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Mapping the Community School Policy Network Using Twitter Data and Social Network Analysis

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Abstract: This research sought to understand how organizations have adapted to the evolving policy ecosystem to scale and sustain a justice-orientated approach to education reform. Using descriptive social network analysis to map the policy information network that formed around Community Schools, the authors identified the influential organizations in the network and described key characteristics of its structure. They drew from Twitter data and related media articles over a five-year period to categorize the actors engaged in the Community School information network and map its geographic distribution across the United States. The findings depict a broad, multi-state network focused on promoting a proactive, positive policy agenda that differed substantially from those described in extant studies of resource networks that advance neoliberal education reforms. The authors close by discussing Twitter as a policy platform and how community-based coalitions can influence education politics and policy.
Keywords: social network analysis; Community Schools; social media; education policy; Twitter

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Mapeo de la red de políticas de escuelas comunitarias utilizando datos de Twitter y análisis de redes sociales
Resumen: Esta investigación buscó comprender cómo las organizaciones se han adaptado al ecosistema de políticas en evolución para ampliar y sostener un enfoque orientado a la justicia en la reforma educativa. Utilizando un análisis de redes sociales descriptivo para mapear la red de información de políticas que se formó en torno a las Escuelas Comunitarias, los autores identificaron las organizaciones influyentes en la red y describieron las características clave de su estructura. Se basaron en datos de Twitter y artículos de medios relacionados durante un período de cinco años para categorizar a los actores involucrados en la red de información de Escuelas Comunitarias y mapear su distribución geográfica en los Estados Unidos. Los hallazgos describen una red amplia y multiestatal enfocada en promover una agenda de políticas proactiva y positiva que difiere sustancialmente de las redes de recursos descritas en estudios previos que impulsan reformas educativas neoliberales. Los autores concluyen discutiendo el uso de Twitter como plataforma de políticas y cómo las coaliciones basadas en la comunidad pueden influir en la política y las políticas educativas.
Palabras clave: análisis de redes sociales; Escuelas Comunitarias; redes sociales; política educativa; Twitter

Mapeando a rede de políticas de escolas comunitárias utilizando dados do Twitter e análise de redes sociais
Resumo: Esta pesquisa buscou entender como as organizações têm se adaptado ao ecossistema político em evolução para expandir e sustentar uma abordagem orientada à justiça na reforma educacional. Usando uma análise de redes sociais descritiva para mapear a rede de informações políticas formada em torno das Escolas Comunitárias, os autores identificaram as organizações influentes na rede e descreveram as características-chave de sua estrutura. Eles utilizaram dados do Twitter e artigos de mídia relacionados ao longo de um período de cinco anos para categorizar os atores envolvidos na rede de informação das Escolas Comunitárias e mapear sua distribuição geográfica nos Estados Unidos. Os resultados mostram uma rede ampla e multiestadual focada na promoção de uma agenda política proativa e positiva, que difere substancialmente das redes de recursos descritas em estudos existentes que impulsionam reformas educacionais neoliberais. Os autores concluem discutindo o Twitter como uma plataforma política e como coalizões baseadas na comunidade podem influenciar a política e as políticas educacionais.
Palavras-chave: análise de redes sociais; Escolas Comunitárias; redes sociais; política educacional; Twitter

Mapping the Community School Policy Network Using Twitter Data and Social Network Analysis

Over recent decades, the proliferation of interest groups privately funding advocacy research and network building has reshaped education policy ecosystems in ways that we are still striving to understand (Wisman & Ingle, 2021). Two essential questions persist: Who is driving education policy change, and why are some drivers more successful in achieving their policy goals than others? Answering these queries has led researchers to study and map policy networks, such as those that influenced the neoliberal market-based and "incentivist" policies that advanced charter schools (e.g., Ellison et al., 2019; R. Quinn et al., 2014; Scott & Jabbar, 2014), deregulation of teacher preparation (Kretchmar et al., 2018), and high-stakes teacher evaluation processes (e.g., Reckhow & Tomkins-Stange, 2018). Many of these studies have focused on the exchange of funds and, resultantly,

researchers have consistently found the networks' actors to be amply financed with private foundations operating as central network organizers providing political, financial, and informational resources to like-minded advocacy organizations.

We know less about policy networks that advocate for progressive education policies. Anzia (2020) characterized opponents of neoliberal education reforms as loosely connected and lacking a unifying positive policy agenda. Meaning, these "backlash groups" (Anzia, 2020, p. 981) had yet to identify the specifics of a proactive, well-developed policy effort that offers a clear and compelling alternative means to improve school outcomes. Ferman (2017) similarly noted how the public narrative of perpetual crises puts opponents of market-based education reforms in the reactionary position of "always responding, never proactively promoting" (p. 124). The current study scrutinizes these portrayals and extends the existing pool of education policy network research by mapping a network focused on promoting an equity-centered school reform in the United States over a five-year period. In doing so, we sought to understand an information network advancing education policies that improve education for all children through a strategy that employs community partnerships and comprehensive social services.

We focused on an information network centered in social media instead of a resource network to explore how information is disseminated and who is shaping its messages. We hoped this data set would capture a broader array of policy actors than may be revealed in a resource network because the availability of free digital social media has lowered the transactional costs of attracting attention, making new connections, and exchanging information, which were historically barriers to communication in policy networks (Leifeld & Schneider, 2012). Consequently, many advocacy organizations now use social media platforms for organizing and policy discourse (Lubienski et al., 2016; Rubin, 2017).

At the center of this descriptive study lies the network that communicated information about Community Schools throughout the United States. Community Schools are the ideal venue for this research because (a) proponents explicitly marketed them as them as an equitable alternative to charter schools (Frankl, 2016), (b) their numbers have increased substantially over the last decade to about 10,000 schools nationwide (J. Quinn & Blank, 2020), and (c) policymakers responded to the initiative differentially across states (Partnership for the Future of Learning, 2018). This unique context allowed us to answer the call for research focused on identifying idea brokers during key policy windows and understanding the rise of policy ideas in education across state contexts (Galey-Horn & Ferrare, 2020).

This paper's purpose is to map the policy information network that formed around Community Schools, identify influential organizations in the network, and describe key characteristics of the network's structure. The study centers the following research questions:

> RQ1: Which organizations were most central to Community School information networks from 2015 to 2019?
>
> RQ2: How did the information network that formed around the topic of Community Schools change over time?

To answer these questions and empirically model the relationships between the participants in a national policy network, we developed an extensive data set from information posted on the social media platform formerly known as Twitter. Schuster and colleagues (2021) explained that using Twitter data for this purpose "acknowledges the increasing relevance of new information communication technologies for the exchange of policy-related information and the establishment of new connections, as well as the growing use of online social media platforms for political debates" (p. 5). Research has also found online activity to be fairly accurate at identifying central network actors and parties with strong connections (Kibanov et al., 2015). Our analysis of this data

drew on social network theory (Borgatti et al., 2013) to model and describe the structure of interactions between important brokers and coalitions within the information network that discussed Community Schools. As we identified the wide and diverse array of Community School actors locally and nationally, we mapped a broad, growing, multi-state network that differed substantially in its makeup from those described in prior studies of resource networks and market-based education reforms.

The following sections discuss relevant policy network literature and outline the policy issue—Community Schools. We then describe our theoretical and methodological approach and how we used Twitter as a data source. Finally, we present the results of our investigation and interpret their meanings in terms of the evolving education policy landscape.

