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Maintaining Systems of Care in the Midst of Shock

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Version: June 12, 2023

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Abstract

The COVID-19 pandemic created massive disruptions across society. These disruptions put into focus integrated social service referral networks', hereafter systems of care, ability to be resilient in times of crisis. This research examines 11 systems of care across the United States. The researchers compare network performance before and immediately following the emergence of the COVID-19 pandemic using quantitative service episode data (N = 2,579). Resilience is measured by examining whether networks improved their time to service (i.e., efficiency) and case resolution rate (i.e., effectiveness). The authors explain systems of care resilience and fragility based on in-depth interviews with care system workers (N = 17). Through these interviews, they identify three strategies that support resilience *(1) coordination change, (2) network reduction, and (3) network growth and connection.* In addition, they identify three factors that explain system of care fragility: *(1) lack of capacity, (2) technology barriers, and (3) over-reliance on familiar providers.*

Maintaining Systems of Care in the Midst of Shock

The COVID-19 pandemic led millions of workers to work from home, parents to take charge of their children's education, and over 6 million deaths globally (Azizi et al., 2021). These disruptions fully display the inequalities permeating society across racial, ethnic, and economic lines (Bowleg et al., 2020). This exacerbation of inequalities pushed the need for social services for governments and communities to the forefront. The pandemic immensely strained social workers and service provision models (Abrams & Dettlaff, 2020). Social workers were asked to find alternative modes of community connection. Social service agencies had to confront inefficiencies and obstacles in provision models to match the nuances of community needs (Carson & Mattingly, 2018).

A system of care (SoC) or integrated social service referral network is an interorganizational network that usually connects public and nonprofit organizations through technology and personnel to support comprehensive and targeted care provision (Pronovost & Bo-Linn, 2012). These systems and similar collaborative forms exist across social service domains. This approach is seen in homeless services (Mosley, 2022), mental health (Huang & Provan, 2007; Lorant et al., 2019; Nicaise et al., 2013; Provan & Milward, 1995) and family services (Chen & Graddy, 2010). SoCs use case management technology to allow partner organizations to send information about requested services from clients and other relevant details to mitigate barriers to receiving care. Care systems rely on backbone staff, navigators, and social workers to ensure network logistics run smoothly. These personnel serve as intermediaries between clients and providers throughout their care-seeking process (Browne et al., 2015). The pandemic has put these systems into focus as government agencies and community-based organizations champion this approach to reimagining social service provision. These parties view

SoCs as a tool to relieve stress from traditional hospital-centric healthcare systems (Shortell et al., 2009).

Similar to the disruptions that individuals and families are experiencing, care systems and partner organizations are shifting and adapting to environmental constraints. These constraints reflect barriers to providing in-person services, maintaining communication with technology-deprived clients, funding instability, and challenges in retaining critical staff (Moya et al., 2022). Underserved and underrepresented communities view social service networks as lifelines to access essential services and life-supporting infrastructures (Broussard et al., 2003). If not managed or mitigated properly, network constraints can adversely impact care-seeking plans and the ability of a community to bounce back and bounce forward (Alsan et al., 2021). These constraints have led to a call from researchers and practitioners to understand how SoCs can be resilient in times of severe disruption and prolonged crisis to support community wellness (Beckstein et al., 2022).

Resilience is a line of inquiry in disaster literature (Bruneau et al., 2003). Disasters in this space are environmental (e.g., earthquakes, hurricanes, etc.) or human-made (e.g., chemical spills, faulty housing developments). Resilience emphasizes a community or an organization's ability to withstand disruptions in unexpected environments and move forward into the new reality developed due to the disaster (Doerfel et al., 2013; Kendra & Watchendorf, 2003). More specifically, resilience examines the characteristics and processes of organizations and communities to identify strategies related to rapid response abilities and survival. These abilities associated with immediate response are organizational redundancy, capacity for resourcefulness, effective communication, and capacity to self-organize in extreme demands (Romero-Lankao et al., 2016). Networks in disaster emphasize speed to connect communities to safety as the primary

metric to capture resilience. This focus on efficiency is essential but limiting when networks support complex human service needs during prolonged change (Lai & Hsu, 2019).

If resilience does not occur, it ultimately impedes individuals, families, and communities' ability to bounce back and forward into new normalcy domains. Specifically, the inability to access and share resources, mobilize human and technical capital, communicate effectively across partner agencies, and reach individuals and community members quickly. Although these reasons for resilience nonobservance have been explored in disaster literature, little work has explored fragility rationales for SoCs that seek to wrap around communities in prolonged crises (Moore & Gagné, 2022).

This paper aims to capture the resilience and fragility rationales across care systems in social services. Systems of care support communities in longitudinal ways. This means that providers and care system staff collaborate to create unique care-seeking plans to provide services that match the complexities of immediate and long-term needs (Burns & Goldman, 1999). Due to systems of care focusing on comprehensive access to social services, we expand on Bruneau and colleagues' (2003) definition of resilience. We argue that resilience is both about efficiency and effectiveness. Specifically, this work takes the stance that resilience is about connecting communities to social services promptly (i.e., efficiency) and successfully (i.e., effectiveness). This understanding of resilience recognizes that clients receiving the correct services for their situations is critical in ensuring successful outcomes across economic, civic, and social categories. Additionally, this work captures the strategies and obstacles that influence resilient outcomes in prolonged crisis conditions. Thus, this paper highlights mechanisms that support the efficiency and effectiveness of social service provision during the COVID-19 pandemic.

This research is essential for social work research and practice because social workers are increasingly asked to respond to community needs with reimagined and repurposed collaborative purpose-driven arrangements such as SoCs (Simes & Tichenor, 2022). Thus, understanding how the provision of social services ultimately occurs in a severe and prolonged crisis is essential to mitigate adversities in these types of environments. Specifically, this work provides social workers and researchers with measurable resilient outcomes, resilience strategies, and fragility rationales to inform organizing.

The paper proceeds as follows. First, we provide a brief overview of systems of care in social services, and then we describe resilience as a line of inquiry. Next, we describe the methods of this study and our analysis of 11 systems of care that address multiple veterans and military family needs. Then we explain our results, including how these efficiency and effectiveness metrics differ by service type, leading to resilience strategies and fragility rationales. After that, we discuss the implications of these rationales and strategies for social work and resilience theory. Finally, we conclude with the limitations and contributions: identifying resilience strategies, identifying fragility rationales, extending resilience theory due to long-term purpose-oriented referral networks, and an empirical understanding of measuring resilience in SoCs through efficiency and effectiveness.

Systems of Care for Social Services

Systems of Care (SoCs) are formed to provide wraparound care to meet the needs of diverse target populations in health and human services. With the implementation of SoCs, providers are better equipped to support individuals navigating community services (Wolk et al., 2021). Collaborating with network partners, service providers share knowledge and resources and communicate goals to problem-solve with a greater capacity to meet clients' needs (Weber &

Khademian, 2008; Huang & Provan, 2006). The benefits of SoCs extend to potentially reducing spending on preventable health care, promoting a more accessible and healthy community (Brewster et al., 2019).

