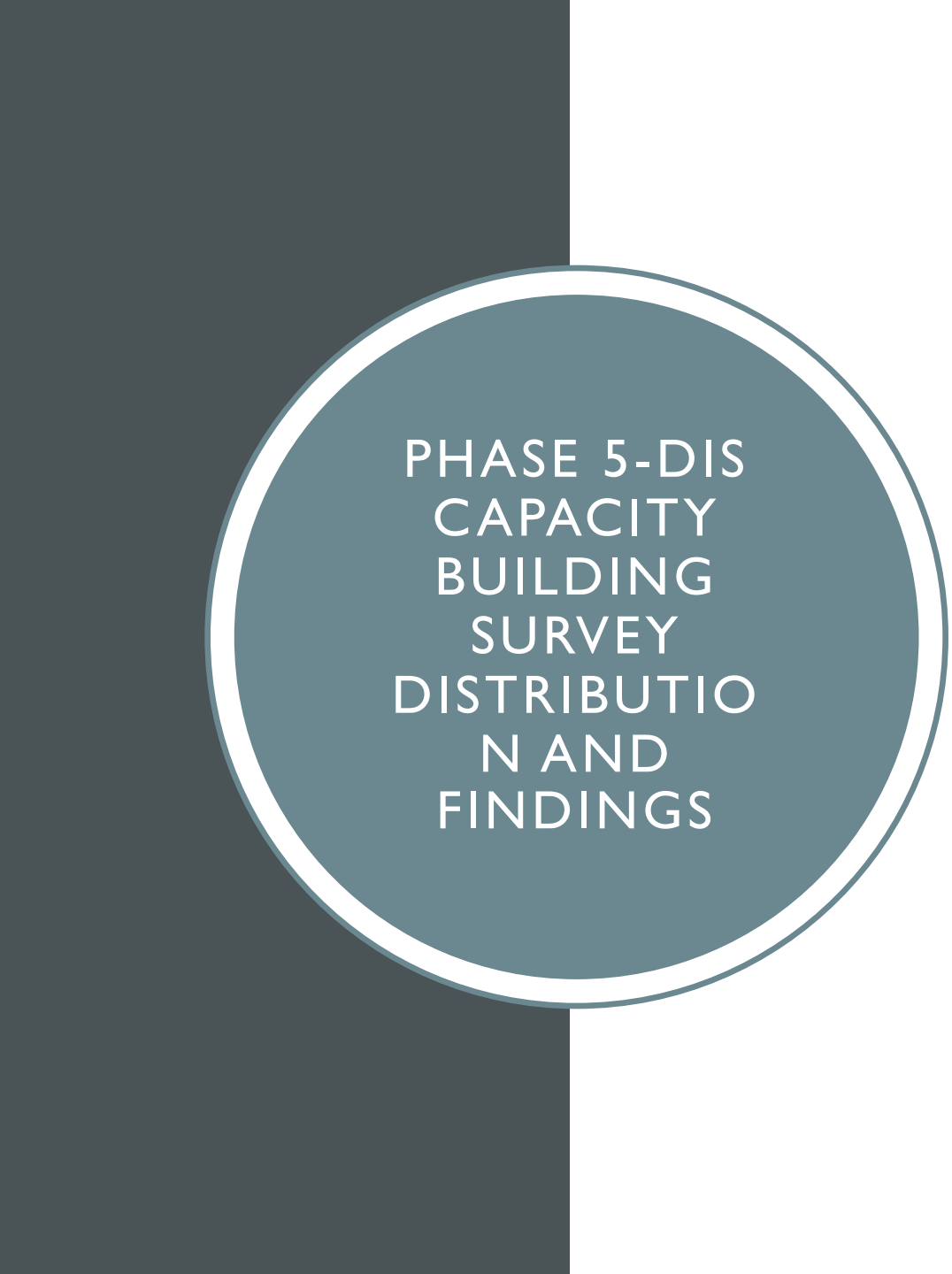
PHASE 3-
TARGETED
SEARCHES FOR
ADDITIONAL
DIS PROGRAMS

- We consulted 6 DIS experts to identify missing programs
 - Nationally and internationally recognized DIS researchers who were connected to our research team or identified via snowball sampling
 - Experts included those with international reputation in DIS, government funders, and DIS experts with experience leading DIS training and capacity building
- NIH Reporter
 - 2020 funding awards for DIS programs funded by NIH with known DIS components including CTSA and multi-project applications (e.g., U01, P50s)



PHASE 4—
WEBSITE
ABSTRACTION
FOR ALL
PROGRAMS
AND DATA
CLEANING

- Information was abstracted by research assistants using an iteratively developed abstraction form
- Fields for abstraction included
 - locational information
 - primary website
 - DIS concentration (DI, QI, Knowledge Translation, Policy, and/or Community Engagement)
 - DIS capacity building activities



PHASE 5-DIS
CAPACITY
BUILDING
SURVEY
DISTRIBUTIO
N AND
FINDINGS

- We emailed a Capacity Building Survey to the primary contact identified for each program
- The survey was structured following the domains of the Washington University Network of Dissemination and Implementation Research model
 - Model domains include inputs (e.g., funding model, human resources), activities (e.g., training, mentorship), outputs (e.g., grant outcomes, academic outcomes), and long-term public health outcomes guided by the Translational Science Benefits Model
 - The survey also captured evaluation methods and D&I competencies or frameworks for program evaluation
 - Outputs also included whether CBPs specialized in a DIS product or resource