Policy Networks

In multiple streams theory, Kingdon and Stano (1984) posited that policy changes are adopted when committed policy entrepreneurs call attention to urgent problems and acceptable solutions during favorable policy windows when decision makers are likely to act. Although Kingdon and Stano mostly envisioned policy entrepreneurs as individuals, policy theorists that followed him recognized how sizable coalitions united around shared policy beliefs can change public opinion and sway decision makers, thus opening new policy windows when social change is possible (Petridou & Mintrom, 2021). As such, the extant literature indicates that networking and coalition building are key strategies of policy entrepreneurs (Anderson et al., 2020) and many researchers have studied policy networks to explain policy change processes (e.g., Galey-Horn & Ferrare, 2020; Reckhow & Tomkins-Stange, 2018).

The current study follows Knoke (2011), in defining a policy network as a set of interconnected public and private organizations, interest groups, or individuals that exchange resources to further policy solutions they believe will address important social problems. Policy network analysis offers a "conceptualization of policymaking as a process that involves a diverse and interdependent set of actors working together over time and across multiple levels of the government to influence and change policy" (Galey-Horn & Ferrare, 2020, p. 5). Researchers have demonstrated the influence of policy networks on teacher evaluation reform (Galey-Horn & Ferrare, 2020; Reckhow & Tomkins-Stange, 2018), the advancement of charter schools (Castillo, 2020; Danley & Rubin, 2020; Ellison et al., 2019; Kang, 2023; Scott, 2015; Welsh & Graham, 2021), teacher merit pay (Scott & Jabbar, 2014), school discipline reform (Koon, 2020), and the adoption of the Common Core standards (Supovitz et al., 2018). Although much of this work has focused on the United States, researchers have also studied networks related to the expansion of computer coding education in England (Williamson, 2016), global conversations about inclusive education (Schuster et al., 2021), and venture philanthropy in Australia (Rowe, 2023).

Most of the extant policy network studies share a focus on the interjection of private interests into public schooling. To better understand this phenomenon, researchers made methodological choices to track funding (e.g., Haddad, 2020; Reckhow, 2016; Scott, 2015), investigate research production (e.g., Lubienski et al., 2016; Scott & Jabbar, 2014), and map the networks of influential organizations (e.g., American Federation for Children Network, Ellison et al., 2019; and Teach for America, Kretchmar et al., 2018) and individuals (e.g., David Gonsky, Rowe, 2023). As a result, researchers determined that many policy networks are dominated by large, well-funded, national or international private foundations (e.g., Reckhow & Tomkins-Stange, 2018; Rowe, 2023) that may have a greater focus on "elite coordination rather than building a broader and self-sustaining base of support" (Reckhow, 2016, p. 454). For example, a study focused on an individual who advanced a policy to allow tax-free private donations for disadvantaged schools in

Australia determined his network concentrated power among a small group of philanthropists (Rowe, 2023).

By contrast, most of the information about progressive policy networks has come from studies conducted at the local level. Without the support of wealthy philanthropists, these policy networks may have to develop wide bases of support to draw attention, cultivate financial supporters, attract experts, and pressure decision makers (Danley & Rubin, 2020; Ferman, 2017; Welsh & Graham, 2021). An analysis of local policy networks opposed to market-based reforms found that Newark's efforts to resist charter school expansion were bolstered when the coalition drew assistance from regional and national organizations, collaborated with existing local non-profits, garnered press coverage, and gained the endorsements of elected leaders (Danley & Rubin, 2020). Yet, the inclusivity needed to create a sizable network can make it difficult for broad coalitions to develop cohesive policy platforms that everyone will support (Ansell et al., 2009; Glazer & Egan, 2018). A study of a local progressive policy network in Detroit concluded that opponents of charter schools had to enlist both elite and grassroots actors to frame educational reform solutions around broad values, such as holding all schools accountable for providing a quality education (Kang, 2023).

Types of Policy Actors

Prior policy network research has revealed a wide array of actors working in the education policy arena. The current study examines these actors on an organizational level, reflecting Ferman's (2017) insight that "organizations or institutions are crucial for transforming individual actions into collective actions" (p. 119). We, therefore, developed a framework to categorize the organizations associated with the policy actors in the Community Schools information network. Like Reckhow et al. (2021), we classified policy actors by their involvement in the activities of creating new knowledge in the field (Research Production), interpreting and disseminating this information (Information Synthesis), or acting on selected knowledge to develop policies and initiatives (Idea Uptake).

Research Production

The producers of policy-relevant research include the traditional sources of *universities* and independent *research institutions* (e.g., American Institutes for Research, AIR) as well as some *think tanks* and *advocacy organizations* (McDonnell & Weatherford, 2020). Private *foundations* also support research production by commissioning reports or funding studies from research producers (Reckhow, 2016). Some of these studies have been criticized as "advocacy research" that flout the research norm of neutrality because they are intentionally designed to yield results the funders can use to justify favored policy solutions and shape public discourse about education (Ellison et al., 2019; Lubienski et al., 2016).

Information Synthesis

Information synthesizers fill an important role by interpreting and distributing policy-related knowledge to make it accessible for a broader audience (Reckhow et al., 2021). Many think tanks can be categorized as information synthesizers, rather than research producers, because McDonald (2014) concluded their loose definitions of "research" were "synonymous with a policy brief, web memo, report, or lecture" (p. 868). Alongside these strategies, synthesizer organizations share information through social media, holding press conferences, writing press releases or articles, lobbying lawmakers, and testifying in public hearings (Rubin, 2017; Welsh & Graham, 2021).

Synthesizers on the less ideological end of the continuum include *technical assistance providers* (e.g., paid consultants) that aid schools and districts in interpreting and implementing new ideas

(McDonnell & Weatherford, 2020). Less ideological synthesizers can also include journalistic *press* and *media* organizations whose primary mission is informing the public (Scott & Jabbar, 2014).

Synthesizers with explicit policy agendas include *member organizations* whose expressed missions further the interests of a defined set of constituents, such as employee unions (e.g., American Federation of Teachers, AFT; National Education Association, NEA), professional associations, local chambers of commerce, and parent groups. Teachers' unions have historically been well-resourced, influential actors in the education policy arena, but their power has diminished in states that enacted laws to curtail collective bargaining and compulsory dues collection (Swain & Redding, 2022). Advocacy organizations are mission-oriented non-profit entities that organize around issues or ideas. This category includes large, well-funded national groups with paid professional staff as well as local organizations that may be run by volunteers (Ellison et al., 2019; Ferman, 2017) and rely heavily on local grassroots community organizing (Daniel et al., 2023; Welsh & Graham, 2021). Private foundations often share information with, coordinate with, or directly fund the work of synthesizers who share their policy interests (Reckhow, 2016; Scott, 2015).

Idea Uptake

In the education policy domain, idea uptake typically requires *elected officials* at local, state, or federal levels to adopt supportive policies that provide authorization, funding, and resources for a given reform. State and federal *departments of education* are instrumental in faithfully interpreting legislation, developing regulations, and communicating policy to local implementers. Education reforms then depend on individual *school district officials* and *school personnel* to interpret, accept, and implement the policies (Spillane et al., 2002). Although they are often categorized as implementers, researchers have also found that school district personnel (Galey-Horn et al., 2020) and school principals (Ansell et al., 2009) have been central actors in advancing policy agendas beyond the local level. Such active engagement by local actors may be particularly important in collaborative reforms such as Community Schools that require tangible, coordinated support from *businesses, social service providers, churches*, and *non-profit organizations* (e.g., United Way) that share a vision for providing equitable educational opportunity to all children.

