



From Data Scarcity to Social Equity: A Multi-Dimensional Framework for Understanding and Supporting Underserved Communities

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Article Info

ISSN (online): 2583-8261

Impact Factor (RSIF): 8.41

Volume: 05

Issue: 05

Received: 07-07-2026

Accepted: 05-08-2026

Published: 06-09-2026

Page No: 37-45

Abstract

Underserved communities face persistent systemic barriers that create and perpetuate disparities across multiple domains of social life, including healthcare access, energy equity, social care, disaster preparedness, and economic inclusion. Despite growing scholarly attention to these populations, significant gaps remain in understanding how overlapping forms of disadvantage interact and how research methodologies can be ethically and effectively adapted to generate actionable knowledge. This paper presents a comprehensive conceptual framework for understanding underserved communities through the integration of community engagement theory, methodological innovation for data-obscured populations, and intersectional analysis of structural barriers. Drawing on a systematic synthesis of the social science literature, the paper identifies four core dimensions that shape the experiences of underserved communities: (1) structural and institutional barriers, (2) trust and relationship dynamics, (3) methodological challenges in research and practice, and (4) community assets and resilience. This paper proposes an integrated framework, the Community Equity Engagement and Research (CEER) model, that emphasizes partnership, cultural responsiveness, and methodological flexibility. The paper concludes with implications for policy, practice, and future research, arguing that meaningful progress requires shifting from deficit-based approaches to strengths-based, participatory frameworks that center community voice and agency.

DOI: <https://doi.org/10.54660/IJSSER.2026.5.5.37-45>

Keywords: underserved communities, social equity, community engagement, research methodology, structural barriers, trust, intersectionality, participatory research, social inclusion, data-obscured populations

1. Introduction

The concept of "underserved communities" has gained increasing prominence in social science research, public policy discourse, and practice-oriented fields such as public health, social work, and community development (Shaw *et al.*, 2025; Tahir & Ibrahim, 2025) ^[13, 17]. These communities, defined by their systematic exclusion from adequate services, resources, and opportunities, represent a critical focal point for scholars seeking to understand and address social inequality. Yet despite growing recognition of the importance of studying underserved populations, significant challenges persist in both conceptualization and methodology. Underserved communities are characterized by multiple, intersecting forms of disadvantage that compound over time and across institutional contexts. Research has documented how factors such as race, ethnicity, socioeconomic status, geographic location, disability, and immigration status interact to create unique barriers to service access and social participation (Cedeño, 2024; Goulbourne, 2023) ^[3, 7]. These barriers are not merely additive but multiplicative, creating conditions of systemic exclusion that resist simple policy solutions.

The contemporary social science literature has made substantial progress in identifying the structural determinants of inequality

affecting underserved communities. Studies have examined how healthcare systems fail to adequately serve ethnically minoritized populations (Shaw *et al.*, 2025) ^[13], how social protection programs in developing regions often miss their intended beneficiaries (Bloch, 2020; Mitra & Paul, 2018) ^[2, 10], how energy burdens disproportionately affect low-income and minority households (ScienceDirect, 2026) ^[12], and how disaster management systems inadequately reach vulnerable populations (Springer, 2022) ^[14]. Collectively, this body of research reveals a consistent pattern: services and interventions designed to be universal frequently produce inequitable outcomes because they fail to account for the specific circumstances, needs, and barriers facing underserved communities.

However, significant gaps remain in the literature. First, there is a persistent tendency to treat underserved communities as monolithic categories, obscuring the heterogeneity of experiences within these groups and the intersecting nature of multiple forms of disadvantage. Second, research methodologies often struggle to effectively engage these populations, resulting in data that may be unrepresentative or methodologically compromised. Third, there remains a tension between deficit-based approaches that emphasize what underserved communities lack and strengths-based approaches that recognize community assets and resilience. This paper addresses these gaps by developing an integrated conceptual framework for understanding underserved communities that synthesizes insights from multiple disciplinary perspectives. It draws on literature from public health, social welfare, community psychology, urban studies, disaster management, and research methodology to construct a comprehensive model that accounts for both structural constraints and community agency. Our framework emphasizes the importance of partnership, trust-building, and methodological flexibility in generating knowledge that can meaningfully inform policy and practice. The paper proceeds as follows. Section 2 provides a conceptual clarification of underserved communities, distinguishing this term from related concepts and tracing its evolution in the literature. Section 3 reviews the key structural barriers affecting underserved populations across multiple domains. Section 4 examines the critical role of trust in community engagement and research participation. Section 5 addresses the methodological challenges and innovations in studying data-obscured and hard-to-reach populations. Section 6 explores community assets and resilience, challenging deficit-based narratives. Section 7 presents our integrated Community Equity Engagement and Research (CEER) framework. Section 8 discusses implications for policy, practice, and future research. Section 9 concludes.