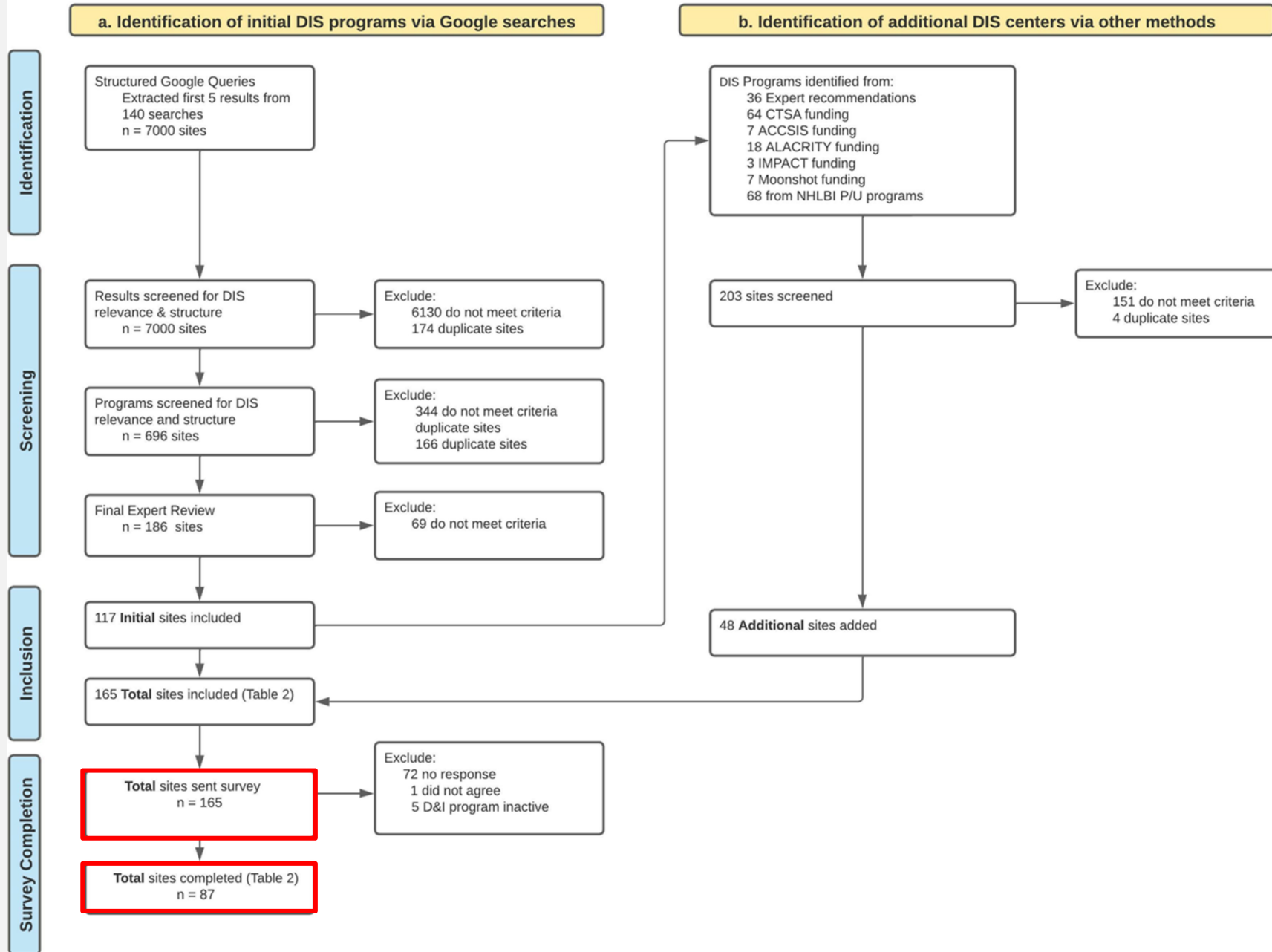
RESULTS

PAPER #1

DIS CAPACITY BUILDING PROGRAM SEARCH RESULTS (PHASES 1–3)

- The first 50 search results were extracted from each unique search resulting in 140 searches and 7000 search results.
- After removing duplicates ($n= 174$) and those not meeting the eligibility criteria ($n= 6130$), 696 CBPs were retained
- The secondary review narrowed the sample to 186 CBPs
- The tertiary review by faculty team members resulted in an additional exclusion of 69 CBPs
- DIS experts nominated 36 additional programs
- Targeted searches of funding mechanisms yielded 162 additional programs
- In total, through expert nomination and funding searches, an additional 203 programs were identified. Of these 203 CBPs, 151 did not meet criteria and 4 were duplicate sites. This phase resulted in 48 additional
- **Total of 165 CBPs**

PRISMA Diagram for DIS Program Capacity Review



DIS PROGRAM CHARACTERISTICS (PHASE 4)

- N=165 DIS CBPs are included in the final list
 - 112 (68%) are in the USA
 - 28 (17%) are in Western Europe
 - 17 (10%) are in Canada
 - 5 (3%) are in Australia
 - 2 (1%) are in Asia
 - 1 (.5%) is in Nigeria
- 131 had a concentration in *DIS* (79%)
 - 46 in *Quality Improvement* (28%)
 - 27 in *Knowledge Translation* (16%)
 - 5 in *Policy* (3%)
 - 4 in *Community Engagement* (2%)

Table 2 Results from systematic review of DIS programs

From: [A systematic review of dissemination and implementation science capacity building programs around the globe](#)

