Digital Equity Ecosystems Measurement Framework

Colin Rhinesmith, Ph.D. and Rafi Santo, Ph.D.

METROPOLITAN NEW YORK LIBRARY COUNCIL

DERC Digital Equity Research Center

Telos Learning

November 2022

Digital Equity Ecosystems Measurement Framework

By Colin Rhinesmith, Ph.D. and Rafi Santo, Ph.D

Colin Rhinesmith, Ph.D.

Colin Rhinesmith (he/him) is the Founder and Director of the Digital Equity Research Center at the Metropolitan New York Library Council, a Research Fellow with the Quello Center at Michigan State University, and a Senior Fellow with the Benton Institute for Broadband & Society. Previously, Dr. Rhinesmith was an Associate Professor and Director of the Community Informatics Lab in the School of Library and Information Science at Simmons University.

The Digital Equity Research Center (DERC) at the Metropolitan New York Library Council engages in community-based and participatory digital equity research to advance social, economic, and racial justice.

Rafi Santo, Ph.D.

Rafi Santo (he/him) is a learning scientist and principal researcher at Telos Learning. His work focuses on the intersection of digital culture, education, and institutional change. His scholarship spans multiple levels of activity—from understanding youth learning pathways across settings to investigating policy implementation and organizational network design—in order to develop practical insights that come from a holistic perspective.

Telos Learning is a research, design, and strategy firm focused on advancing educational justice through institutional change and collective action. Its work spans formal K12 schooling as well as the out-of-school learning sector, with a focus on youth learning pathways around technology and computer science education, creative media design, and digital literacies. Telos specializes in issues of organizational development, in particular the role of networks in supporting processes of learning, improvement, and collective impact..

This work is licensed under the Creative Commons Attribution-Noncommercial 3.0 United States License. A copy of this license is available at http://creativecommons.org/licenses/by-nc/3.0/us/.

Please include the following attribution when citing this report:
Rhinesmith, C., & Santo, R. (November, 2022). *Digital equity ecosystems measurement framework.* Digital Equity Research Center, Metropolitan New York Library Council. https://metro.org/digital_equity_ecosystems

Acknowledgments

The Digital Equity Ecosystems Measurement Framework report is supported with federal American Rescue Plan Act funds allocated to the New York State Library by the U.S. Institute of Museum and Library Services.

The authors would like to thank all of the participants in this research study for their time and contributions, as well as to the following individuals for their additional assistance and support: Nate Hill, Davis Erin Anderson, Meghan McDermott, Angela Siefer, Aaron Schill, Kathy Fall, Houman Saberi, Leon Wilson, Lauren Moore, Lynn Thurston, Munirih Jester, Bruce Clark, Chrissie Powell, Rebecca Gibbon, Hillary Kolos, and Aaron Deacon.

Design by Tony Murray.

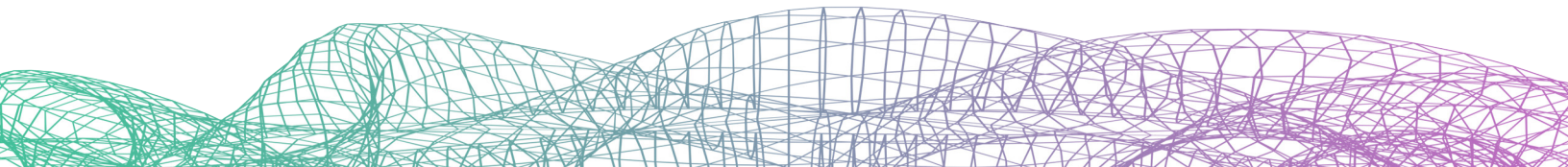


Table of Contents

EXECUTIVE SUMMARY 5

THE NEED FOR A MEASUREMENT FRAMEWORK 7

- Key Definitions 8
- DEEM Project Overview 9

THE DEEM FRAMEWORK 10

- The DEEM Framework as a General Theory of Change 11
- Coalition Health Indicators 13
- Member Strength Indicators 15
- Community Impact Indicators 17

COALITION MEASUREMENT IN PRACTICE 20

- Using DEEM Indicator Data for Planning and Improvement 20
  - Engaging in Community Equity Needs Assessment to Inform Coalition Strategy 20
  - Improving Coalition Professional Development and Community Building Activities 21
  - Informing Development and Improvement of Coalition Governance Structures 22
  - Improving Member Services through Supporting Shared Measurement 23
  - Auditing Equitable Representation within Coalition Member Participation and Governance 24
- Using DEEM Indicator Data for Argumentation 25
  - Establishing Need for Coalition Activities 25
  - Advocating for Policy Changes 26
  - Demonstrating Coalition Outcomes 26

MOVING FORWARD: BRINGING THE DEEM FRAMEWORK INTO USE WITHIN COALITIONS 29

RECOMMENDATIONS FOR KEY STAKEHOLDERS 31

- State Broadband and Digital Equity Officers 31
- National Telecommunications and Information Administration 31
- Philanthropic Organizations 32
- Academic Researchers 33
- Community Members 33

ENDNOTES 34

APPENDIX I - RESEARCH METHODOLOGY 35

APPENDIX II - COALITION HEALTH SCORECARD 40

APPENDIX III - MEMBER STRENGTH SURVEY 42

APPENDIX IV - DEEM FRAMEWORK CONTRIBUTORS 46

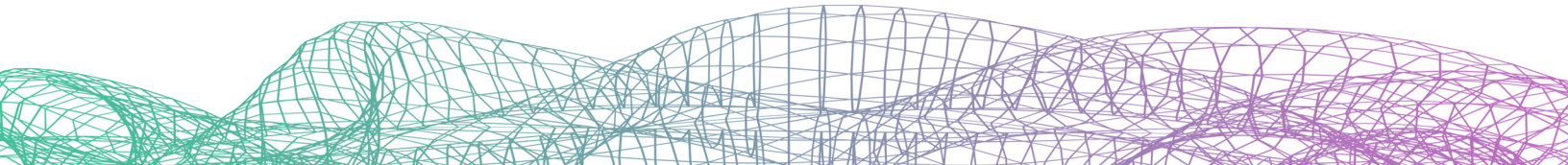
Executive Summary

This report introduces a measurement framework to assist local coalitions in their efforts to grow and sustain healthy digital equity ecosystems. Digital equity ecosystems are interactions between individuals, populations, communities, and their larger environments that all play a role in shaping the work in local communities to advance more equitable access to technology and social, economic, and racial justice.[1] The Digital Equity Ecosystems Measurement (DEEM) framework assumes that local coalitions play a key role in this work. Through local coordination of digital inclusion services, information and resource sharing, networking, data collection, and advocacy, local coalitions have mobilized individuals and organizations across their communities to take action. While these local coalitions continue to address their communities' digital equity challenges, many lack the conceptual frameworks and measurement tools needed to gather data for planning, improvement, and argumentation purposes.

In response, this report presents findings from a participatory design research project with 32 digital equity and digital justice coalition leaders and members who came together for two workshops in June 2022. The DEEM framework presented in this report is the result of a synthesis of data gathered from these two workshops, as well as from a series of stakeholder interviews with local coalition leaders and a literature review conducted before the workshops began. The DEEM framework introduced in Table 1 and further detailed in this report is meant to represent the ideas and contributions from our research participants and introduce these concepts to a broader group of coalition leaders, members, and stakeholders. Ultimately, the DEEM framework should be useful to any local coalition working to understand and evaluate their work to grow and sustain healthy digital equity ecosystems.

Table 1. The Digital Equity Ecosystems Measurement (DEEM) Framework Overview

Coalition Health	Member Strength	Community Impact
Indicators related to the organization, structure and relationships of a coalition as a whole.	Indicators related to the capacities and efforts of coalition members related to the valued impacts of the coalition.	Indicators related to positive changes to the lives of individuals and the broader community that a coalition is hoping to bring about through its efforts focused on advancing digital inclusion, equity, and justice.



In this report, we introduce an overall framework with indicators at each of the three measurement levels that local coalitions can use to gather data to inform planning, improvement, and argumentation. Examples of indicators at each measurement level are introduced in Table 2 and are further described, with specified indicators under each area, more comprehensively in this report.

The indicators offered at each measurement level are meant to serve more as a menu of options rather than as a strict, hierarchical formula for coalitions to draw from as they strategize around how data can play a role in advancing their work. Depending on the goals, structure, and stage of development of a given coalition, some indicators might be more useful than others. Therefore, in this report we highlight how specific purposes of data use might leverage distinct indicators across the DEEM framework in order to address particular needs. Measurement tool suggestions are then provided in our framework to assist local coalitions in thinking about how to most effectively gather data at each of the three levels.

The DEEM framework is meant to be a starting point to encourage deeper engagement around the ongoing efforts, as well as the broader outcomes and impacts, of local coalitions. This work is also timely as the National Telecommunications and Information Administration begins to release billions of dollars in federal funding to advance broadband and digital equity over the next five years.[2] Now and in the coming years, there will be a growing need to better conceptualize and measure the impact of this public funding and to use data to improve coalition efforts even after these federal programs have completed. Furthermore, while philanthropic and other stakeholders might understand why digital equity matters, these same entities may lack the conceptual frameworks needed to grasp the internal and external evidence of the need for and impacts of coalitions in particular. A clearly articulated, rigorous, and accessible framework to measure the efforts led by local coalitions can further support initiatives to promote universal broadband, deliver new opportunities, and strengthen digital equity ecosystems.

Table 2. DEEM Framework Example Indicators

Coalition Health	Member Strength	Community Impact
Member participation, clarity of opportunities, sense of belonging, internal alignment, collective efficacy, community representation, responsive governance.	Member focus, capacity, geographic reach, demographic reach, equity orientation.	Community-wide digital access and skills, community use of technology for civic, educational, health and social connection, community ownership over technology and media.