To promote accessibility, an SoC is an interorganizational network that usually connects independent organizations through technology and personnel to support comprehensive and targeted care provision (Pronovost & Bo-Linn, 2012). Providing wraparound care, SoCs have grown in numbers to cover core health services and support services for home and community-based treatments (AACAP). SoCs originated from clinical environments, like hospitals (Baker et al., 2005), but have grown to cover a more comprehensive set of care needs in nonclinical contexts. SoCs also exist in the domains of health care, mental health care (Huang & Provan, 2007; Lorant et al., 2019; Nicaise et al., 2013; Provan & Milward, 1995), intervention programs, homeless services (Mosley, 2022), family services (Chen & Graddy, 2010) and substance abuse (McGihon et al., 2018). SoC services can also cover employment, recreation, housing, and support for family members (Cook & Kilmer, 2010). An SoC offers the ability to provide services for many areas of need for an individual, creating a more comprehensive level of care.

In providing a wide range of services, care systems support various needs in immediate and long-term circumstances. Practitioners posit that collaborative care models must provide multiple facets of care, including mental and physical health, to adequately address the needs of patients (Thota et al., 2012). A prevalent barrier to addressing clients' needs are fragmented care delivery systems. A fragmented delivery system provides services through various agencies that may have different administrative structures, funding levels, and philosophies of care, which leaves vulnerable populations lost in conflicting routes to services (Frank & Baumohl, 2021). In

a fragmented delivery system, clients rely on care that may differ in quality across different agencies.

Further, these agencies may not collaborate in providing integrated care, impeding access and continuity of care (Nicaise et al., 2013). Unlike a fragmented delivery system, an SoC offers care for individuals in partnership with community organizations to strengthen capacity and maintain support for clients. Lorant et al. (2019) found that patients benefited from improved continuity of care when service networks were implemented. Moreover, care systems often support under-resourced communities, which may experience barriers to care through racism, ableism, and social-determinant risk factors (Kuo et al., 2022).

With barriers to care for under-resourced communities, such as a lack of access to resources, navigating health and social services can be complex. SoCs utilize technology and social workers to address these barriers, support clients' needs, and efficiently provide care. Internally, SoCs use various information and communication technologies (ICTs), such as email or teleconference, to collaborate and streamline network activities (Fu et al., 2019). Externally, SoCs also utilize technologies to communicate efficiently to support clients. Within healthcare, eHealth or digital health programs are rapidly growing to deliver healthcare services through technological means (Nilsen et al., 2020), such as health screening, referral management, etc. (Cartier et al., 2020). A call service, such as United Way 2-1-1, can link low-income individuals to services in their community, reducing disparities in disease categories for those in vulnerable situations (Kreuter et al.,2012).

Within these SoCs, social workers, or navigators, are concerned with providing social services and improving clients' health and social outcomes at an individualized level. The responsibilities of a social worker are to provide care in two parts, being instrumental

(addressing physical barriers to accessing care) and relational (building a positive relationship between the navigator and the client) (Browne et al., 2015). Moreover, social workers working within collaborative arrangements have been found to mitigate barriers to intervention access for individuals, improving their adherence to treatments (Park, 2021). In using case management technologies and practices, social workers can keep track of information, communicate with their partner organizations, and provide integrated services to improve client outcomes (D'Andrade, 2019).

In stable times, systems of care can be effective and efficient ways of connecting individuals to care that supports wellness and resilience. They help individuals navigate the complex landscape of programs, providers, and eligibility requirements (Broaddus et al., 2017). But, during times of crisis, these networks are called upon to act as adaptive systems that can respond to changing demand, organizational capacity constraints, and new needs. In short, they are asked to become resilient.

Resilience

Resilience was introduced and discussed in ecological literature to explain nonlinear dynamics within and across ecosystems (Holling, 1973). Ecological resilience characterizes a system's ability to stay at equilibrium or stability when encountering disruptive events. The stability of a system depends on various stability domains where a system exists. Stability domains refer to a particular space where communities feel confident that their current environment will enable developmental processes for survival and adaptation (Folke et al., 2010). Thus, stability depends on a system's ability to tolerate perturbations and transition to stable states that may differ from the initial equilibrium points (Gunderson, 2000). These

theoretical underpinnings have helped explain how societies mobilize resources to respond to environmental and human-made disasters (e.g., hurricanes, tsunamis, and oil spills).

Disasters represent perturbations that cause a system to partake in rapid response activities to reach a stable domain. Bruneau and Colleagues (2003) define resilience as the ability of organizations and communities to mitigate and contain the effects of disasters and execute response activities that minimize the impact on quality of life. They state that resilience aims to reduce injury, economic losses, and loss of life. In this sense, resilience is shown through activities that support robustness, redundancy, resourcefulness, and rapidity. Robustness and redundancy emphasize the actors' ability to resist the disaster's effects. Resourcefulness and rapidity emphasize a community's ability to recover. Some of the activities that support resilient systems in disaster events are the use of resilience assessment tools (Dianat et al., 2022), effective and transparent communication across system stakeholders (Thomas & Suresh, 2022), engaged and trustworthy leadership (Goniewicz et al., 2022), community engagement (Satizabal et al., 2022), and the ability to connect to a variety of stakeholders (Losee et al., 2022).

Moreover, resilience has been described as an ecosystem that can "bounce back" and recover system function by managing instability caused by internal and external shocks. Systems may also "bounce forward" from shocks by mobilizing system capacities to move to a new reality created due to disaster (Cox & Perry, 2011; Kendra & Wachtendorf, 2003). In this sense, resilient organizations and communities can adapt to their environment's negative aspects and find new opportunities to increase capacities and benefits for actors across the ecosystem (Ponomarov & Holcomb, 2009). Resilience ultimately connects to the ability of individuals, organizations, and communities to continue to develop in the face of complexities across sociopolitical and sociocultural levels (Pettus et al., 2021).

On the community level, resilience is often discussed as the ability of a community to identify and mobilize resources to respond to community needs. Communities rely on interorganizational arrangements across social service organizations to coordinate access and the provision of resources (Doussard & Fulton, 2020). In a disaster context, response networks facilitate activities focused on immediate needs such as food, medical services, and emergency shelter. Response networks form temporary ties or renew existing ties to assist across functions and geographies to learn from one another and supplement activities to support relief efforts (Pérez-Nordtvedt et al., 2013). Organizations within response networks build ties with similar organizations to quickly build momentum to respond to dynamic emergency events (Doerfel et al., 2010).

SoCs within communities play a similar role as response networks but differ because SoCs are long-term purpose-oriented networks. This mission orientation shapes the framing of community resilience (Norris et al., 2008). Specifically, community-level resilience sits at the level of community practice, where social service providers focus strategies on immediate and long-term needs (Gutiérrez & Gant, 2018). Community-level resilience emphasizes the collective development of physical, sociopolitical, sociocultural, and psychological resources that promote wellness and mitigates adversity (Ahmed, 2004). This type of resilience situates a community's ability to become a protective and socially connected ecosystem that supports long-term development (Greenfield & Marks, 2010). The short-term focus of response networks is a crucial distinction because networks driven by long-term mitigation or providing a wide array of services can differ in resilience and community impact strategies (Lawlor et al., 2022).

In a disaster context, the inability to cope effectively and move to new stability domains can lead to severe consequences such as death, homelessness, and social incoherencies

across socioecological levels (Imperiale & Vanclay, 2021). For response networks, practices associated with resilience failures are often connected to the inability to quickly reestablish partner ties, ineffective communication, poor use of information communication technologies, and lack of coordination (Boin et al., 2015). For long-term purpose-driven collaborations, the failure to mobilize dormant partners, ineffective communication, uncertain leadership, low organizational and professional commitment, and lack of financial and technical resources impede success in social service provision (Crosby & Bryson, 2005; Mor Barak et al., 2001). Nonetheless, maladaptive practices described and identified in the literature often occur within standard operating environments. Thus, research is needed to determine what strategies and ineffective practices occur when SoCs operate in an extreme and prolonged crisis to promote learning and extend knowledge of complex adaptive systems (Worstell, 2020). Systems of care provide a fertile ground for identifying how long-term purpose-oriented networks respond to these events, which makes it imperative to understand resilience within the context of SoCs.