Community Schools

The Community School strategy provides an alternative to both conventional models of public schools and efforts to privatize them because it leverages community resources to provide a holistic approach to education, particularly in under-resourced and underserved communities experiencing high concentrations of poverty (Coalition for Community Schools [CCS], 2020). Designed to target and reduce systemic educational inequities, Community Schools are concerned with addressing countless obstacles to educational equity in lieu of a narrow focus on closing achievement gaps for systemically minoritized groups (Provinzano, 2023). These schools are centered around partnerships between the school, families, and local community organizations that capitalize on untapped community strengths and assets, while also providing various educational, health, and social services to meet students' multifaceted and complex needs (Min et al., 2017). These collaborations develop around four core pillars (i.e., integrated student supports, expanded learning time and opportunities, family and community engagement, and collaborative leadership practices) that "provide an infrastructure to embed the characteristics of more advantaged schools in community schools' structures and practices" (Oakes et al., 2017, p. 4). The strategy designates the school as a community hub where families and community members engage in shared decision-making and reform efforts, thus extending and altering the traditional relationship between the school and local community (Oakes et al., 2017). As such, these schools counter market-style,

neoliberal reforms that "advocate for governance mechanisms that make it more challenging or impossible for communities, particularly low-income communities of color, to control their public schools" (Danley & Rubin, 2020, p. 663).

There are approximately 10,000 schools across the US that identify as Community Schools (J. Quinn & Blank, 2020), and these numbers continue to increase. The current Community School movement began in the mid-1980s and early 1990s when schools across the nation began including school-based health and social service programs in partnership with neighborhood entities. Four early models of Community Schools were developed by the University of Pennsylvania, the Children's Aid Society, Beacon Schools, and the United Way, with Philadelphia and New York serving as epicenters of the emerging Community School movement. Foundation funds supplied by the DeWitt Wallace-Reader's Digest Fund and the Mott, Wallace, and Kauffman foundations supported Community School expansion (Blank et al., 2023). In 1997, a group of Community School stakeholders formed the Coalition for Community Schools (CCS), which is administered by the Institute for Educational Leadership (IEL) and now has over 100 partners (Benson et al., 2017).

In the past decade, the CCS, along with policy and advocacy organizations such as the NEA, Learning Policy Institute (LPI), and the Children's Aid Society's National Center for Community Schools, have catapulted federal and state support for Community Schools. The federally funded Full-Service Community Schools grant program, which provides funding to local education agencies to develop Community Schools, reached a historic high of $150 million in the fiscal year 2023 budget (Long, 2023). State-level efforts to resource and sustain Community Schools over time have also increased. Successful advocacy has resulted in state-level financial support for Community Schools in Maryland, New York, California, New Mexico, and Florida (Maier & Rivera-Rodriguez, 2023). Yet, progress has been uneven across states, as evidenced by Minnesota's 2015–16 round of grants to 13 Community Schools that has gone unrepeated (AFT, 2021). Other state governments have only allocated time-limited federal recovery funds for Community Schools (e.g., Illinois, Georgia) or not passed proposed Community School bills (e.g., Texas Legislature, 2019). Private foundations and philanthropic organizations, on the other hand have been instrumental in their support of community schools. In 2022, billionaire philanthropist MacKenzie Scott donated $133.5 million to educational non-profit Communities in Schools (Korn, 2022), and a year later, the Ballmer Group committed an unprecedented $165 million to the same organization to expand their integrated student services model (Superville, 2023). Additionally, The NEA Foundation has provided grant funding to support the development of community schools (The NEA Foundation, n.d.), and United Way has managed the funding and implementation of community across the United States (Okogbue et al., 2022).

In sum, the literature clearly indicates that Community Schools represent a well-developed, proactive policy agenda with a national scope that provides a vehicle for developing greater understanding of policy information networks. The following section describes the methods we used to examine the structure of the Community School information network, determine its breadth, and map its development over time.

Methods

This study was designed to model, describe, and explain the interactions between important brokers and coalitions within the Community School information network. To do so, we drew on descriptive social network analysis to quantify connections between individual network actors and visualize how they changed over time (Borgatti et al., 2013). Following policy network analysis methodology (Galey-Horn & Ferrare, 2020), we analyzed the actors and subcommunities within the context of a policy goal—state-wide funding legislation. This approach enabled us to identify central

organizations and coalitions that were positioned to shape the flow of information about Community Schools.

Twitter as Data

We focused our study on the five-year period from January 2015 to December 2019, which was before the disruption of the COVID-19 pandemic and a time when several states (e.g., Minnesota, New Mexico) adopted policies to fund Community Schools. We drew our data from the social media platform formerly known as Twitter and media articles shared by Twitter users. Although social media's role in education policy is still an emerging area of research (e.g., Sam et al., 2019; Schuster et al., 2021), we found it a useful venue for identifying influential Community School policy actors over time. Twitter gives all users the opportunity to promote their ideas and express their policy preferences, and thus, using the platform for our data set allowed us to illustrate the complexity of the network without limiting us to a predefined set of actors. Although Twitter only represents one way for network actors to exchange information, a wide variety of policy actors are utilizing the platform as a mechanism for negotiating education policy agendas and building new connections (Schuster et al., 2021). Further, scholarly efforts examining the role of social media platforms like Twitter in facilitating advocacy and social change have been on the rise in recent years (e.g., Supovitz et al., 2018), signifying the relevancy of this data source.

Twitter users connect to one another by publishing, sharing, and responding to short messages of no more than 280 characters (commonly known as "tweets" and "retweets"). Users find and follow discussions on topics of particular interest by using and subscribing to hashtags (#) followed by key words. By using the @ symbol followed by a Twitter user's name, participants can directly exchange information and attract the attention of specific other users. Users can also embed links to other websites, videos, and reports in their messages.

Our research focused on tweets published under #*communityschools*, which we ascertained through exploration was the location of almost all communication related to Community Schools. By using Twitter's search function, we found other hashtags that were used by regional actors (e.g., #*communityschoolsPHL*, #*NM4commschools*, #*texascommunityschools,* #*sustainablecommunityschools*), but tweets with these hashtags almost always also included #*communityschools* to connect with national community school actors. Tweets were identified during the period from July 2023 to December 2023 using Twitter's advanced search feature, which introduced a small bias threat as retrospective data collection precluded us from capturing deleted posts. We also realized that some people active in Community School policy advocacy may not be active on social media. This threat was partially mitigated by including in our data set the Community School-related news articles, reports, and policy briefs shared by Twitter users. By following the embedded links to the items network participants shared on Twitter, we were able to get a clearer picture of who the Twitter users were and what more traditional information sources, such as newspapers, were writing about. If, for example, a Twitter user linked to an Education Week or NEA Today article without describing the content of the article, following the link enabled us to determine that the article featured a particular organization and its activities related to Community Schools. As such, influential organizations not actively on Twitter were still captured in our data. The 10,862 connections documented in our data set included 81% documented by tweets, 12% by linked articles, 6% by linked reports and policy briefs, and 1% by linked institutional web pages.

Our aim was to create a spreadsheet that included the following information: source (author of tweet or media item), target (organization or elected official mentioned by source), year, type of connection (tweet, retweet, media type), location of organization (city, state, longitude, latitude), and organization type (as outlined in the literature review and Table 1). Because social network analysis focuses on pairwise relationships, each target mentioned in a tweet or media item was coded in its

own row. We manually coded the data rather than relying on digital tools because it allowed us to capture information from images and logos, follow links to external media shared by users, and ignore repeated reposting of the same information. Manual coding was also necessary to achieve our inclusion criteria of only tweets by organizational actors focused on scaling or sustaining Community Schools in the United States.