The Need For A Measurement Framework

One third of U.S. households continue to struggle with the availability, affordability, and adoption of broadband internet service.[3] Tribal communities experience even greater challenges.[4] Local coalitions in communities across the country emerged both before and in response to the COVID-19 pandemic to address the impacts of digital and social inequalities. Through local coordination of digital inclusion services, information and resource sharing, networking, data collection, and advocacy, coalitions have mobilized individuals and organizations across their communities to take action. While these local coalitions continue to address their communities' digital equity challenges, many lack the conceptual frameworks and measurement tools needed for planning, improvement, and argumentation purposes to better understand the outcomes and impacts of their work.

The American Rescue Plan Act (ARPA) provided significant funding for local communities to support local digital inclusion activities.[5] Many local coalitions formed during this time to organize community resources and take advantage of federal support for those most impacted by the digital divide.[6] These coalitions often include representatives of local governments, libraries, educational institutions, housing authorities, community technology training and network providers, social service and civic organizations, and individual community members. While many local coalitions formed in response to the pandemic, several that formed before the pandemic shifted their efforts from only providing direct digital inclusion services to focusing more on information and resource sharing, networking, data collection, and raising awareness about digital inequality, and developing new tactics to advance digital equity.

While recent academic studies and practitioner reports have sought to understand the impacts of the pandemic on those without computers, broadband, and digital literacy training, few reports have laid out what local coalitions might need to assess their efforts and themselves in this work to advance digital inclusion, equity, and justice. The Digital Equity Ecosystems Measurement (DEEM) framework presented in this report attempts to address this gap in both academic and practitioner spaces by providing local coalitions with a way to both understand and measure the health, strength, and impacts of their efforts alongside their communities.

ASC3 Build-a-Robot Event, photo courtesy of Greater Cleveland Digital Equity Coalition

Key Definitions

In this report, we introduce several ways to think about and engage in digital equity ecosystem measurement with coalitions serving as key actors in these efforts. The definitions presented in this section are meant to guide coalition members and leaders as they seek to better understand the conceptual framework and measurement tools presented in this report.

- **Digital inclusion** - "The activities necessary to ensure that all individuals and communities, including the most disadvantaged, have access to and use of Information and Communication Technologies (ICTs). This includes five elements: (1) Affordable, robust broadband internet service; (2) Internet-enabled devices that meet the needs of the user; (3) Access to digital literacy training; (4) Quality technical support; and (5) Applications and online content designed to enable and encourage self-sufficiency, participation and collaboration."[7]

- **Digital equity** - "A condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy. Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services."[8]

- **Digital justice** - The provision of "spaces through which people can investigate community problems, generate solutions, create media and organize together."[9]

- **Digital equity ecosystems** - "interactions between individuals, populations, communities, and their larger sociotechnical environments that all play a role in shaping the work in local communities to advance more equitable access to technology and social, economic, and racial justice."[10]

- **Local coalition** - (1) a collective organization of organizations (e.g., local governments, libraries, educational institutions, housing authorities, community technology training and network providers, other social service and civic organizations, etc.); (2) operating in the public realm, with a reasonable degree of transparency about its activities, governance and finances; and (3) that functions within a collaborative structure (formal or informal), that may include processes for decision making, leadership responsibilities, rights and obligations of members, regular meetings, and open process for joining.[11]

To support the growth, development, and sustainability of healthy digital equity ecosystems, individual community members, grassroots organizations, and more formal institutions were organizing local coalitions for years before the COVID-19 pandemic emerged. While national organizations, such as the National Digital Inclusion Alliance (NDIA), have developed key guidebooks and other resources to assist many stakeholders in starting digital inclusion coalitions,[12] few resources exist to provide local coalitions with the framework and tools they need to effectively and holistically measure the outcomes and impacts of their work. The DEEM framework is meant to respond to this need and provide a starting point for these efforts.

DEEM Project Overview

The research began in early 2022 to address a gap in both the scholarly literature and, more importantly, in practice related to the internal and external measurement needs of local coalitions working to advance digital inclusion, equity, and justice. Our work started with a systematic review of the scholarly literature and practitioner documentation related to the following: different conceptualizations of digital equity; current approaches to measurement of digital equity; current digital equity coalition structures; and previous work focused on network and coalition measurement. We used findings from our literature review to inform our engagements with digital equity and digital justice stakeholders. Between March and May, we interviewed 10 leaders and members of local coalitions to gain a deeper understanding of the goals, structure, activities, and data and evaluation needs of their coalitions. The interviews provided key context and information that we used in order to develop two participatory design workshops that we facilitated in June 2022 with 32 coalition leaders and members from across the United States.

We utilized participatory design as a research approach in order to engage coalitions in the process of co-designing a framework and tools to evaluate and assess their community work (see Appendix I -Research Methodology). The responses that participants shared during the workshops provided insights into the data and evaluation needs of coalitions. The two workshops provided ample data and information, along with our stakeholder interviews conducted pre-workshops, that helped to inform the development of our draft DEEM framework that our participants then reviewed and provided feedback on before the final publication.

The DEEM Framework

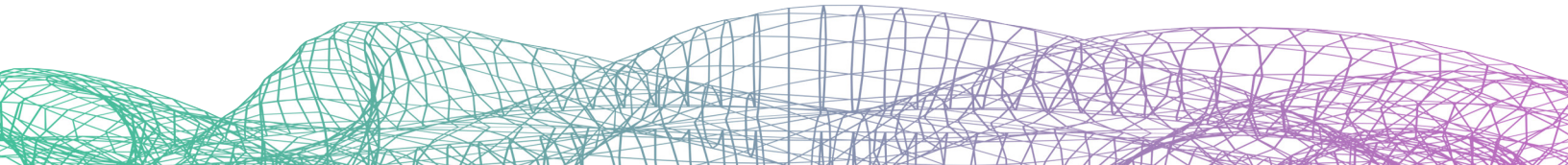
Through our interviews and participatory design workshops with coalition members from across the U.S., we learned there are many types of coalitions at different stages of development. While many coalitions are structured in similar ways, or at least with similar expectations (i.e., leadership, working groups, general membership, etc.) as reflected in NDIA's Digital Inclusion Coalition Guidebook,[13] we discovered that the type of backbone organization leading a coalition matters – particularly with regard to the role it plays in shaping the conditions, and power dynamics, within which coalitions operate. NDIA describes the backbone layer of a coalition as one which "which supports the administrative functions of the coalition by providing organizational support and/or acting as a financial agent for the coalition."[14] In this report, we describe a backbone organization as one which provides these same activities or responsibilities for the coalition. With all this in mind, our DEEM framework should be considered as a starting point for thinking about how coalitions can assess their efforts, outcomes, and impact, including the types of indicators and data that could be useful as part of this work over time.

Therefore, as we set out to develop this project, we knew the framework should try be inclusive of the following design characteristics:

- **Holistic** - the framework should provide insight into and evidence around activity at multiple levels of analysis within Digital Equity Ecosystems with coalitions as the center of these analyses. This includes the "coalition health" level (the coalition on the whole), the "member strength" level (the capacities, orientations, and activities of coalition members), and the "community impact" level (the valued activities and outcomes on the ground). The ability to make connections across these different levels of measurement sets the framework apart from prior efforts that tend to focus purely on community-level outcomes.

- **Adaptive** - the framework should provide insight into and evidence attuned to coalitions that are at different stages of development (i.e. early, developing, robust, etc.) as well as those that utilize varied coalition designs and target particular outcomes from increased levels of broadband adoption and digital literacy skills to increased diversity and participation of digital inclusion coalition members.

- **Multipurpose** - the framework should be viable for both formative and summative purposes (i.e., usable both to improve the work of coalitions, as well as to argue for their impacts), including for future development, implementation, and evaluation of the outcomes and impacts of programs to advance digital inclusion, equity, and justice.



The following pages present an overview of the three levels of our DEEM framework (see Table 3 - Coalition Health, Member Strength, and Community Impact) with the indicators and possible data sources included, before we turn to use cases that demonstrate how local coalitions might implement the framework.

Table 3. The Digital Equity Ecosystems Measurement (DEEM) Framework Overview

Coalition Health	Member Strength	Community Impact
Indicators related to the organization, structure and relationships of a coalition as a whole.	Indicators related to the capacities and efforts of coalition members related to the valued impacts of the coalition.	Indicators related to positive changes to the lives of individuals and the broader community that a coalition is hoping to bring about through its efforts focused on advancing digital inclusion, equity, and justice.

The DEEM Framework as a General Theory of Change

The measurement levels included in the DEEM framework are rooted in a general theory of change around how digital equity coalitions operate and how they approach the process of advancing goals of digital inclusion, equity, and justice. This theory of change focuses on how the backbone layer of the coalition, including individual organizations serving in this role, creates new opportunities for various forms of coordination and capacity building among previously uncoordinated organizations that are working to advance digital equity with their local communities. This coordination and capacity building, in turn, then supports these organizations to develop new or improve existing work they are engaged in. These new or improved efforts on the part of coalition member organizations then positively impact the lives of individuals and communities on the whole vis-a-vis valued outcomes around digital inclusion, equity, and justice.

Cleveland DE Panel at PEW Broadband Summit, photo courtesy of Greater Cleveland Digital Equity Coalition

The three levels of measurement in the framework, then, align to this vision of change.

- **Coalition Health** - The coalition health level speaks to the coalition's structure and enactment: to what degree are members participating in coalition activities? Do they have strong relationships? Do they believe they can accomplish the goals they set out together? Is effective and equitable governance in place?

- **Member Strength** - The member strength level speaks to the ability of coalition member organizations to carry out activities that promote community level outcomes: what issues are member organizations focused on? Where do they work, and with whom? How strong is their capacity in different areas?