2. Conceptualizing Underserved Communities

2.1. Defining the Concept

The term "underserved communities" encompasses populations that experience systematic barriers to accessing adequate services, resources, and opportunities across multiple domains of social life. These communities are not defined by any single characteristic but rather by their shared experience of structural exclusion and marginalization (Goulbourne, 2023; Tahir & Ibrahim, 2025) ^[7, 17]. Key dimensions of being underserved include limited access to healthcare, education, housing, transportation, financial services, and social support systems; underrepresentation in

research and policy decision-making; exposure to disproportionate environmental hazards and health risks; and limited political voice and power.

The concept is closely related to but distinct from other terms in the social science lexicon. "Marginalized communities" emphasizes exclusion from mainstream social, economic, and political life (Cedeño, 2024) ^[3]. "Vulnerable populations" emphasizes heightened risk of harm due to individual or group characteristics (Tahir & Ibrahim, 2025) ^[17]. "Hard-to-reach populations" emphasizes the challenges researchers face in accessing these groups (Springer, 2026) ^[16]. "Data-obscured populations" emphasizes the lack of available data that hides these groups from scholarly attention (Nature, 2025) ^[11].

Each of these terms carries different implications for research and practice. "Hard-to-reach" tends to locate the problem within the community rather than with research or service systems (Nature, 2025) ^[11]. In contrast, "data-obscured" shifts responsibility to the research community to develop more inclusive methodologies and recognizes that the problem is not the community's inaccessibility but rather the limitations of conventional research approaches (Nature, 2025) ^[11]. This distinction matters because framing shapes the types of solutions that are pursued.

2.2. Evolution of the Concept in Social Science

The scholarly understanding of underserved communities has evolved significantly over recent decades. Early approaches often adopted a deficit perspective, focusing on what these communities lacked and treating them as passive recipients of services and research (Cedeño, 2024) ^[3]. This perspective has been increasingly challenged by scholars who emphasize community assets, resilience, and agency (Cedeño, 2024; Goulbourne, 2023) ^[3, 7].

The shift toward a more empowering conceptualization has been driven by several intellectual currents. The rise of community-based participatory research (CBPR) has emphasized the importance of involving community members as co-researchers rather than passive subjects (Goulbourne, 2023) ^[7]. Critical theory has highlighted the role of power relations in shaping who is studied and how (Cedeño, 2024) ^[3]. Intersectionality has drawn attention to the multiple, intersecting forms of disadvantage that shape community experiences (Springer, 2026) ^[16]. Postcolonial and decolonial scholarship has challenged the implicit assumptions and biases in research conducted by outsiders on marginalized populations (Taylor & Francis, 2025) ^[18].

Contemporary scholarship increasingly recognizes underserved communities as complex, heterogeneous groups with diverse needs, strengths, and aspirations (Shaw *et al.*, 2025) ^[13]. This recognition has important implications for research design, intervention development, and policy formulation.

2.3. Key Characteristics and Diversity

Underserved communities exhibit substantial diversity across multiple dimensions. They include urban and rural populations, ethnic and racial minorities, immigrants and refugees, people with disabilities, LGBTQ+ individuals, older adults, low-income households, and indigenous peoples (Tahir & Ibrahim, 2025) ^[17]. These groups often face unique challenges but also share common experiences of systemic exclusion.

Geographic location shapes patterns of disadvantage in

important ways. Rural underserved communities face different barriers than urban ones, limited transportation, fewer service providers, and different patterns of social isolation (ER, 2018) ^[6]. Within urban areas, underserved communities are often concentrated in specific neighborhoods that experience disinvestment, environmental hazards, and limited resources (ScienceDirect, 2026) ^[12]. These geographic patterns reflect historical processes of segregation, redlining, and uneven development. Temporal dynamics also matter. Some communities experience persistent, multigenerational disadvantage, while others face temporary or episodic challenges. Understanding these temporal patterns is important for designing appropriate interventions.