Due to the pandemic creating prolonged shock across human service needs, care systems have been forced to ensure that clients maintain care in a dynamic, ever-changing environment. Losing stable employment increased the demand for essentials like food and reduced the need for other services. However, with a health protocol limiting in-person activities, clients could no longer access care as they had in the past. Thus, it is essential to understand what it means to be resilient in care systems.

RQ1: What network resilience practices did systems of care enact during COVID-19?

RQ2: What network resilience practices are associated with adaptive versus maladaptive outcomes?

Method

Cases

Our data come from 11 systems of care organized by AmericaServes. AmericaServes is "the [United States'] first coordinated system of public, private, and nonprofit organizations working together to serve veterans, transitioning service members, and their families" (AmericaServes, 2021). The 11 systems, or networks, operate in New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Texas, and the District of Columbia. The systems offer services in 21 categories, including financial and income support, physical and mental health care, social and spiritual enrichment, employment assistance, and transportation. They accomplish this by following a centralized intake and referral process.

Clients may enter the network by interacting with one of the providers or by referring themselves to the network. In either case, the client's service request arrives at the network's Coordination Center, an elected or volunteer provider responsible for routing and monitoring all referrals in the network. The Coordination Center then conducts an intake procedure with the client to identify the client's full set of needs. With the client's needs identified, the Coordination Center sends referral requests to potential providers within the network. If a provider accepts the referral, then care begins. If a provider rejects the referral, the Coordination Center continues contacting providers in the network until it connects the client with care.

Their technology provider, Unite Us, maintains the platform through which AmericaServes tracks the progress of referrals and information about organizations and clients. This data includes client demographics (e.g., age, gender, race, service era, eligibility information), organization attributes (e.g., program offerings, tenure in the network, number of

users), and referral information (e.g., service type, timing, current status, originating and receiving organization). Notably, the timing data of referrals capture when the referrals first entered the system and when key updates happened (e.g., rejection, acceptance, closure) to the referral.

Systems Data

The quantitative data from our study come from the Unite Us system used by the networks to send and receive referrals with one another. To understand how COVID disrupted activity in the networks, we drew data from two slices—one before COVID and one early in COVID's emergence. The pre-COVID data capture networks' activity 30 days immediately prior to the first COVID cases in each network's state. The emergence data capture network's activity 30 days after states' initial responses to the COVID pandemic. Table 1 shows the specific windows we pulled data for each network and the corresponding sample sizes.

These data include all referrals and cases which occurred during those windows. Broadly, referrals and cases describe separate components of what the system terms service episodes. Service episodes illustrate individual requests for assistance that may be part of a more extensive care journey. Unite Us collects various data on service episodes, including demographic information, service type, timing, and resolution status. For our study, we focus on three data elements: the requested service type, the times of creation and case acceptance, and the resolution status of the episode. We elaborate on these further in our Measures section.

To prepare the data for analysis, we performed a few cleaning steps. First, we dropped any service episodes marked as duplicates or self-resolved. We made this choice to limit redundancy and assess the networks' work more accurately. Next, we dropped inter-network episodes to attribute effort appropriately to the networks. We then aggregated the data up to the

episode level since a single episode can have multiple records logging changes in the episode's status. After aggregating, we computed whether networks experienced improvements or declines in their time to accept referrals and their resolution rates for each observed service type, lumping no changes in with improvements. Finally, we dropped service types for which there were not at least 2 cases (i.e., networks) that improved and 2 cases that declined. In total, this left us with 1,350 episodes before COVID, and 1,229 episodes during the emergence of COVID. These episodes are the basis of the quantitative portion of our analysis.

Table 1. Data Sampling

| Network ID | Data Window | | # Episodes | |
	Before	Emergence	Before	Emergence
2	01/11/2020–02/11/2020	04/01/2020–05/01/2020	160	128
3	01/14/2020–02/14/2020	04/02/2020–05/02/2020	226	520
4	01/03/2020–02/03/2020	04/02/2020–05/02/2020	140	105
5	01/06/2020–02/06/2020	04/08/2020–05/08/2020	43	10
7	01/11/2020–02/11/2020	03/31/2020–05/01/2020	75	42
10	01/22/2020–02/22/2020	04/03/2020–05/03/2020	256	129
11	01/01/2020–02/01/2020	03/29/2020–05/30/2020	53	21
12	01/06/2020–02/06/2020	04/02/2020–05/23/2020	171	89
13	01/09/2020–02/09/2020	04/03/2020–05/03/2020	108	72
14	01/02/2020–02/02/2020	03/23/2020–04/23/2020	71	31
18	01/20/2020–02/20/2020	04/03/2020–05/03/2021	47	82

Note. Before captures the 30 days immediately prior to the first cases of COVID within the network's home state. Emergence captures 30 days after the network's home state began initial responses to the COVID pandemic.

Measures

Service Types

The COVID pandemic shifted many aspects of the work and home environments, creating a concomitant shift in the needs for which people required support. We, therefore, break out our examination of resilience strategies and performance by service type. The Unite Us platform codifies 21 unique services, including education and employment; social and spiritual enrichment; assistance with clothing, food, income, transportation, and utilities; and physical and mental health, to name a few. However, after our cleaning process (described in the Systems Data section), we retained only nine services: benefits navigation, employment, food assistance, housing and shelter, income support, individual and family support, mental and behavioral health, money management, and utilities.

Efficiency

The first performance metric we examined was networks' time efficiency. Unite Us tracks three key points in time for service episodes: when they first entered the platform, when an organization accepts the referral to provide services, and when that organization completes service delivery with the client. We could, therefore, examine time efficiency as the "time to accept," the "time to close," or the total time of the episode. Since services vary in complexity to deliver (Saitgalina & Council, 2020), we rely on time to accept. Time to accept best captures the effort of the network to connect a client with requested services and is less susceptible to differences in provider processes or practices. To understand how efficiency changed before and after COVID's emergence, we computed the median time to accept for each service type within each network.

Effectiveness

The second performance metric we examined was networks' effectiveness. We borrow from Turrini et al.'s (2010) conceptualization and frame effectiveness as the impact of networks' activities beyond their boundaries—in this case, connecting individuals in their communities to services that satisfy their needs. In Unite Us' terms, effectiveness corresponds to the resolution status of the service episodes. We consider episodes marked as "resolved" to be effective and episodes marked as "unresolved" to be ineffective, as these describe whether or not a service episode resulted in services for the client. We then computed the resolution rate for each service within each network, which served as our measure of effectiveness.

Interviews

The research team conducted interviews with 17 staff of the networks in the Fall of 2020. We conducted follow-up interviews with 16 staff of the networks in the Winter of 2021. The first-round interviews focused on general background information about the participants and the decision rules they used to manage referrals generally. They also presented the respondent with detailed analytics from the pre-COVID period for their network. The interviewer asked detailed questions about time-to-care, the pattern of provider referrals, and the types of services provided. The first interview lasted between 45 minutes and an hour. The second interview focused on the period 30 days after COVID-19's emergence. Again, specific questions were developed based on the system's data. These questions asked the participant to reflect on the differences in the number of cases, time to care, most frequent service types, active providers, and patterns of referrals during the pre-COVID and post-emergence time periods. The interviews lasted between 45 and 90 minutes.