- **Community Impact** - Finally, the community impact level speaks to the on the ground issues that are of primary importance to the coalition: what is the nature of digital access issues in the community? Do community members have the digital skills they need to participate in society? Is the community collectively empowered in relation to the technological world?

The DEEM framework presented in this report assumes that coalitions focused on digital inclusion, equity, and justice vary in the specifics of their goals and structure, as well as in how they define what success looks like. For instance, some coalitions engage in advocacy-related work in order to enact policy change, leveraging collective voice, aligned commitments, and specialized roles within campaigns that would result in shifts in local or state policies that would directly impact community-level outcomes. Other coalitions engage in direct service provision themselves, as in the case of facilitating Digital Navigator programs. Still others aim to support members through capacity-building opportunities, or through funds to develop and implement new community-based services addressing digital equity issues. Across these approaches, the framework offers indicators that can support data use in order to improve and demonstrate the efficacy of such efforts, but should be tailored to the particulars of the structures and goals a coalition is pursuing.

The indicators offered at each level of measurement are meant to serve more as a menu of options—rather than as a strict, hierarchical formula—for coalitions to draw from as they strategize around how data can play a role in advancing their work. Depending on the goals, structure, and stage of development of a given coalition, some indicators might be more useful than others. In the use cases that follow, we highlight how specific purposes of data use might leverage distinct indicators across the DEEM framework in order to address particular needs.

Table 4. Coalition Health Indicators and Possible Data Sources

Coalition Health

Indicators related to the organization, structure, and relationships of a coalition as a whole (i.e., measured by the extent to which each attribute exists).

Indicator Area		Possible Data Sources
Participation		
■	**Member participation** - Member participation in existing coalition-facilitated opportunities (e.g., meet-ups, professional development, working groups, requests for proposals, formal membership status, etc.) is at or exceeding expected engagement levels.	• Participation-tracking/databases/spreadsheets
Clarity		
■	**Clarity of opportunities** - Information about opportunities (e.g., meetings, working groups, funding, participation in governance structures, etc.) within the coalition is openly available and clear to its stakeholders.	• Member surveys • Self-assessments by coalition staff • Self-assessments by coalition members
■	**Clarity of actors** - Information about actors (e.g., coalition leaders and coalition members, including both individuals and organizations) within the coalition is openly available and clear to all stakeholders in terms of individual member organization's capacities, interests, and responsibilities.	
■	**Clarity of impact** - Information about the impact of the coalition's activities, outcomes, and community benefits is openly available and clear to its members, stakeholders, and community. This includes the issues of coordinated data sharing across coalition members and the coalition stewards.	
Trust & Belonging		
■	**Sense of belonging** - Coalition members feel a sense of belonging, community, and comfort participating in coalition opportunities and participation structures.	• Event exit tickets • Member surveys • Self-assessments by coalition staff • Self-assessments by coalition members
■	**Trust** - Coalition members and staff have strong relationships based in trust and mutual respect that form the basis for engaging in joint work and collective advancement.	

Table 4. Coalition Health Indicators and Possible Data Sources, continued

Coalition Health

Indicators related to the organization, structure, and relationships of a coalition as a whole (i.e., measured by the extent to which each attribute exists).

Indicator Area	Possible Data Sources
Internal Alignment	• Member surveys • Self-assessments by coalition staff • Self-assessments by coalition members
■ **Member goal orientation** - Coalition members are focused on and have buy-in around specific coalition goals.	
■ **Shared language** - Coalition members feel that they have a common set of concepts and ways of talking about goals that support coalition efforts.	
■ **Shared purpose** - Coalition members feel that they have a clear shared purpose that they are moving towards within the context of coalition efforts.	
■ **Collective Efficacy** - Coalition members believe that coalition members, as a whole, can organize and execute the courses of action required to have a positive effect vis-a-vis the coalition's valued outcomes.	
Equity & Representation	• Member surveys • Self-assessments by coalition staff
■ **Alignment to community equity needs** - Coalition goals and member activities are aligned with and address focal community needs related to digital inclusion, equity, and justice.	
■ **Community representation** - Coalition membership includes diverse representation from local communities most impacted by digital inequities and injustices that it aims to address.	
Governance	• Member surveys • Self-assessments by coalition staff • Self-assessments by coalition members
■ **Responsive governance** - Coalition members see coalition leadership as responsive to their needs and interests.	
■ **Representative governance** - Coalition governance is representative of key stakeholders of the coalition, including coalition members (types/sizes of organizations, organization leaders from non-dominant communities) as well as community members.	
■ **Formalized governance** - Coalition governance has defined structures around decision-making, participation in governance roles, and other governance activities (e.g. nomination processes, by laws, etc.).	

Table 5. Member Strength Indicators and Possible Data Sources

Member Strength
Indicators related to the capacities, efforts, and reach of coalition members related to the valued impacts of the coalition (i.e., measured by the extent to which each exists).

Indicator Area	Possible Data Sources
Member Efforts	
Member focus - Issues or goals current coalition member organizations are focused on.	• Member surveys • Direct observations • Listening sessions
Member activities - Current organizational programs and services of coalition members that relate to one or more coalition impact goals.	• Member surveys • Meeting minutes • Goal statements
Member Reach	
Numerical reach - Current number of community members who participate in coalition members' programs and receive members' services.	• Internal tracking databases/spreadsheets with de-identified data • Member surveys
Geographic reach - Current geographic service areas of coalition members' programs and services.	• Internal tracking databases/spreadsheets • Member surveys • Asset mapping
Demographic reach - Demographic subgroups served by current coalition members' programs and services.	• Internal tracking databases/spreadsheets • Member surveys • Asset mapping
Member Capacity	
General member capacity - Current organizational capacity of coalition members in relation to specific coalition goals, which can include indicators related to expertise, staffing, funding, and other dimensions of member-level capacity.	• Member surveys
Member recognition- Degree of recognition and credibility of coalition members' impact and leadership among key community stakeholders (community members, elected officials, municipal agencies, etc.).	• Newsletters • Social media • Member surveys • Press releases
Member-community representativeness - The extent to which coalition member organizations represent the local communities most impacted by digital inequities.	• Landscape analysis • Member surveys • Community member surveys

Table 5. Member Strength Indicators and Possible Data Sources, continued

Member Strength
Indicators related to the capacities, efforts, and reach of coalition members related to the valued impacts of the coalition (i.e., measured by the extent to which each exists).

Indicator Area	Possible Data Sources
Member Capacity	
Member-community connectedness - The extent to which coalition members feel connected and engaged with their constituents and have evidence of these strong ties with their communities.	• Member surveys • Community member surveys • Event attendance • Use of member organization spaces
Member equity focus - The extent to which coalition members are using an equity/racial justice lens as a foundational element (i.e., conscious creation and communication around the consideration of real challenges of others in this space).	• Member surveys • Community member surveys • Longitudinal outcomes data to show how efforts are impacting racial disparities • Data on retention and promotion rates by race (and gender) across the organization and by staff level

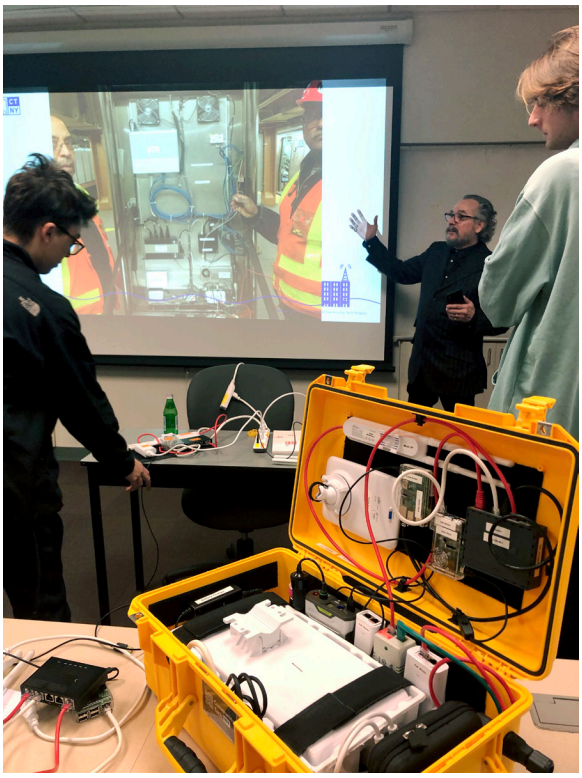


photo courtesy of Community Tech NY

Table 6. Community Impact Indicators and Possible Data Sources

Community Impact
Indicators related to positive changes to the lives of individuals and the broader community that a coalition is hoping to bring about through its efforts (i.e., measured by the percentage of each in relation to the whole). Note: Indicators of community impact must be tailored to and respond to the needs of a given community. Ultimately, they should be defined by the coalition members, in partnership with other stakeholders and the broader community.

Indicator Area	Possible Data Sources
Digital Inclusion[15]	
Digital Access Individuals (i.e., including unhoused) • Member surveys • Community member surveys • Event attendance • Use of member organization spaces Households • % of households with access to affordable, robust broadband internet service • % of households with personal computer or tablet computer in household • % of households with mobile phone • Connectivity - Average quality of connectivity Point of access • % of individuals with “basic,” “above basic,” or “advanced” digital skills (general) • % of individuals who feel they are able to safely navigate digital spaces • % of individuals with a degree in an ICT-related field • % of individuals employed as an ICT specialist	• Affordable Connectivity Program enrollment • Locally-collected data primary data gathered by coalition members • Locally-collected secondary data from partner orgs (e.g., school districts, libraries, etc.)
Digital Skills Individuals • % of individuals with “basic,” “above basic,” or “advanced” digital skills (general) • % of individuals who feel they are able to safely navigate digital spaces • % of individuals with a degree in an ICT-related field • % of individuals employed as an ICT specialist Households • % of households with “basic,” “above basic,” or “advanced” digital skills (general) • % of households who feel they are able to safely navigate digital spaces	• Locally-collected data primary data gathered by coalition members • Locally-collected secondary data from partner orgs (e.g., school districts, libraries, etc.)