To ensure we gathered data related to scaling or sustaining community schools, we read each tweet, scanned its images, and followed its links to screen out informational tweets about the general activities of individual school initiatives, such as events, services, or appeals for involvement. The included information generally involved (a) a rationale for adopting the strategy, (b) evidence of effectiveness, (c) key supporters and exemplar schools, (d) specific policy positions, (e) threats from loss of funding or school takeovers, (f) legislation and funding, (g) direct encounters with policymakers, (h) collective actions like mass demonstrations and strikes, (i) local or state developmental milestones, and (j) educational forums and network convenings. Over the five-year period, as more schools were actively implementing the strategy and tweeting about their initiatives, the proportion of excluded tweets grew. In 2015, 1 in 2 tweets met the inclusion criteria. By 2019, the ratio had dropped to 1 in 11. The final data set included 4,336 tweets comprised of 121 from 2015, 1,270 from 2016, 1,008 from 2017, 1,067 from 2018, and 870 from 2019.

Our inclusion criteria required us to exclude tweets from non-U.S. actors and by individuals who were not obviously policymakers or positioned to represent the interests of specific organizations as indicated by their Twitter profiles. We considered persons writing under their individual names to be organizational actors when their profiles identified them as school district superintendents or department heads; national, state, or district employee union leaders; leaders of community-based organizations; or elected officials. Rank and file employees, such as teachers and community school coordinators were excluded even when their profiles mentioned their organizational affiliations. Due to retrospective data collection in 2023, we could not rely solely on information from the authors' Twitter profiles to identify their organizational affiliations in 2015–19. We, therefore, conducted a web search of each individual included in the final data set to determine their organizational affiliations for each year during the focal period. Most of this information was available on LinkedIn and Ballotpedia. After collapsing people representing the same organization and organizations operating under the same umbrella together (e.g., IEL and CCS), the final data set identified 3,298 organizations as "nodes" that were somehow connected to the Community School information network and 10,862 "edges" or directed connections between organizations.

Analysis

To determine which organizations were central to the network (RQ1) and how this changed over time (RQ2), we uploaded separate nodes and edges tables for each year and the entire five-year period into the open-source platform Gephi 0.10.1 (Bastian et al., 2009) for exploratory social network analyses to provide overviews of the network and identify its most central nodes. We examined the data set to determine the boundaries of the network and concluded that most entities with a degree statistic of three or greater had interacted with at least one other member of the network as evidenced by the presence of both in-degree and out-degree ties. We, therefore, eliminated nodes with fewer than three edges from the remaining analyses. To characterize the overall network, we used Gephi to calculate average degree, graph density, network diameter, and average path length statistics for each of the five years and the entire period. These statistics collectively illustrated the extent organizations were connected to one another, how efficient the network was at spreading information, and how vulnerable the network was to node failure.

For visual representations of the network, we used Gephi's Force Atlas 2 to create a force-directed layout where the most connected nodes are close together and unconnected nodes repel

one another. To identify the subcommunity structures within the network, we used Gephi to conduct a modularity analysis to detect highly interconnected clusters with more ties among members than to other organizations in the network. Modularity "measures the density of links inside of communities as compared to links between communities" (Blondel et al., 2008, p. 2). Gephi's algorithm operated in two phases that repeatedly assigned nodes to communities and then evaluated the gain in modularity that would result by placing the node in a different community until each node was placed in the community where the gain was maximized. Geographic maps of state and local actors in the network were created with Gephi's geolayout function using the longitude and latitude of the organizations.

We identified the most influential members of the network by calculating the weighted out-degree and in-degree centrality and eigenvector centrality of the nodes. These methods allowed us to identify the two types of influential network actors that Supovitz et al. (2018) characterized as "transmitters" with high out-degree statistics who send a lot of messages and "transceivers" with high in-degree statistics who are often mentioned by others. Unweighted degree statistics simply counted the nodes' direct outgoing and/or incoming connections. Weighted out-degree and in-degree centrality measures factored in the weight of the adjacent nodes' edges. These statistics were useful for identifying transmitters and transceivers that were connected to other organizations with many direct connections. Eigenvector centrality more fully captured the extent that status was transmitted through social connections by determining node centrality in relation to the centrality of adjacent nodes, thus factoring in both the direct and indirect connections of adjacent nodes. We then quantified the balance of participants' interactions as transceivers or transmitters by calculating each organization's ratio of in-degree and out-degree ties. Finally, we calculated betweenness centrality to determine how network information flowed through each organization. Betweenness centrality was determined by computing the proportion of the shortest paths between all pairs of other nodes that pass through the focal node (Borgatti et al., 2013). We normalized the betweenness scores for ease of interpretation.

Limitations

Readers should consider that a descriptive study focused on a particular reform and a data set primarily collected through social media is unlikely to support broad inferences about policy networks. In addition to the limitation of missing data from deleted Tweets, some organizations may have been more active on Twitter than they were in their offline efforts to advance Community Schools, and vice versa. Although the inclusion of reports, articles, and other media partially mediated this threat by identifying important transceivers who were not Twitter users, these sources lacked the networked aspects that allowed us to depict relationships between entities that interacted on social media. Despite these limitations, the study provided useful insights about the Community School information network.

Results

The results outlined in the sections that follow reveal a dynamic, cross-state network that has changed substantially over time. Across the five-year period, 3,298 organizations were somehow connected to the network as transmitters of information or transceivers mentioned in a message or linked article about scaling or sustaining Community Schools. This number dropped to 938 organizations and 4,651 edges after removing the organizations with a degree statistic of 1 or 2, which was a marker of low interaction with other organizations in the network. This network size was similar to the five-year global inclusive education Twitter network's 986 nodes, but more than double its 1,829 edges (Schuster et al., 2021). The adjusted network had a mean degree of 5.1,

indicating the average organization had five connections, ranging from 3 to 741 edges per organization. The graph density (ratio of actual edges to possible edges) was low at 0.006, indicating the network was quite dispersed.

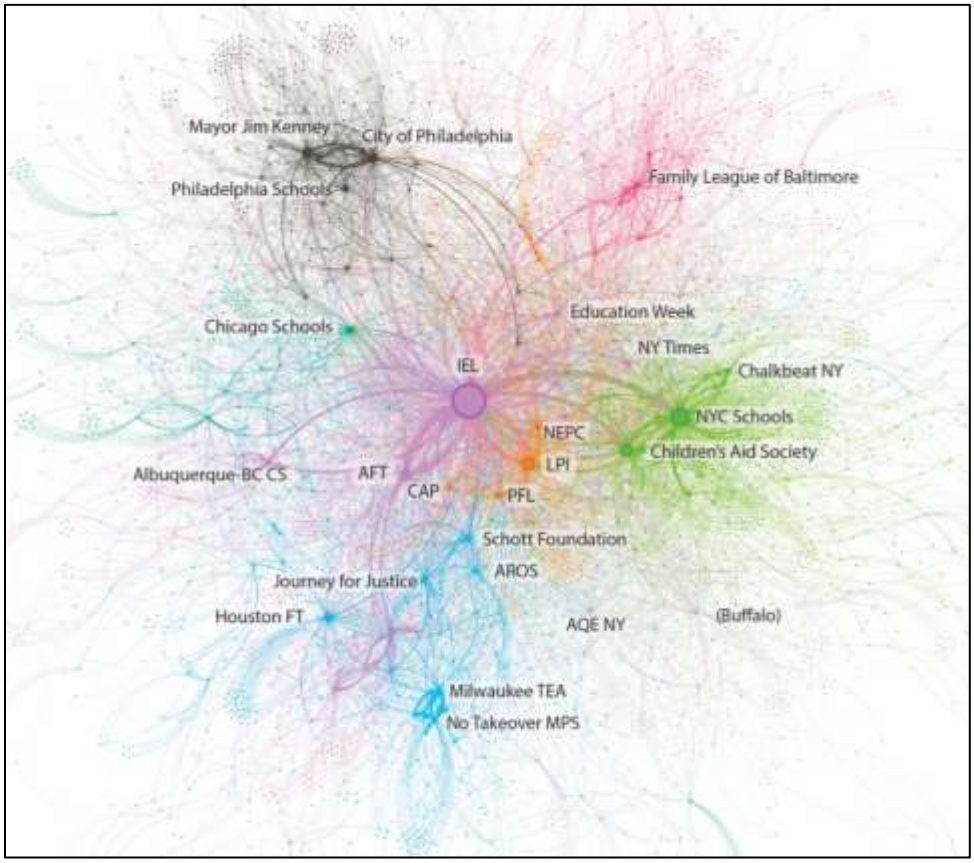
The following sections present data related to the two research questions. We first identify the central organizations in the network and then explain how the network changed over time.