Host institution	Program name	Country / state / province	Website	D&I concentration Dissemination & Implementation (DI) Quality Improvement (QI) Knowledge Translation (KT) Subspecialty: <i>Community Engagement (CE)</i> <i>Policy</i>	Capacity building activities Conferences/Workshops Consultation Data Analysis Database Fellowships Framework/Tool Development Funding Guideline Dev. Internships Mentorship Research Seminars/Webinars Training/Courses Training Materials Video Channel Work Placement
Survey respondents (n= 87)					
ABCT Dissemination and Implementation Science Special Interest Group (DIS SIG)	ABCT Dissemination and Implementation Science Special Interest Group (DIS SIG)	USA	https://dissig.tidyhq.com/	DI	Conferences/Workshops Mentorship Training Materials
Boston University	Clinical and Translational Science Institute (CTSI)	USA / Boston	https://www.bu.edu/ctsi/	DI	Conferences/Workshops Consultation Framework/Tool Development

CAPACITY SURVEY RESULTS (PHASE 5)

- 87 (53%) CBPs completed the survey
- 62 (80%) were based in the USA
- 56 (71%) were affiliated with an academic institution

CAPACITY SURVEY RESULTS (PHASE 5)

SOURCES OF FINANCIAL SUPPORT

D&I funding model (n=73)	
Short term (i.e., start-up funds)	9 (12%)
Long term (i.e., ongoing)	33 (45%)
Both	21 (29%)
Other	9 (12%)
Sources of financial support (n=87)	
Research / program grants	45 (52%)
Internal institutional funds	35 (40%)
CTSA	25 (29%)
Internal department funds	20 (23%)
Non-profits	17 (20%)
Government	9 (10%)
Education/course fees	4 (5%)
Membership fees	3 (4%)
Fees for services	3 (4%)
Other	4 (5%)

CBP ACTIVITIES

Activities

D&I activities (n=87)

Training and Education	69 (79%)
Mentorship	58 (67%)
Resources and Tools	57 (66%)
Consultation	58 (67%)
Professional Networking	54 (62%)
Technical Assistance	46 (52%)
Grant Development Support	45 (52%)
Internship for Students/Trainees	24 (28%)
Other	5 (6%)

Types of training (n=69)

Webinars/Seminars	63 (91%)
Workshops	48 (70%)
Coursework	43 (62%)
Invited Guest Speakers	41 (59%)
Masters Programs (D&I or public health)	10 (14%)
Integrated training in medical programs	10 (14%)
Doctoral/PhD (D&I or public health)	9 (13%)
Other	8 (12%)

OUTPUTS

Outputs

Productivity measurements (n=87)

# of Publications	56 (64%)
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# of Grants	51 (59%)
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# of Mentees	41 (47%)
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# of Proposals submitted	33 (38%)
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# of Active Members	31 (36%)
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# of New collaborations	26 (30%)
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Member Satisfaction	25 (29%)
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Social media analytics	23 (27%)
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# of Meetings hosted	22 (25%)
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# of Individuals receiving communications	18 (21%)
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# of Conferences hosted	17 (20%)
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# Consultations	8 (9%)
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Uptake of findings	8 (9%)
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# Products	4 (5%)
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Other	5 (6%)
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Frequency of productivity measurements (n=72)

Once a month	5 (7%)
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Every 3 months	8 (11%)
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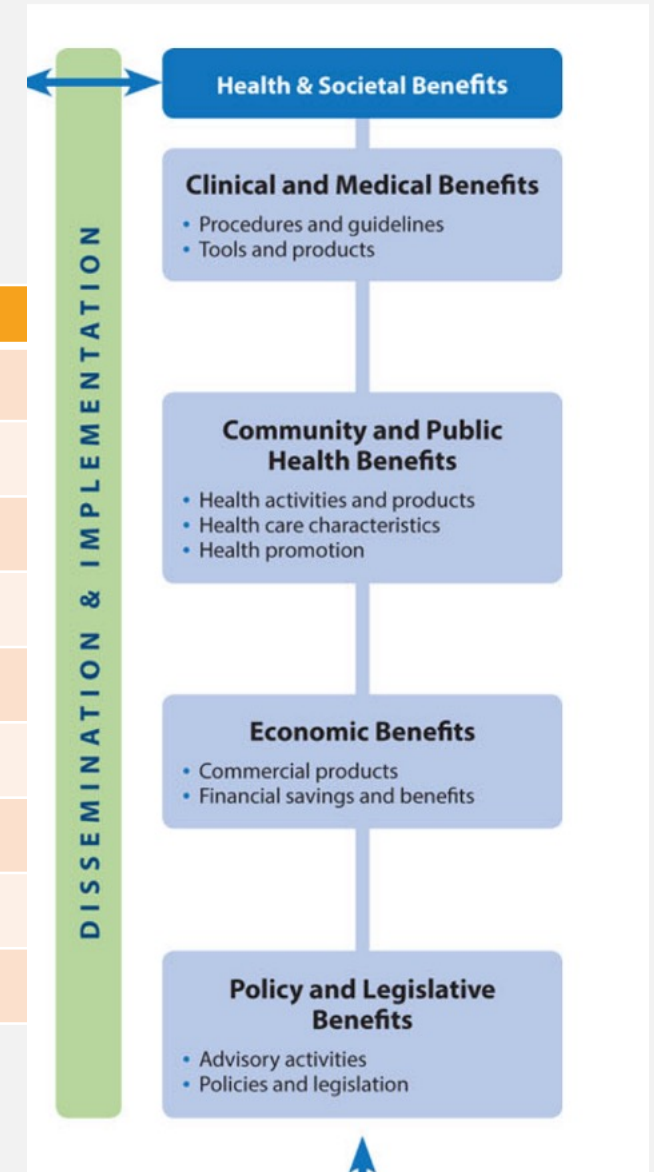
Every 6 months	16 (22%)
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Once a year	35 (49%)
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Other	8 (11%)
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LONG TERM OUTCOMES