Table 6. Community Impact Indicators and Possible Data Sources, continued

Community Impact

Indicators related to positive changes to the lives of individuals and the broader community that a coalition is hoping to bring about through its efforts (i.e., measured by the percentage of each in relation to the whole). Note: Indicators of community impact must be tailored to and respond to the needs of a given community. Ultimately, they should be defined by the coalition members, in partnership with other stakeholders and the broader community.

Indicator Area	Possible Data Sources
Digital Inclusion **Digital Use** % of individuals who use the internet for the following: • economic and workforce development • education • health care • public safety and emergency services • civic engagement • social connections	• Locally-collected data primary data gathered by coalition members • Locally-collected secondary data from partner orgs (e.g., school districts, libraries, etc.)
Digital Equity **Digital Access** • % of individuals who have experienced equitable access to the affordable internet service, digital devices, and digital literacy skills needed to successfully use networked technologies. • % of individuals who have experienced the ongoing support, resources, and opportunities needed in order to thrive in our society, democracy, and economy • % of individuals who know their wisdom, knowledge, and expertise have been centered in the design, implementation, and evaluation of digital equity programs and services. • % of individuals who know their privacy is protected while navigating digital spaces • % of individuals who feel safe and secure navigating digital spaces • % of individuals who know they are not being digitally discriminated against based on their race, class, gender, sexuality, and/or other social identities	• Community listening sessions (multilingual) • Community surveys (multilingual) • Community events with shared activities (multilingual)

Table 6. Community Impact Indicators and Possible Data Sources, continued

Community Impact
Indicators related to positive changes to the lives of individuals and the broader community that a coalition is hoping to bring about through its efforts (i.e., measured by the percentage of each in relation to the whole). Note: Indicators of community impact must be tailored to and respond to the needs of a given community. Ultimately, they should be defined by the coalition members, in partnership with other stakeholders and the broader community.

Indicator Area	Possible Data Sources
Digital Justice[16]	• Community listening sessions (multilingual) • Community surveys (multilingual) • Community events with shared activities (multilingual) • Community media productions
Access • % of community members who have equal access to media and technology, as producers as well as consumers	
Participation • % of community members who have been traditionally excluded from and attacked by media and technology believe they are able to participate as producers as well as consumers	
Healthy communities • % of community members who can create knowledge, tools and technologies that are free and shared openly with the public	
Common ownership • % of community members who have spaces through which people can investigate community problems, generate solutions, create media, and organize together	

photo courtesy of Community Tech NY

Coalition Measurement in Practice

The DEEM framework provides a basis for considering what might be measured at different levels within a digital equity coalition, but rather than an end in itself, measurement should always be done to solve particular problems. In this section we share various purposes that measurement can serve within coalitions, and how data related to DEEM framework indicators might be mobilized within them. Throughout this section, we highlight case examples from actual coalitions where data associated with the DEEM framework could have relevance.

Broadly, data use falls into two categories: (1) planning and improvement and (2) argumentation. Data to support planning and improvement is most often used internally by leaders and members within a coalition to help shape coalition efforts and improve its work. Data to support argumentation tends to be shared with external actors such as policymakers and funders to advocate for policy changes, establish the need for coalitions, demonstrate their outcomes, and generally "tell the story" of the coalition's work.

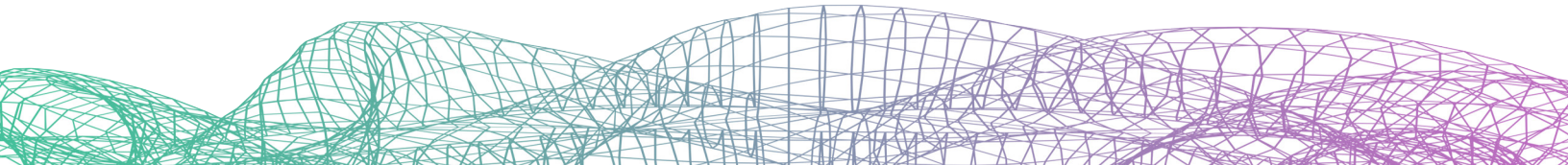
The scenarios shared below are neither mutually exclusive nor exhaustive of ways that data might be used within coalition contexts. Instead, they aim to highlight the ways that the DEEM framework can serve as a kind of "menu" of possible indicators to draw on in order to solve particular challenges with digital equity coalitions.

Using DEEM Indicator Data for Planning and Improvement

Below, we share scenarios related to planning and improvement where using data related to DEEM indicators can be mobilized to support coalitions.

Engaging in Community Equity Needs Assessment to Inform Coalition Strategy

In that coalitions aim to improve digital equity outcomes together with their communities, engaging in a community equity needs assessment in order to plan a coalition's strategy can be a critical activity that leverages data. Such a needs assessment might aim to gather various forms of data. "Community impact"-level data might be derived from various public data sources, surveys, and/or listening sessions with other community members in order to understand experiences and current outcomes related to digital inclusion, equity, and justice issues. "Member strength"-level data might be gathered via coalition member surveys in order to understand the availability and quality of services across members of the coalition as they relate to overall community needs. And "coalition health"-level data can speak to equity alignment of current coalition goals in relation to community equity needs identified through data gathered at the community impact and member strength levels.



Through gathering data across these three levels, a coalition can first understand the nature of a community's needs related to digital equity, then understand strengths and gaps in services that coalition members are providing as it relates to those needs, and finally consider whether the coalition goals on the whole are in alignment with the most critical needs of the community within which it operates. Such a process might result in shifts to coalition strategy and top-level goals, identify areas where coalition members might develop new programs, and support the creation of dedicated coordination mechanisms related to emerging issues.

Table 7. Community Equity Needs Assessment Indicators

DEEM Indicators - Community Equity Needs Assessment		
Coalition Health	**Member Strength**	**Community Impact**
• Alignment to community equity needs	• Member capacity • Member focus • Member activities • Geographic reach • Demographic reach	• Various, dependent on coalition goals

Improving Coalition Professional Development and Community Building Activities

Many coalitions offer ongoing structures, such as member meet-ups or professional development events, aimed at improving the capacity of member organizations and developing stronger relationships across their members, and data can help coalition leaders understand and improve these activities.

At a basic level, a coalition leader might look at member participation data related to event attendance to see trends in uptake of these opportunities across the coalition, helping them see if there are certain types of opportunities that don't get uptake and spur investigation into why that might be.

To understand whether these events are reaching their intended outcomes, coalition leaders might gather data via a bi-yearly coalition health scorecard that members fill out to understand the degree to which coalition members have a sense of belonging, trust, and shared language. By looking at responses from members that actively participate in coalition events aimed at these outcomes versus members that don't, a coalition leader can get a sense of whether these efforts are reaching their goals, or whether they might need to be improved.

To inform more long term planning and assessment of professional development opportunities offered through a coalition, coalition leaders might deploy an annual member strength survey where members indicate what kind of community services they currently provide (member focus, member activities), and around what issues they feel they have stronger, or weaker, capacity (general member capacity). Such surveys can help set the agendas for future capacity-building events, and, taken over time and combined with member participation data, can speak to whether capacity-building efforts are having an impact on organizations that more actively participate in them.

Table 8. Coalition Professional Development and Community Building Activities Indicators

DEEM Indicators - Coalition Professional Development and Community Building Activities		
Coalition Health	**Member Strength**	**Community Impact**
• Member participation • Sense of belonging • Trust • Shared language	• Member focus • Member activities • General member capacity	• not applicable

Informing Development and Improvement of Coalition Governance Structures

As coalitions evolve and improve the ways they're structured and governed over time, data can also play an important role in supporting these shifts.

In some cases, data gathered about coalition health might make it evident that certain basic governance functions are in need of improvement. For example, a combination of member participation data around coalition opportunities and member responses to questions on a bi-yearly coalition health scorecard related to clarity of opportunities might show that members are not aware of various coalition activities (e.g., meet-ups, professional development events, requests for proposals, etc.), spurring coalition leaders to rethink the internal communication tactics within the coalition.

The same coalition health scorecard might ask members about whether they see the current coalition leaders as responsive to their needs and interests (responsive governance) and whether the current governance structures, such as the organization of working groups, are serving the coalition well. Seeing these data points might help coalition leaders and members to think together about how to improve or even restructure how the coalition is organized at the governance level.

Table 9. Coalition Governance Structures Indicators

DEEM Indicators - Coalition Governance Structures		
Coalition Health	**Member Strength**	**Community Impact**
• Member participation • Clarity of opportunities • Responsive governance	• not applicable	• not applicable

Improving Member Services through Supporting Shared Measurement

Coalitions have unique opportunities to strengthen the services their members provide not just through sharing best practices across organizations, but also through supporting members that do similar work to engage in shared measurement around common outcomes and engage in cycles of continuous improvement.

A coalition leader might use general data that helps them see which members are working on the same specific issue and have similar types of programs (member focus, member activities), in order to support the formation of a cohort that utilizes shared measurement instruments. For instance, a handful of coalition members might all provide day-long digital literacy workshops for community members, but operate in different geographic regions. If the goals, structure, and audience of these workshops are similar enough, the cohort can work together to develop an end of workshop participant "exit ticket" related to digital skills indicators (e.g., % of individuals with "basic," "above basic," or "advanced" digital skills, % of individuals who feel they are able to safely navigate digital spaces, % of individuals that felt the workshop was valuable, etc.) that all organizations in the member cohort utilize. Bringing back data from these exit tickets can then support the member cohort to see trends and spur sharing of best practices across the organizations.