3. Structural Barriers and Systemic Inequality

3.1. Healthcare and Social Care Access

One of the most extensively documented domains of disadvantage is healthcare and social care access. Research consistently demonstrates that underserved communities experience disproportionately poor health outcomes, limited access to quality care, and reduced participation in health research (Shaw *et al.*, 2025; Springer, 2026; Nature, 2025) ^[13, 15, 11].

Shaw *et al.* (2025) ^[13] conducted a systematic review of culturally centered pharmacy services for ethnically minoritized populations, finding that despite the potential of pharmacy settings as accessible healthcare venues, significant gaps remain in knowledge of how best to design and deliver culturally competent services. The review identified four key themes: navigating pharmacy systems, understanding cultural needs and beliefs that influence medicine use, strengthening relationships with healthcare providers, and addressing language and communication barriers. These findings underscore the need for cultural competency training, stronger community relationships, and improved interpretation services (Shaw *et al.*, 2025) ^[13].

In the UK social care context, a systematic review of equity and inclusion in adult social care research found a "disconnect between the aims of UK health and social care policy, which emphasize reducing inequity, and the way research is conducted" (Springer, 2026) ^[15]. The review identified that evidence often assumes interventions are equally effective across populations, despite limited consideration of underserved groups. This assumption fails to account for the specific barriers and needs of these populations, potentially leading to interventions that are less effective for those who need them most.

Research in South Asia has documented how social protection programs often fail to reach their intended beneficiaries due to problems with targeting, implementation, and design (Bloch, 2020; Mitra & Paul, 2018; Kabeer, 2009) ^[2, 10, 9]. Studies have identified issues such as exclusion errors (leaving out eligible beneficiaries), inclusion errors (including ineligible beneficiaries), and problems with take-up (eligible individuals failing to access benefits). These problems reflect deeper issues with governance, administrative capacity, and program design that disproportionately affect underserved populations.

In the United States, research on community resources for older adults with disabilities has documented how fragmented service systems, insurance gaps, and workforce shortages create barriers to accessing support (Illinois State, 2025) ^[8]. The review found that "viewing community

resources as interconnected, rather than isolated, supports helps identify where systems can be made more inclusive and responsive" (Illinois State, 2025, p. 8). This finding highlights the importance of taking a systems perspective on service accessibility.

3.2. Energy Burdens and Environmental Inequality

Energy burdens, the proportion of household income spent on energy costs, disproportionately affect underserved communities. Research in Atlanta's Grove Park neighborhood has documented how data scarcity creates barriers to understanding and addressing energy equity (ScienceDirect, 2026) ^[12]. The study found that households in this historically disadvantaged neighborhood experienced elevated energy vulnerability, with PEVI (Price-Energy Vulnerability Index) reaching as high as 31.26 and energy intensities peaking at 1.7 kWh/ft²/month.

The Grove Park case illustrates several structural factors that contribute to energy burdens in underserved communities: aging housing stock with poor energy efficiency, limited financial resources to invest in weatherization or efficient appliances, and lack of access to energy assistance programs. These factors are compounded by "economic and racial disparities and increasing vulnerability to the effects of climate change, including intensifying heat extremes" (ScienceDirect, 2026, p. 2).

The study also highlights the challenges of conducting energy equity research in underserved communities, where "building records are often outdated, interior measurements are unavailable, and residents may resist intrusive data collection" (ScienceDirect, 2026, p. 3). These data scarcity conditions create a "critical gap in both research and practice: how to design community-scale digital twins that are both data-lean and equity-oriented" (ScienceDirect, 2026, p. 3).

3.3. Disaster Management and Emergency Preparedness

Underserved communities face disproportionate risks and barriers in disaster management and emergency preparedness. The Punctuated Equilibrium Theory (PET) framework has been used to examine how underserved communities make evacuation decisions during disasters, using the Lower Ninth Ward of New Orleans during Hurricane Katrina as a case study (Walden University, 2026) ^[19].

The PET framework highlights how "long periods of stability" in public policy can be "punctuated by a catalyst event" that creates opportunities for policy change (Walden University, 2026, p. 15) ^[19]. However, these opportunities are not always realized for underserved communities. The study of zip code 70117 examined "the barriers and facilitators to evacuation and the decision-making process to evacuate for the residents of the Lower Ninth Ward" (Walden University, 2026, p. 17) ^[19]. It found that factors such as trust, resources, and prior experiences shaped evacuation decisions.