Analysis and Quantitative Results

This research uses a sequential explanatory mixed methods design (Ivankova et al., 2006). In this mixed method design, quantitative data is collected first, then qualitative data is used to explain the results. In our research, we first examined the system's data and then asked interviewees to examine and explain the results.

We first approached our data quantitatively using a descriptive approach. Typically, resilience studies occur within the context of change, especially drastic, crisis-driven changes. Therefore, we first examined how requests for each service the networks offer changed before and during COVID's emergence. As mentioned in the Systems Data section, we dropped from further analysis any services that lacked two cases of increased volume and two cases of decreased volume. With the remaining nine services, we computed each network's efficiency and effectiveness by service before and during COVID to understand how changes in network performance occurred in relation to changes in service demand (see Table 2 in the appendix).

Across 11 networks, nine services, and two metrics, this offered 198 potential cases for change in performance. For example, there was an opportunity for Network 1 to improve or reduce its effectiveness in providing food. This represents one potential case for change. Five services failed our inclusion criteria of two negative and two positive cases for efficiency (i.e., there were at least two networks where performance improved and two where performance was lower), and one service failed our inclusion criteria for effectiveness, reducing our sample to 132 cases. Of these, 36 cases had no comparison before or during COVID-19, leaving us with a final sample of 96 cases. 67 cases capture differences in network effectiveness, with 47 (70%) showing an increase or maintenance in effectiveness and 20 (30%) showing a decrease. The other 29 cases capture differences in network efficiency, with 14 (48%) showing an increase or

maintenance in efficiency and 15 (52%) showing a decrease. 10 networks exhibited varying changes in effectiveness across services, and 5 networks exhibited varying changes in efficiency across services. For example, Network 4 maintained or improved its effectiveness for benefits navigation, employment, housing, income, and family support requests but was less effective for money management requests. In contrast, Network 4 experienced only efficiency losses, connecting clients to care slower for benefits navigation, housing, and mental health requests.

Qualitative Analysis, Results and Discussion

We used a two-stage qualitative analysis to analyze 325 transcribed pages (see Saldaña, 2015). First, we utilized open coding to identify the practices that the respondents identified to address the emergence of COVID. We initially identified 649 codes. Second, the first author reviewed these codes, removing duplicates and combining the practices to arrive at 158 codes. Finally, we examined the presence of these practices for each of the cases identified by the quantitative analysis as resilient or fragile. From the reduced number of codes, 8 codes were established for resilience strategies, and 5 categories were associated with fragility. These codes were further categorized as 3 primary strategies for resilience and 3 primary fragility rationales from which theoretical constructs were derived.

Resilience Strategies

We find that resilience for care systems is accessed through three primary strategies: coordination change, network reduction, and network growth and connection. Coordination change is the ability of SoCs to recognize the need to shift to new stability domains through pivoting, proactive communication with providers, learning, use of workarounds, and consistently championing the benefits of collaboration and the technologies that enable that collaboration. Network reduction is the ability of SoC to shift and focus resources on activities

and services they know will perform well. Network growth and connection rely on an SoC's ability to identify new financial resources, community engagement, and learning to strengthen the capacity of social service provision (see Table 3 in the appendix). All these strategies demonstrate that resilience in the pandemic environment is shaped by the timescale of the shock, preexisting relationships, and the ability to adapt to continuously meet the shifting needs of communities. This indicates a key difference from response networks: resilience is a speedy connection to services rather than a comprehensive strategy to support ongoing needs.

Coordination change. In addition to how the external environment shapes the occurrence of these resilience strategies, these strategies are also shaped by the types of services provided. For all service types, coordination change was observed. Service types such as employment assistance, food assistance, housing, benefits navigation, and income support became increasingly critical as the pandemic created profound uncertainty in the ability of communities to access these life-supporting resources. Eligibility requirements and access to documentation and technology heavily guard these services. To respond to this uncertainty, SoC personnel pivoted to focus on activities that mitigated barriers to ensure connection to services. For example, coordination center staff would workaround the case management technology and proactively call social service providers via phone to capture real-time service capacity to avoid long wait times and rejection of referrals. In other instances, SoCs scheduled frequent meetings where partners could share current capacity and problem-solve with other social service providers about eligibility issues for individuals and families to boost access to available services:

I don't think the pandemic has affected our ability to assess capacity because we have this extra

piece, which are the collaboratives that meet monthly or every other month in the region and

bring the organizations together.

In these collaborative spaces, care coordination personnel build and forge relationships to

motivate participation from providers in the care system, while advocating for the frequent use of

the care system technologies to boost real-time capacity capture to inform the provision of social

services. In other words, SoCs were consistently learning to do ordinary activities in new ways.

Coordination change as a resilience strategy is uniquely distinct from resilience strategies

observed in response networks due to its emphasis on long-term planning, learning, and

adaptation. This strategy is primarily situated in the idea that accessing resilience coincides with

community practice. Social service providers constantly communicate and identify alternative

routes to connect communities to service.

Network Reduction. Moreover, social service providers reduced attention on making

known the range of services in these care systems, such as social enrichment programs or mental

health support. Care system personnel reduced capacity in specific service areas to cater to the

most requested services for community members. Care system providers noted that the needs

mentioned above became the most sought services because of the uncertainty due to the

pandemic. Through the resilience strategy of network reduction, SoCs reduced operations in

other areas to scale or maximize access and connection to vital services. Care system personnel

of Network 3 describe this strategy:

Their big thing is, a lot of the in-person groups that they usually would do, they could not do

because of COVID. So they redeployed staff to deliver food boxes in a partnership with us.

This example demonstrates that reduction. They are, specifically, redeploying and

moving staff from other areas to focus on efficient and effective food provision. The resilience

strategy of network reduction points to another contrast between response networks and how

resilience has been traditionally understood. In the traditional disaster context, resilience

emphasizes the reemergence of collaboration to meet emergency needs. In this context, networks

do not reduce capacity; rather, capacity is shaped based on the immediate effects of the disaster.

For SoCs, their presence and collaboration are ongoing irrespective of external shocks. Thus,

social service providers reimagine how to use the network to be resilient. In this sense, resilience

also emphasizes the need for social service providers to learn new tasks as they reduce capacity

in other services. Unlike response networks in traditional disaster contexts, providers' expertise is

directly tied to services those communities need.

Network growth and connection. Lastly, for resilience strategies, network growth and

connection were identified as essential tools to boost resiliency. Network growth and connection

are demonstrated through the ability of social service providers to increase financial capacity and

community engagement to better serve communities. Through the legislative passing of

pandemic-related aid, SoCs could access more financial resources to ensure essential services

remain accessible. Although financial resources were expanded in areas such as food, housing,

income support, and benefits, the pandemic environment created barriers to connecting with

community members face-to-face:

Different organizations in the community came together. They passed out food boxes for

individuals. And so our staff have been really fortunate to be a part of those events. We had some

stand downs for our employment program that were really beneficial. We were safe, we masked

up, we took temperatures and really followed those necessary guidelines. We are being adaptable

as well to meet the client and the veteran where they're at.