Table 10. Shared Measurement in Member Services Indicators

DEEM Indicators - Shared Measurement in Member Services		
Coalition Health	**Member Strength**	**Community Impact**
• not applicable	• Member capacity • Member focus • Member activities	• Custom, based on area(s) of shared practice and outcomes among members

Auditing Equitable Representation within Coalition Member Participation and Governance

For many digital equity coalitions, equity is not solely conceptualized as being concerned with improving communities in terms of outcomes like digital access, skills, or participation, but also about whether community members, especially those from historically marginalized communities, are actively engaged in the process of community change around these and other issues of digital inclusion, equity, and justice. As such, coalitions may want to actively consider who is part of the coalition, and data can play a role in formally auditing issues around equitable member participation and representation in the coalition.

Understanding whether or not a coalition is engaging in equitable participation and representation can of course be understood through more informal means of "looking around the room" and seeing who is and isn't present, as well as simply considering who has decision-making authority within the coalition, but can also be informed through more "formal" data efforts. For example, data on member participation in coalition activities, combined with metadata on members, can shed light on trends around who is and isn't present in a coalition, and whether these trends are reproducing historical inequities. Such data can be reviewed not only to determine the nature of community representation within the coalition writ large, but also to determine whether the coalition is reaching its goals vis-a-vis representative governance through consideration of which members are engaged, or not, in governance structures and activities.

Table 11. Equitable Representation within Coalition Member Participation and Governance Services

DEEM Indicators - Representation with Coalition Member Participation and Governance		
Coalition Health	**Member Strength**	**Community Impact**
• Member participation • Community representation • Representative governance	• not applicable	• not applicable

Using DEEM Indicator Data for Argumentation

In contrast to the data uses outlined above that inform more internal processes of planning and improvement, data is often used to "make the case" to external actors—funders, policymakers, prospective partners and members, etc.—around the need for and outcomes of digital equity coalitions, as well as in the context of advocating for local policy changes.

Establishing Need for Coalition Activities

Digital equity coalitions often must establish the nature of the needs they are addressing in order to garner resources and support. This might be in the context of funding proposals, but also plays into processes of forming partnerships with actors external to the coalition or inviting prospective new members to join the coalition.

Data plays an important role in establishing the need for digital equity coalitions, and is likely to draw on data related to the "community impact" level, but potentially on the "member strength" level as well. Similar to the needs assessment use case above (see page 20-21), coalition leaders might compile data related to issues of digital inclusion, equity, and justice in their community that help external stakeholders understand the problems they aim to address on the coalition impact level. Additionally, they might leverage data related to the "member strength" level that map active organizations and service providers, provide insight into the capacity and reach of organizations in the community, and highlight gaps that the coalition aims to address through its work.

Table 12. Need for Coalition Activities Indicators

DEEM Indicators - Need for Coalition Activities		
Coalition Health	**Member Strength**	**Community Impact**
• not applicable	• Member focus • Member activities • Geographic reach • Demographic reach	• Various, dependent on coalition goals

Advocating for Policy Changes

For some coalitions, policy advocacy represents a key strategy for advancing digital inclusion, equity, and justice in their communities. Within these efforts, data can play an important role in convincing the general public, and, critically, policymakers to take certain actions.

Data utilized to engage in policy advocacy and argumentation should be directly linked to the specific policy demands a coalition is advocating for, but the nature of the data leveraged can likely be similar to those gathered in the context of needs assessments and establishing need for coalition activities (above) examples. Advocacy campaigns led by coalitions are most likely to focus on the kinds of data linked to the "community impact" level, which can highlight on the ground disparities related to digital inclusion, equity, and justice in their community related to the campaign's advocacy goals.

Table 13. Advocating for Policy Changes Indicators

DEEM Indicators - Advocating for Policy Changes		
Coalition Health	**Member Strength**	**Community Impact**
• not applicable	• not applicable	• Various, dependent on coalition's specific advocacy goals

Demonstrating Coalition Outcomes

One of the central forms of data-based argumentation that coalitions engage in externally relates to demonstrating the outcomes of coalition efforts. This form of argumentation is complex and, depending on the kinds of claims a coalition wants to make, can require substantial resources. There is no "one size fits all" approach to such coalition-level evaluations, since coalitions take many forms and leverage distinct logic models. Additionally, attributing on-the-ground impacts to the activities that coalitions engage in is challenging, especially given that those activities most often operate at levels that are upstream from direct, lived experiences of the communities they aim to serve.

The most important place for a coalition to start when considering how to demonstrate its outcomes is with a clear theory of change, represented by a logic model that ties together its inputs, activities, and intended effects in the short, medium, and long term. Coalition logic models will often implicate data from all three levels of the DEEM framework, with short term outcomes likely linked to the "coalition health" level, medium term outcomes to the "member strength" level, and long term outcomes to "community impact" level.

Some coalition health indicators are likely to be more compelling to external audiences—active member participation, high degrees of trust, sense of belonging, shared language, and collective efficacy among coalition members, coalition members demonstrating strong buy-in around specific coalition goals (member goal orientation), and especially improvements in these indicators over time can speak to a coalition's success. Similarly, demonstrating that a coalition's membership is representative of the community it's serving (community representation), and that it's engaged in representative governance, can show that values around inclusion and equity are not simply present in mission statements but in the enactment of the coalition itself.

Many, though not all, coalitions conceive their primary area of outcomes as related to improving the work of their member organizations. In demonstrating their contribution to these outcomes, coalitions would look to indicators at the member strength level. Some mechanisms employed to improve and resource member organizations' work can facilitate more direct claims around outcomes at this level. For instance, coalitions that provide funding to member organizations in order to support direct services can build into this funding more straightforward reporting requirements that speak to numerical, geographic, and demographic reach of services provided through coalition funding. Additionally, data on the nature of applications to funding opportunities can provide insight into how oriented member organizations are to particular coalition goals and their current capacities in relation to these goals. Other mechanisms, such as professional development workshops and meet-ups that aim to build capacity might employ similar approaches as those outlined above related to using data to improve professional development activities (see page 21-22).

Directly attributing shifts in the lives of community members in areas like digital access, literacy, and use—the "community impact" level—to coalition activities can also vary in approach, though is generally complex and resource intensive to establish. In some cases, coalition models have clear lines of attribution to shifts at the community level. For instance, advocacy campaigns organized by coalitions that lead to direct policy changes—establishment of community-owned broadband networks, increased municipal funding for device distribution, and greater recognition of digital equity efforts by state and local leaders—often have clear narratives of a "win" that can be tied back to coalition activities. Coalitions that engage in direct service provision—such as in the case of Digital Navigator programs—provide opportunities for coalition backbone organizations to more directly gather evidence of community-level impacts. But for coalitions that largely focus their efforts on strengthening member organizations, directly attributing community-level impacts presents a more challenging proposition. A coalition might track shifts around certain community-level indicators related to digital access and participation through publicly available data sources, but attributing positive shifts in these areas to coalition activities often requires resource intensive social scientific studies and evaluation efforts.

Despite the complexity and often-times resource-intensive nature of demonstrating coalition outcomes, there are ways forward that are viable for many coalitions. Fairly straightforward member participation tracking systems (via database solutions such as Airtable) can be combined with yearly coalition health and member strength surveys that provide evidence around a fairly wide range of indicators in the DEEM framework. Implemented over time, combining data and utilizing metadata across these can demonstrate positive shifts in how a coalition is working together and advancing the work of member organizations.

Table 14. Coalition Outcome Indicators

DEEM Indicators - Coalition Outcomes		
Coalition Health	**Member Strength**	**Community Impact**
• Member participation • Trust • Sense of belonging • Shared language • Collective efficacy • Member goal orientation • Community representation • Representative governance	• Member focus • Member activities • Numerical reach • Geographic reach • Demographic reach • General member capacity • Member recognition • Member equity focus	• Various, dependent on coalition's specific long term goals around community-level impacts

photo courtesy of Digital Inclusion Alliance of San Antonio

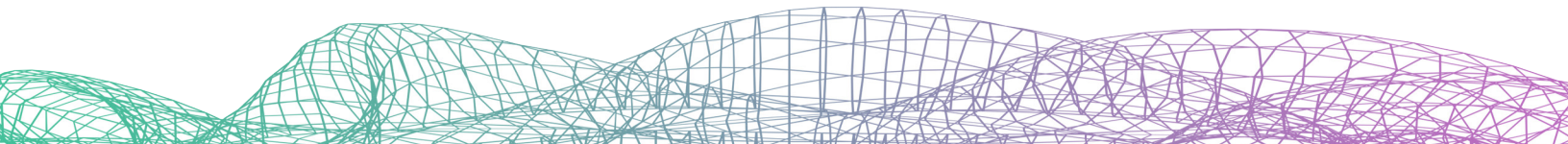
Moving Forward: Bringing the DEEM Framework into Use within Coalitions

This report focuses centrally on addressing the "what" and "why" of digital equity coalition measurement. The DEEM framework itself aims to address the question of what might be measured within digital equity coalitions, and the use cases offered aim to address the question of "towards what ends"—why it is useful to gather data on various areas of activity and at different levels. While the report suggests several general data collection approaches, its purpose was not to directly address the "how" of digital equity coalition measurement. As coalitions move forward and aim to bring the ideas shared in this report into practice locally, there are several critical steps that we recommend:

1. **Establish a collective process for determining why your coalition wants to engage in measurement, and what should be measured to achieve those ends.** Questions of how and what data will be collected, how it will be analyzed and by whom, and many other important implementation issues around measurement in practice are downstream from these foundational questions. Establishing why a coalition wants to engage in measurement should serve to specify what kinds of indicators are important to collect data on, which can then help specify an overall approach to measurement. Critically, in coalitions, the process of answering these questions can be one that all stakeholders can be involved in in some way. While backbone organizations are often the natural stakeholder to lead such a process, as with other areas of governance, determining a high level measurement strategy is both more equitable and effective through the participation of members and other stakeholders. This is especially important if part of what will result from a new measurement strategy is members being asked to participate in things like surveys and coalition self-assessment activities, not to mention the creation and use of shared data collection mechanisms.