Long-term outcomes	
Use of Translational Science Benefits Indicators (TSBI) for evaluation (n=74)	
Yes	20 (27%)
No	37 (50%)
Not sure	17 (23%)
TSBI Categories (n=20)	
Clinical & Medical	9 (45%)
Community & Public Health	13 (65%)
Economic	11 (55%)
Policy & Legislative	11 (55%)



CONCLUSIONS

- This review identified 165 DIS CBPs with most having more than two DIS activities
- Opportunities remain to enhance capacity building efforts
- Shared metrics to compare program operations and impact would be ideal
- Key priorities include sustainment strategies such as advocating for internal funding to support infrastructure rather than relying on research grants to indirectly support operations
- Need for formal certification, low-cost, accessible options for learners in LMICs, opportunities for practitioners/non-researchers (e.g., DIS within medical degrees), and opportunities for mid/late stage researchers

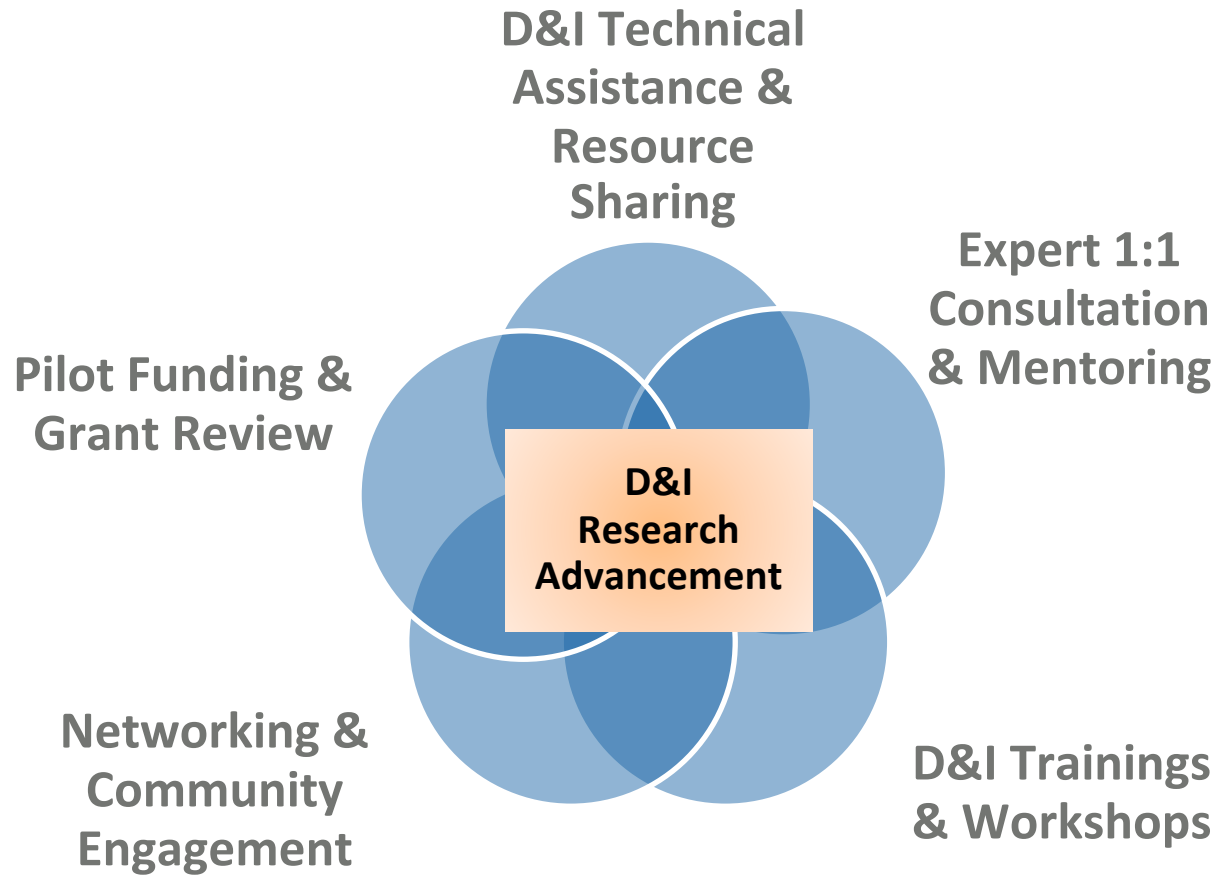
PROCESS EVALUATION OF AN
ACADEMIC D&I SCIENCE
CAPACITY BUILDING PROGRAM

PAPER #2

OBJECTIVES

1. To outline the process evaluation of an academically housed DIS capacity building program
2. To describe the development of a capacity building model, the DISC Logic Model (DLM), to capture academic dissemination products and scientific outcomes

Core DISC Activities



Training & Education

- Biannual Advanced Series Workshops
- Implementation Science Seminars
- D&I Journal Club and Works in Progress
- D&I Science in Health Course