Central Organizations in the Network (RQ1)

Figure 1 depicts the network across the five years with its eight major subgroups indicated by color. The influence of each node is depicted by the size of its circle, with larger circles having more connections. Labels are shown for the 25 most influential transmitting or transceiving organizations as indicted by their unweighted degree centrality. The diagram shows the relationships between organizations using arrows that point from the transmitter to the transceiver. Relationships with more ties have darker arrows, thus more intense coloring depicts denser areas of the network. The network's most central organizations are closest to its center, with IEL's CCS acting as the predominant organization in the network. Conversely, the outer edges of the network include many nodes with few in or out-degree connections to other organizations.

Figure 1

The Community School Information Network, 2015–2019



Note. Some peripheral actors at the edges of the network were cut from the diagram to maximize the size of central actors. IEL = Institute for Educational Leadership/Coalition for Community Schools. NEPC = National Education Policy Center. BC CS= Bernalillo County Community Schools. AFT = American Federation of Teachers. CAP = Center for American Progress. PFL = Partnership for the Future of

Learning. LPI = Learning Policy Institute. AROS = Alliance to Reclaim Our Schools. AQE = Alliance for Quality Education. TEA = Teachers Education Association. MPS = Milwaukee Public Schools.

Sub-Communities in the Network

Most of the subgroups depicted in Figure 1 have geographic ties. The green subgroup, centered in New York City, is anchored by New York City Public Schools and the Children's Aid Society/National Center for Community Schools, which are the second- and fourth-most influential organizations ordered by eigenvector centrality (Table 1). This subgroup also includes Chalkbeat New York, an online publication devoted to local education.

Table 1

Most Central 35 Organizations in the Community School Information Network

Organization	Category	Location	λ	In-Degree*	Out-Degree*	In-Out Ratio	Between-ness
IEL	Advocacy	National	1.00	707	717	1.0	1.00
NYC Public Schools	School/District	NY	0.70	364	303	1.2	0.37
LPI	Advocacy	National	0.58	232	150	1.5	0.14
Children's Aid Society	Advocacy	National	0.50	214	165	1.3	0.14
New York Times	Press/Media	NY	0.43	75	30	2.5	0.04
AFT	Member Org.	National	0.41	167	161	1.0	0.15
U of CO, Boulder	University	CO	0.41	78	62	1.3	0.06
Comm. in Schools	Advocacy	National	0.37	68	24	2.8	0.04
Baltimore Schools	School/District	MD	0.37	72	7	10.3	0.02
Mayor Jim Kenney	Elected Off.	PA	0.35	165	60	2.8	0.12
Chicago Schools	School/District	IL	0.35	55	84	0.7	0.08
Family League	Advocacy	MD	0.32	114	63	1.8	0.07
Schott Foundation	Foundation	National	0.31	66	53	1.2	0.06
Philadelphia Schools	School/District	PA	0.30	70	58	1.2	0.06
Partnership for Future	Advocacy	NY	0.29	68	56	1.2	0.05
NEA	Member Org.	National	0.28	84	41	2.0	0.07
City of Philadelphia	Government	PA	0.26	134	121	1.1	0.11
Journey for Just. All.	Advocacy	National	0.26	67	92	0.7	0.08
PA Dept. of Ed.	Government	PA	0.25	48	21	2.3	0.06
Education Week	Press/Media	National	0.25	53	52	1.0	0.02
U.S. Dept. of Ed.	Government	National	0.23	30	6	5.0	0.01
Washington Post	Press/Media	DC	0.23	34	37	0.9	0.03
Mayor Bill DeBlasio	Elected Off.	NY	0.22	67	1	67.0	0.00
Houston AFT	Member Org.	TX	0.22	68	132	0.5	0.05
Elev8 Baltimore	Advocacy	MD	0.21	17	32	0.5	0.01
Cincinnati Schools	School/District	OH	0.21	33	1	33.0	0.00
Research for Action	Advocacy	PA	0.20	23	33	0.7	0.03
Baltimore Sun News	Press/Media	MD	0.20	18	7	2.6	0.01
Oakland Schools	School/District	CA	0.19	31	1	31.0	0.00
CAP	Advocacy	National	0.19	32	49	0.7	0.02
Chalkbeat New York	Press/Media	NY	0.19	56	53	1.1	0.03
Oakland Intl. HS	School/District	CA	0.19	15	0	15.0	0.00
RAND Corporation	Ind. Research	National	0.18	22	7	3.1	0.00
AROS	Advocacy	National	0.18	28	43	0.7	0.02
Harvard University	University	MA	0.17	15	3	5.0	0.00

Note. * weighted. NYC = New York City. LPI = Learning Policy Institute. AFT = American Federation of Teachers. U of CO = University of Colorado. Comm. = Communities. NEA = National Education Association. Just. All. = Justice Alliance. Dept. of Ed.= Department of Education. CAP = Center for American Progress. Intl. HS = International High School. AROS = Alliance to Reclaim our Schools.

Moving clockwise around the diagram, the gray up-state New York-based subcommunity is anchored by the advocacy organization Alliance for Quality Education New York. Continuing in that direction, the bright blue subcommittee is the most dispersed, covering both Houston and Milwaukee. The blue community is anchored by six organizations that include advocacy organizations, local teacher unions, a foundation, and a local organization focused on resisting a takeover of Milwaukee's schools. The subcommunity most associated with CCS is depicted in purple. The purple network reaches out toward the other subnetworks and is most connected geographically with New Mexico and the Albuquerque-Bernalillo County Community Schools. The purple network also includes the national AFT, Education Week, and the *New York Times*. Chicago Public Schools is the only anchor organization in the teal network. The subcommunity depicted in black is centered in Pennsylvania and dominated by Philadelphia. Although there appear to be three closely connected Philadelphia anchors, the mayor had direct oversight of both the city and the schools, meaning a fair amount of the Philadelphia activity involved city departments retweeting or mentioning one another. The red subcommunity, centered in Maryland, is anchored by the Family League of Baltimore. The orange subcommunity is the only one without geographic ties because its anchors were national advocacy organizations that published documents widely shared by other members of the Community School network (i.e., Learning Policy Institute, National Education Policy Center, Partnership for the Future of Learning) and a sponsor of several events that received many tweets (i.e., Center for American Progress).

Central Organizations

The analysis of the 35 most central organizations and elected officials ranked by their eigenvector centrality (Table 1) illustrates a wide array of network actors. Among these organizations were national, regional, and local advocacy organizations; large city school districts; the member organizations AFT, NEA, and some of their local affiliates; media organizations; national, state, and local government agencies; universities; the mayors of New York and Philadelphia; an independent research institute; and the Schott foundation. The eigenvector centrality figures quantified the dominance of the CCS ($\lambda = 1.00$) compared to the second ranked New York City Public Schools ($\lambda = 0.66$) as important network actors.