2. **Articulate a coalition theory of change and associated logic model.** As noted earlier in the report, if a coalition does not already have a developed theory of change and logic model, the process of developing a measurement strategy presents an important opportunity to do so. Articulating short term, medium term, and long term outcomes, as well as how specific coalition activities aim to "move the needle" on them, can provide an important localized model to guide measurement that can draw on the DEEM framework. With a logic model in hand, a coalition can then determine which areas of activity are most important to focus on within a data strategy based on the measurement uses it's identified.

3. **Develop data collection, analysis, and use plans.** Having answered questions about why it wants to engage in measurement and what measurement should focus on, a coalition is then ready to begin determining how to go about measurement activities including data collection, analysis, and use. This includes matching indicators to potential data sources and measurement approaches such as tracking databases, surveys, publicly available data, etc. Plans around how these data will be analyzed, and then the contexts of data use and representation should be well envisioned as part of this stage of developing a coalition measurement strategy.



4 **Actively incorporate plans around data consent, privacy, harms, and security.** As digital equity advocates know well, histories of harm are all too common when it comes to uses of data. A key element of a coalition measurement strategy should be a clear articulation of what data will be collected, how it will be stored securely, how it will (and will not) be used, how privacy will be protected, and how those providing data will have fully informed consent within data collection activities. Within this, questions of data de-identification, especially around data from vulnerable populations, should be paramount.

5 **Engage in iterative development of measurement strategies.** The process of developing and implementing a coalition measurement strategy is not a 'one and done' activity. As with all other work, measurement strategies require iteration in order to both improve existing approaches as well as to modify focus based on shifts in coalition activity. Creating mechanisms for reflection around a coalition data strategy can help articulate the utility and limitations of certain measurement approaches, as well as help identify new areas of need when it comes to measurement.

Developing a process for articulating measurement needs, focus, and approaches within digital equity coalitions requires forethought, planning, and expertise. Within this report, we've aimed to support the digital equity community through the development of a common measurement framework to draw on, and a set of possible use cases that might be supported by a measurement strategy. These ideas can serve as a starting point, rather than an end point. Rather than providing a "silver bullet" or "one size fits all" model, coalition leaders and stakeholders should work together to consider their own approaches and local context to develop a plan that meets the particular needs of their community. Our hope is that in doing so, digital equity coalitions will be better able to achieve their goals and, collectively, address the visions of digital equity, inclusion, and justice.

photo courtesy of Digital Inclusion Alliance of San Antonio

Recommendations for Key Stakeholders

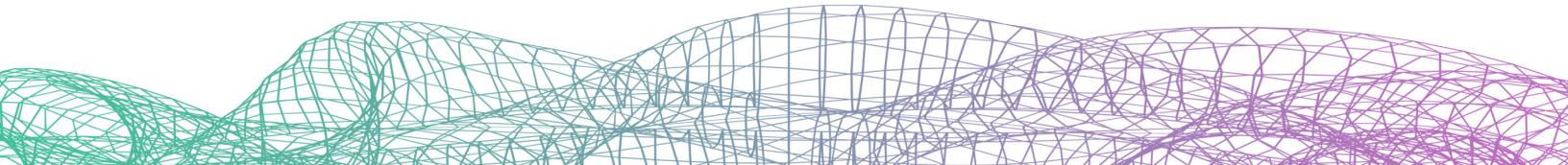
In this final section, we provide recommendations for key stakeholders interested in using the DEEM Framework to better understand and measure the work of local coalitions to create and sustain healthy digital equity ecosystems. This includes recommendations for state broadband and digital equity officers, federal policymakers, philanthropic organizations, academic researchers, and community members.

State Broadband and Digital Equity Officers

- The DEEM framework should be used to both grow and support local coalitions as they work to advance state digital equity planning in the BEAD and DEA grants from NTIA.
- The framework includes key indicators that can be used by states in developing their digital equity plans. These indicators can be used to better incorporate equity in the design, implementation, and evaluation of state broadband and digital equity grant programs.
- The framework also provides a roadmap for how states can engage with covered populations to ensure that their needs and aspirations are both included and met in state broadband and digital equity grant programs.
- The framework shows how statewide digital equity ecosystems can be developed and sustained by working closely with local coalitions.
- The framework can be utilized as a shared language and framework to better understand the work and efforts of local coalitions and needs of communities.

National Telecommunications and Information Administration

- The DEEM framework offers a starting point for further elaboration and potential incorporation in broader efforts to assess the impact of NTIA's broadband and digital equity funding, particularly in areas where local coalitions have played a role in their planning and implementation.



- The framework provides a way for NTIA to further articulate the value of local coalitions in the work to advance the goals of the IIJA and NTIA's programs.
- The framework introduces a lens through which the focus of NTIA's programs can be seen and understood, particularly in areas where coalitions are centered.
- The framework presents a way to talk about the importance of digital equity ecosystems in the success of NTIA programs.
- The framework can be utilized as a shared language and framework to better understand the work and efforts of local coalitions and needs of communities they serve.

Philanthropic Organizations

- The DEEM framework provides a way for philanthropic organizations to better understand and fund local coalitions in their work to advance digital inclusion, equity, and justice.
- The framework outlines an approach to research funding that centers the measurement needs of local coalitions in these investigations.
- The framework provides a roadmap for philanthropy in their role to support state digital equity planning, particularly where there are gaps in funding to support the inclusion of covered populations, and the community-based organizations that support them, in local coalition efforts.
- The framework can be utilized as a shared language and framework to better understand the work and efforts of local coalitions and needs of communities they serve.

Academic Researchers

- The DEEM framework provides a starting point for researchers and university partners interested in better understanding the role that local coalitions play in advancing digital inclusion, digital equity, and digital justice.
- The framework presents researchers and university partners with a way to support local coalitions in various aspects related to their goals, structure, and activities.
- The framework offers researchers and university partners an opportunity to contribute additional insights to support local coalitions' measurement efforts.
- The framework can be utilized as a shared language and framework to better understand the work and efforts of local coalitions and needs of communities they serve.

Community Members

- The DEEM framework provides individual community members with a way to organize local coalitions to advance digital inclusion, equity, and justice and to understand what success looks like in this work.
- The framework offers an approach for those most impacted by digital inequalities to ensure that they have a seat at the table when it comes to digital equity planning, implementation, and assessment of the work with and in their communities.
- The framework can help to provide accountability measures for local coalitions, and the states who support them, to ensure that federal and private dollars are being put to good use over the next five years in particular as the NTIA begins to implement its broadband and digital equity grant programs.

Endnotes

1 Colin Rhinesmith and Susan Kennedy. (November, 2020). *Growing Healthy Digital Equity Ecosystems During COVID-19 and Beyond.* Evanston, IL: Benton Institute for Broadband & Society. https://www.benton.org/digital-equity-ecosystems-report

2 Congress.gov. (2022). H.R. 3684 - Infrastructure Investment and Jobs Act. https://www.congress.gov/bill/117th-congress/house-bill/3684/text

3 National Telecommunications and Information Administration. (2021). https://www.ntia.doc.gov/blog/2022/new-ntia-data-show-enduring-barriers-closing-digital-divide-achieving-di gital-equity; U.S. Department of Education. (2022). https://tech.ed.gov/advancing-digital-equity-for-all/

4 American Indian Policy Institute. (2022). Digital Divide. Arizona State University. https://aipi.asu.edu/content/digital-divide

5 Adie Tomer and Caroline George. (2021). "The American Rescue Plan is the broadband down payment the country needs." https://www.brookings.edu/research/the-american-rescue-plan-is-the-broadband-down-payment-the-country-needs/

6 Rhinesmith and Kennedy, "Growing Healthy Digital Equity Ecosystems During COVID-19 and Beyond."

7 National Digital Inclusion Alliance (2022). "Definitions." https://www.digitalinclusion.org/definitions/

8 National Digital Inclusion Alliance, "Definitions."

9 Detroit Digital Justice Coalition. (2022). "Digital Justice Principles." http://detroitdjc.org/principles/

10 Digital Equity Research Center. (2022). "Digital Equity Ecosystems." https://dercenter.org/digital-equity-ecosystems/

11 National Digital Inclusion Alliance. (2022). Digital Inclusion Coalition Guidebook. https://www.digitalinclusion.org/blog/2022/02/24/ndia-publishes-new-digital-inclusion-coalition-guidebook/

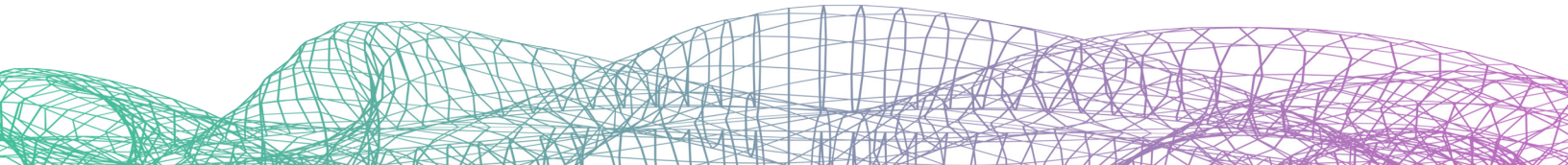
12 National Digital Inclusion Alliance, "Digital Inclusion Coalition Guidebook."