Research on social media use for disaster management has examined how underserved communities access and use these technologies in emergency contexts (Springer, 2022) ^[14]. The study found that "for people belonging to the underserved community in our case study at the lower level of trust, certain factors were found to be significant predictors of their use of social media for disaster preparedness and response" (Springer, 2022, p. 1) ^[14]. This finding underscores the critical role of trust in shaping community engagement with emergency systems.

3.4. Economic Inclusion and Financial Services

Economic exclusion, limited access to financial services and economic opportunities, is a fundamental dimension of being underserved. Research on financial literacy interventions for immigrant Latina mothers has examined how social exclusion shapes economic participation (Cedeño, 2024) ^[3]. The study implemented a Feminist Action Research approach to deliver a financial literacy program, finding that participants faced barriers including limited understanding of financial terminology, lack of familiarity with banking institutions, and experiences of discrimination in financial settings.

The Cedeño (2024) ^[3] study applied critical theory and Freire's concept of conscientização (consciousness-raising) to examine how participants could become aware of "the structural causes of problems (e.g., social exclusion) while beginning the process of liberation via social inclusion" (p. 6). This approach emphasized praxis, connecting knowledge with lived experience, as a pathway to empowerment.

3.5. Intersectionality and Compounding Disadvantage

Understanding the structural barriers facing underserved communities requires an intersectional lens that recognizes how multiple dimensions of identity and disadvantage interact. Research has demonstrated that "overlapping constraints, particularly in behavioral health, shape access and outcomes" in ways that are not captured by examining individual factors in isolation (Illinois State, 2025, p. 5) ^[8]. Intersectionality, a concept developed by Kimberlé Crenshaw, highlights how forms of discrimination and disadvantage interact and compound each other. For example, a low-income person of color with a disability faces barriers that are not simply the sum of being low-income, being a person of color, and having a disability. Rather, these dimensions of identity intersect to create unique experiences of exclusion (Illinois State, 2025) ^[8].

This intersectional perspective has important implications for both research and practice. Research that examines single dimensions of disadvantage risks obscuring the complex realities of underserved communities. Practice that addresses single barriers without considering intersections may fail to effectively reach those who experience compounded disadvantage.

4. Trust, Community Engagement, and Partnerships

4.1. The Centrality of Trust

Trust is a central concept in understanding the relationship between underserved communities and institutions, including researchers, service providers, and government agencies. Research demonstrates that mistrust, rooted in historical experiences of exploitation, discrimination, and neglect, is a significant barrier to engagement (Goulbourne, 2023; Nature, 2025; Walden University, 2026) ^[7, 11, 19].

Goulbourne's (2023) ^[7] dissertation on community engagement explored the role of communication in engagement processes, finding that "previous research has highlighted the historic missteps leading to many underserved community members not trusting health-promoting institutions (e.g., government, healthcare, faith-based) and being less motivated to engage" (p. 6). The study identified both institutional trust (trust in organizations and systems) and interpersonal trust (trust in community members) as key factors shaping engagement. Notably, "interpersonal and institutional trust was identified as both an

antecedent of highly involved forms of community engagement (i.e., transformational engagement) and a goal of lesser involved community engagement strategies (i.e., transactional engagement)" (Goulbourne, 2023, p. 7) ^[7]. The Cedeño (2024) ^[3] study similarly found that building confianza (trust) through bilingual services, welcoming environments, and respectful relationships was essential for engaging immigrant Latina mothers in a financial literacy program. The study emphasized that "creating an inclusive learning environment where they felt they had the confianza to contribute to the decision-making process" was a prerequisite for meaningful participation.

4.2. Community Engagement Strategies and Models

Scholarship on community engagement has developed various models and frameworks for effectively engaging underserved populations. Goulbourne (2023) ^[7] developed a conceptual framework that "explicates communication structures, mechanisms and processes that can enable each form of community engagement on this continuum based on the synthesis and integration of the literature on communication and community engagement" (p. 5).

The framework identifies three forms of community engagement along a continuum: (1) transactional engagement (lower involvement, focused on information sharing), (2) transitional engagement (moderate involvement, focused on consultation), and (3) transformational engagement (high involvement, focused on empowerment and shared decision-making). The choice of engagement strategy is influenced by factors including "perceived community readiness, organizational readiness, and community engagement goal" (Goulbourne, 2023, p. 5) ^[7].