In addition to connecting with organizations external to the SoC, social service providers

also used case management technologies to identify at-risk populations to share with them they

have access to these expanded services:

We went through our database of 6,000 veterans and did an export of veterans that were over 65.

That would be the most likely need— food during this. And what we did is then take that export

directly and contacted every single one of them, via email, to see how we could support them.

These examples elucidate this strategy of network growth and connection. Specifically,

SoC personnel need to identify alternative methods of community connection to use the

expanded resources given to them by external parties. Due to the long-term purpose of these care

systems, providers rely on preexisting and new community relationships to meet communities

where they are to inform them about the growth in capacity for these services and ultimately

ensure access to them. This resilience strategy highlights the principle of SoCs needing to

wraparound communities, unique to this provisioning model. Response networks in traditional

disaster contexts consistently rely on known ties to expedite access to emergency services. For

SoCs, providers are asked to engage with community members to identify existing needs,

whereas, for response personnel, populations that need assistance are often more evident because

of their proximity to the disaster. Due to the need to wraparound, social service providers must actively seek out communities that need assistance while confronting the systemic barriers that obscure access and support for immediate intervention.

Factors Influencing Network Fragility

As this work describes resilience for SoCs, it also identities fragilities that impede social service providers from accessing resilient outcomes for their respective communities. The three main fragility rationales surfaced were: lack of capacity, technology barriers, and over-reliance on familiar providers. Lack of capacity indicates that the care system did not have the capacity (people and or finances) to meet the demand for services successfully. Technology barriers include case management technologies becoming too cumbersome, inaccessible, and unclear, stopping hasty responses. It also includes limited access community members have to technologies to learn and sign up for services. Over-reliance on familiar providers indicates that care system personnel rely on the most familiar providers, leading them to neglect other providers that can provide similar or the same services (see Table 4 in the appendix).

Lack of capacity. Lack of capacity is a fragility that is often prevalent in social services. Before the pandemic, many social service organizations were stretched thin regarding staff and were heavily regulated by the parameters of their grant dollars. This reality did not go away because of the pandemic:

> In this case, we got thrown a lot of money. The community got thrown a lot of money to support and assist with this, with little to no guidance or change on the parameters of our grants.

As mentioned, the pandemic exacerbated the need, pushing more communities to ask for assistance and boosting demand. As demand increased, SoCs were running on existing infrastructures for social service provision with limited staff and reduced services from social service providers not being able to match the increase in demand resulting in longer wait times and connection to services:

> There's not much that they can do working from home, closed. So we were just sending very minimal ones [cases] or we were only sending ones that were absolutely super essential because they were closed.

Although not unique in this context, this fragility rationale differs from response networks in traditional disaster contexts. Capacity barriers for response networks often situate providers' inability to organize rapidly to meet emergency needs. Response networks are often given more autonomy from government agencies and other external partners in assisting communities due to their short-term mission orientation. For SoCs, they exist within highly regulated environments where bureaucratic actors create legal parameters and guidelines that limit the ability of social service providers to develop and support solutions that match the wickedness of social complexities,

Technology barriers. Case management technologies serve as the primary channel for communication about requested services and serve as a resource to identify and target resources. Although these technologies afford advantages, user experiences and use are varied. Some social service providers view technology as too complicated and use workarounds like phone calls to connect community members with services. For coordination personnel, they noted that social service providers might not continually update the system to indicate what services they can

provide at a given time, and features that dictate referral and information exchange get in the way of meaningful insights that the technology could provide:

> There's no way for us to refer directly back to the veteran's bridge home without first sending it somewhere else, then recalling it and then sending it back to the veterans bridge home, or closing it out and starting a new service episode, which in my opinion, is a little bit dishonest because at this point now we're creating more than just the initial service episode that is present.

In addition to the functionality of these technologies, community members had limited access to technologies that allowed social service providers to follow up:

> They just can't get in touch with them…. you know they didn't have money to pay their phone bill, so then you have no way to get in touch with them.

The reliance on case management technology as the primary channel to manage service requests implies that community members also need access to web-enabled technologies that support this crucial communication exchange. The pandemic exacerbated the technological divide between low-income and rural communities, reducing resilient outcomes. This fragility is observed in other disaster contexts. Technical barriers are cited to be a critical factor in determining resilience. For response networks, the ability of providers to understand and use risk assessment technologies and other tools is a crucial capacity to address needs. Although these technologies' stated purposes may differ, the inability to use technology successfully can negatively affect both SoCs and response networks.

Overreliance on familiar providers. Lastly, for fragility rationales, an overreliance on familiar providers was observed as a barrier to service provision. Due to the drastic shift in needs, care system personnel relied on social service providers they believed were the most effective in providing services. Although these providers have been known to be efficient and effective, this caused other providers not to be used, creating bottlenecks as service requests moved through the SoC:

> I've got a provider that offers that support, but in Unite Us, I can't send you a referral with that service type because that's not listed as one of the service types they provide. You may have 27 organizations that say they provide benefits navigation.

Overreliance on familiar providers as a fragility rationale is unique to this service provision context. For response networks, a reliance on preexisting ties is often an antecedent for successful service provision. Response networks rely on these ties because of their known expertise and ability to respond to emergencies. For SoCs, this rationale is similar but hinders the ability of communities to access services efficiently and effectively. This leads to an uneven distribution of service requests, creating bottlenecks for social service providers that could be mitigated with broader provider participation. Although these familiar providers deliver services well, the overreliance on familiar providers creates a fragmented service delivery process, insufficient to meet complex and layered community needs. These results show that social service providers in SoCs return to provision practices they conceptualize as safe and known to cope with extreme change.

Implications for Resilience Theory

These results provide vital insights concerning resilience theory. These findings demonstrate that resilience at the community level looks different than resilience bounded by a disaster's parameters. Community-level resilience refers to the ability of actors across socioecological levels to mobilize resources to create a protective and adaptive ecosystem to meet both short-term and long-term needs (Ahmed, 2004). The results of this study affirm this understanding of resilience. Specifically, SoCs' concern with the intersection of needs motivates a different strategic approach to move to new stability domains to support community development. Our resilience strategies show that SoCs consistently try to change referral network operations and structures to support the growth of an adaptative and protective social services ecosystem (Greenfield & Marks, 2010). Thus, to be resilient on the community level, SoCs must design themselves as social learning systems that enable social service providers to identify new and alternative modes of collaborative practice to maximize connections to social services (Wenger, 2000). This aspect is unique to SoCs and in contrast to resilience, where interorganizational arrangements are concerned with the immediate effects of the disaster itself.

Moreover, this work points to a new theoretical ground for resilience theory. Specifically, this work extends resilience theory by firmly situating the purpose or mission orientation of actors that aim to create resilient outcomes. These results suggest that social service arrangements with a long-term purpose or mission to wraparound communities in extreme shock will enact resilience strategies focusing on long and short-term needs. The types of services provided are connected to the purpose of these social service arrangements and further influence the ability to access resiliency. This purpose also suggests specific fragilities and complexities that may affect the ability to meet needs. This work asks resilience scholars to deeply consider

the purpose of an interorganizational network as an antecedent that will inform capabilities to move to new stability domains.

In addition to these theoretical contributions, this work captures both the process of resilience and the outcomes of resilience in an empirical fashion. Resilience has been described as a theoretical framework that can be elusive and broadly defined (MacPherson et al., 2016). This work builds on Bruneau and Colleagues' (2003) definition of resilience by combining activities that connect communities to services rapidly (efficiency) and communities ultimately receiving those services (effectiveness). This research gives a clear empirical view of how long-term purpose-driven referral networks understand and measure resiliency.