13 National Digital Inclusion Alliance, "Digital Inclusion Coalition Guidebook."

14 National Digital Inclusion Alliance, "Digital Inclusion Coalition Guidebook."

15 This list of indicators are adapted from work published by the National Digital Inclusion Alliance, Digital Futures Society, and Institute of Museum and Library Services.

16 Digital Justice indicators from Detroit Digital Justice Coalition: https://alliedmedia.org/projects/detroit-digital-justice-coalition



Appendix I - Research Methodology

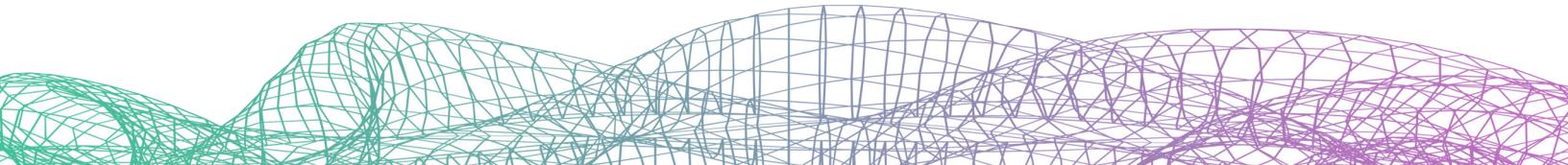
We began our work in early 2022 to address a gap in both the scholarly literature and, more importantly, in practice related to the measurement needs of local coalitions working to advance digital inclusion, equity, and justice. Our work started with a systematic review of the scholarly literature and practitioner documentation related to the following four areas:

1. Conceptualizations of digital equity and how differing conceptualizations implicate different outcome measurement models.
2. Current approaches to measurement of digital equity and an identification of gaps related to differing conceptualizations of the construct.
3. Current digital equity coalition structures, identification of points of commonality and divergence that bear on ecosystem measurement.
4. Network measurement. Driving questions: What are common network-level indicators utilized in other fields that can have relevance to DEEM? What modes of measurement and data use exist in other network work that DEEM can draw on?

We used the findings from our literature review to develop the interview protocol that we used to talk with digital equity and digital justice stakeholders. Between March and May, we interviewed 10 leaders and members of local coalitions in communities across the country to gain a deeper understanding of the following:

- The goals of the coalitionand how coalition members conceptualize issues of equity, inclusion, and justice, within the context of those goals.
- The structure of the coalitionin terms of leadership, membership, and decision making.
- The activities of the coalitionin terms of both the ongoing work as well as special projects that it has pursued.
- How the coalition's structure and activities relate to its goals and conceptions of equity/inclusion/justice.
- The current and desired roles of data and evaluationin the context of the coalition's work.

The interviews provided key context and information that we used to develop the content for our two participatory design workshops that were held in June 2022.



Participatory Design Workshops

Participatory design (PD) is both a research methodology and a design practice with roots in Scandinavian labor organizing during the 1970s. Several Scandinavian countries viewed PD as a strategy to address the growing power imbalances between workers and their employers, as industrial technology was introduced into factories. PD has since emerged as an effective tool to empower workers and technology users across a wide range of disciplines, including in the field of community informatics, a field of research and practice focused on advancing digital inclusion, equity, and justice. Similarly, we chose PD as an approach to engage coalitions in the process of co-designing tools to evaluate and assess their community work.

After introducing our general approach to thinking about digital equity ecosystem measurement, we shared the following prompt with our participants during the first of our two participatory design workshops in June 2022:

> What indicators of coalition impact, strength, and health are important for digital equity coalitions to track? During this activity, we're hoping to surface your perspectives on the kinds of things digital equity coalitions might track in order to both improve their work and argue for its importance.

Table 15 includes a sample of responses at the Coalition Health and Strength levels that workshop participants entered into a shared Google Doc.

Table 15. Sample PD Workshop Activity Participant Responses (Example #1)

Suggested Coalition Health Indicators	Suggested Member Strength Indicators
• Amount of funding directed to region to support coalition efforts • Number of active members/organizations • Defined decision making structure • Using a equity and/or racial equity lens • Routinely established meeting objectives & deliverables • Existence of a clear and shared mission for the coalition, along with specific goals for the coalition • Evidence of tangible collaboration in planning, funding, delivering evaluating impact • Presence of by-laws (including how decisions are made; working group structures etc) • Presence of roles/responsibilities documentation • Is there transparency with this coalition - can you see and track their work as an outsider?	• What providers are offering what services and where? • # and types of partners • Population groups that members work with • After identification of targeted groups or communities, are they being reached? • Are there trusted engagement partners actively involved in the coalition that reach all the target populations/ communities? • Leadership, decision-making by community leaders with lived experience or who work closes as a trusted member of those with lived experiences • Diversity of memberships/ participants and organizations including those with disabilities • Degree to which programs are intergenerational • Diverse services/resources; Invested/ active community entrenched organization members

Table 16 includes responses from the same activity at the Coalition Impact level. After the activity was completed, the group came back to discuss what they found. As the two workshop facilitators, we discovered together with the participants that their responses fell into two different categories, which are described below.

Table 16. Sample PD Workshop Activity Participant Responses (Example #2)

Suggested Coalition Impact Indicators (Changes Affecting Populations)	Suggested Coalition Impact Indicators (Changes Affecting Ecosystem
• # of people connected to internet access • # of people who attended digital literacy trainings/workshops • # of devices loaned • Narrowing of gaps in HH internet and device adoption rates between different groups based on race, age, & income • Outcomes as deemed important by members of the community being served • Increased access to increasingly common activities, such as online shopping, access to government programs, community services • Decrease in loneliness • Increased level of community participation • Economic/social outcomes of being online • Residents' right to internet/informational privacy	• Who can most directly serve those in need? • What changed for org that's providing those service • Providing local data to state agencies • Protecting privacy • Equity indicators • Sustainability - as measured by how many have digital equity plans • Needs of target populations met • # of organization or programs supported or touched by coalition efforts • Advocacy successes • Impact of program or project cultivated because of partnership and collaboration developed within coalition

As a result, we believe that Coalition Impacts are best understood at the following two levels, as articulated by our workshop participants and through our analysis of data gathered during the workshop session.

1. Indicators offered as a way to help coalition leaders (i.e., backbone organizations) think about their impact at the member strength level (see "changes affecting ecosystem improvement" in Table 3).
2. Indicators to help coalition leaders think about their overall impact on the direct community-level, or impact, level (see "changes affecting populations" in Table 3).

At the end of our first workshop, we invited all workshop members to participate in a measurement ideation activity using the template below. Tables 20 & 21 provide examples of responses that we included in our analysis of the workshop data for this report.

Table 17. Measurement Ideation Activity Responses (Example #1)

Indicator name	Brief definition	How could you collect data that would tell you something about this indicator?	What's a claim you'd be able to make through collecting this data?
• Regular participation and sharing of information	• How much members are participating in the coalition and the extent to which the coalition is a hub for sharing information	• # of active members • # of people attending events or participating in discussions via email/slack/etc • # of people attending multiple events/meetings • # of information sharing posts or links • # of organizations co-sponsoring or promoting events and meetings	• Dynamic, interactive, and mutually-reinforcin g network • Broader outreach into target communities • Sustainability of coalition

During the same activity, "sustainable partnerships" was identified by one group as an important indicator that was defined and further elaborated upon in Table 21.

Table 18. Measurement Ideation Activity Responses (Example #2)

Indicator name	Brief definition	How could you collect data that would tell you something about this indicator?	What's a claim you'd be able to make through collecting this data?
• Sustainable partnerships	• The number and types of partnerships that enhance individual organizational capacity and sustainability	• Tracking joint proposals • Tracking public-private partnerships (PPPs) • The number of new partners and donors • The types of new partnerships • Length of partnerships and type of partnerships (e.g. renewable; unrestricted; multi-year etc)	• % of joint proposals • % of new PPPs formed • # of new partners and donors • # of new funding partners/sources and then # of additional partnerships created after that (idea is to track a growing network)

The two workshops provided ample data and information, along with our stakeholder interviews conducted pre-workshops, that helped to inform the development of our draft DEEM framework and initial draft report. The draft DEEM framework report was then shared with the research participants for their review and comment over a two-week period. This process of member checking provided an opportunity to gather additional insights on the framework and to help ensure that the framework would be useful to local coalitions.

Appendix II - Coalition Health Scorecard

Answer these questions for a basic coalition diagnosis of strengths and areas of growth. Refer back regularly and you can use your score to identify and track progress in key areas of coalition development. (We suggest quarterly.)

How to use this scorecard:

- Ask each coalition member to fill out an individual scorecard.
- Enter individual scores in a collective table, indicating the number of members selecting particular scores to tabulate coalition results.
- Together consider the results. What patterns do you see? What results need further discussion? Over time, what has improved? What hasn't? Why?