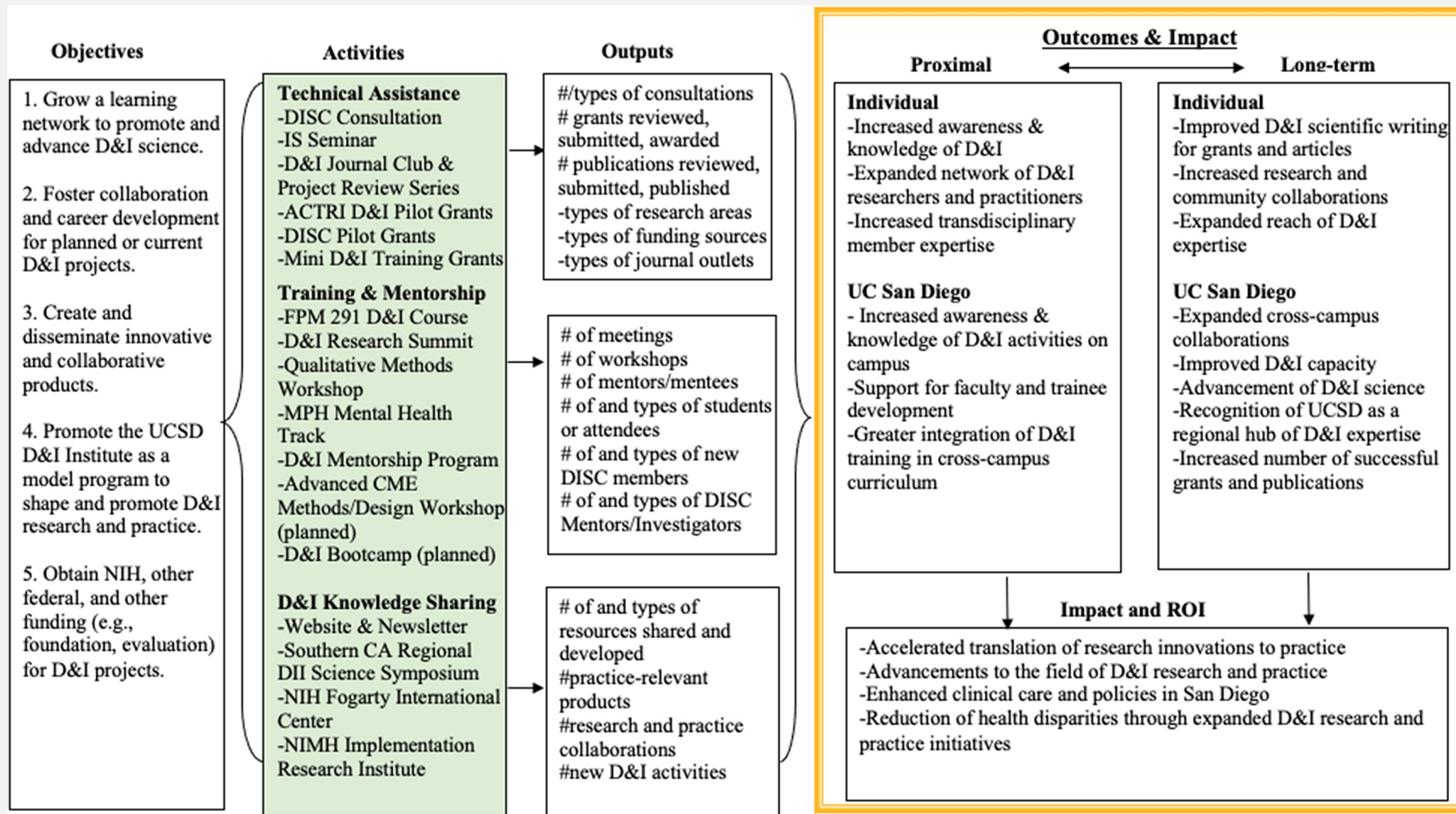
Research Advancement

- DISC Consultation Program
- DISC Internship Program
- D&I Pilot Grants
- D&I Mini Training Grants
- Web-based Resources
- DISC Community Networking