The analysis of in-degree and out-degree ties revealed some notable differences between organizations in terms of how often they engaged with the network as transmitters or transceivers. Organizations that were mostly balanced had in-out ratios close to 1 and high betweenness centrality statistics. These included each of the top four organizations (IEL, NYC schools, LPI, Children's Aid Society), and the AFT. Most of the advocacy organizations acted as information brokers, with balanced ratios or a balanced tipped more toward transmission than transception. As the fifth ranked organization, the *New York Times* acted as a transmitter when it wrote articles about Community Schools in the traditional press and more often filled the role of transceiver on Twitter where these articles were widely shared. The most heavily skewed transceiver was Mayor Bill de Blasio, who was often mentioned as a proponent of the NYC Community School Initiative both on Twitter and in media articles shared on the platform, but he made only one tweet about Community Schools in this forum across the five years. By contrast, Philadelphia mayor Jim Kenny (or his office) was a frequent tweeter who had 60 out-degree ties, mostly about his efforts to establish a beverage tax to fund Community Schools and other initiatives. The other organizations that primarily acted as transceivers were schools in Baltimore, Cincinnati, and Oakland that were often mentioned in tweets and other media as exemplars of the strategy. Harvard was an outlying transceiver because its initiatives were discussed in online conversations about Community Schools even though the university did not appear to be directly involved in furthering the Community School strategy at that time.

Table 2

Organizations Associated with the Community School Information Network

Category	*n*	% total	Adjusted *n*	Adjusted % Total
Advocacy/Nonprofit Organizations	979	30	299	32
National	215	7	61	7
State	311	9	97	10
Local/Regional	452	14	141	15
Schools/Districts	639	19	165	18
Journalistic Press/Media	347	11	146	16
Elected Officials	461	14	99	11
Member Organizations	220	7	82	9
University	158	5	46	5
Government Agency	132	4	40	4
Federal	12	<1	3	<1
State	56	2	15	2
Local	64	2	22	2
Business	124	4	21	2
Private Foundation	69	2	14	1
Technical Assistance Provider	67	2	13	1
Other	97	3	11	1
Health Care	52	2	5	1
Arts, Libraries, Sports	30	1	2	<1
Religious	15	<1	4	<1
Independent Research Institute	4	<1	2	<1
Total	3,298		938	

Note. Adjusted *n* includes only actors with degree < 3.

Categorical Analysis

The breadth of the network is revealed in part by analyzing the variety among its participants. Table 2 lists the number of network actors from each organizational category both before and after pruning loosely connected organizations from the analysis. The data indicate that advocacy organizations were most prevalent (n = 299, 32%) followed by officials from schools and districts (n = 165, 18%). Approximately half of the advocacy organizations operated at the local or regional levels. Overall, 347 journalistic press and media organizations communicated information about Community Schools that appeared in Twitter during the focal period, but only 146 remained after the removal of incidental actors. Both elected officials and member organizations constituted about 10% of the network, but a greater proportion of elected officials were removed after minimally engaged actors were eliminated. With a few exceptions, elected officials mainly included transceivers who were tagged in tweets requesting support for pending legislation or thanking officials for their votes. Frequent transmitter Mayor Kenney was joined by a few other representatives who actively promoted Community Schools, such as a councilmember and school board member in Washington DC and a state representative in Tennessee. In a similar manner, most government agencies (4%) filled a transceiver role, mentioned often in conversations about obtaining grants. One exception was the Secretary of Education in Pennsylvania, who was depicted in news articles and tweets as promoting Community Schools across the state. The few private foundations with substantial network involvement (n = 14, 1%) were typically identified as funders of conferences, grants, or reports

State Analysis

The geographic distribution of the network also illustrates the network's breadth and depth. Table 3 shows the states (degree > 2) ranked by their ratios of network actors to the overall population with quartiles roughly indicated by solid lines. When interpreting the table, readers should take note that national organizations are not represented in this data. The table shows participants in the information network hailing from 41 states and Washington D.C., with the highest number of state or local organizations, by far, located in Pennsylvania (n = 144, 1.11% per 100,000 of the state's population) and New York (n = 156, 0.79% per 100K). Both states had high profile Community School Initiatives in their major cities and in smaller districts throughout each state. In terms of raw numbers, the next highest state was California (n =50, 0.13% per 100K), which hosted the high-profile Oakland Community Schools and the 2019 Los Angeles teachers strike that sought funding for Community Schools, among other demands.

Table 3

State Affiliations of Network Actors

Category	State CS Funding	Actors *n*	% of population
DC	2012 (continuing)	31	4.43
New Mexico	2019, 22	30	1.43
Pennsylvania		144	1.11
Maryland	2020	65	1.05
New York	2013, 14, 16, 18, 21, 22	156	0.79
Wisconsin		35	0.59
Minnesota	2015 (2 years only)	19	0.33
Rhode Island		3	0.30
Tennessee		21	0.30
Illinois		35	0.28
West Virginia		5	0.28
New Jersey		21	0.23
Arkansas		6	0.20
Alaska		1	0.17
Virginia		14	0.16
California	2021, 22	50	0.13
Nevada		4	0.13
Oklahoma		5	0.13
Texas		39	0.13
Massachusetts		8	0.12
Connecticut		4	0.11
Idaho		2	0.11
Louisiana		5	0.11
Michigan		11	0.11
Delaware		1	0.10
Kansas		3	0.10
Colorado		5	0.09
Ohio		11	0.09
Washington		6	0.08
Maine		1	0.07
New Hampshire		1	0.07
Oregon		3	0.07

Category	State CS Funding	Actors *n*	% of population
Georgia		6	0.06
Iowa		2	0.06
Utah		2	0.06
Florida	2014, 19, 22	12	0.05
Arizona		3	0.04
North Carolina		4	0.04
Indiana		2	0.03
Mississippi		1	0.03
Kentucky		1	0.02
South Carolina		1	0.02

Note. National organizations are not represented in this table. *n* includes nodes with degree > 2. % of Population calculated per 100,000. State Community School Legislation information from AFT, 2021; DC.gov, 2023; Maier & Rivera-Rodriguez, 2023; Partnership for the Future of Learning, 2018. Population from 2020 U.S. Census.

After ranking the states by their proportional network participation by population, most of the places that passed Community School Funding legislation during the time of the study appeared in the top quartile of network activity. In the top two positions were Washington DC (4.43% per 100K) and New Mexico (1.43% per 100K). Both locations passed legislation offering comprehensive district-wide and state-wide support for Community Schools. The most notable exception to this pattern was Florida, which ranked in the lowest quartile with only 12 network actors (0.05% per 100K) even though it passed statewide Community School funding during the studied period.

Network Changes Over Time (RQ2)

The network changed substantially over the five-year period in terms of size, density, and geographic dispersion. In 2015 the unpruned Twitter network had 258 edges. The size jumped more than tenfold in 2016, when it peaked at 3,247 edges and New York's and Philadelphia's Community School initiatives achieved major milestones. The network size began to drop in 2017 (n = 2,519 edges) and stabilized around 2,000 edges in 2018 and 2019. The network diameter fluctuated from 3 to 13 across the years, but there was no consistent pattern of change. Across time, the network became denser, with density statistics increasing from .066 to 0.116 and the mean degrees per node growing from 1.7 in 2015 to 3.7 in 2019. These figures seem to depict a network with a spike of attention from many loosely connected organizations during a high-profile period that settled into a slightly smaller network with more ties between participants.