Goulbourne's research with employees and board members of community-based organizations revealed a key finding: "consideration of the availability of partnerships played a more critical role in community engagement decision making than perceived community and organizational readiness to engage" (p. 7). This finding highlights the importance of leveraging existing relationships and networks as a foundation for engagement.

The concept of "co-creation" or co-production has gained traction as an engagement approach that recognizes the expertise and agency of community members (Taylor & Francis, 2025; Shaw *et al.*, 2025) ^[18, 13]. Co-creation approaches involve community members as active partners in designing, implementing, and evaluating services and research. This stands in contrast to traditional expert-led approaches that position community members as passive recipients.

4.3. The Role of Partnerships

Partnerships between community organizations, researchers, and service providers are essential for effective engagement with underserved populations. Goulbourne (2023) ^[7] found that "practitioners indicated that they seek to leverage partnerships as a critical first step in building trust and engaging community members" (p. 7). Partnerships serve multiple functions: they provide access to communities, offer legitimacy and credibility, bridge cultural and linguistic gaps, and compensate for capacity limitations.

Community-based organizations (CBOs) often play a critical intermediary role in partnerships.

These organizations have established relationships with underserved communities, cultural competence, and trust that

external partners may lack.

However, CBOs often face capacity constraints, limited funding, staffing, and time, that can limit their ability to engage in partnerships.

The Taylor & Francis (2025) ^[18] edited volume on research methods for marginalized populations emphasizes the importance of establishing partnerships with difficult-to-reach populations. Contributors to the volume drew on their own studies to "guide readers through the main phases of research, including study design, data collection, and data analysis" with an emphasis on "access and accessibility in research" (p. 1).

5. Methodological Challenges and Innovations

5.1. Studying Data-Obscured Populations

A fundamental challenge in researching underserved communities is that they are often "data-obscured", hidden from scholarly attention due to limitations in available data (Nature, 2025) ^[11]. The Nature (2025) ^[11] article on "strategic local government referral sampling" introduces the concept of Data-Obscured Populations (DOP) to describe groups that are "hidden in plain sight" because they are not captured by conventional data sources.

The term "data-obscured" was selected for several reasons: (1) "highlighting data invisibility" by pointing to the absence of data as a barrier to recognition and study; (2) "implying potential for discovery" by suggesting these groups "are not inherently unreachable or unimportant, but rather hidden beneath the current limits of research practices"; (3) "encouraging methodological innovation" to develop new ways of gathering data; and (4) "avoiding stigmatisation" by placing responsibility on the research community rather than the population (Nature, 2025, p. 3) ^[11].

This framing has important implications for research design. Rather than treating difficulty of access as a community deficiency, it recognizes the need for methodological innovation and adaptation.

5.2. Sampling Strategies for Underserved Populations

Traditional

sampling strategies often fail to adequately reach underserved populations.

Convenience sampling, while easy to implement, "may not always yield participants who can provide the most relevant or best information for the study" and "may not be suitable for sampling hard-to-reach populations as they are not easily identifiable" ^[11].

Purposive sampling, which relies on researchers identifying participants based on specific characteristics, similarly "assumes that the researcher can readily identify potential participants and has preexisting access to them", assumptions that do not hold for many underserved populations ^[11].

Snowball sampling, which relies on referrals from initial participants, has been a favored method for studying hard-to-reach populations. However, it has limitations for data-obscured populations: "DOP is hidden in plain sight, and the likelihood of familiarity among the individuals in the group is extremely low" ^[11]. Direct referrals may also cause emotional distress in sensitive contexts.

To address these limitations, Nature introduces Local Government Referral Sampling (LGRS) as a technique for reaching data-obscured populations. LGRS "leverages the extensive networks and local knowledge of government entities" to facilitate "the identification and referral of

potential participants" ^[11]. This approach recognizes that government entities may hold data or have access to populations that are not captured by other databases.

5.3. Technology-Assisted Research Methods

Technology offers new possibilities for studying underserved populations, though it also raises challenges. Berger discusses "technology-assisted research of populations under the radar," noting that "the constant development of technology expands the possibilities for such research by offering innovative ways to address some of the aforementioned challenges in accessing previously hard to reach population groups and collecting rich data especially relative to sensitive topics" (p. 1) ^[11].