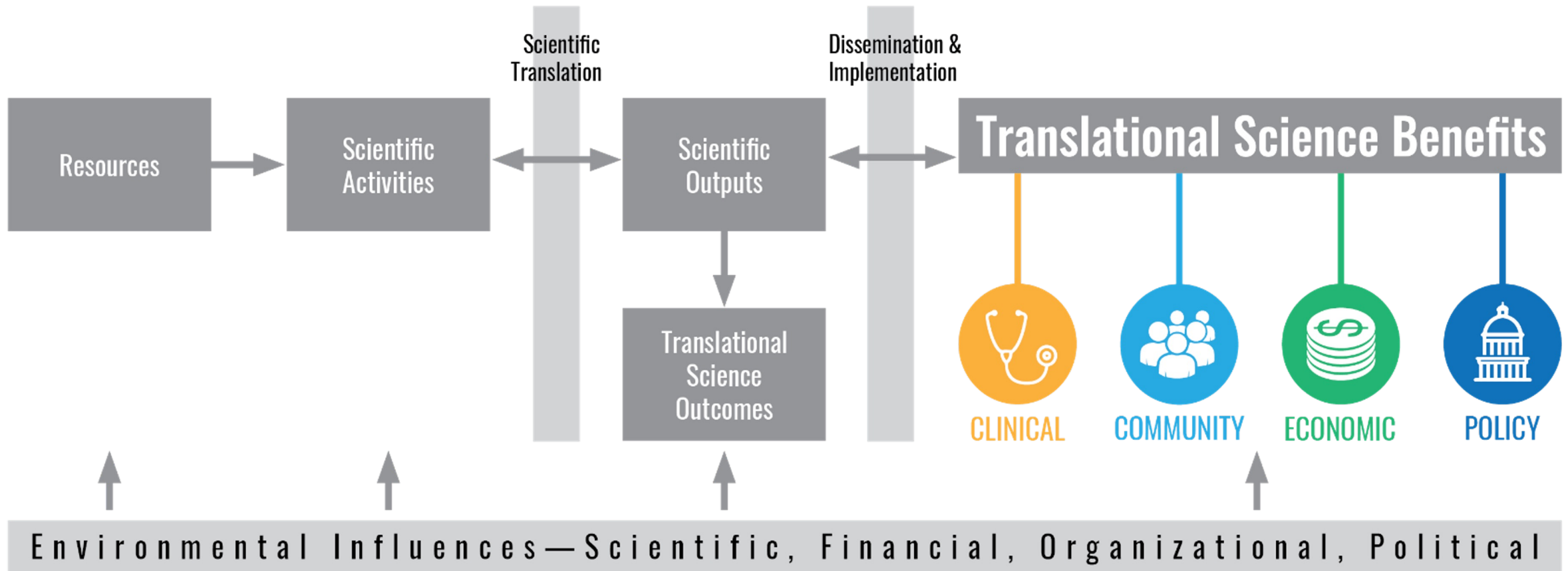
PROCESS EVALUATION BACKGROUND

- We use the DLM to guide a process evaluation to
 - (1) assess how engagement in DISC activities translates into scientific products, outputs, and outcomes
 - (2) explore how to improve the DISC using feedback from members.
- The DISC Evaluation for year 1 (2020) and year 2 (2021) includes a multimethod approach (e.g., surveys, attendance tracking, feedback forms, documentation of grant outcomes)