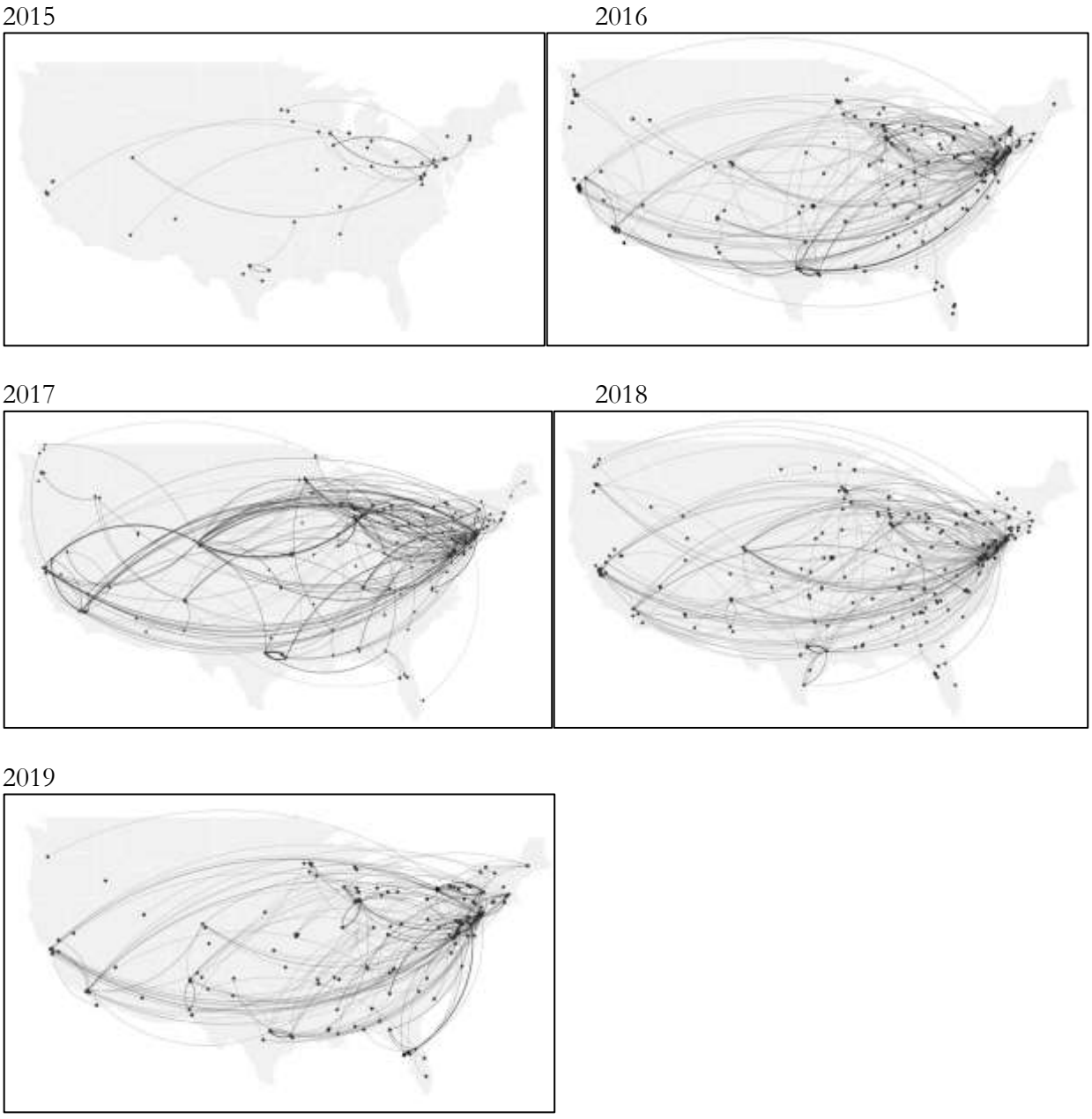
The series of U.S. maps shown in Figure 2 illustrate connections between state and local organizations during each of the five years. Disconnected dots were connected to national organizations that were excluded from this analysis. Across the five years, the nexus of activity remained in the Mid-Atlantic states (e.g., New Jersey, New York, Pennsylvania, Maryland) that were linked to organizations in the Midwest (e.g., Illinois, Minnesota), California, and Texas. Connections across the country to Colorado grew in 2017 when LPI and the National Education Policy Center, housed in Boulder, released a favorable research review of the evidence supporting Community Schools (i.e., Oakes et al., 2017). Cross-state connections to Florida expanded slightly in 2019 around the time it achieved a second round of state funding legislation.

An analysis of eigenvector centrality by year identified which organizations were consistently involved across time. Early network influencers included organizations from various categories: New York City Public Schools (λ = 0.85), The Schott Foundation (λ = 0.81), Philadelphia Mayor Jim

Kenney (λ = 0.47), Journey for Justice Alliance (λ = 0.43), the Children's Aid Society and its National Center for Community Schools (λ = 0.42), the New York Times (λ = 0.42), and AFT (λ = 0.32). IEL's CCS was only the eighth-ranked network actor in 2015 (λ = 0.22) but it rose to the top each year afterward (λ = 1.00). Similarly, the NEA, Communities in Schools, and Baltimore City Schools were largely absent in 2015 but were consistently present afterward. The National Education Policy Center (λ = 0.00–0.46) and LPI (λ = 0.00–0.72) also grew in influence over time, as they began to undertake research and policy positions advancing the Community School approach.

Figure 2

Local and State Network Actors



Note. Disconnected dots indicate connections to national organizations that were not depicted in this diagram.

Other early influencers lessened their involvement over the five-year period. The Schott Foundation, for example, dropped from an eigenvector centrality value of 0.81 in 2015 to 0.06 in 2017. The Philadelphia mayor, schools, and city also peaked in 2016 (λ = 0.60, 0.54, 0.33, respectively) when the city passed a tax on sweetened beverages to pay for Community Schools and other mayoral priorities. All three tapered off their network involvement afterward (2019, λ = 0.01). Local and state organizations such as the Chicago Public Schools, Elev8 Baltimore, Family League of Baltimore, Houston Federation of Teachers, Pennsylvania Department of Education, and Research for Action showed similar spikes of involvement for one to three years followed by a lesser network presence, demonstrating how engagement with the network could wane over time.

Discussion and Conclusions

This study was successful in its quest to model and describe the structure of interactions between important brokers within the Twitter-based Community School information network. In answering the question about the network's central organizations, we identified who was using Twitter as a platform to advance a proactive progressive policy agenda across the United States. Using a variety of social network analysis metrics, we determined that the Community School information network differed from prior depictions of neoliberal reform and resource networks in three distinct ways. It (a) was primarily led by advocacy organizations such as the CCS, (b) had a strong local presence, and (c) included a wide array of organizations. As we explored our second research question by mapping how the Twitter-based Community School policy network grew geographically from its Mid-Atlantic core over a five-year period, our results were significant in illustrating how increased cross-state connections in the network coincided with major events such as the publication of a favorable research review and passage of the Florida state funding bill. Although these descriptive findings are specific to the Community School network, they extend our current understandings of policy networks in important ways, as we discuss in greater detail in the following sections.

Broad Base of Support

Without support from high-profile donors, the literature suggests coalitions like the one that advanced Community Schools need broad bases of support to draw attention and pressure decision makers if they are to achieve their policy aims (Ferman, 2017; Welsh & Graham, 2021). We documented this on a national scale as we identified the same press attention, endorsements from elected leaders, and interactions between national, regional, and local non-profit organizations that Danley and Rubin (2020) found in Newark's coalition against charter schools. Our analysis revealed a wide variety of involved organizations, with a particularly strong presence of advocacy organizations and other information synthesizers (e.g., teachers unions). Research producers were largely absent from the network, which is unsurprising given the current study's focus on social media activity rather than research bibliographies or grant funding. It is likely that more university-assisted Community School initiatives like the one in Philadelphia were involved in research-practice partnerships with universities or other research producing organizations, but this information was not present on Twitter. Rather, the information synthesizers in the Twitter network advanced Community Schools by publishing an influential research review of related evidence (i.e., Oakes et al., 2017), sharing strategic policy briefs (e.g., Frankl, 2016; Partnership for the Future of Learning, 2018), and quoting speakers from national and local conferences. News articles widely shared on the platform documented the successes of local and regional organizations in developing local Community Schools and linked them to the national movement.