Implications for Social Services

These findings suggest five primary implications for social service providers. First, this work informs social work by creating an operational definition to measure the provision of social services. Resilience is a concept that has been amorphous and poorly measured across disaster contexts (MacPherson et al., 2016; Zhong et al., 2015). This work defines and measures speed in crises and connection to services (efficiency). Additionally, this conceptualization of resilience provides a measure to understand how resilience at the community level can be evaluated (effectiveness). Second, this work offers resilience strategies that support communities during severe and prolonged uneasiness and fragility rationales that surface vital barriers. Although these strategies are tied to the external shock from the pandemic, social service providers can apply these strategies in situations that may require a reimagination of service provision.

Third, these findings suggest that relationship building is fundamental in mitigating barriers that obscure service access. Thus, social service providers using a community of practice lens should consistently identify avenues for community connection, share information, and

enroll communities in those services (Ungar, 2002). Fourth, the results put into focus the difficulties surrounding case management technologies. These technologies are growing in use and are seen as an effective way to support the provision of social services and cross-functional integration (Cartier et al., 2020; Waldfogel, 1997).

Nonetheless, suppose social service providers and community members are not supported to learn these technologies in ways that match their respective needs. In that case, it will create functional barriers that will exacerbate existing obstacles in service provision (Gray et al., 2015). Social services providers should seek ways to support learning to boost confidence in use for both partners and community members. Lastly, this work identifies that preexisting legal parameters and guidance surrounding funding hinders the ability of social service providers to respond in a way that matches the nuances created by the shock. Thus, these findings boost arguments for more flexible funding formulas and flexible design of social delivery systems (Hasenfeld & Garrow, 2012; O'looney, 1993).

Limitations

Although this work provides a robust mixed-method analysis from prominent networks to provide critical insights, there are some limitations. First, this work uses a specific and shorter time window to measure efficiency and effectiveness. Future work should capture the provision across a longer timescale to potentially account for more services and identify trends. Second, this work interviews care system personnel to identify strategies and fragility rationales. These insights are essential but do not fully account for how the communities they serve understand these strategies and fragilities. Future work should center community voice to grow knowledge on the impacts of these strategies. Lastly, SoCs in this study primarily concerns veterans and

their families. Although a significant population, future work should determine if resilience as a measure and its associated strategies and fragilities are observed in other social service contexts.

Conclusion

This research demonstrates that resilience for care systems looks different because of the initial purpose of these social service provision models, providing four key contributions. First, we identify resilience strategies as coordination change, network reduction, and network growth and connection. We identify fragility rationales as lack of capacity, technology barriers, and overreliance on providers. These strategies and fragilities define activities and complexities to boost preparedness for future shocks. This work offers social service providers the processes that lead to resiliency and fragilities that can inform their ability to become proactive social learning systems. Second, resilience has been deeply explored in disaster contexts where natural or manufactured disaster is the leading source of shock, and response networks are the primary support providers. Although crucially important, resilience is short-term, and response networks quickly fall dormant, so other social service actors use specific practices to take over. This work analyzes resilience in a different context, offering an empirical and expansive view of how resilience can occur for social service arrangements on the community-level.

Third, this work demonstrates that long-term purpose-driven provision models are asked to be both response networks and comprehensive wraparound collaboratives in prolonged shock. These findings expand resilience theory by placing the purpose of referral networks as a key antecedent that influences activities that lead to adaptations and survivability. Social service arrangements such as SoCs, with a more long-term purpose orientation, aim to create an ecosystem of resilience where communities have access to sociopolitical, sociocultural, physical,

and psychological resources. Thus, the purpose of a social service interorganizational network will influence how providers organize themselves and connect with the communities they serve.

Lastly, this research provides an empirically driven definition to measure resilience. We define resilience as the ability of an SoC to respond efficiently and effectively to the comprehensive needs of communities. This definition extends our understanding of resilience from the disaster context by incorporating both speeds at which social services are accessed (efficiency) and if communities connect with those services (effectiveness). Through this definition, this work highlights that resilience is a process constituted through strategies that seek to mitigate and proactively respond to issues exacerbated by the COVID-19 pandemic. Overall, these findings are crucial for social work providers because they are tasked with navigating these issues with the communities they serve in extenuating ways. Even though a global pandemic is a once-in-a-lifetime event, this work should put scholars, government actors, and social service providers on notice to prepare for our next shock and hopefully mitigate and address the exacerbation of inequities across our communities.

References

Abrams, L. S., & Dettlaff, A. J. (2020). Voices from the frontlines: Social workers confront the

COVID-19 pandemic. *Social Work*, *65*(3), 302-305.

Ahmed, R., Seedat, M., Van Niekerk, A., & Bulbulia, S. (2004). Discerning community

resilience in disadvantaged communities in the context of violence and injury prevention.

South African Journal of Psychology, *34*(3), 386-408.

Alsan, M., Chandra, A., & Simon, K. (2021). The great unequalizer: initial health effects of

COVID-19 in the United States. *Journal of Economic Perspectives*, *35*(3), 25-46.

Azizi, M. R., Atlasi, R., Ziapour, A., Abbas, J., & Naemi, R. (2021). Innovative human resource

management strategies during the COVID-19 pandemic: A systematic narrative review

approach. *Heliyon*, *7*(6), e07233.

Baker, J. R., Crudder, S. O., Riske, B., Bias, V., & Forsberg, A. (2005). A model for a regional

system of care to promote the health and well-being of people with rare chronic genetic

disorders. *American Journal of Public Health*, 95(11), 1910-1916.

Beckstein, A., Chollier, M., Kaur, S., & Ghimire, A. R. (2022). Mental wellbeing and boosting

resilience to mitigate the adverse consequences of the COVID-19 pandemic: A critical

narrative review. *Sage Open*, *12*(2), 21582440221100455.

Boin, Arjen, and Fredrik Bynander. "Explaining success and failure in crisis coordination."

Geografiska Annaler: Series A, Physical Geography 97.1 (2015): 123-135.

Bowleg, L. (2020). We're not all in this together: On COVID-19, intersectionality, and structural

inequality. *American Journal of Public Health*, *110*(7), 917-917.

Broaddus, M. R., Owczarzak, J., Schumann, C., & Koester, K. A. (2017). Fostering a "feeling of

worth" among vulnerable HIV populations: the role of linkage to care specialists. *AIDS patient care and STDs*, *31*(10), 438-446.

Broussard, C. A. (2003). Facilitating home-school partnerships for multiethnic families: School social workers collaborating for success. *Children & Schools*, *25*(4), 211-222.

Browne, T., Darnell, J., Estes Savage, T., & Brown, A. (2015). Social workers as patient navigators: A review of the literature. *Social Work Research*, *39*(3), 158-166.

Bruneau, M., Chang, S. E., Eguchi, R. T., Lee, G. C., O'Rourke, T. D., Reinhorn, A. M., ... & Von Winterfeldt, D. (2003). A framework to quantitatively assess and enhance the seismic resilience of communities. *Earthquake spectra*, *19*(4), 733-752.

Burns, B. J., & Goldman, S. K. (1999). Promising Practices in Wraparound for Children with Serious Emotional Disturbance and Their Families. Systems of Care: Promising Practices in Children's Mental Health 1998 Series. Volume IV.