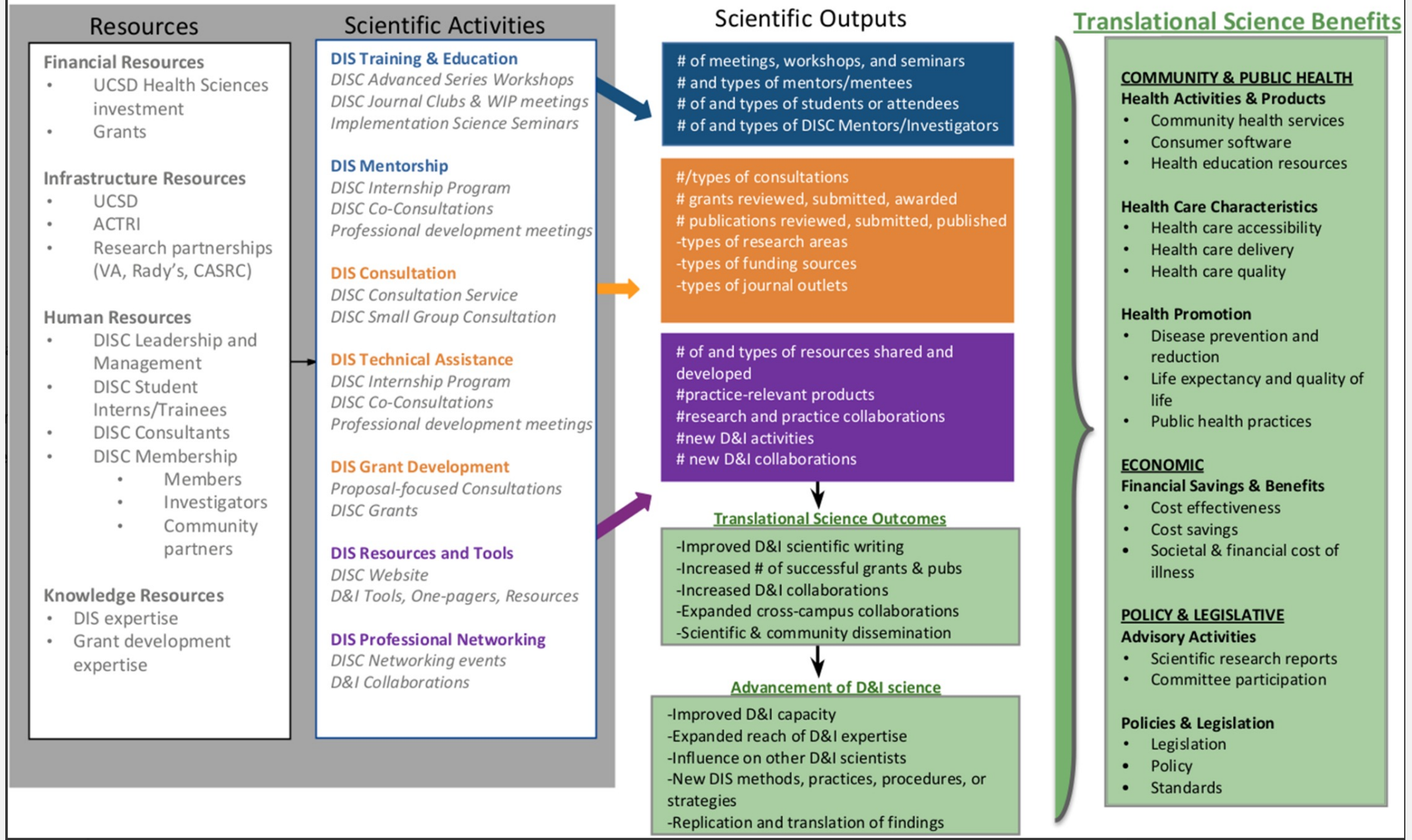
DISC LOGIC MODEL 1.0



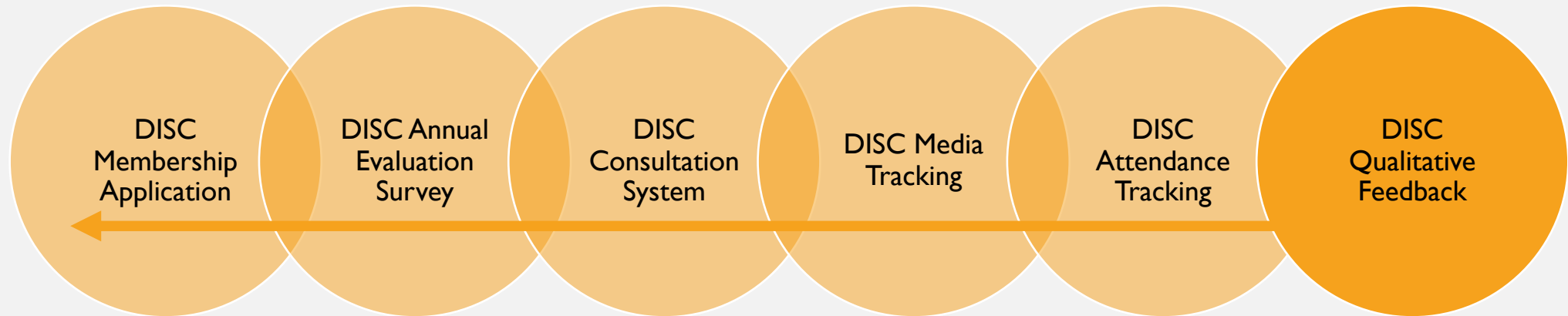
Translational Science Benefits Model (TSBM)



DISC LOGIC MODEL 2.0



SOURCES OF EVALUATION DATA



RESULTS

PAPER #2

DISC MEMBER CHARACTERISTICS

DISC Member Data		
	Year 1 N (%)	Year 2 N (%)
DISC General Members	279 (81)	157 (80)
DISC Investigators	64 (19)	40 (20)
Total DISC Members	343	540
Member Characteristics		
Professor (assistant, associate, etc.)	160 (47)	70 (36)
Research Scientist/Staff & Project Scientists	55 (16)	31 (16)
Clinician or Care Provider	17 (5)	13 (7)
Non-Faculty Researchers	15 (4)	9 (5)
Post-Doctoral Candidates	44 (13)	21 (11)
Students (graduate, undergraduate, etc.)	61 (18)	60 (30)
Other	16 (5)	16 (8)
DISC Member Race/Ethnicity		
White	67 (20)	107 (54)
Asian (Not Pacific Islander)	22 (6)	42 (21)
Latin American/Latino/Latinx	19 (6)	32 (16)
Black/African American (Not Hispanic)	8 (2)	16 (8)
Prefer to self-describe	6 (2)	8 (4)
Other Spanish/Spanish American	3 (.9)	2 (1)
Prefer not to answer	3 (.9)	4 (2)
American Indian/Alaskan Native	3 (.9)	3 (2)
Filipino/Pilipino	2 (.5)	6 (3)
Native Hawaiian/Other Pacific Islander	1 (.3)	0 (0)
Unknown	225 (66)	4 (2)

DISC MEMBER CHARACTERISTICS


DISC Member Data

Topics of Research or Practice

Psychiatry/Mental Health	195 (57)	85 (43)
Public Health	154 (45)	105 (53)
Health Services	132 (38)	85 (43)
Health Promotion	101 (29)	65 (33)
Global Health	75 (22)	50 (25)
Health Policy	70 (20)	59 (30)
Aging	58 (17)	13 (7)
Pediatrics	50 (15)	36 (18)

Institutional Affiliation

University of California	206 (60)	74 (38)
Other Institution	103 (30)	119 (61)
California State University	47 (14)	18 (9)
County Health Department	33 (10)	10 (5)
VA San Diego	30 (9)	8 (4)
Rady Children’s Hospital San Diego	25 (7)	5 (3)



DISC
ANNUAL
EVALUATION

- 165 / 343 DISC member respondents in year 1 and 101 / 540 respondents in year 2
- Reported Activities:
 - More than 95% endorsed participation in at least one activity (e.g., workshops, consultations, seminars, etc.).
- Reported Outputs:
 - Year 1: Grant submission (65/165, 39%), mentoring for career award (40/165, 24%)
 - Year 2: Grant submission (17/101, 17%), new scientific collaborator (12/101, 12%)

DISC SCIENTIFIC AND CAPACITY BUILDING ACTIVITIES

- DISC Newsletters:
 - Year 1: 7 newsletters with an average open rate of 45% and average click rate of 10%
 - Year 2: 12 newsletters with an open rate of 19% and click rate of 8%
- DISC Website (From Year 1 to 2):
 - Web visits increased from 4,156 to 5,561
 - Unique visitors increased from 2,599 to 3,384
- DISC Twitter (From Year 1 to 2):
 - At the end of year 1, the DISC Twitter had 832 followers, and 1,146 followers by the end of Year 2.
- DISC Journal Club:
 - Average attendance increased from 18 to 25.
- Implementation Science Seminar (ISS):
 - Year 1 with an average attendance of 37. In Year 2, three ISS events were held with an average attendance of 15.