However, technology-based approaches face limitations. Differential access to technology (the digital divide) may exclude some underserved populations. Social desirability bias may be exacerbated in digital settings. Ethical issues around privacy, consent, and data security are heightened when working with vulnerable populations. These challenges require careful attention in research design.

The ScienceDirect study on energy equity and digital twins illustrates both the potential and challenges of technology-based approaches. The study implemented a "Minimum Viable Data" framework to generate energy vulnerability insights under data-scarce conditions, demonstrating that "high-resolution interval data, detailed building audits, or extensive sensor networks may not be prerequisites for identifying households experiencing disproportionate energy hardship, particularly when the objective is screening and community prioritization rather than individual diagnosis" (p. 6) ^[12].

5.4. Community-Based and Participatory Research

Community-based participatory research (CBPR) and participatory action research (PAR) are approaches that emphasize partnership and community involvement throughout the research process. The Cedeño study implemented a Feminist Action Research (FAR) approach, which "was characterized by the 'look-think-act' process (i.e., approach that centers on cyclical processes of inquiry focused on learning during action research studies)" (p. 7) ^[3].

The FAR approach involved participants in multiple ways: providing space for personal reflections, engaging in activities and role plays, and discussing their own experiences as learning opportunities. This approach recognizes "that mistakes were welcomed, agreeing that we were adults working together towards common goals, and that we should support each other during the learning process" (Cedeño, 2024, p. 5) ^[3].

Shaw *et al.* recommend that future research "utilize lived-experience narratives and participatory co-design methods to further explore ways to address wider healthcare accessibility inequalities for this minoritized population" (p. 7) ^[13]. These approaches center the knowledge and expertise of community members rather than positioning them as passive subjects.

5.5. Ethical Considerations

Research with underserved communities raises distinctive ethical considerations. Historical exploitation of marginalized groups, including the Tuskegee syphilis study and ongoing research abuses, has created justified mistrust that researchers must actively work to overcome.

Key ethical principles include: informed consent that is

meaningful and culturally appropriate; respect for autonomy and community self-determination; fair distribution of research benefits and burdens; protection of privacy and confidentiality; and community involvement in research governance^[18, 11].

The Taylor & Francis volume emphasizes that researchers must be prepared for "the challenges of studying or working with populations that may be outside their personal expectations and experiences, affecting their ability to accurately represent the lived experiences of marginalized and vulnerable communities" (p. 1). This requires reflexivity, ongoing examination of the researcher's positionality and its effects on the research process.

6. Community Assets and Resilience

6.1. Beyond Deficit-Based Approaches

Much research on underserved communities has adopted a deficit-based perspective that emphasizes problems, deficiencies, and needs. This perspective, while useful for identifying challenges, can be limiting and disempowering. Increasingly, scholars advocate for strengths-based approaches that recognize community assets, resources, and resilience.

The ERIC (2018)^[6] article on "place-based education for environmental behavior" in rural Latin American communities argues for a "community-resources approach, comprised of funds of knowledge and social capital" (p. 1). The funds of knowledge approach recognizes that communities possess knowledge and skills developed through lived experience that are valuable resources for education and intervention. Social capital, the networks, norms, and trust that enable cooperation, is also a crucial community resource.

The Cedeño (2024) study found that immigrant Latina mothers possessed substantial knowledge and skills, though these were often unrecognized in mainstream financial institutions. The FAR approach created opportunities for participants to "become aware of and start to believe in their capacity to make transformative change through acquiring information, skills, and experience via critical analysis of historical and current structures and social relations that shape their powerlessness" (Cedeño, 2024, p. 6)^[3].

6.2. Social Capital and Community Networks

Social capital, the resources embedded in social networks, is a critical asset for underserved communities. As the ERIC (2018) article notes, "promoting environmental behavior is both contextualized by and dependent upon social and community interactions, or 'mediations'" (p. 1)^[6]. These social interactions can facilitate information sharing, mutual support, and collective action.

Research on disaster management has found that social networks play a crucial role in underserved communities' resilience and recovery. As Walden University (2026) found, "resident trust, ability, and resources are critical" in shaping evacuation decisions during disasters. Trust in neighbors and community organizations can facilitate collective responses to emergencies that compensate for inadequate institutional responses.

However, social capital can also have negative dimensions. As Goulbourne (2023) notes, "interpersonal trust" can also contribute to low motivation to engage with external institutions when "community members [have] interpersonal

trust in each other contributing to a low motivation and willingness to engage" (p. 6)^[7]. Strong internal community bonds can lead to insularity and resistance to external engagement.