Carson, J. A., & Mattingly, M. J. (2018). "We're all sitting at the same table": Challenges and strengths in service delivery in two rural New England counties. *Social Service Review*, *92*(3), 401-431.

Cartier, Y., Fichtenberg, C., & Gottlieb, L. M. (2020). Implementing Community Resource Referral Technology: Facilitators And Barriers Described By Early Adopters: A review of new technology platforms to facilitate referrals from health care organizations to social service organizations. *Health Affairs*, *39*(4), 662-669.

Chen, B., & Graddy, E. A. (2010). The effectiveness of nonprofit lead-organization networks for social service delivery. *Nonprofit Management and Leadership*, *20*(4), 405-422.

Cook, J. R., & Kilmer, R. P. (2010). Defining the scope of systems of care: An ecological

   perspective. *Evaluation and Program Planning*, *33*(1), 18-20.

Cox, R. S., & Perry, K. M. E. (2011). Like a fish out of water: Reconsidering disaster recovery

   and the role of place and social capital in community disaster resilience. *American

   Journal of Community Psychology*, *48*, 395-411

Crosby, B. C., & Bryson, J. M. (2005). A leadership framework for cross-sector collaboration.

   Public Management Review, *7*(2), 177-201.

D'Andrade, A. C. (2019). Professional stakeholders' concerns about reunification case plan

   requirements. *Social Service Review*, *93*(3), 524-561.

Dianat, H., Wilkinson, S., Williams, P., & Khatibi, H. (2022). Choosing a holistic urban

   resilience assessment tool. *International Journal of Disaster Risk Reduction*, *71*, 102789.

Doerfel, M. L., Chewning, L. V., & Lai, C. H. (2013). The evolution of networks and the

   resilience of interorganizational relationships after disaster. *Communication Monographs*,

   80(4), 533-559.

Doerfel, M. L., Lai, C. H., & Chewning, L. V. (2010). The evolutionary role of

   interorganizational communication: Modeling social capital in disaster contexts. *Human

   Communication Research*, *36*(2), 125-162.

Doussard, M., & Fulton, B. R. (2020). Organizing together: Benefits and drawbacks of

   community-labor coalitions for community organizations. *Social Service Review*, *94*(1),

   36-74.

Folke, C., Carpenter, S. R., Walker, B., Scheffer, M., Chapin, T., & Rockström, J. (2010).

   Resilience thinking: integrating resilience, adaptability and transformability. *Ecology and

   Society*, *15*(4)

Frank, J. M., & Baumohl, J. (2021). "Making It Work": Accommodation and Resistance to

Federal Policy in a Homelessness Continuum of Care. *Social Service Review*, *95*(3),

369-412.

Fu, J. S., Cooper, K. R., & Shumate, M. (2019). Use and affordances of ICTs in

interorganizational collaboration: An exploratory study of ICTs in nonprofit partnerships.

Management Communication Quarterly, *33*(2), 219-237.

Goniewicz, K., Burkle, F. M., Hall, T. F., Goniewicz, M., & Khorram-Manesh, A. (2022). Global

public health leadership: The vital element in managing global health crises. *Journal of

Global Health*, *12*.

Greenfield, E. A., & Marks, N. F. (2010). Sense of community as a protective factor against

long-term psychological effects of childhood violence. *Social Service Review*, *84*(1),

129-147.

Gray, M., Dean, M., Agllias, K., Howard, A., & Schubert, L. (2015). Perspectives on

neoliberalism for human service professionals. *Social Service Review*, *89*(2), 368-392.

Gunderson, L. H. (2000). Ecological resilience—in theory and application. *Annual Review of

Ecology and Systematics*, *31*(1), 425-439.

Gutiérrez, L. M., & Gant, L. M. (2018). Community practice in social work: Reflections on its

first century and directions for the future. *Social Service Review, 92*(4), 617-646.

Hasenfeld, Y., & Garrow, E. E. (2012). Nonprofit human-service organizations, social rights, and

advocacy in a neoliberal welfare state. *Social Service Review*, *86*(2), 295-322.

Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual Review of Ecology

and Systematics*, *4*(1), 1-23

Huang, K., & Provan, K. G. (2007). Structural embeddedness and organizational social outcomes

in a centrally governed mental health services network. *Public Management Review*, *9*(2), 169-189.

Imperiale, A. J., & Vanclay, F. (2021). The mechanism of disaster capitalism and the failure to build community resilience: Learning from the 2009 earthquake in L'Aquila, Italy. *Disasters*, *45*(3), 555-576.

Ivankova, N. V., Creswell, J. W., & Stick, S. (2006). Using mixed methods sequential explanatory design: From theory to practice. *Field Methods*, 18(1), 3–20

Kendra, J. M., & Wachtendorf, T. (2003). Elements of resilience after the world trade center disaster: reconstituting New York City's Emergency Operations Centre. *Disasters*, *27*(1), 37-53.

Kreuter, M. W., Eddens, K. S., Alcaraz, K. I., Rath, S., Lai, C., Caito, N., ... & Roux, A. M. (2012). Use of cancer control referrals by 2-1-1 callers: a randomized trial. *American Journal of Preventive Medicine*, *43*(6), S425-S434.

Kuo, D. Z., Rodgers, R. C., Beers, N. S., McLellan, S. E., & Nguyen, T. K. (2022). Access to services for children and youth with special health care needs and their families: concepts and considerations for an integrated systems redesign. *Pediatrics*, *149*(Supplement 7).

Lai, C. H., & Hsu, Y. C. (2019). Understanding activated network resilience: A comparative analysis of co-located and co-cluster disaster response networks. *Journal of Contingencies and Crisis Management*, *27*(1), 14-27.v

Lawlor, J. A., Metta, K. R., & Neal, Z. (2022). What is a coalition? A systematic review of

coalitions in community psychology. *Journal of Community & Applied Social Psychology*, *32*(1), 3-18.

Li, L., Ding, Y., Yuan, J., Ji, W., Zhao, J., & Shen, L. (2022). Quantifying the Resilience of Emergency Response Networks to Infrastructure Interruptions through an Enhanced Metanetwork-Based Framework. *Journal of Management in Engineering*, *38*(5), 04022047.

Lorant, V., Grard, A., Van Audenhove, C., Leys, M., & Nicaise, P. (2019). Effectiveness of health and social service networks for severely mentally ill patients' outcomes: A case–control study. *Administration and Policy in Mental Health and Mental Health Services Research*, *46*, 288-297.

Losee, J. E., Webster, G. D., & McCarty, C. (2022). Social network connections and increased preparation intentions for a disaster. *Journal of Environmental Psychology*, *79*, 101726.

Kendra, J. M., & Wachtendorf, T. (2003). Elements of resilience after the world trade center disaster: reconstituting New York City's Emergency Operations Centre. *Disasters*, *27*(1), 37-53.

Macpherson, H., Hart, A., & Heaver, B. (2016). Building resilience through group visual arts activities: Findings from a scoping study with young people who experience mental health complexities and/or learning difficulties. *Journal of Social Work*, *16*(5), 541-560.

McGihon, R., Hawke, L. D., Chaim, G., & Henderson, J. (2018). Cross-sectoral integration in youth-focused health and social services in Canada: a social network analysis. *BMC Health Services Research*, *18*, 1-7.

McNamara, M. W., Miller-Stevens, K., & Morris, J. C. (2019). Exploring the determinants of

collaboration failure. *International Journal of Public Administration*.