While extant research focused on the interjection of private interests into public schooling (e.g., Reckhow, 2016; Rowe, 2023; Scott, 2015), the Community School policy ecosystem uncovered in this study differed and is important because it appeared to be primarily driven by community-based advocacy organizations and school districts. We found few foundations substantively involved in the Community School information network, with only one foundation listed among the 35 most influential organizations. This structure was very different than what Scott and Jabbar (2014) described as the hub and spoke relationship between foundations and intermediary organizations. Instead, advocacy organizations were the most prevalent Community School network actors, and the national advocacy organization CCS emerged as the leading organization in the Twitter-based policy ecosystem. As outlined in the literature review, CCS is a national coalition of about 100 partners with a small staff in Washington D.C. that works with funders to influence policy agendas at the federal and state levels for the purpose of strengthening and expanding Community Schools (Benson et al., 2017; Blank et al., 2023). CCS explains that its strength lies in "relationships between thousands of grassroots to grass top leaders, organized in networks to prepare, support, and mobilize expanding knowledge, skills, practices, and advocacy to disrupt the status quo and eliminate systemic and structural barriers to equitable outcomes" (CCS, 2019, p. 2). Although CCS does rely on private funding, this involvement reflects the Reckhow and Tomkins-Stange (2018) typology of foundations that sponsor advocacy organizations "with preexisting policy preferences that aligned with their philanthropic agenda, subsequently amplifying their influence and creating potential ripple effects for other potential grantees, *but not dictating their behavior*" (p. 281). This hands-off approach seems to better represent the activity of philanthropists in the Community School network than the more directive model that promoted charter schools (e.g., Ellison et al., 2019; R. Quinn et al., 2014; Scott & Jabbar, 2014) and teacher evaluation reforms (e.g., Reckhow et al., 2021).

Notably, officials from local school districts represented one-fifth of the policy network. Advocacy organizations were the only group with more representation. This result is not entirely surprising, as Community Schools are characterized as a collaborative reform with much engagement from school district personnel (e.g., building principals and district superintendents) and highly dependent upon coordinated services from a myriad of community-based organizations. What is surprising is the central role of New York City's Executive Director of Community Schools in furthering the movement across the state and nationally. By contrast, the corresponding role in Philadelphia had mostly local connections. These findings are bolstered by our methodology that excluded communications other than those focused on scaling or sustaining Community Schools. The included tweets showed school officials conducting site visits, sharing positive outcomes data, lobbying elected officials at all levels, offering legislative testimony, speaking in national forums, and celebrating policy wins. These results extend prior findings that school district personnel (Galey-Horn et al., 2020) and school principals (Ansell et al., 2009) can be central actors in advancing policy agendas.

Use of Twitter as a Policy Platform

This study's results are significant in identifying network actors through social media ties rather than resource sharing or knowledge development. As social media has lowered the transactional costs of attracting attention and exchanging information, policy-minded organizations may find it easy to engage with others online. Yet, merely participating in online chatter may have little effect on policy adoption or implementation. It is, therefore, important to question whether the network depicted on Twitter was truly influencing education policy or if the platform merely served as a forum for people to promote themselves and express their opinions (Simonofsky et al., 2021). Three clues suggest that the Community School information network participants revealed in our study were indeed policy actors: (a) some influential politicians were frequent transmitters in

Community Schools conversations, (b) photographs in tweets and news articles showed network participants giving legislative testimony and networking with policymakers, and (c) the timing and location of increased Twitter activity loosely corresponded with high-profile Community School policy events. We thus conclude that, despite the data set's limitations, platforms like Twitter can serve as a means for identifying who is disseminating information and shaping policy messages.

Although sharing information is important, policy entrepreneurs also rely on networking and coalition building to facilitate their work (Anderson et al., 2020). In this regard, our social network analysis revealed differences between the Philadelphia and New York Community School sub-communities that illustrated how some policy actors use Twitter as a tool for public relations and others use it for network building. The Philadelphia and New York mayors were both elected to office on platforms that included the expansion of Community Schools, but their uses of the platform differed. In Philadelphia, city officials seemed to use Twitter as a short-term, public relations strategy to gain local public support for the beverage tax that partly funded Community Schools. The mayor's office, schools, and city departments in Philadelphia presented the illusion of network activity by tagging and retweeting one another, but they made little outreach beyond spotlighting supportive City Council Members and sharing news articles about their own endeavors. When the Philadelphia mayor's agenda moved on to new priorities, Philadelphia activity in the Community School forum dropped off sharply.

By contrast, the main New York actor on Twitter was not the mayor. It was the city's director of Community Schools—the second most connected actor in the national Community School information network. The director had many ties to advocacy organizations on Twitter and tweets often showcased his off-line activities promoting Community Schools throughout the city, state, and nation at conferences and events.

The extent Twitter materially aided Community School network participants in achieving their public relations and network-building goals remains unclear. While studies have explored how people use Twitter to shape discourse (e.g., Sam et al., 2019; Supovitz et al., 2018), more could be learned about the policy implications of how people use the platform to strategize and build coalitions.

Research Recommendations

The current study successfully began the process of filling a hole in the education policy network literature, but further research is required if we hope to develop a comprehensive understanding of the education policy terrain. We partly answered the question about who was driving Community School policy change, but we need to know more about why some drivers are more successful in achieving policy objectives than others. The Community School network is, therefore, ripe for further study. It would be useful to statistically relate changes in the network to milestones in state Community School funding legislation using inferential statistics such as exponential random graph models (ERGM; Borgatti et al., 2013). We also suggest using policy network analysis methods (Galey-Horn & Ferrare, 2020) for a more in-depth analysis of Tweets that compares the narratives and tactics deployed in states that did and did not pass Community School funding legislation. Of particular interest is investigating the problem framing and solution strategy narratives deployed in states with differing patterns of political control. Finally, in examining the role of policy actors, we found the activity of school district administrators and other local entities to be substantial in this community-driven educational reform. This finding highlights the importance of identifying influential policy actors in other educational reform initiatives, such as project-based learning and social-emotional learning. These implementers, equipped with the social and political capital necessary to shape educational policy, are critical to driving systemic change. As such, we recommend systematically mapping networks of policy actors to identify influencers and uncover

potential synergies among reform movements. Such an approach could facilitate the development of robust, interconnected networks similar to those supporting Community School reforms.

Conclusion

At the outset of this research, we questioned whether characterizations of market-based reform opponents as lacking proactive education policy agendas were accurate. Because we found the Community School network drastically different from the loosely connected approach Anzia (2020) described, we must conclude that this characterization was incomplete. Although we found some groups in the Community School network did take a primarily adversarial stance to neoliberal education reforms (e.g., No Takeover of MPS!), we mostly uncovered a wide array of interconnected national and community-based organizations with a very clear policy agenda focused on improving school *and* student outcomes for all children. This finding is important because for Community Schools to stay true to their justice-oriented, community-driven mission (Partnership for the Future of Learning, 2018), their policy actors must differ from elite for-profit, nonprofit, government, and nongovernmental policy actors who often "appropriate civil rights language and ideals to push through their market-based and accountability reforms" (Koon, 2020, p. 372). It is most fitting that a Community School network is driven by actors from local communities.

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