		Not so much				Totally!
Clarity		**1**	**2**	**3**	**4**	**5**
1	Information about opportunities within the coalition is openly available and clear to its stakeholders.	☐	☐	☐	☐	☐
2	Information about actors within the coalition is openly available and clear to all stakeholders in terms of individual member organization's capacities, interests, and responsibilities.	☐	☐	☐	☐	☐
3	Information about the impact of the coalition's activities, outcomes, and community benefits is openly available and clear to its members, stakeholders, and community.	☐	☐	☐	☐	☐
Trust & Belonging						
4	Coalition members feel a sense of belonging, community, and comfort participating in coalition opportunities and participation structures.	☐	☐	☐	☐	☐
5	Coalition members and staff have strong relationships based in trust and mutual respect that form the basis for engaging in joint work and collective advancement.	☐	☐	☐	☐	☐

		Not so much				Totally!
Internal Alignment		**1**	**2**	**3**	**4**	**5**
6	Coalition members are focused on and have buy-in around specific coalition goals.	☐	☐	☐	☐	☐
7	Coalition members feel like they have a common set of concepts and ways of talking about goals that support coalition efforts.	☐	☐	☐	☐	☐
8	Coalition members feel like they have a clear shared purpose that they are moving towards within the context of coalition efforts.	☐	☐	☐	☐	☐
9	Coalition members believe that coalition members, as a whole, can organize and execute the courses of action required to have a positive effect vis-a-vis the coalition's valued outcomes.	☐	☐	☐	☐	☐
Equity & Representation						
10	Coalition goals and member activities are aligned with and address focal community needs related to digital inclusion, equity, and justice.	☐	☐	☐	☐	☐
11	Coalition membership includes diverse representation from local communities most impacted by digital inequities and injustices that it aims to address.	☐	☐	☐	☐	☐
Governance						
12	Coalition members see coalition leadership as responsive to their needs and interests.	☐	☐	☐	☐	☐
13	Coalition governance is representative of key stakeholders of the coalition, including coalition members as well as community members.	☐	☐	☐	☐	☐
14	Coalition governance has defined structures around decision-making, participation in governance roles, and other governance activities.	☐	☐	☐	☐	☐

Appendix III - Member Strength Survey

Member Strength Survey
Thank you for taking the time to have your station fill out this survey.

Survey Purpose
The [insert your coalition's name] is conducting this survey as part of our work to better understand the capacities, efforts, and reach of coalition members. The survey will help create a clearer picture of coalition members' focus and priorities, current work they're doing, and the needs they have. We anticipate that the results will have strategic value for you and for the field more broadly. The results will help to shape future ways that coalition members are supported and help us tell the story of how coalition members are advancing digital equity more broadly.

Confidentiality
Your organization's responses will be kept confidential, and all responses will be aggregated. The results will not identify any individual or station's responses, so you should feel free to be completely honest in your answers.

Who Should Respond?
The survey is designed to take 15 minutes to complete and should be completed by either your organization's director or by those within the organization who are most familiar with your organization's digital equity work. We are interested in a broad definition of digital equity, including any content or activities that support local community members.

If you have any questions regarding this survey, please contact [insert name of coalition leader] and [email address].

Main Questions
1. Name (optional): _____
2. If you agreed to be contacted in the future for follow-up questions please share your email address or phone number (optional):_____
3. Title: _____
4. What is the name of your organization?_____

Organizational Details

4. What is the name of your organization? _____

5. How long have you worked at this organization?Please select one of the following:

- ☐ 0-1 year
- ☐ 1-5 years
- ☐ 5-10 years
- ☐ Longer, please specify:_____

6. What type of organization do you work for? Please select one of the following:

- ☐ K-12 school
- ☐ Higher education
- ☐ Library
- ☐ Local non profit
- ☐ National non profit
- ☐ Religious institution
- ☐ Housing authority
- ☐ Health care provider
- ☐ Homeless shelter
- ☐ Financial institution
- ☐ Internet service provider (ISP)
- ☐ For profit
- ☐ Advocacy
- ☐ Union
- ☐ Workforce development
- ☐ Local government
- ☐ State government
- ☐ Federal government
- ☐ Other:_____

Member Efforts

8. What are the main issues or goals that your organization is currently focused on? Please explain _____

9. What types of digital inclusion services does your organization provide?

Please select all that apply:

- ☐ Low-cost internet access
- ☐ Digital literacy training
- ☐ Low-cost broadband enabled-devices
- ☐ Public access computer facilities
- ☐ Other:_____

10. What other programs or services does your organization provide that relate to one or more of the coalition's goals? Please explain:_____

Member Reach

11. How many people are served by your organization's programs and services? Please provide any additional details that would help usnderstand the reach of your organization in the communityorganization? _____

_____

12. What is the current geographic service area of your organization? _____

_____

13. Please select the population(s) in your community that your organization serves:

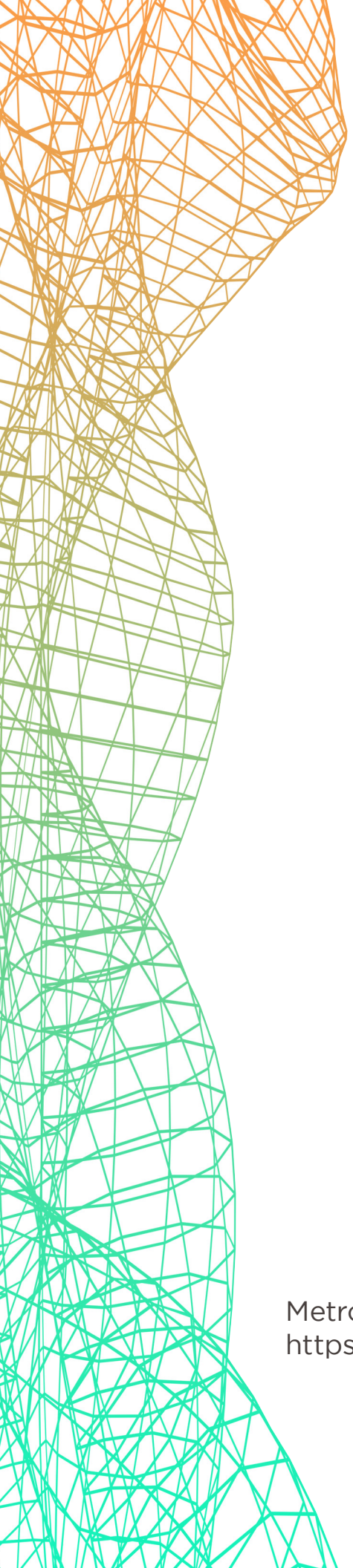
- ☐ General
- ☐ Early childhood/preschool (0-5 years)
- ☐ Middle childhood/primary school (6-12 years)
- ☐ Adolescents/High school (13-18 years)
- ☐ Adults (19-20)
- ☐ Adults (21-64)
- ☐ Aging, elderly, senior citizens (65+ years)
- ☐ Families/intergenerational
- ☐ Military families and/or veterans
- ☐ People with mental or physical challenges/disabilities
- ☐ People who are low income/economically disadvantaged
- ☐ Ethnic or racial minority populations
- ☐ Immigrants/refugees
- ☐ English language learners
- ☐ Rural populations
- ☐ Urban populations
- ☐ Suburban populations
- ☐ Unemployed
- ☐ Housing insecure and/or homeless populations
- ☐ Other:_____
- ☐ N/A

Member Capacity
14. What is your organization's current capacity in relation to the coalition's goals, which can include internal expertise, staffing, and funding? Please share anything that would help us to better understand your organization's current capacity to advance digital equity?_____
15. Has your organization been recognized for its work to advance digital equity? (Y/N) If "YES," please explain:_____
16. Does your organization represent or reflect those most impacted by digital inequalities in your community? (Y/N) Please explain:_____
17. Does your organization feel connected and engaged with the community you serve? (Y/N) If "YES," does your organization have evidence of these strong ties? Please explain:_____
18. Does your organization use an equity/racial justice lens in your work? (Y/N) If "YES," please explain:_____

Appendix IV - DEEM Framework Contributors

Name	Organization	Coalition
Sara Ali	Multnomah County	Digital Inclusion Network (Portland, OR)
Natali Betancur	The Center for Digital Equity	The Center for Digital Equity (Charlotte, NC)
Bruce Clark	The Center for Digital Equity	The Center for Digital Equity (Charlotte, NC)
Laura Cole	BiblioTech	Digital Inclusion Alliance of San Antonio
Carrie Coogan	Kansas City Public Library	Kansas City Coalition for Digital Inclusion
Susan Corbett	National Digital Equity Center	Maine Digital Inclusion Initiative
Aaron Deacon	KC Digital Drive	Kansas City Coalition for Digital Inclusion
Kevin Easterling	Black Heritage Association of the Lehigh Valley	Allentown Digital Inclusion Initiative
Kathy Fall	Community Tech NY	
Rebecca Gibbon	City of Portland, Oregon	Digital Inclusion Network (Portland, OR)
Nate Hill	Metropolitan New York Library Council	
Munirih Jester	National Digital Inclusion Alliance	Digital Inclusion Alliance of San Antonio
Rebecca F. Kauma	City of Long Beach	
Hillary Kolos	DreamYard	Bronx Digital Equity Coalition
Scott Kushner		Central New York Digital Inclusion Coalition
Liz Lima	Rural LISC and Lead for America	

Name	Organization	Coalition
Meghan McDermott	City of New York	
Aaron Meyerson	City of New York	
Lauren Moore	New York State Education Department	
Christina Quintanilla-Muñoz	Intercultural Development Research Association	Digital Inclusion Alliance of San Antonio
Danny R. Peralta	Hunts Point Community Network	
Chrissie Powell	Byte Back	Baltimore Digital Equity Coalition
Houman Saberi	Community Tech NY	
Aaron Schill	National Digital Inclusion Alliance	Digital Inclusion Network (Portland, OR)
Leslie Scott	KC Digital Drive	Kansas City Coalition for Digital Inclusion
Angela Siefer	National Digital Inclusion Alliance	
Andy Stutzman	Drexel University	Technology Learning Collaborative of Philadelphia
Lynn Thurston	Finger Lakes Digital Inclusion Coalition	Finger Lakes Digital Inclusion Coalition
Christa Vinson	Rural LISC	
Deb Watts	(Digital equity consultant)	
Gwenn Weaver		Digital Durham
Leon Wilson	Cleveland Foundation	Greater Cleveland Digital Equity Coalition
Vicky Yuki	National Digital Inclusion Alliance	



Metropolitan New York Library Council
https://metro.org