Moore, C. J., & Gagné, P. (2022). Exploring policy implications of ethics of care and justice in

care work and human services organizations. *Journal of Applied Social Science*, *16*(1),

176-193.

Mor Barak, M. E., Nissly, J. A., & Levin, A. (2001). Antecedents to retention and turnover

among child welfare, social work, and other human service employees: What can we

learn from past research? A review and meta-analysis. *Social Service Review*, *75*(4),

625-661.

Mosley, J. E., & Park, S. (2022). Service providers' influence in collaborative governance

networks: effectiveness in reducing chronic homelessness. *Journal of Public

Administration Research and Theory*, *32*(1), 130-149.

Moya, E. M., Zamore, C., Perez, L. M., Tellez, K., Avila, A., & Aragones, A. (2022). COVID-19

Imperils Access to Health and Human Services in El Paso, Texas and New York City:

Perspectives from Hispanic Parents. *Journal of Racial and Ethnic Health Disparities*,

9(3), 1024-1029.

Nicaise, P., Tulloch, S., Dubois, V., Matanov, A., Priebe, S., & Lorant, V. (2013). Using social

network analysis for assessing mental health and social services inter-organisational

collaboration: findings in deprived areas in Brussels and London. *Administration and

Policy in Mental Health and Mental Health Services Research*, *40*, 331-339.

Nilsen, E. R., Stendal, K., & Gullslett, M. K. (2020). Implementation of eHealth Technology in

Community Health Care: the complexity of stakeholder involvement. *BMC Health

Services Research*, *20*, 1-13.

Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008).

Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, *41*, 127-150.

O'looney, J. (1993). Beyond privatization and service integration: Organizational models for service delivery. *Social Service Review*, *67*(4), 501-534.

Park, S. (2020). Coproduction in the treatment of substance use disorder and its relationship to clinics' service output patterns. *Social Service Review*, *94*(3), 607-645.

Ponomarov, S. Y., & Holcomb, M. C. (2009). Understanding the concept of supply chain resilience. *The International Journal of Logistics Management*, *20*(1), 124-143.

Pérez-Nordtvedt, L., O'Brien, R., & Rasheed, A. A. (2013). What are temporary networks and when are they useful?. *Group & Organization Management*, *38*(3), 392-421.

Pettus, C., Veeh, C. A., Renn, T. R., & Kennedy, S. C. (2021). The well-being development model: A theoretical model to improve outcomes among criminal justice system–involved individuals. *Social Service Review*, *95*(3), 413-468

Pronovost, P. J., & Bo-Linn, G. W. (2012). Preventing patient harms through systems of care. *Jama*, *308*(8), 769-770.

Provan, K. G., & Milward, H. B. (1995). A preliminary theory of interorganizational network effectiveness: A comparative study of four... *Administrative Science Quarterly*, *40*(1), 1-33.

Ramaswamy, R., Ramaswamy, V., Holly, M., Bartels, S., & Barach, P. (2022). Building local decision-making competencies during COVID-19: Accelerating the transition from learning healthcare systems to learning health communities. *Learning Health Systems*, e10337.

Romero-Lankao, P., Gnatz, D. M., Wilhelmi, O., & Hayden, M. (2016). Urban sustainability and

      resilience: From theory to practice. *Sustainability*, *8*(12), 1224.

Saitgalina, M., & Council, D. (2020). Contextualizing performance of coordinated care network

      of veteran services in Virginia. *Journal of Social Service Research*, *46*(3), 299-312.

Saldaña, J. (2021). The coding manual for qualitative researchers. *The Coding Manual for*

      Qualitative Researchers, 1-440.

Satizabal, P., Cornes, I., Zurita, M. D. L. M., & Cook, B. R. (2022). The power of connection:

      Navigating the constraints of community engagement for disaster risk reduction.

      International Journal of Disaster Risk Reduction, *68*, 102699.

Shortell, S. M., Washington, P. K., & Baxter, R. J. (2009). The contribution of hospitals and

      health care systems to community health. *Annual Review of Public Health*, *30*, 373-383.

Simes, J. T., & Tichenor, E. (2022). "We're Here to Help": Criminal Justice Collaboration

      among Social Service Providers across the Urban-Rural Continuum. *Social Service*

Review, *96*(2), 268-307.

Thomas, A., & Suresh, M. (2022). Readiness for sustainable-resilience in healthcare

      organisations during Covid-19 era. *International Journal of Organizational Analysis*,

      (ahead-of-print).

Thota, A. B., Sipe, T. A., Byard, G. J., Zometa, C. S., Hahn, R. A., McKnight-Eily, L. R., ... &

      Community Preventive Services Task Force. (2012). Collaborative care to improve the

      management of depressive disorders: a community guide systematic review and

      meta-analysis. *American Journal of Preventive Medicine*, *42*(5), 525-538.

Turrini, A., Cristofoli, D., Frosini, F., & Nasi, G. (2010). Networking literature about

      determinants of network effectiveness. *Public Administration*, 88(2), 528–550.

https://doi.org/10.1111/j.1467-9299.2009.01791.x

Ungar, M. (2002). A deeper, more social ecological social work practice. *Social Service Review*, *76*(3), 480-497.

Waldfogel, J. (1997). The new wave of service integration. *Social Service Review*, *71*(3), 463-484.

Wenger, E. (2000). Communities of practice and social learning systems. *Organization*, *7*(2), 225-246.

Worstell, J. (2020). Ecological resilience of food systems in response to the COVID-19 crisis. *Journal of Agriculture, Food Systems, and Community Development*, *9*(3), 23-30.

Zhong, S., Clark, M., Hou, X. Y., Zang, Y. L., & Fitzgerald, G. (2014). Development of hospital disaster resilience: conceptual framework and potential measurement. *Emergency Medicine Journal*, *31*(11), 930-938.

Appendix A: Tables

Table 2. Resilience Outcomes by Service and Measure

Network	Benefits Nav.		Employment		Food		Housing		Income		Family Support		Mental Health		Money Mgmt.		Utilities	
	Effic.	Effect.	Effic.	Effect.	Effic.	Effect.	Effic.	Effect.	Effic.	Effect.	Effic.	Effect.	Effic.	Effect.	Effic.	Effect.	Effic.	Effect.
1	N	Y						N		Y		N						
2	Y	Y		Y	N	Y	Y	Y		Y		N	Y			Y		Y
3	N	N		Y	N	N	N	N		Y		Y	N					N
4	N	Y		Y			N	Y		Y		Y	N			N		
5	N	Y		N	Y	Y	Y	Y		Y								Y
6	Y	Y		Y		Y	Y	Y		N		Y				N		N
7		Y		N	N	N	Y	N		Y		Y						Y
8	N	N		Y	Y	Y	N	N										
9	Y	Y		N			Y	N		Y								
10		Y				Y		Y		N			Y					Y
11	N	Y		Y	Y	Y	Y	Y		Y		Y	N			Y		Y

Note. Effic. = Efficiency. Effect. = Effectiveness. Y indicates that, for a specific measure and service type, a network's score improved or maintained after the onset of COVID-19 (i.e., exhibited resilience). N indicates that, for a specific measure and service type, a network's score worsened after the onset of COVID-19 (i.e., did not exhibit resilience). Blanks cells indicated cases that lacked a comparison, having 0 requests before or during COVID-19. Gray columns indicate cases that did not meet our inclusion criteria of 2 positive and 2 negative cases.

Table 3. Resilience Strategies

Table 4. Fragility Rationales