DISC OUTPUTS AND OUTCOMES

- Workshops:
 - Year 1: One workshop with an attendance of 221 and satisfaction of 4.6 of 5
 - Year 2: Two workshops with an average attendance of 79 and satisfaction of 4.4 of 5.
- Consultations:
 - 68 consultations in Year 1 and 70 in Year 2.
 - Most consultees (41/42) agreed that consultations were “very valuable.”
 - Year 1: Consultations were for grant support 48/68 (71%), project implementation 11/68 (16%)
 - Year 2: 37/70 (53%) consultations were for grant support and 21/70 (30%) were for project implementation.
 - 43/138 (31%) proposal consultations were for K or R-level NIH grants.
- Funding from Grant Support
 - Year 1: 13/68 (19%) grants that had DISC consultation support were funded
 - Year 2: 11/68 (16%) grants with DISC consultation support were funded

DISC QUALITATIVE FEEDBACK

- Themes include a desire for...
 - *Increased diversity*
 - *Student-focused content and opportunities*
 - *Increased collaboration opportunities*
 - *Online resources*
 - *Methods-focused workshops*
 - *Assistance with DIS grant writing*
 - *Equity-oriented research and practice*
 - *Advancing DIS skills to move from a novice to more advanced DIS user*
 - *Interest in practical application of DIS*

	DISC evaluation year 1	DISC evaluation year 2	DISC workshop evaluation form
Themes	Example responses	Example responses	Example responses
Student-focused content and opportunities	<i>"I really love the journal club!! Also, Involving students and young professionals, including connection with local programs"</i>	<i>More graduate student focused guidance and material! "Free workshops, trainings, and presentations! I'm a grad student with limited professional development funds."</i>	None
Desire for increased diversity	<i>More discussions from scholars of color and scholars from underrepresented backgrounds</i>	<i>Presentations by BIPOC scholars in the field</i>	<i>How to amplify the impact of community perspectives</i>
Increased community engagement and collaboration opportunities	<i>"Connection or open office hours of sorts to learn more about ways to engage and get connected" I would love a social hour from time to time to help build our community despite the pandemic. Project development work groups. Groups that come together to talk about different projects and what are the best methods to utilize for that project.</i>	<i>More ways to engage early career folks, such as training opportunities and mentorship.</i>	<i>Exploring how to forge strong partnerships with communities and with investigators across disciplines (to engage in transdisciplinary DIS work)</i>
More online supports and resources	<i>I'm just starting out with DISC, perhaps an "introductory" resource of some kind (e.g., reading list, suggested pages on website) might be helpful!</i>	<i>Asynchronous training resources with live support/input if needed</i>	<i>More practical applications of development of implementation strategies (and assessment)</i>
Desire for methods-focused workshops	<i>More short methods seminars at no cost More advanced workshops and trainings related to mixed methods, community academic partnerships, applying DIS frameworks and the formative evaluation process</i>	<i>Short trainings on specific DIS methods</i>	<i>Qualitative methods (e.g., conducting focus groups, interviews (coding methodology). Applying models and frameworks in developing new projects.</i>
Interest in practical application of DIS	<i>Short, practical trainings</i>	<i>More workshops with practical, hands on activities. More Implementation Science Seminars.</i>	<i>Practical application of theories, frameworks and models</i>
Need for assistance with DIS grant writing	<i>Longitudinal grant workshoping for DIS-related grants.</i>	<i>Support in DIS grant proposals</i>	<i>Hybrid Model Research Design and Grant Writing</i>
Advancing DIS skills from beginner to more advanced	<i>More training in DIS models/ skills. I would love to participate in a lecture series that provides an intermediate introduction to new methods in the field.</i>	<i>I would love a clear road map to improve my knowledge and skills in implementation science. I have such limited time to engage in professional development activities, it would be really helpful if DISC could support me in figuring out what I know and what I do not, and then engage in targeted activities to develop my skills and knowledge in the weaker areas.</i>	<i>Resources for moving from beginner to intermediate DIS knowledge/activities</i>
Interest in equity-related research and practice within DIS	<i>More equity-focused work.</i>	<i>More presentations and workshops focused on evaluating equity related outcomes of policy, systems, organizational-level implementation science projects.</i>	<i>Continuing the focus on equity as central to DIS.</i>

CONCLUSIONS

- Linking activities to scientific outputs, community impacts, and longer term scientific and population health outcomes can be a useful way to explore how well CBPs align with institutional and community priorities
- Recommend that CBPs include multiple data sources collected at varying frequencies to flexibly evaluate activities
- Recommend to inform members from the outset that evaluation will be involved
- Evaluation is important to guide refinement of activities and alignment of resources

TAKEAWAYS

TAKEAWAYS



To further expand DIS Capacity, prioritizing technical assistance, strengthening networking, identifying approaches to facilitate DIS grant writing through writing workshops, as OWLs



Organizing CBP evaluation with tailored center logic model is useful and shared metrics of evaluation to compare program operations and impact would be ideal; building out translational science benefits evaluation

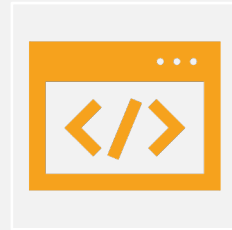


A live, central catalog of CBPs is an important future direction of this work

Thank you!



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[@ImpSciUCSD](https://twitter.com/ImpSciUCSD)

DISCUSSION

As we reflect on capacity building and resources through centers and programs in D&I, what do we need to do differently as we move forward?

How can D&I centers and programs do a better job of evaluating and capturing long-term translational science benefits?

How might you use a central database of D&I research centers and programs? How might we increase the usability of a database of centers and compendium of capacity building strategies?