6.3. Community Agency and Empowerment

Recognizing community agency is essential for effective engagement and intervention. Underserved communities are not passive victims of structural forces but active agents who navigate, resist, and transform the conditions of their lives.

The Cedeño (2024)^[3] study emphasizes the importance of "personal agency" in transforming social conditions. The FAR approach was grounded in "critical thought as an emancipation from oppression through an awakening of our consciousness" (p. 6). This consciousness-raising, or conscientização, involves "a deep reflection" combined with "participation, action via personal agency, and social change."

This perspective has important implications for intervention design. Rather than imposing solutions from outside, effective interventions work with communities to identify goals and strategies that align with community values and priorities. This requires ongoing dialogue and partnership rather than one-way communication.

7. An Integrated Framework: The Community Equity Engagement and Research (CEER) Model

Drawing on the foregoing synthesis, the paper proposes an integrated framework, the Community Equity Engagement and Research (CEER) model, that addresses the multiple dimensions of understanding and supporting underserved communities. The CEER model is grounded in the following principles:

7.1. Core Principles

1. Recognition of Systemic Inequality: The framework begins from the recognition that underserved communities face systemic, structural barriers that are not of their own making. These barriers, including discrimination, disinvestment, limited access to resources, and inadequate representation in decision-making, are embedded in institutional practices and policies^[17, 8].

2. Intersectional Analysis: Disadvantage is not experienced in a single dimension but through multiple, intersecting axes of inequality. Understanding underserved communities requires attention to how race, class, gender, disability, immigration status, geography, and other dimensions interact^[8, 16].

3. Trust as Foundation: Trust is a prerequisite for meaningful engagement. Historical and ongoing mistreatment of underserved communities has created justified mistrust that must be actively addressed^[7, 11].

4. Partnership and Co-Creation: Engagement is most effective when it is based on partnership and co-creation, where community members are active participants in designing, implementing, and evaluating services and research^[13, 3].

5. Cultural Responsiveness: Services, research, and interventions must be culturally responsive to the specific

needs, values, and preferences of diverse communities ^[13, 3].

6. Methodological Innovation: Studying underserved communities requires methodological innovation that goes beyond conventional approaches to address data scarcity, access challenges, and ethical considerations ^[11, 3].

7. Strengths-Based Approach: While acknowledging barriers and challenges, the framework also recognizes community assets, knowledge, and resilience ^[6, 3].

8. Commitment to Equity and Justice: The ultimate goal of research and practice is not simply understanding but contributing to more equitable and just outcomes.

7.2. Key Components

The CEER model has four interconnected components:

Component 1: Understanding Systemic Barriers: This component involves mapping the structural, institutional, and environmental factors that create and perpetuate disadvantage. This includes analysis of policies, resource allocation, service delivery systems, and historical patterns.

Component 2: Building Trust and Relationships: This component involves deliberate efforts to establish and maintain trusting relationships with communities. This includes transparency about goals and methods, responsiveness to community concerns, demonstrating commitment and follow-through, and involving trusted intermediaries and community organizations.

Component 3: Engaging Communities as Partners: This component involves moving beyond consultation to genuine partnership, with community members participating in decision-making, co-design, and co-delivery of services and research. This includes mechanisms for ongoing community voice in governance.

Component 4: Generating and Applying Knowledge: This component involves developing knowledge that is both rigorous (methodologically sound) and relevant (useful for communities and practitioners). This requires careful attention to research design, data collection, analysis, and dissemination.

7.3. Implementation Considerations

Effective implementation of the CEER model requires attention to organizational capacity, resources, and institutional commitment. Organizations working with underserved communities need cultural competency training, flexibility in approaches, sustained commitment rather than short-term projects, and resources to support partnership activities.

Institutional barriers to implementation include funding constraints, timelines that do not align with community needs, evaluation requirements that prioritize easily measurable outcomes over meaningful engagement, and organizational cultures that are not oriented to partnership.

8. Implications for Policy, Practice, and Research

8.1. Policy Implications

The CEER framework has several implications for policy. First, policy design should be informed by intersectional analysis that recognizes the diversity of underserved communities and the multiple forms of disadvantage they experience. Universal policies that fail to account for this diversity may inadvertently perpetuate inequality.

Second, policy implementation should include mechanisms for community participation in governance and oversight. As

Tahir and Ibrahim (2025) argue, "social inclusion-based public services emphasize access, participation, and equitable treatment for all segments of society" (p. 1) ^[17]. This requires more than consultation, it requires meaningful power-sharing with communities.

Third, policies should address structural determinants of inequality, including underinvestment in underserved communities, inadequate service infrastructure, and discriminatory practices. As the South Asia social protection literature demonstrates, well-intentioned programs may fail to reach underserved populations if structural barriers are not addressed ^[2, 9].

Fourth, policy should support and fund community-based organizations as critical partners in service delivery and engagement. The capacity of CBOs should be strengthened to support their intermediary role.

8.2. Practice Implications

For practitioners, including service providers, community organizers, and researchers, the CEER framework emphasizes several key considerations.

Relationship building and trust are foundational and require time, consistency, and genuine commitment. Practitioners should not expect immediate engagement but should invest in developing relationships over time.

Cultural responsiveness requires more than cultural competency training, it requires structural changes to make organizations more accessible, such as multilingual services, flexible scheduling, and community-based locations.

Partnership requires shared power and decision-making. This may challenge conventional professional roles and require new skills in collaboration and facilitation.

Strengths-based approaches require moving beyond needs assessments to asset mapping and identifying community resources. This also requires recognizing the knowledge and expertise that community members possess.

Methodological flexibility and innovation may be necessary to engage underserved populations effectively. Practitioners should be prepared to adapt approaches based on community feedback and changing circumstances.

8.3. Research Implications

Future research should address several gaps and priorities identified in this review.

Further development of methodological approaches.

There is continued need to develop and evaluate methods for studying underserved communities, particularly approaches that are participatory, culturally responsive, and ethically sound. The concept of "data-observed populations" (Nature, 2025) provides a useful starting point for developing innovative sampling and recruitment strategies.

Intersectional analysis: Research should more systematically examine how multiple dimensions of identity and disadvantage interact to shape experiences and outcomes. This requires collecting data that captures diversity within underserved communities and analyzing interactions between forms of disadvantage.

Longitudinal studies: Much research on underserved communities is cross-sectional, providing a snapshot rather than a dynamic understanding. Longitudinal studies could illuminate how barriers and needs change over time and how interventions affect long-term outcomes.

Evaluation of interventions: There is a need for rigorous evaluation of interventions designed to serve underserved

communities, including attention to whether interventions are reaching intended populations and achieving equitable outcomes.

Community-based and participatory research: The shift toward community-based and participatory approaches should continue and be strengthened. This includes developing appropriate methods for community involvement in governance, analysis, and dissemination of findings.

Use of technology: Research on using technology to study underserved communities should continue, with attention to both opportunities and risks. This includes addressing digital divide issues and ethical concerns.

9. Conclusion

This paper has provided a comprehensive conceptual framework for understanding underserved communities through the integration of community engagement theory, methodological innovation, and intersectional analysis. It has been argued that effective engagement with and support of underserved communities requires attention to multiple interconnected dimensions: structural barriers, trust and relationships, methodological challenges, and community assets.

The Community Equity Engagement and Research (CEER) model presented in this paper offers an integrated approach that recognizes the complexity and diversity of underserved communities while providing practical guidance for policy, practice, and research. The model emphasizes partnership, cultural responsiveness, methodological flexibility, and commitment to equity and justice.

The prevalence and persistence of disparities affecting underserved communities, documented across numerous studies and contexts, signal a need for fundamental change in how social services, policy, and research are designed and delivered. It is not enough to simply provide services or conduct research; we must address the structural factors that create and perpetuate inequality.

This requires a shift in perspective, from viewing underserved communities as problems to be solved to recognizing them as partners and experts on their own lives. It requires commitment to building trusting relationships, sharing power, and centering community voice in decision-making. And it requires methodological innovation to generate knowledge that is both rigorous and relevant.

The challenges are significant, but the imperative for change is clear. Underserved communities deserve not just our attention but our respect, partnership, and sustained commitment to equity and justice. The CEER model provides a framework for meeting this imperative.

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How to Cite This Article

Alanazi AF. From data scarcity to social equity: a multi-dimensional framework for understanding and supporting underserved communities. *Int J Soc Sci Except Res.* 2026;5(5):37-45. doi:10.54660/IJSSER.2026.5.5.37-45.

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